SIEMENS

Cerberus® CS1140

Fire detection system

Hardware description
Modules

EP7F-Z1

Building Technologies

Fire Safety & Security Products

3

4

1 About this document

Purpose

This document describes the function of hardware modules of the control unit CS1140. The consistent adherence to these instructions ia a prerequisite for a safe application.

Scope

This document contains information for all modules CS1140, valid for all software versions.

Target groups

This product documentation and the work instructions are aimed at the following persons, who have a particular function and have the corresponding training and qualification.

Group of persons	Activity	Qualification
Project Manager	The project manager is responsible for the local project management. His co-ordinates the schedules of all groups of people working on a project as well as resources. He also continuously obtains the technical information required for project realization.	He has had the technical training appropriate to his function and the size of a project or the product line used in the project and has attended the training courses for project managers at the supplier's works.
Installation personnel	They install product, device or system components and subsequently carry out a general performance check.	Professional training in the field of building automation or electrical installations.
Commissioning personnel	The configuration of the products, devices or systems for specific customers at the place of installation. They check serviceability and officially clear the product, device or system for use by the operator / customer. They are also responsible for trouble-shooting.	They have had the professional training appropriate to their function and to the commissioning of the products, systems and devices and have attended the technical training courses for commissioning personnel.
Product Specialist	He programs and parameterizes the product to comply with the requirements for specific countries and customers. He provides support in the solving of technical problems and supports all groups of people when product faults arise.	He has had technical training appropriate to his function and has attended the technical training courses for product specialists at the supply plant.

Reference documents

Information in	Document
1393	Installation housing H26..../H28...
1971	Installation housing H37...
1273	Installation housing H38...
1274	Installation housing H47...
1275	Installation housing H67...
1033, 003128, 003129	Operating instructions AlgoPilot B3Q4../560 EP5
008728	Operating instructions AlgoPilot B3Q4../560 EP7F–Z1
004598	Operating instructions AlgoPilot B3Q6../565 EP7F–Z1
005590	Operating instructions extinguishing section B3Q4.. EP7F
005113	Operating instructions extinguishing section B3Q6.. EP7F
1577	Compact control unit CI1145 EP5
008727	Compact control unit CI1145 EP7F–Z1
1076	Planning (CS1140 'Modular') EP5
008725	Planning (CS1140 'Modular') EP7F–Z1
1249	Commissioning EP5
008726	Commissioning Hardware EP7F–Z1
1456	Commissioning Extinguishing EP5
005109	Commissioning Extinguishing EP7F
1669	Paging interface card K3I090, Technical manual
1099	Modules overview
825	Connection factors of detection lines
1102	'Interactive detection line' connection factors
001508	Connection factors for fire detection systems collective, AnalogPLUS, interactive

1062	Communication module network
006516	Inscription strip templates for indication & operation equipment
007798	CDI-WAN Installation, Configuration, Commissioning

Work and operational safety

Before personnel begin work on the system they must have read and understood the related operating instructions, in particular Chapter 2 'Safety regulations'.

Disregard of the safety regulations

Before they are delivered, products are tested to ensure they function correctly when used properly. Siemens disclaims all liability for damage or injuries caused by the incorrect application of the instructions or disregard of warnings of danger contained in the documentation. This applies in particular to:

- Personal injuries or damage caused by improper use and incorrect use;
- Personal injuries or damage caused by disregarding safety instructions in the documentation or on the product;
- Personal injuries or damage caused by poor maintenance or a lack of maintenance.

Conventions

(...)	Additional information
..)	Notes
".....” / '....’	Definitions of designations
–>	Details see page ...., or document .....

Document identification

Place		Signification
Title page		– System names
		– Product type
		– Document purpose
Last page	bottom left	– The document number
		– Version date
	bottom right	– Manual
		– Register

Modification index

Version	Date	Brief description
e1260e	10. 2000	Ultimate version
e1260f	08. 2001	EP5 Align Siemens layout
e1260g	11. 2002	EP7F Supplement sections 'About this document' and 'Safety regulations' Supplement various hardware modules
e1260h	12. 2002	Program file names changed, and several minor changes
e1260i	05. 2003	Adaptation E3G080, K3I110, E3L030, Reference documents, several minor changes
1260_j_en_--	11. 2004	New E3M140, several adaptations EP7F-Z1, several minor changes
001260_k_en_--	02. 2005	replaces Quicksilver document 1260

Training

Siemens provides the necessary training for all products. You can find information about courses in the Siemens Intranet.

Download

The current issue of technical documentation can be found in the Siemens Intranet.

2 Safety regulations

This chapter describes the danger levels and the relevant safety regulations applicable for the use of our products. Please read the work instructions as well as the chapter 1 'About this document' before beginning with the work.

2.1 Signal words and symbols

2.1.1 Signal words and their meaning

The danger level - that is, the severity and probability of danger - is indicated by the signal words listed below. Non-observance may lead to the consequences indicated.

DANGER
Imminent danger!
● May cause danger to life or serious bodily injury.

WARNING
Dangerous situation!
● May cause serious bodily harm!

CAUTION
May cause dangerous situations!
● May cause light injuries!

NOTE
Possibly harmful situation!
● May cause damage to the product or to objects in the immediate vicinity of the product!

2.1.2 Symbols and their meaning

The symbols listed below indicate the nature and origin of the danger.

	Signal word	General danger

	Signal word	Electrical voltage

Example for a danger warning

	DANGER **External voltage**	Disconnect the module from the power supply.

2.1.3 Classification and meaning of additional symbols

i	Tips and information.

STOP	Refers to extremely important or critical decisions to be taken into account before continuing the work.

2.2 Safety-relevant working instructions

Country-specific standards

The products are developed and produced in compliance with the relevant international and European safety standards. Should additional country-specific, local safety standards or regulations concerning project planning, assembly, installation, operation and disposal of the product apply in the place of operation, then these standards or regulations must also be taken into account in addition to the safety regulations mentioned in the product documentation.

Electrical installations

DANGER **Work on electrical** **installations**	Any work on electrical installations may only be carried out by qualified electricians or instructed persons working under the guidance and supervision of a qualified electrician, in accordance with the electro technical regulations.

- Control units must be disconnected from the power supply during commissioning or maintenance work.
- Terminals with an external voltage supply must be provided with a sign 'DANGER - External voltage'.
- Mains leads to the control unit must be installed separately and provided with a clearly marked fuse.
- Earthing must be carried out in compliance with local safety regulations.
- When work is carried out in explosion-hazardous areas, the appropriate safety precautions must be taken.

Assembly, installation, commissioning and inspection work
- If any tools or accessories such as ladders are required, safe and suitable devices must be used.
- Prevention of spurious tripping of the remote transmission must be assured.
- Always inform the fire brigade before testing the remote transmission.
- The activation of fire control installations for test purposes must not cause damage to the system or parts thereof.
- Fire control installations must only be activated after the test has been completed and the system has been handed over to the customer.
- Third party systems or devices must only be activated in the presence of the responsible person.
- When work on management stations and system terminals are performed, the safety regulations of the connected sub-systems must be observed. This especially applies when switching-off system components.
- In the case of extinguishing systems, always use the 'General installation instructions' as a guideline. This guideline is available on request.

Testing the product operability
● Evacuate and cordon off extinguishing sector.
● Inform people about the possibility of occurring fog and noise.
● Inform people before testing of alarm devices; take the possibility of panic reactions into account.
● Inform the alarm and fault receiving stations connected to the system before running the tests.

Modifications to the system design and the product
Modifications to a system or to individual products may cause faults or malfunctioning. Please request written approval from us, and the relevant authorities concerning intended system modifications and system extensions.

Modules and spare parts
● Locally procured modules and spare parts must comply with the technical specifications laid down by the manufacturer. This compliance is always ensured for original spare parts supplied by us.
● Only use fuses with the specific fuse characteristics.
● Wrong battery types and improper battery exchange may introduce the danger of explosion. Only use the specified battery type or an equivalent battery type recommended by the manufacturer.
● Batteries require environmentally safe disposal. They must be handed in at the local collecting points.
● Please take into account that the extinguishing agent cylinders are pressurized and must be exchanged in compliance with the local safety regulations.

3   Hardware overview

'CC'

K3N010   E3X100/101   ──I-Bus──

CPU   Driver

E3G091   Z3B171

FÜ

250VAC 10A

Fire control installations

'CC'

E3X102/103   ──I-Bus──

CPU   Driver

E3G091   Z3B171

FÜ

250VAC 10A

Fire control installations

'CI'

B3Q...   ──I-Bus──

CPU   E3G070   Driver

E3G091   Z3B171

FÜ   250VAC 10A

Fire control installations

Line modules   **LON module**

CPU

──I-Bus──

E3M060	E3M071	E3M171	E3M080	E3M111	E3M120	E3M140	E3I040
1 Loop/Stub	1 Loop/Stub	1 Stub	8 Stubs	4 Loops/Stubs	4 Loops	2 Loops/Stubs	

E3M220

LON-Bus

- Addressable MS9i
- Interactive DS11
- Interactive DS11 Ex
- Collective DS11 MS6/7/9/24
- MS5
- AnalogPLUS DS11
- CBA8000 / TS9000
- Addressable SintesoTM

K3I050

K3I110

B3Q580/ B3Q590/ 595

Control modules

CPU

──I-Bus──

E3L020 Driver   E3L030   E3G050   E3G060   E3G070   E3G080   K5L020   E3G110

Z3B171   1......16

250VAC 10A

1.........8

30VDC 1A

1.......6

E3G091   Z3B171

FÜ   250VAC 10A

Fire control installations

LON-Bus

E3M...

FBF FSD ÜE

B3Q440

Extinguishing SECTION

CPU's

Module	Specification
E3X101	Master module as CPU for configuration 'CC11' (EPROM and RAM-sets separate)
K3N010	RAM extension card to E3X101
E3X102	Master module as CPU for configuration 'CC11' with Flash-ROM und 1MB RAM soldered
E3X103	Master module as CPU for configuration 'CC11' with Flash-ROM und 2MB RAM soldered
B3Q...	Control console AlgoPilot for configuration 'CI11'

Line modules

Module	Specification
E3M060	Line module for MS9i detectors
E3M071	Line module for interactive detectors
E3M171	Line module for interactive Ex detectors
E3M080	Line module for collective detectors
E3M111	Line module for AnalogPLUS detectors
E3M120	Line module for CBA8000/TS9000 detectors
E3M140	Line module for Sinteso^{TM} devices
E3M220	MS5 adapter

LON module

Module	Specification
E3I040	I-Bus/LON module

Control modules

Module	Specification
E3L020	Control module with 16 driver outputs
E3L030	Control module for the connection of the VdS periphery
E3G050	Control module with 8 volt-free contacts
E3G060	Control module with 6 monitored control lines
E3G070	Control module universal for configuration 'CI11'
Z3B171	Relay for fire control installations

Extinguishing

Module	Specification
E3G080	Control module extinguishing
E3G110	Emergency operation link to extinguishing
K5L020	Dual sector extinguishing p.c.b
B3Q440	Local control console extinguishing section

Peripheral equipment

Module	Specification	
E3G091	Remote transmission interface 'CH'	
FÜ	Remote transmission equipment	
FBF	Fire department control panel (VdS 'D')	Non Siemens products not listed in
FSD	Fire department key cabinet (VdS 'D')	this document -> see chapter 32
ÜE	Transmission device (VdS 'D')	

Hardware overview

AlgoPilot control console

Mimic display

B3Q...

B3Q321

E3I040

LON-Bus

I-Bus

Data bus

B3R051 B3R051

and/or

K3R072

or

K3G060

1

24

30VDC 1A

2x

CPU
E3X10.
or
B3Q...

E3I040

I-Bus

LON-Bus

K3I110

K3I050

B3Q580

B3Q590
B3Q595

16

16

Data bus

B3R051

and/or

K3R072

or

K3G060

1

24

30VDC 1A

2x

Printer

B2Q191

CPU
E3X10.
or
B3Q...

or

E3I020

B2Q191

RS232

Gateway

C-Bus

CC11/CI11

E3H020
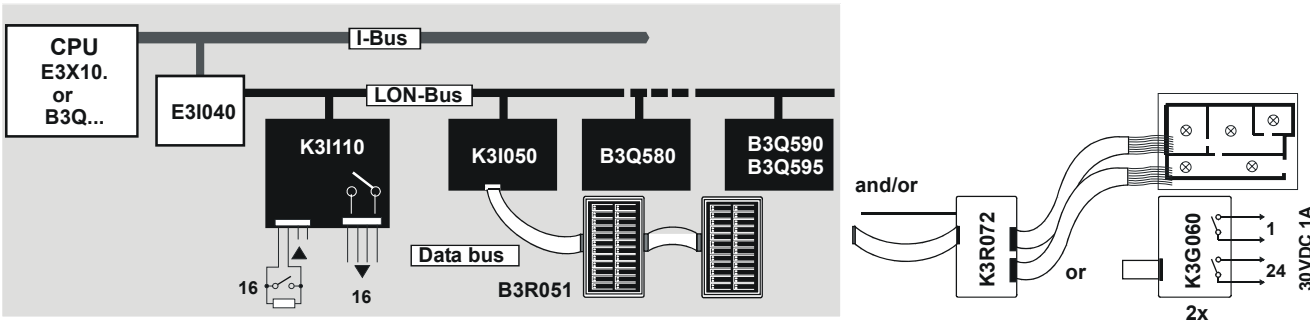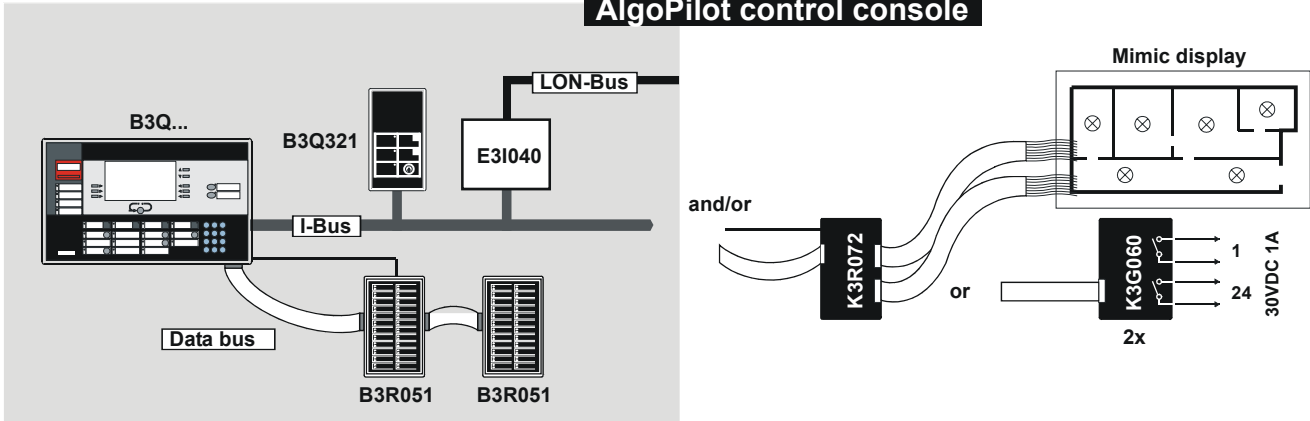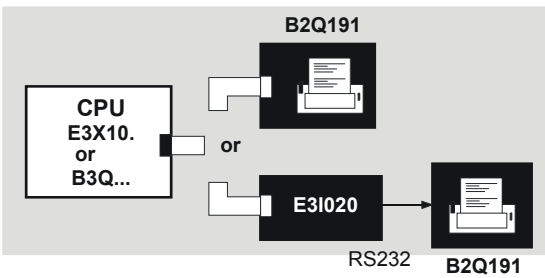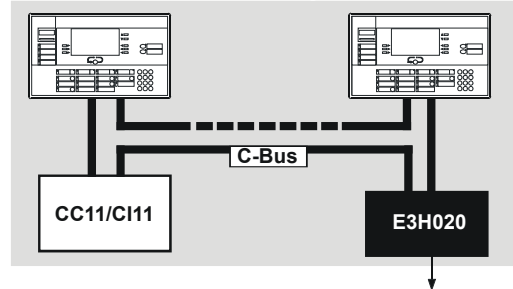
Power supply with accessories

Mains

CC11

Batteries
AX12..

B2F020
29,6V/6A

Battery-charging
unit

24V

E3X10.

I-Bus

Mains

B1F120
24V/3A

Door magnets

Mains

CI11

B2F020
29,6V/6A

E3C011

Batteries
AX12..

AlgoPilot B3Q...

24V

I-Bus

B2F020

Z3I041

Mains

B2F020

B3P020

Mains
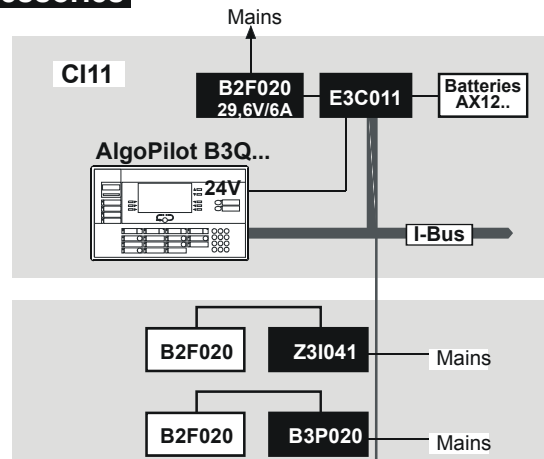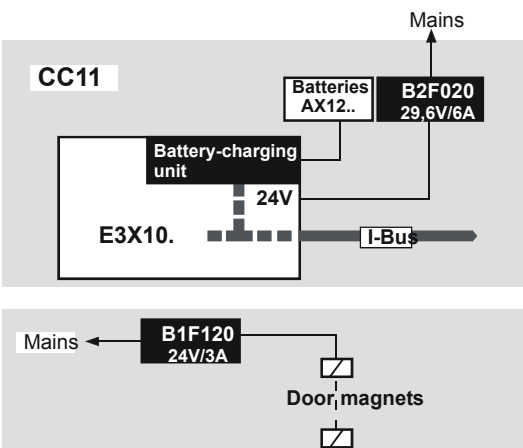
Operation AlgoPilot and floor indicator panel

Module	Specification
B3Q...	Control console AlgoPilot (can also be used as control panel and CPU)
B3Q321	Fire department control panel 'CH'
B3R051	Parallel indicator panel
K3R072	Mimic Display control module
K3G060	Relay card to Mimic Display board K3R072
K3I050	LON/Mimic Display converter
K3I110	LON I/O p.c.b
B3Q580	Text display terminal
B3Q590	Text control terminal with Nordic key
B3Q595	Text control terminal with KABA key

Printer

Module	Specification
B2Q191	Logging printer (Siemens)
E3I020	RS232 module

Gateway

Module	Specification
E3H020	C-Bus Gateway module as interface for LMS/DMS

Module	Specification
B2F020	Converter 115/230 VAC –> 29.6 VDC / 6 A as system voltage
B2F120	Converter 115/230 VAC –> 24 VDC / 3 A to supply door magnets etc.
E3X101	Master module with integrated battery-charging unit
E3X102	Master module with integrated battery-charging unit
E3X103	Master module with integrated battery-charging unit
E3C011	Battery-charging module
Z3I041	Surge protector set
B3P020	Mains filter for special cases (HF-interference)

4 Emergency operation

An alarm which occurs during system failure is displayed at the control panel as a "Collective alarm" (without location). This is achieved by the emergency operating circuit permanently integrated in the system.

Reduced alarm messages in emergency operation mode
– Collective alarm at AlgoPilot B3Q... level (visual and buzzer)
– Alarm horns are activated and can be silenced at AlgoPilot B3Q... control console level
– Remote alarm is activated via contact at the CPU
– Response indicator at detector flashes (except with collective detectors)

Emergency operation circuit at C-Bus level (external)
– Comprises the functions "Collective alarm" and "Silence alarm horns"
– Requires 3 additional wires between E3X10. and AlgoPilot B3Q...
– The line 'Emergency operation circuit fire alarm' is electrically monitored
– Function 'Monitoring' must, if not used, be set to inactive (AlgoWorks)
– Emergency operation circuit between the individual stations is designed for specific systems

Emergency operation circuit at I-Bus level (internal)
– Comprises the functions "Emergency alarm" and "Silence alarm horns" at the various I-Bus modules
– Integrated in the I-Bus flat cable (for this purpose 2 lines lead via all modules to the E3X10.)
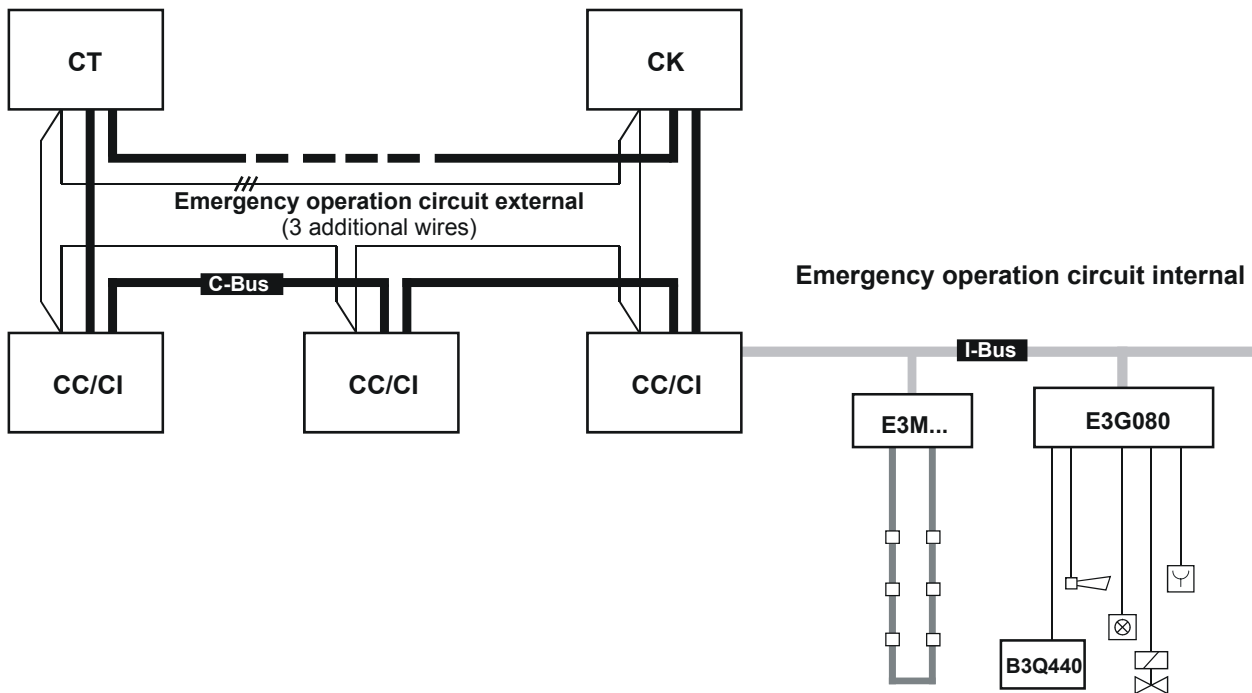
4.1 Emergency operation at line module E3M060 / 070/ 071/ 171/ 110/ 111 level

- Alarm evaluation in "Emergency operation" mode via **Emergency operation processor** and "Emergency operation" in the detector
- With emergency alarm a "Collective alarm" is given at the AlgoPilot B3Q... control console **with** the response indicator in the detector flashing
- With line short circuit **and** malfunction of the line processor **no** "Emergency alarm" is given
- Mimic Display panel output (connector ST10) only active in emergency alarm mode (not available for E3M110)

4.2 Emergency operation at line module E3M140

- Alarmauswertung bei "Notlauf" via **Linienprozessor**
- bei Notalarm erfolgt "Sammelalarm" auf der Bedienung AlgoPilot B3Q... **mit** Blinken des Ansprechindikators am Melder
- bei Leitungskurzschluss **und** Ausfall des Linienprozessors erfolgt **kein** "Notalarm"
- Synoptikausgang (Stecker SYNOPTIK) nur aktiv bei Notalarm

4.3 Emergency operation at line module E3M080 level

- Alarm evaluation with "Emergency operation" via **hardware comparators**
- With emergency alarm the "Collective alarm" is given at the AlgoPilot B3Q... control console **without** the response indicator at the detector flashing
- Selectable Function "Short circuit = Alarm" also fulfilled with emergency alarm
- Corresponding Mimic Display panel output (connector ST10) only active in emergency alarm mode

4.4 Emergency operation at control module 'Extinguishing' E3G080 level

a) Failure of control unit (E3X10. or AlgoPilot B3Q...)
The E3G080 functions autonomously. The user data are transferred from the AlgoWorks via the control unit to the E3G080 and stored there in an EEPROM. This protects them if the control unit malfunctions.
Complete manual activation is possible even in the event of control unit malfunction. Merely automatic activation of extinguishing via fire detector is no longer possible and the local B3Q440 control console has the following modifications for the operator:
- The 'Switch off warning panel' key serves as "Reset E3G080"
- The 'Silence alarm horn' key serves as "Acknowledge" (silence emergency alarm)

b) Failure of E3G080
Even in the event of malfunction of the E3G080, certain basic functions are still possible.
The following are still available:
– disabling input, terminal 20   (if S2–1 is set to "ON")
– input "Extinguishing activated"   (if S2–2 is set to "ON")
– Function when input 'Extinguishing activated' is active:
– Emergency alarm and illuminated warning panel are activated

(if S2–2 is set to "ON")

– Main valve is activated, but without operating time limit

(if S2–1 is set to "ON")

4.5 General requirements

At least **one control console per system** must comply with standard EN54, i.e. must have Emergency operation capability and Emergency power supply.

Emergency power supply
- This consists of a second supply circuit to stations located elsewhere
- For this purpose the AlgoPilot control console has 2 de-coupled supply inputs

4.6 Wiring principle
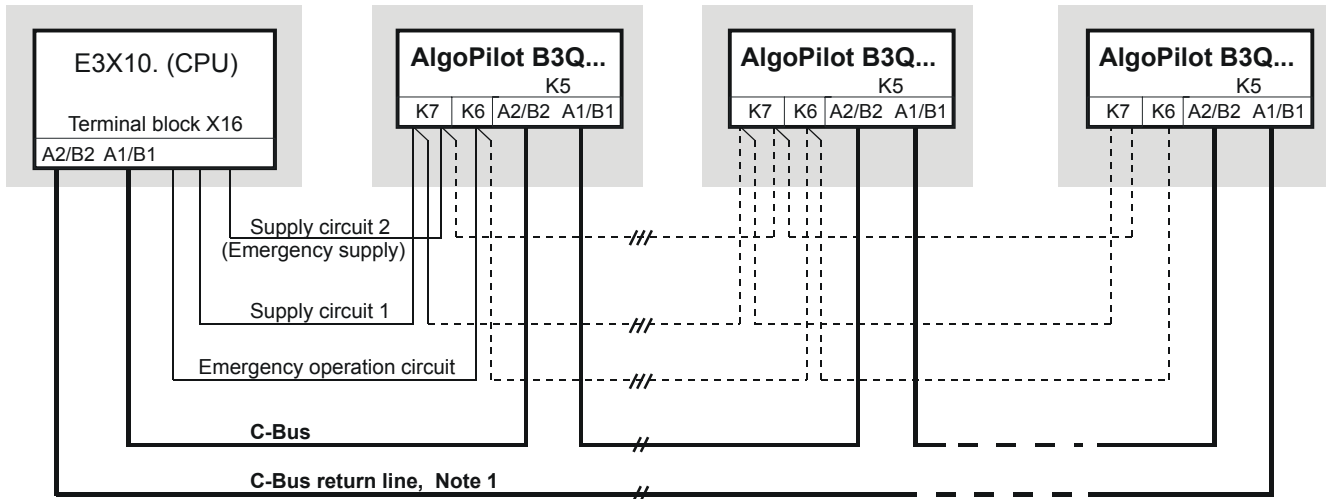
Note 1 C-Bus loop line = max. 1000 m (at G51 Ø0.6mm) incl. return line or, max. 1400 m at G51 Ø0.8 mm

Two requirements must be met for control consoles located elsewhere. At least **one** control console must comply with standard EN54 (i.e. have emergency operation capability and emergency supply).

EN54 requirements:
- Communication as loop line   (=C-Bus designed as loop line)
- Operation also in emergency mode   (=3 additional wires for emergency operation between CPU and control consoles)
- second de-coupled 24 V supply   (=3 additional wires if there is no autonomous power supply)

The **number of wires** in the connection cable depends on the application:

a) Are control consoles supplied from the control unit or autonomously with 24V?

b) Is an emergency power supply also provided according to EN54?

c) Is the emergency operation circuit also provided?

Application	C-Bus	24 V supply	Emergency supply	Emergency operation circuit	**Number of wires**
24V supply from control unit **Complies with EN54**	X (2 wires)	X (3 wires)	X (2 wires)	X (3 wires)	10
24V supply from control unit without emergency operation / emergency power supply	X (2 wires)	X (3 wires)	–	–	5
autonomous power supply **Complies with EN54**	X (2 wires)	–	–	X (3 wires)	5
autonomous power supply without emergency operation / emergency power supply	X (2 wires)	–	–	–	2

Note:

– Emergency operation circuit also required between other CPUs or to a separate Gateway

– Emergency operation circuit and the emergency power supply are not laid out as a loop line

– Route emergency power supply in a separate cable or in the C-Bus cable feedback

5 Principle of 24V wiring

5.1 Standard power supply 'CC'

AlgoPilot B3Q6../565

AlgoPilot B3Q4../560

K7

X34 X33 F1
X31
X32
X33 X34
X32 X31

B3Q...

Plug-in terminals K7

1 +
2
3 -
4 +
5
6 -

Programming terminals 'K7' as **input:**
0Ω-Resistors X31+X32+X33+X34

1) If only supply path 1 is used, terminals
K7-1 / K7-4 and K7-3 / K7-6 must
be connected

B2F020 ← Mains

CC11

E3X10.

X17

Terminal block X17

+ 3
+ 4
- 5
6

12V
12V

12
13
14

Battery
max. 42Ah

K1 → Supply modules

+ 8
- 9

Terminal block X16

+ 14
- 15

B3Q...

K1

Plug-in terminals K7

+ 1
2
- 3
+ 4
5
6

1)

AlgoPilot B3Q6../565

AlgoPilot B3Q4../560

K7

X34 X33 F1
X31
X32
X33
X32 X31 X34

Programming terminals 'K7' as **input:**
0Ω-Resistors X31+X32+X33+X34

5.2 Standard power supply 'CI/CT'

B2F020 ← Mains

CI11
CT11

E3C011

X17

+ 2
+ 3
+ 4
+ 5
- 6
- 7

12V
12V

8
9
10

Battery
max. 42Ah

← 13
← 14
← 15
← 16
17
→ 18
→ 19
→ 20

K1 → Supply modules

AlgoPilot B3Q6../565

AlgoPilot B3Q4../560

K7

X34 X33 F1
X31
X32
X33 X34
X32 X31

B3Q...

Plug-in terminals K7

1 +
2
3 -
4 +
5
6 -

Programming terminals 'K7' as **input:**
0Ω-Resistors X31+X32+X33+X34

B3Q...

K1

Plug-in terminals K7

+ 1
2
- 3
+ 4
5
6

AlgoPilot B3Q6../565

AlgoPilot B3Q4../560

K7

Y34 Y33
Y33 Y34
Y31 Y31
Y32 Y32
Y34
Y31
Y32

Programming terminals 'K7' as **output:**
0Ω-Resistors Y31+Y32+Y33+Y34

5.3 Cascading principle

Standard power supply

1st extension

B2F020
- −
- +
← Mains

E3X10.

Terminal block X17

+	3
+	4
−	5
−	6
	17
	18
	19
	20

X17
12V — 12
12V — 13
14
Battery 1
max. 42Ah

K1

→ Supply modules

* jumpers 2 - 3 only with E3C010

E3C011

+	2	*
+	3	
+	4	
+	5	
−	6	
−	7	

X17
12V — 8
12V — 9
10
Battery 2
max. 42Ah

←	13
←	14
←	15
←	16
→	17
→	18
→	19
→	20

K1

Auxiliary power supply operating in parallel

2nd extension

B2F020
- −
- +
← Mains

E3C011

+	2	*
+	3	
+	4	
+	5	
−	6	
−	7	

X17
12V — 8
12V — 9
10
Battery 3
max. 42Ah

←	13
←	14
←	15
←	16
→	17
→	18
→	19
→	20

K1

Only necessary if
the E3C011 are
not used as I-Bus
participants

3rd extension

E3C011

+	2	*
+	3	
+	4	
+	5	
−	6	
−	7	

X17
12V — 8
12V — 9
10
Battery 4
max. 42Ah

←	13
←	14
←	15
←	16
→	17
→	18
→	19
→	20

K1

4th extension

E3C011

+	2	*
+	3	
+	4	
+	5	
−	6	
−	7	

X17
12V — 8
12V — 9
10
Battery 5
max. 42Ah

←	13
←	14
←	15
←	16
→	17
→	18
→	19
→	20

K1

24

6 Ground fault monitoring (FM compliance)

Customer sites covered by the American Factory Mutual (FM) insurance company have special requirements to their fire panels. The basic FM requirement is to safely monitor and detect ground faults, of all lines leaving the panel.
The AlgoRex CS1140 family has now been technically adjusted to fulfill those requirements. To achieve this, some modules had to be modified. Those modules have either a changed part number or an incremented index as listed in the table below.
For FM installations, adhere the FM Approval mark to the control unit housing next to the CS1140 label.
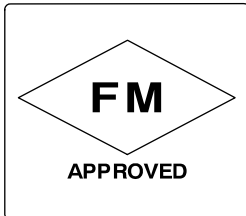
All modules are delivered pre-set with today's functionality, so that when setting up FM installations only, minor adjustments are necessary on some of the modules according to the following description.

FM APPROVED

6.1 Modules overview for FM compliant installations

Modules with part numbers / indices as follows are suitable for FM installations.

	Module	Part number	Index 1)	jumper setting
E3X101	Master module	546674		yes
E3X102	Master module	629025		yes
E3X103	Master module	629038		yes
B3Q...	Central card used for AlgoPilot B3Q4xx	528870		yes
B3Q460	Control console AlgoPilot (Standard)	546551		yes
B3Q480	Control console AlgoPilot (Nordic)	546577		yes
B3Q485	Control console AlgoPilot (CH)	546580		yes
B3Q490	Control console AlgoPilot (Guinard)	546593		yes
B3Q...	Central card used for AlgoPilot B3Q560	529167		yes
B3Q560	Control console AlgoPilot (China)	546616		yes
B3Q...	Central card used for AlgoPilot B3Q6xx	628741		yes
B3Q660	Control console AlgoPilot (Standard)	565600		yes
B3Q670	Control console AlgoPilot (Australia)	565590		yes
B3Q680	Control console AlgoPilot (Nordic)	569855		yes
B3Q685	Control console AlgoPilot (CH)	A5Q00003873		yes
B3Q565	Control console AlgoPilot (China)	565480		yes
E3G070	Control module "universal"	546661		yes
E3G080	Control module "Extinguishing"	475949	CD	yes
E3I040	I-Bus/LON module	499310	EB	yes
K3I110	LON-I/O p.c.b.	528854		yes
E3L020	Control module "I/O"	546645		no
E3G060	Control module "monitored"	542539		no
E3H020	C-Bus Gateway	546658		no

1) Mentioned index or higher

Remarks

– All other well known existing modules (except E3L030) of the AlgoRex CS1140 family are technically unchanged, and can be used in ground fault monitored systems without adjustments. With an E3L030 board installed, the system is not FM compliant.
– Please verify part numbers or index of used modules and check jumper settings as described in the following scheme.

6.2   Programming ground fault monitoring

Galvanically isolated circuits
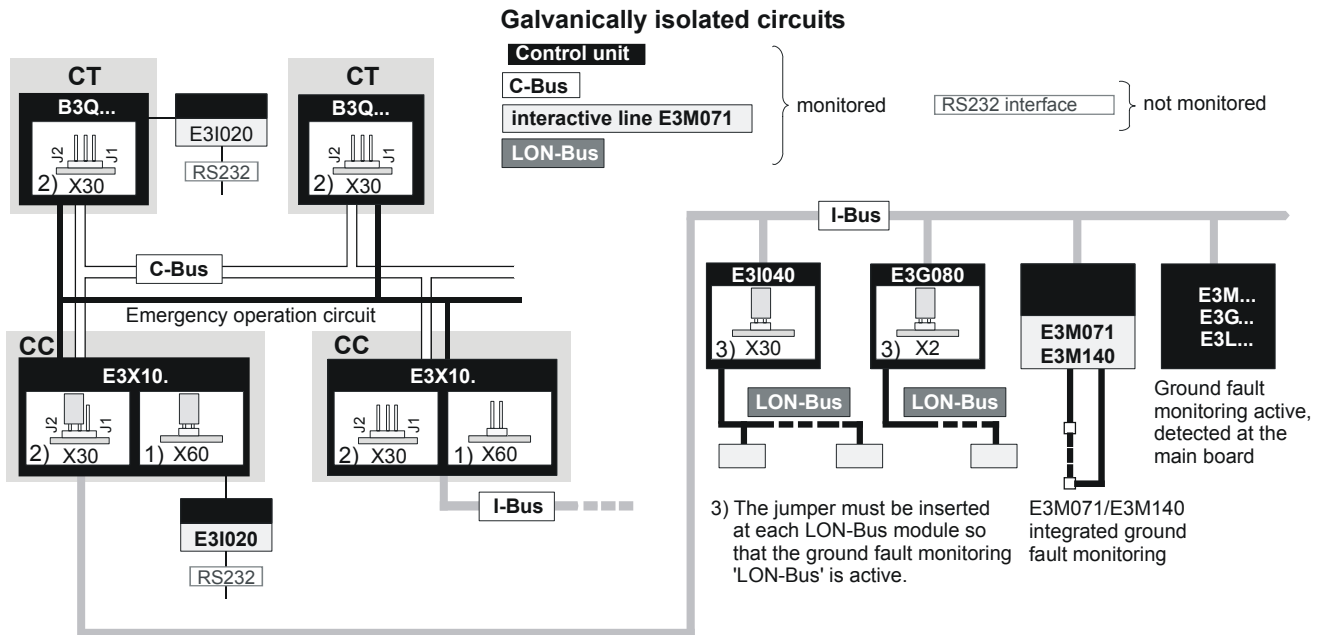
1) Ground fault monitoring 'control unit' (jumper 'X60') may only be active **once** within an electrically connected C-Bus network. (preferably always in the station with C-Bus address 1)

2) The C-Bus potential shall only be allocated to system ground in **one station** (jumper 'X30'). (preferably always in the station with C-Bus address 1)

3) The jumper must be inserted at each LON-Bus module so that the ground fault monitoring 'LON-Bus' is active.

E3M071/E3M140 integrated ground fault monitoring

Ground fault monitoring active, detected at the main board

Stations which have their own power supply and which are not linked together by the emergency operation circuit are regarded as separate circuits with their own ground fault monitoring. The jumper 'X60' must be inserted **at each station**.

- Outgoing lines which are activated by galvanically isolated contacts cannot influence the control unit in the event of ground fault, and therefore, they don't need to be monitored!
- If a connection is security-relevant, and an RS232 interface is being used, be sure to make an optical link.
- If galvanically isolated relays are used, make sure that the 3rd party system takes over the ground fault monitoring function.

- Ground fault monitoring reacts if the resistance is:
  a) $\leq 4\ \text{k}\Omega$ from positive potential to ground, or
  b) $\leq 16\ \text{k}\Omega$ from negative potential (system ground) to ground

7 E3X100 Master module (superseded by E3X101)

7.1 Overview

- Main evaluating unit for the **CS1140** series of fire detection control units with the function of "Main CPU"
  - ➔ With small systems, the B3Q... control console can also take over the "Main CPU" function.
- Processes up to 16 I–Bus modules
- Various interfaces, control inputs, control outputs and supply outputs
- EPROM as program memory
- RAM depending on application
- Lithium battery for RAM buffering
- Integrated battery–charger and monitoring function unit as I–Bus module
- Integrated emergency operation electronics
- Card format 366.8 mm x 200 mm

7.2 Application

Processing capacity see –> document 'Planning' (1076 EP5, 008725 EP7F-Z1)
For larger systems with stations **CC1142** or **CC1143..**
According to system size (table of quantities) choose the corresponding EPROM+RAM set:
- for **CC1142** –> **CCQ00xxx** (EPROM set 2x 512Kx8Bit)
  Z3S070 (RAM set 2x 512Kx8Bit)
- for **CC1143** –> **CCW00xxx** (EPROM set 2x 512Kx8Bit)
  Z3S070 (RAM set 2x 512Kx8Bit)
  K3N010 (RAM board 1x 1MB)

Recommended EPROMs: 27C040, 27C4001 (512Kx8Bit, 100 ns, DIP32)

X15

Terminal blocks X15 and X16 (20 terminals each). **With EMI protect.**.
– mounted on module chassis
– for the connection of the prefabricated cable to connection level, or
– for direct connection of the periphery

X16

Terminal block X17 (20 terminals) **Only for internal connections**.
– mounted on module chassis
– for the connection of the prefabricated cable for battery, temperature sensor and power unit

X17

Battery terminals (+, –, Centre tap)

Temperature sensor

Card chassis

27

7.3 Key data

Current at 24 V	approx. 225 mA (quiescent), max. 500 mA (alarm)
Battery charging	
Battery	2 x 12 V / 6...42 Ah, lead battery (full battery recharging up to 80 % within 24 h)
Charging characteristics	Can be adjusted to 16 makes of battery using programming switch "S2"
Charging current	Max. 1.7 A (current limitation)
Battery monitoring	Battery presence test every 55 sec
Symmetry monitoring	Asymmetry >1 V = Trouble
Battery test	automatic battery load test (3 A for 10 sec 1 x per 23 h), Can also be activated manually via control console B3Q...
EMI-protected battery line	no
Low discharge protection	Battery operation switches off when voltage is ≤ 21.0 V
Quiescent current	100 mA when on emergency power operation 110 mA when on mains operation without battery charging

7.4 Functions

Interfaces
– C-Bus interface
– I-Bus interface
– 2 x RS232 via RS232 module E3I020
– Emergency operation circuit

Control inputs / control outputs
– 2 monitored control lines for alarm devices 24 V, 2 A with EMI protection
– 8 programmable control outputs with EMI protection (driver 40 mA)
– 4 programmable control inputs with EMI protection
– 1 programmable control in- or output (output max. 40 mA) ≥ EP7F
– 5 control outputs / inputs for remote transmission equipment
– Make contact "REMOTE alarm", emergency operation capability
– Changeover contact "REMOTE fault", emergency operation capability and "fail-safe"

Supply outputs
– Supply outputs incl. fuses for B3Q..., remote transmission equipment, spare
– prefabricated cable set for battery and temperature sensor

"Battery-charging and monitoring" features
– I-Bus module integrated in the E3X100 with own processor (the E3C... has the same functions)
– for charging and monitoring the 24 V emergency power battery
– designed for the AC/DC converter B2F020
– Temperature compensation via external temperature sensor
– Selectable functions (via maintenance PC)
  – emergency power available   yes/no
  – battery available   yes/no
  – charge   yes/no
  – presence monitoring   yes/no
  – symmetry monitoring   yes/no
  – automatic battery load test   yes/no
  – Fault signal delay upon mains failure 1...30 min.

Emergency operation

An alarm which in the event of a system malfunction is signaled at the control panel as a "combined alarm" (no location details). This is achieved by the emergency operating circuit permanently integrated in the system.

Emergency operation circuit at C-Bus level

– Covers the functions "Combined alarm" and "Silence alarm horns"
– Requires 3 additional wires between E3X100 and B3Q...

Emergency operation circuit at I-Bus level

– Covers the functions "Emergency alarm" and "Silence alarm horns" on the various I-Bus modules
– Integrated in the I-Bus flat cable (for this purpose 2 lines lead via all modules to the E3X100)

Emergency alarm

In the event of **simultaneous alarm and malfunction** of the master module and / or control console B3Q... (Emergency alarm) the alarm signal is reduced as follows:

– Combined alarm at control console B3Q... level (visual and buzzer),
– Alarm horns are activated and can be silenced at control console B3Q... level
– Remote alarm is activated via contact at the CPU.

7.5 Important components
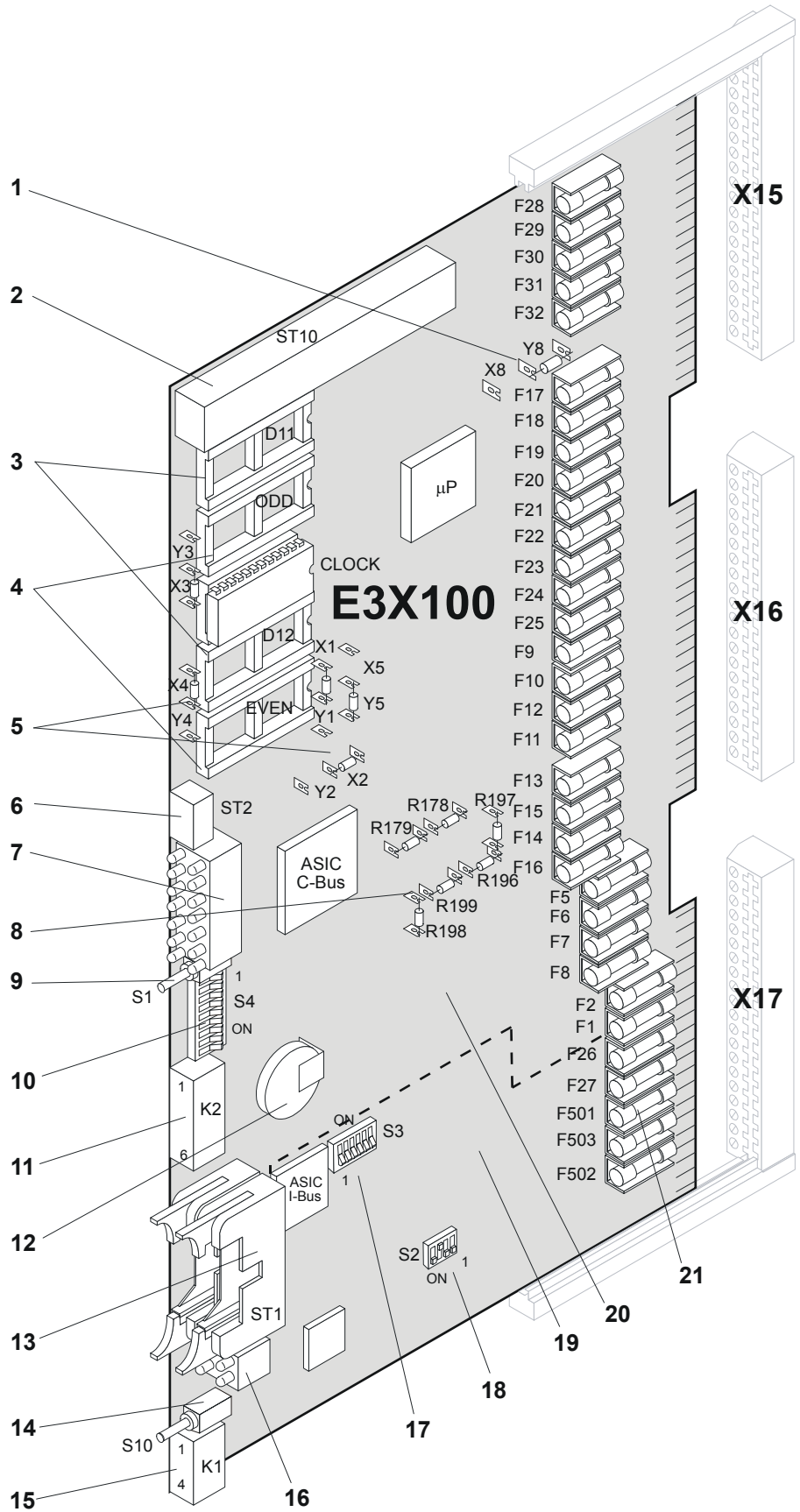
Legend:

1   0 Ω-Resistor: "Remote alarm" make / break contact

    Y8 = make contact (factory setting)

    X8 = break contact

2   Connector "ST10": for RAM extension card K3N010 (96 pin)

3   RAM plug-in spaces D11 / D12: User data and standard text

4   EPROM plug-in spaces D1 / D2: Software

5   Programming for RAM/EPROM:

	RAM 256Kx8Bit or 512Kx8Bit	EPROM 512Kx8Bit	EPROM 1024Kx8Bit
0 Ω-Resistors	**X1**	**X2 / X3 / X4 / Y5**	X2 / X3 / X4 / X5

6   Connector "ST2": RS232 (2x HCMOS level), connection to E3I020

    – is also used as interface to the maintenance PC

7   LED indicator block "CPU functions"

	yellow	"Emergency operation"
H1	green	""Normal operation" 1)
	red	Output Q1 active
H2	red	Output Q2 active
	red	Output Q3 active
H3	red	Output Q4 active
	red	Output Q5 active
H4	red	Output Q6 active
	red	Output Q7 active
H5	red	Output Q8 active
	red	Horn 1 active
H6	red	Horn 2 active
	red	Remote transmission "Alarm" active
H7	red	Remote transmission "Fault" active
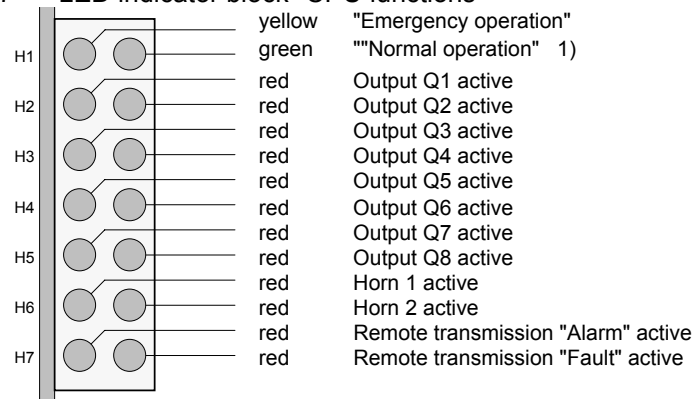
1) (fast flashing: no data loaded yet; slow flashing: data loaded)

8   Resistances to adapt C-Bus impedance:

Position	Impedance value 110 Ω, e.g. for G51 0.6Ø	Impedance value 50 Ω, e.g. for MICC
R178 / 179	402 Ω	182 Ω
R196 / 197 / 198 / 199	110 Ω	49,9 Ω

(inserted at factory)

– Impedance adaptation only required if C-Bus line is > 100 m.

– For calculation of adaptation resistors for other impedance values than 110 Ω or 50 Ω –> see document 1594

9   Key "S1": Reset CPU

10 Maintenance switch "S4": Maintenance functions

"S4-1...10" are set to "off" at the factory

S4 - 1...8   unused

S4 - 9:   Switch on / off red LEDs (H2...H7) on E3X100

S4 - 10:   Maintenance mode. Blocks **all** control outputs and activates the corresponding LED:

Module	Control outputs	LEDs
E3X100	Q1 ... Q8	H2 ... H5
E3L020	I/O1 ... I/O16	H1 ... H16
E3G050	K1 ... K8	H1 ... H8
E3G060	1........6	H1 ... H6
E3G070	Q1...Q7	H5... H11

● Extinguishing control module E3G080 is not included in the blocking of the S4-10.

● Also blocks the monitoring of the 'Emergency operation circuit fire alarm'.

11 Plug-in terminals "K2": Remote transmission equipment

12 Lithium battery 3 V / 70 mAh: RAM buffering for clock, user data etc.
- data storage time: minimum 2 weeks, typical >100 days
- maintenance-free

13 Double flat cable header "ST1" (26-pin): I-Bus

14 Key "S10": System start only with battery (without mains voltage)

15 Plug-in terminals "K1": Supply for the "I-Bus" modules

16 LED indicator block "Battery charger"

H501		yellow	"Power supply fault"
		green	"Mains operation"
H502		yellow	"Battery fault"
		yellow	unused

Indicators vary in meaning according to application:

a) Battery operation and symmetry monitoring	**LED "Power supply fault** – Input voltage > 31.0 V –> power unit malfunction – Battery voltage > 29.5 V or < 25 V –> charger malfunction – Charger malfunction – Charger shut down (via software function) – Temperature sensor open line / short circuit – Temperature sensor measures > 55 °C – EEPROM check sum error
	LED "Power on" – Input voltage > 28.5 V
	LED "Battery fault – Battery voltage < 23 V – Asymmetry > 1.0 V or fuse F503 blown – Possibly cell short circuit – Open line to battery or fuse F501 / F502 blown – Autom. test to indicate battery presence negative – Autom. battery load test negative

b) Battery operation without symmetry monitoring	**LED "Power supply fault** – Input voltage > 31.0 V –> power unit malfunction – Battery voltage > 29.5V or < 25 V –> charger malfunction – Charger malfunction – Charger shut down (via software function) – Temperature sensor open line / short circuit – Temperature sensor measures > 55 °C – EEPROM check sum error
	LED "Power on" – Input voltage > 28.5 V
	LED "Battery fault – Battery voltage < 23 V – Open line to battery or fuse F501 / F502 blown – Autom. test to indicate battery presence negative – Autom. battery load test negative

c) Operation with external voltage (instead of battery)	**LED "Power supply fault** – Input voltage > 31.0 V –> power unit malfunction – EEPROM check sum error
	LED "Power on" – Input voltage > 28.5 V
	LED "Battery fault – Battery voltage or external voltage < 23 V or > 31.0 V – Autom. presence test (external voltage) negative or fuse F501 / F502 blown

d) Operation without battery or external voltage	**LED "Power supply fault** – Input voltage > 31.0 V –> power unit malfunction – EEPROM check sum error
	LED "Power on" – Input voltage > 28.5 V
	LED "Battery fault – no function

32

17 Programming switch "S3": Choose "I-Bus address battery charger"
To set I-Bus address for the **Function unit "Charge /monitor battery"**. This unit is an I–Bus user (as e.g. line module) and must have an individual address (number). This is set on programming switch "S3".
Maximum 16 I-Bus devices

	Function / I-Bus address		Programming switch S3					
No.			S3-1	S3-2	S3-3	S3-4	S3-5	S3-6
0	Module out of commission (unused)		off	off	off	off	off	off
1	I-Bus user number	1	on	off	off	off	off	off
2		2	off	on	off	off	off	off
3		3	on	on	off	off	off	off
4		4	off	off	on	off	off	off
5		5	on	off	on	off	off	off
6		6	off	on	on	off	off	off
7		7	on	on	on	off	off	off
8		8	off	off	off	on	off	off
9		9	on	off	off	on	off	off
10		10	off	on	off	on	off	off
11		11	on	on	off	on	off	off
12		12	off	off	on	on	off	off
13		13	on	off	on	on	off	off
14		14	off	on	on	on	off	off
15		15	on	on	on	on	off	off
16		16	off	off	off	off	on	off

"S3–1...6" are set to "off" at the factory

18 Programming switch "S2": Choose "Battery type"
To set temperature compensation according to information from the various battery manufacturers

	Possible battery variants		Programming switch S2			
Var.	Battery manufacturer	Battery model	S2-1	S2-2	S2-3	S2-4
0			off	off	off	off
1			on	off	off	off
2	Varta Shin-Kobe (Hitachi) Kobe PSD (Power Storage Germany)	CF 12-24 (VM 1224) HP..-12 HP..-12	off	on	off	off
3	Genesis	G12V120W15	on	on	off	off
4	Sunrise Panasonic	LCL 12V24S LCL 12V..P	off	off	on	off
5	Phoenix (Korea)	FNC 12..0	on	off	on	off
6	Yuasa	NP..–12B	off	on	on	off
7	Sonnenschein Dryfit	A212/..G5	on	on	on	off
8	Power–Sonic	PS12..0	off	off	off	on
9	Hagen Drysafe	HDS–12..0NB	on	off	off	on
10	Sonnenschein Dryfit	A512/..G5	off	on	off	on
11	ALARMCOM (FIAMM) 1)	FG...	on	on	off	on
12			off	off	on	on
13			on	off	on	on
14			off	on	on	on
15			on	on	on	on

"S2" is set to variant 11 (ALARMCOM) at the factory
1) available from index 'CD' onwards

7.5.1 Floating charging voltage as a function of temperature

➔ see E3X101 page 43

19 Battery charging section
20 CPU section

21 Fuses

F1	630 mA/T	Supply 5 V/12 V
F2	63 mA/T	Auxiliary supply ASIC
F5, F6	2 A/T*	Control line alarm horn 1
F7, F8	2 A/T*	Control line alarm horn 2
F9	2 A/T*	unused
F10	2 A/T*	Emergency operation circuit "Silence horn"
F11	2 A/T*	Emergency operation circuit "Common"
F12	2 A/T*	Emergency operation circuit "Fire alarm"
F13, F14	2 A/T*	Supply "Control console B3Q..." +
F15, F16	2 A/T*	Supply "Control console B3Q..." –
F17...F25	0,5 A/T*	Programmable control outputs "Q1...Q8"
F26	2 A/T*	Supply "Remote transmission"
F27	2 A/T*	Supply "Reserve"
F28...F32	2 A/T*	Programmable control inputs "I1...I4"
F501...F503	6,3 A/T*	Battery (F501 "Positive" / F502 "Negative" / F503 "Centre")

* Fuse with high breaking capacity

7.6   Connections
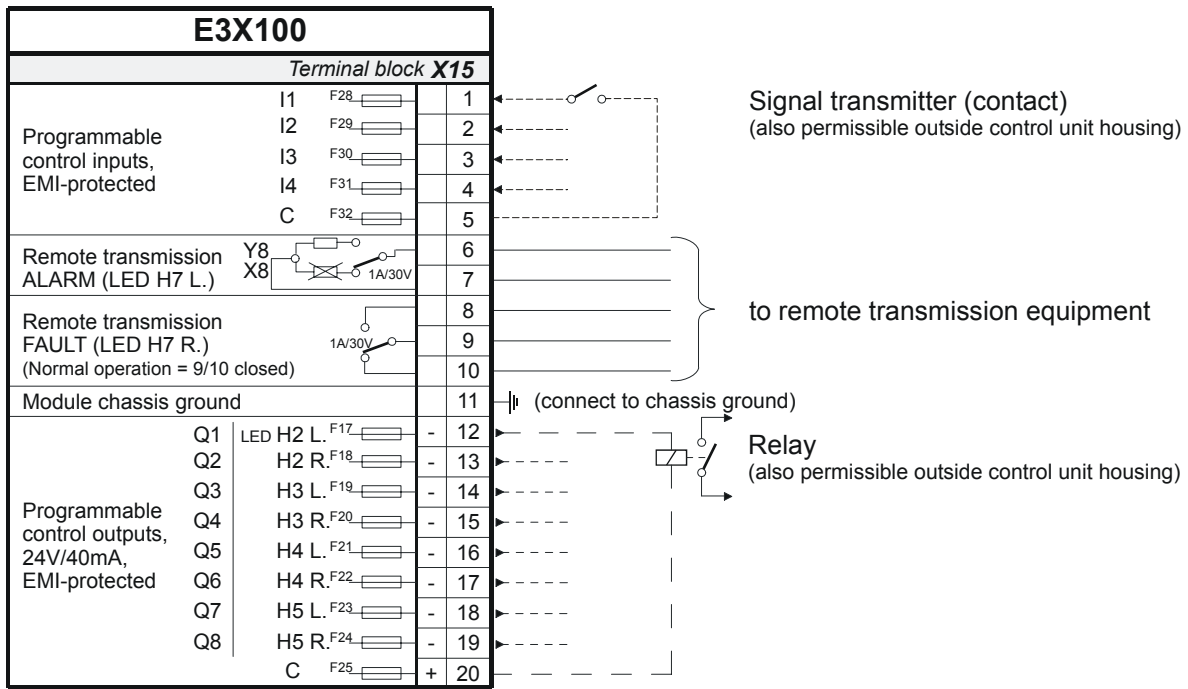
L. = left
R. = right

1) The polarity at terminals 17...20 applies to the active state
2) Supply outputs to AlgoPilot B3Q... X16-8, 9, 14, 15 are not monitored
3) Valid from EP7F
4) Terminate not used horn lines with a 4.75 kΩ resistor

E3X100 Master module (superseded by E3X101)

E3X100

Terminal block X17

Label	Fuse	+/-	Pin	Wire	Notes
Supply neutral point, 20...30V (not protected by fuse)		+	1		
		+	2		
Input voltage, 29,6V 2%		+	3		
		+	4		from converter B2F020 ⊕
		-	5		⊖
0V (not fuse-protected)		-	6		
		-	7		
Supply for remote transmission	F26	+	8		24V/max. 2A to remote transmission equipment
		-	9		
Auxiliary supply	F27	+	10		24V/max. 2A to other **internal** users
		-	11		3)
Battery 24V max. 42Ah, symmetry monitored	F501	+	12	red	12V
	F503		13	green	Battery (internal) **or** 24V external voltage 2)
	F502	-	14	blue	12V
Temperature sensor for battery			15	white	PTC 1)
			16	brown	
Inputs power supply FAULT (default = not active)	Emerg. power		17		
	Power supply		18		monitors other power supply (internal only)
	Battery		19		
	C		20		

Plug-in terminals K1

		+/-	Pin	Wire	
Supply for I-Bus modules	GND	-	1	blue	to the I-Bus modules
		-	2	blue	
	5V	+	3	green	
	24V	+	4	red	

Plug-in terminals K2

		Pin	Wire	
Remote alarm	switch off	1		
	reset	2		
		3		
	blocked	4		
	malfunction	5	white	to remote transmission equipment (using cable set Z3I390)
	C	6	brown	

Double flat cable header ST1

Data communication I-Bus modules	26 Pin	to the I-Bus modules
	26 Pin	

Flat cable header (Mini) ST2

Data communication RS232	20 Pin	According to application - RS232 module (E3I020) - Printer B2Q191 - Maintenance PC (B3D021) - PSA/Pager interface K3I090

1) PTC is always required including for operation "with external voltage" or "without battery".
2) Function "24V external voltage" or function "without battery" is programmable via maintenance PC. With the function "External voltage" the battery presence monitoring can be programmed as "active" (i.e. the external voltage is monitored).
3) Valid from EP7F the outputs X17-8, 9, 10, 11 are always monitored. Up to EP5 these outputs can be programmed as monitored.

8 **E3X101 Master module** (superseded by E3X102/103)

8.1 Overview

- Main evaluating unit for the **CS1140** series of fire detection control units with the function of "Main CPU"
  - ➜ With small systems the AlgoPilot B3Q... control console can also take over the function of "Main CPU".
- Processes up to 16 I-Bus modules
- Various interfaces, control inputs, control outputs and supply outputs
- EPROM as program memory
- RAM depending on application
- Lithium battery for RAM buffering
- Integrated battery-charger and monitoring function unit as I-Bus module
- Integrated emergency operation electronics
- Integrated ground fault monitoring (not contained in E3X100)
- Card format 366.8 mm x 200 mm

8.2 Application

Processing capacity see document 'Planning' (1076 EP5, 004595 EP7F-Z1),
for larger systems with stations **CC1142** or **CC1143**.
According to system size (table of quantities) choose the corresponding
EPROM+RAM set:

– for **CC1142**	–>	**CCQ00xxx**	(EPROM set 2x 512Kx8Bit)
		Z3S070	(RAM set 2x 512Kx8Bit)
– for **CC1143**	–>	**CCW00xxx**	(EPROM set 2x 512Kx8Bit)
		Z3S070	(RAM set 2x 512Kx8Bit)
		K3N010	(RAM board 1x 1MB)

Recommended EPROMs: 27C040, 27C4001 (512Kx8Bit, 100 ns, DIP32)

X15

Terminal blocks X15 and X16 (20 terminals each). **With EMI protect.**
– mounted on module chassis
– for the connection of the prefabricated cable to connection level, or
– for direct connection of the periphery

X16

Terminal block X17 (20 terminals) **Only for internal connections**.
– mounted on module chassis
– for the connection of the prefabricated cable for battery, temperature sensor and power unit

X17

Battery terminals (+, –, Center tap)

Temperature sensor

mechanical coding

Card chassis

8.3 Key data

Current at 24 V	approx. 100 mA (quiescent), max. 500 mA (alarm)
Battery charging	
Battery	2 x 12 V / 6...42 Ah, lead battery (full battery recharging up to 80 % within 24 h)
Charging characteristics	Can be adjusted to 16 makes of battery using programming switch "S2"
Charging current	max. 1.7 A (current limitation)
Battery monitoring	Battery presence test every 55 sec
Symmetry monitoring	Asymmetry > 1 V = Trouble
Battery test	automatic battery load test (3 A for 10 sec 1 x per 23 h), can also be activated manually via AlgoPilot B3Q...control console
EMI-protected battery line	no
Low discharge protection	Battery operation switches off when voltage is ≤ 21.0 V
Quiescent current	100 mA when on emergency power operation 110 mA when on mains operation without battery charging

8.4 Functions

Interfaces
– C-Bus interface
– I-Bus interface
– 2 x RS232 via RS232 module E3I020
– Emergency operation circuit

Control inputs / control outputs
– 2 monitored control lines for alarm devices 24 V, 2 A with EMI protection
– 8 programmable control outputs with EMI protection (driver 40 mA)
– 4 programmable control inputs with EMI protection
– 1 programmable control in- or output (output max. 40 mA) from EP7F
– 5 control outputs / inputs for remote transmission equipment
– Make contact "REMOTE alarm", emergency operation capability
– Changeover contact "REMOTE fault", emergency operation capability and "fail-safe"

Supply outputs
– Supply outputs incl. fuses for B3Q..., remote transmission equipment, spare
– Prefabricated cable set for battery and temperature sensor

"Battery-charging and monitoring" features
– I-Bus module integrated in the E3X101 with own processor (the E3C... has the same functions)
– for charging and monitoring the 24 V emergency power battery
– designed for the AC/DC converter B2F020
– Temperature compensation via external temperature sensor
– Selectable functions (via maintenance PC)
  – emergency power available   yes/no
  – battery available   yes/no
  – charge   yes/no
  – presence monitoring   yes/no
  – symmetry monitoring   yes/no
  – automatic battery load test   yes/no
  – Fault signal delay upon mains failure 1...30 min.

Emergency operation

An alarm which in the event of a system malfunction is signaled at the control panel as a "combined alarm" (no location details). This is achieved by the emergency operating circuit permanently integrated in the system.

Emergency operation circuit at C-Bus level

– Covers the functions "Combined alarm" and "Silence alarm horns"
– Requires 3 additional wires between E3X101 and B3Q...

Emergency operation circuit at I-Bus level

– Covers the functions "Emergency alarm" and "Silence alarm horns" on the various I-Bus modules
– Integrated in the I-Bus flat cable (for this purpose 2 lines lead via all modules to the E3X101)

Emergency alarm

In the event of **simultaneous alarm and malfunction** of the master module and / or control console B3Q... (Emergency alarm) the alarm signal is reduced as follows:

– Combined alarm at control console B3Q... level (visual and buzzer),
– Alarm horns are activated and can be silenced at control console B3Q... level
– Remote alarm is activated via contact at the CPU.

8.5 Important components
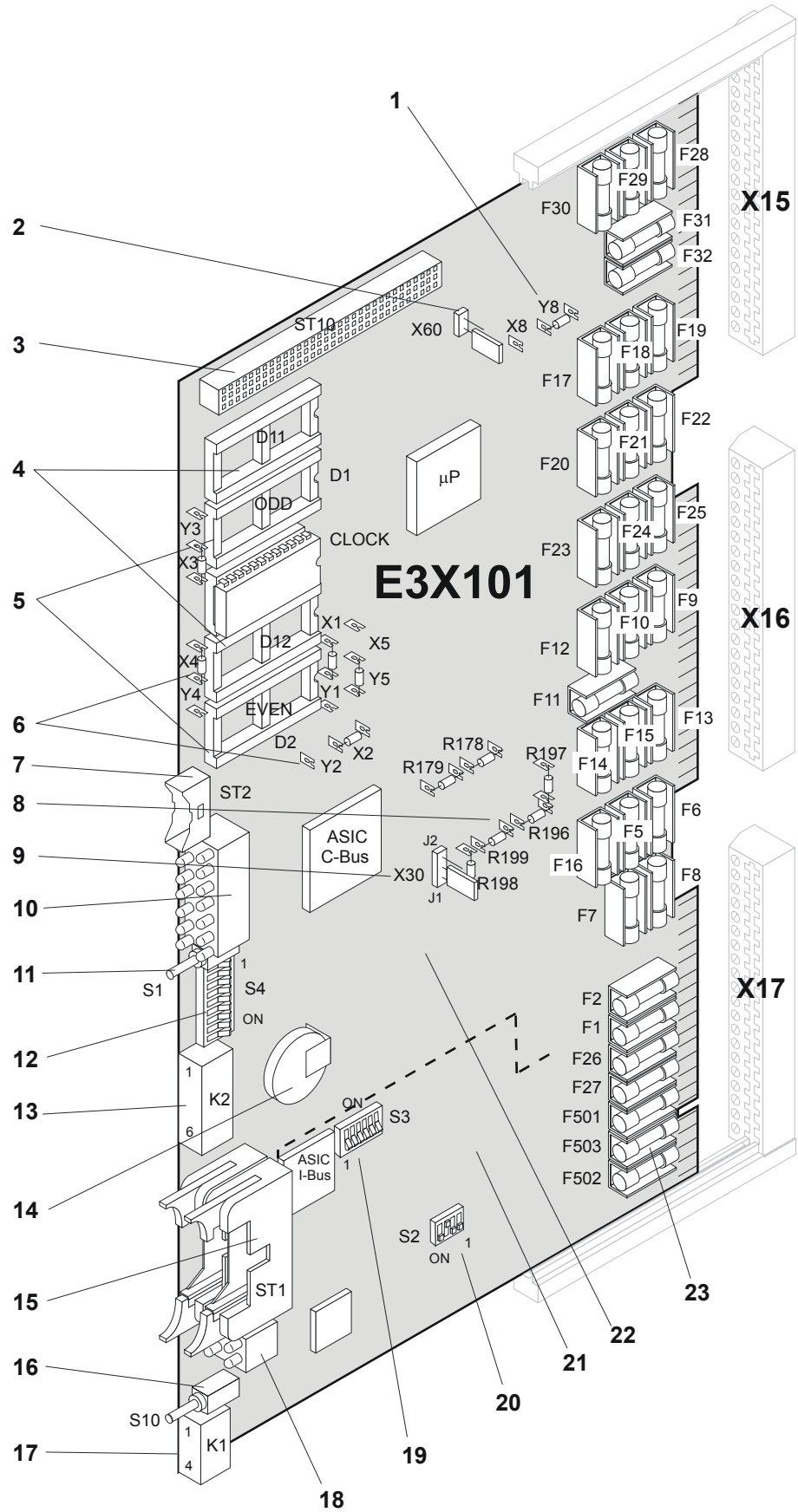
E3X101

μP

ST10

X60 X8
Y8

F28
F29
F30
F31
F32
X15

F19
F18
F17

F22
F21
F20

D11
D1
ODD
CLOCK

Y3
X3

F25
F24
F23

F9
F10
F12

X16

X1
X5
D12
X4
Y4
Y1 Y5
EVEN

D2
Y2 X2

R178
R179
R197
F15
F11
F14
F13

ST2

ASIC
C-Bus
X30

J2
J1
R196
R199
R198

F6
F5
F16
F8
F7

S1 1
S4
ON

F2
F1
F26
F27
F501
F503
F502

X17

K2 1
6

ON S3
ASIC
I-Bus 1

ST1

S2
ON 1

S10 1
K1 4

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23

Legend:

1 0 Ω-Resistor "Remote alarm" make / break contact
    Y8 = make contact (factory setting)
    X8 = break contact

2 Jumper "X60": Ground fault monitoring 'control unit'
    ' out   '   = inactive (factory setting)
    'in'   = active
    → for application details –> see chapter 6

3 Connector "ST10": for RAM extension card K3N010 (96 pin)
4 RAM plug-in spaces D11 / D12: User data and standard text
5 EPROM plug-in spaces D1 / D2: Software

6 Programming for RAM/EPROM:

	RAM 256Kx8Bit or 512Kx8Bit	EPROM 512Kx8Bit	EPROM 1024Kx8Bit
0 Ω-Resistor	**X1**	**X2 / X3 / X4 / Y5**	X2 / X3 / X4 / X5

7 Connector "ST2": RS232 (2x HCMOS level), connection to E3I020
    – is also used as interface to the maintenance PC

8 Resistances to adapt the C-Bus impedance:

Position	Impedance value 110 Ω, e.g. for G51 0.6 Ø	Impedance value 50 Ω, e.g. for MICC
R178 / 179	402 Ω	182 Ω
R196 / 197 / 198 / 199	110 Ω	49,9 Ω

(note: "inserted at factory" spans the middle column rows)

– Impedance adaptation only required if C-bus line is > 100 m.
– For calculation of adaptation resistors for other impedance values than 110 Ω or 50 Ω –> see document 1594

9 Jumper "X30": Ground fault monitoring 'C-Bus'
    'J1'   = not monitored (factory setting)
    'J2'   = monitored
    'removed'   = the other monitors
    → for application details –> see chapter 6

10 LED indicator block "CPU functions"

H1	yellow	"Emergency operation"
	green	"Normal operation" 1)
H2	red	Output Q1 active
	red	Output Q2 active
H3	red	Output Q3 active
	red	Output Q4 active
H4	red	Output Q5 active
	red	Output Q6 active
H5	red	Output Q7 active
	red	Output Q8 active
H6	red	Horn 1 active
	red	Horn 2 active
H7	red	Remote transmission "Alarm" active
	red	Remote transmission "Fault" active

1) fast flashing: no data loaded yet; slow flashing: data loaded

11 Key "S1": Reset CPU

12   Maintenance switch "S4": "Maintenance functions"

"S4-1...10" are set to "off" at the factory

S4 - 1...8	unused
S4 - 9	Switch on / off red LEDs (H2...H7) on E3X101
S4 - 10	Maintenance mode. Blocks all control outputs and activates the corresponding LED:

Module	Control outputs	LEDs
E3X101	Q1 ... Q8	H2 ... H5
E3L020	I/O1 ... I/O16	H1 ... H16
E3G050	K1 ... K8	H1 ... H8
E3G060	1........6	H1 ... H6
E3G070	Q1....Q7	H5... H11

- Extinguishing control module E3G080 is not included in the blocking of the S4-10.
- Also blocks the monitoring of the 'Emergency operation circuit fire alarm'.

13   Plug-in terminals "K2": Remote transmission equipment

14   Lithium battery 3 V / 70 mAh: RAM buffering for clock, user data etc.
   – data storage time: minimum 2 weeks, typical >100 days
   – maintenance-free

15   Double flat cable header "ST1" (26-pin): I-Bus

16   Key "S10": System start only with battery (without mains voltage)

17   Plug-in terminals "K1": Supply for the "I-Bus" modules

18   LED indicator block "Battery charger"

H501	yellow	"Power supply fault"
	green	"Mains operation"
H502	yellow	"Battery fault"
	yellow	unused

Indicators vary in meaning according to application:

a) Battery operation and symmetry monitoring	**LED "Power supply fault** – Input voltage > 31.0 V –> power unit malfunction – Battery voltage > 29.5 V or < 25 V –> charger malfunction – Charger malfunction – Charger shut down (via software function) – Temperature sensor open line / short circuit – Temperature sensor measures > 55 °C – EEPROM check sum error
	LED "Power on" – Input voltage > 28.5 V
	LED "Battery fault – Battery voltage < 23 V – Asymmetry > 1.0 V or fuse F503 blown – Possibly cell short circuit – Open line to battery or fuse F501 / F502 blown – Autom. test to indicate battery presence negative – Autom. battery load test negative

b) Battery operation without symmetry monitoring	**LED "Power supply fault** – Input voltage > 31.0 V –> power unit malfunction – Battery voltage > 29.5V or < 25 V –> charger malfunction – Charger malfunction – Charger shut down (via software function) – Temperature sensor open line / short circuit – Temperature sensor measures > 55 °C – EEPROM check sum error
	LED "Power on" – Input voltage > 28.5 V
	LED "Battery fault – Battery voltage < 23 V – Open line to battery or fuse F501 / F502 blown – Autom. test to indicate battery presence negative – Autom. battery load test negative

c) Operation with external voltage (instead of battery)	**LED "Power supply fault** – Input voltage > 31.0 V –> power unit malfunction – EEPROM check sum error
	LED "Power on" – Input voltage > 28.5 V

LED "Battery fault
– Battery voltage or external voltage < 23 V or > 31.0 V
– Autom. presence test (external voltage) negative or fuse F501 / F502 blown

d) Operation without battery or external voltage	**LED "Power supply fault**
	– Input voltage > 31.0 V –> power unit malfunction
	– EEPROM check sum error
	LED "Power on"
	– Input voltage > 28.5 V
	LED "Battery fault
	– no function

19   Programming switch "S3": Choice of "I-Bus address battery charger"

To set I-Bus address for the **Function unit "Charge /monitor battery"**. This unit is an I–Bus user (as e.g. line module) and must have an individual address (number). This is set on programming switch "S3".

Maximum 16 I-Bus devices

	Function / I-Bus address		Programming switch S3					
No.			S3-1	S3-2	S3-3	S3-4	S3-5	S3-6
0	Module out of commission (unused)		off	off	off	off	off	off
1	I-Bus user number	1	**on**	off	off	off	off	off
2		2	off	**on**	off	off	off	off
3		3	**on**	**on**	off	off	off	off
4		4	off	off	**on**	off	off	off
5		5	**on**	off	**on**	off	off	off
6		6	off	**on**	**on**	off	off	off
7		7	**on**	**on**	**on**	off	off	off
8		8	off	off	off	**on**	off	off
9		9	**on**	off	off	**on**	off	off
10		10	off	**on**	off	**on**	off	off
11		11	**on**	**on**	off	**on**	off	off
12		12	off	off	**on**	**on**	off	off
13		13	**on**	off	**on**	**on**	off	off
14		14	off	**on**	**on**	**on**	off	off
15		15	**on**	**on**	**on**	**on**	off	off
16		16	off	off	off	off	**on**	off

"S3-1...6" are set to "off" at the factory

20   Programming switch "S2": Choice of "battery type"

To set temperature compensation according to information from the various battery manufacturers

	Possible battery variants		Programming switch S2			
Var.	Battery manufacturer	Battery model	S2-1	S2-2	S2-3	S2-4
0			off	off	off	off
1			**on**	off	off	off
2	Varta	CF 12-24 (VM 1224)	off	**on**	off	off
	Shin-Kobe (Hitachi)	HP..-12				
	Kobe PSD (Power Storage Germany)	HP..-12				
3	Genesis	G12V120W15	**on**	**on**	off	off
4	Sunrise	LCL 12V24S	off	off	**on**	off
	Panasonic	LCL 12V..P				
5	Phoenix (Korea)	FNC 12..0	**on**	off	**on**	off
6	Yuasa	NP..–12B	off	**on**	**on**	off
7	Sonnenschein Dryfit	A212/..G5	**on**	**on**	**on**	off
8	Power–Sonic	PS12..0	off	off	off	**on**
9	Hagen Drysafe	HDS–12..0NB	**on**	off	off	**on**
10	Sonnenschein Dryfit	A512/..G5	off	**on**	off	**on**
11	ALARMCOM (FIAMM) 1)	FG...	**on**	**on**	off	**on**
12			off	off	**on**	**on**
13			**on**	off	**on**	**on**
14			off	**on**	**on**	**on**
15			**on**	**on**	**on**	**on**

"S2" is set to variant 11 (ALARMCOM) at the factory

1) available from index 'AA' onwards

8.5.1 Floating charge voltage as a function of temperature

Shin-Kobe HP24-12F
Kobe PSD HP24-12

Ua max. [V]
Ua min. [V]

Genesis
G12V120W15

Ua max. [V]
Ua center [V]
Ua min. [V]

Sunrise LCL 12V24S
Panasonic LCL12V24P

Ua max. [V]
Ua min. [V]

Phoenix (Korea)
FNC 12240

Ua max. [V]
Ua min. [V]

Yuasa
NP24-12B

Ua max. [V]
Ua min. [V]

Sonnenschein Dryfit
A212/24G5

Ua max. [V]
Ua min. [V]

Power-Sonic
PS12260

Ua max. [V]
Ua min. [V]

Hagen Drysafe
HDS-12260NB

Ua max. [V]
Ua min. [V]

Sonnenschein Dryfit
A512/25G5

Ua max. [V]
Ua min. [V]

ALARMCOM
(FIAMM)

Ua max. [V]
Ua center [V]
Ua min. [V]

21   Battery charging section
22   CPU section

23   Fuses

F1	630 mA/T	supply 5 V/12 V
F2	63 mA/T	auxiliary supply ASIC
F5, F6	2 A/T*	Control line alarm horn 1
F7, F8	2 A/T*	Control line alarm horn 2
F9	2 A/T*	unused
F10	2 A/T*	Emergency operation circuit "Silence horn"
F11	2 A/T*	Emergency operation circuit "Common"
F12	2 A/T*	Emergency operation circuit "Fire alarm"
F13, F14	2 A/T*	Supply "Control console AlgoPilot B3Q..." +
F15, F16	2 A/T*	Supply "Control console AlgoPilot B3Q..." –
F17...F25	0,5 A/T*	programmable control outputs "Q1...Q8"
F26	2 A/T*	Supply "Remote transmission"
F27	2 A/T*	Supply "Reserve"
F28...F32	2 A/T*	programmable control inputs "I1...I4"
F501...F503	6,3 A/T*	battery (F501 "Positive" / F502 "Negative" / F503 "Center")

* Fuse with high breaking capacity

8.6   Connections

E3X101

Terminal block **X15**

Programmable control inputs, EMI-protected	I1	F28		1
	I2	F29		2
	I3	F30		3
	I4	F31		4
	C	F32		5

Signal transmitter (contact)
(also permissible outside control unit housing)

Remote transmission ALARM (LED H7 L.)	Y8 X8	1A/30V	6
			7
Remote transmission FAULT (LED H7 R.) (Normal operation = 9/10 closed)		1A/30V	8
			9
			10

To remote transmission equipment

Module chassis ground		11

(connect to chassis ground)

Programmable control outputs, 24V/40mA, EMI-protected	Q1	LED H2 L.	F17	-	12
	Q2	H2 R.	F18	-	13
	Q3	H3 L.	F19	-	14
	Q4	H3 R.	F20	-	15
	Q5	H4 L.	F21	-	16
	Q6	H4 R.	F22	-	17
	Q7	H5 L.	F23	-	18
	Q8	H5 R.	F24	-	19
	C		F25	+	20

Relay
(also permissible outside control unit housing)

L. = left
R. = right

Signal transmitter (contact)
(also permissible outside control unit housing)

Relay
(also permissible outside control unit housing)

Terminal block **X16**

programmable control in-/outputs (as output max. 24V/40mA)	Q/I1 **3)**	F9			1
Emergency op eration circuit, EMI-protected	Silence horn	F10			2
	Fire alarm	F12			3
	C	F11		-	4
unused					5
C-Bus	A1				6
	B1				7
Supply B3Q..., 24V/max. 2A **2)**		F13		+	8
		F15		-	9
Ground					10
					11
C-Bus (feedback)	A2				12
	B2				13
Supply for B3Q..., second supply line **2)**		F14		+	14
		F16		-	15
unused					16
Monitored control line: Alarm horn 1	LED H6 L.	F5	F6	- / +	17 / 18
Monitored control line: Alarm horn 2	LED H6 R.	F7	F8	- / +	19 / 20

B3Q...
K6-2
K6-1
K7-3

- Connection required if B3Q... should have "Emergency operation" capability
- essential with at least one control console
- parallel to all B3Q... (and E3X101 and E3H020) if several have to be linked

K5-4
K5-3
or
K7-1
K7-3
K7-2

- Cabling C-Bus
  max. 1000m per loop with ø0.6 mm wire
  max. 1400m per loop with ø0.8mm wire
  (always including return line)
- for cable type (impedance adaption see table adapt C-Bus impedance

K7-5
K5-2
K5-1
K7-4
K7-6

24V   max. 2A   4.75kΩ

24V   max. 2A   4.75kΩ

External audible alarm devices

1) The polarity at terminals 17...20 applies to the active state
2) Supply outputs to AlgoPilot B3Q... X16-8, 9, 14, 15 are not monitored
3) Valid from EP7F
4) Terminate not used horn lines with a 4.75 kΩ resistor

E3X101

Terminal block **X17**

Supply neutral point, 20...30V (not protected by fuse)		+	1
		+	2
Input voltage, 29,6V 2%		+	3
		+	4
		-	5
0V (not fuse-protected)		-	6
		-	7
Supply for remote transmission	F26	+	8
		-	9
Auxiliary supply	F27	+	10
		-	11
Battery 24V max. 42Ah, symmetry monitored	F501	+	12
	F503		13
	F502	-	14
Temperature sensor for battery			15
			16
Inputs power supply FAULT (default = not active)	Emerg. power		17
	Power supply		18
	Battery		19
	C		20

⊕ from converter B2F020
⊖

24V/max. 2A to remote transmission equipment

24V/max. 2A to other **internal** users

3)

red —— 12V
green —— Battery (internal) **or** 24V external voltage **2)**
blue —— 12V

white
brown —— PTC **1)**

monitors other power supply (internal only)

Plug-in terminals **K1**

Supply for I-Bus modules	GND	-	1
		-	2
	5V	+	3
	24V	+	4

blue
blue
green } to the I-Bus modules
red

Plug-in terminals **K2**

Remote alarm	switch off	1
	reset	2
		3
	blocked	4
	malfunction	5
	C	6

white
brown } to remote transmission equipment (using cable set Z3I390)

Double flat cable header **ST1**

Data communication I-Bus modules	26 Pin	>
	26 Pin	>

to the I-Bus modules

Flat cable header (Mini) **ST2**

Data communication RS232	20 Pin	>

According to application
- RS232 module (E3I020)
- Printer B2Q191
- Maintenance PC (B3D021)
- PSA/Pager interface K3I090

1) PTC is always required including for operation "with external voltage" or "without battery".
2) Function "24 V external voltage" or function "without battery" is programmable via maintenance PC. With the function "External voltage" the battery presence monitoring can be programmed as "active" (i.e. the external voltage is monitored).
3) Valid from EP7F the outputs X17-8, 9, 10, 11 are always monitored. Up to EP5 these outputs can be programmed as monitored.

9   E3X102/103 Master module (supersedes E3X101)

9.1   Overview

- Main evaluating unit for the **CS1140** series of fire detection control units with the function of ”Main CPU”
  - ➜ With small systems the AlgoPilot B3Q... control console can also take over the function of ”Main CPU”.
- Processes up to 16 I-Bus modules
- Various interfaces, control inputs, control outputs and supply outputs
- Flash-ROM 2MBx8Bit as program memory
- SRAM for user data and standard text
  E3X102: 1MBx8Bit
  E3X103: 2MBx8Bit
- Lithium battery for RAM buffering
- Integrated battery-charger and monitoring function unit as I-Bus module
- Integrated emergency operation electronics
- Integrated ground fault monitoring
- Card format 366.8 mm x 200 mm

9.2   Application

Processing capacity –> see document 'Planning' (008725 EP7F-Z1)
For larger systems with stations **CC11..**

E3X102/103

X15

Terminal blocks X15 and X16 (20 terminals each). **With EMI protect.**
– mounted on module chassis
– for the connection of the prefabricated cable to connection level, or
– for direct connection of the periphery

X16

Terminal block X17 (20 terminals) **Only for internal connections**.
– mounted on module chassis
– for the connection of the prefabricated cable for battery, temperature sensor and power unit

X17

Battery terminals (+, -, Center tap)

Temperature sensor

mechanical coding

Card chassis

9.3 Key data

Current at 24 V	approx. 120 mA (quiescent), max. 500 mA (alarm)
Battery charging	
Battery	2 x 12 V / 6...42 Ah, lead battery (full battery recharging up to 80 % within 24 h)
Charging characteristics	Can be adjusted to 16 makes of battery using programming switch "S2"
Charging current	Max. 1.7 A (current limitation)
Battery monitoring	Battery presence test every 55 sec
Symmetry monitoring	Asymmetry > 1 V = Trouble
Battery test	automatic battery load test(3 A for 10 sec 1 x per 23 h), can also be activated manually via AlgoPilot B3Q...control console
EMI-protected battery line	no
Low discharge protection	Battery operation switches off when voltage is ≤ 21.0 V
Quiescent current	100 mA when on emergency power operation 110 mA when on mains operation without battery charging

9.4 Functions

Interfaces
– C-Bus interface
– I-Bus interface
– 2 x RS232 via RS232 module E3I020
– Emergency operation circuit

Control inputs / control outputs
– 2 monitored control lines for alarm devices 24 V, 2 A with EMI protection
– 8 programmable control outputs with EMI protection (driver 40 mA)
– 4 programmable control inputs with EMI protection
– 1 programmable control in- or output (output max. 40 mA)
– 5 control outputs / inputs for remote transmission equipment
– Make contact "REMOTE alarm", emergency operation capability
– Changeover contact "REMOTE fault", emergency operation capability and "fail-safe"

Supply outputs
– Supply outputs incl. fuses for B3Q..., remote transmission equipment, spare
– Prefabricated cable set for battery and temperature sensor

"Battery-charging and monitoring" features
– I-Bus module integrated in the E3X102/103 with own processor (the E3C... has the same functions)
– for charging and monitoring the 24 V emergency power battery
– designed for the AC/DC converter B2F020
– Temperature compensation via external temperature sensor
– Selectable functions (via maintenance PC)
  – emergency power available   yes/no
  – battery available   yes/no
  – charge   yes/no
  – presence monitoring   yes/no
  – symmetry monitoring   yes/no
  – automatic battery load test   yes/no
  – Fault signal delay upon mains failure   1...30 min.

Emergency operation

An alarm which in the event of a system malfunction is signaled at the control panel as a "combined alarm" (no location details). This is achieved by the emergency operating circuit permanently integrated in the system.

Emergency operation circuit at C-Bus level

– Covers the functions "Combined alarm" and "Silence alarm horns"
– Requires 3 additional wires between E3X10. and B3Q...

Emergency operation circuit at I-Bus level

– Covers the functions "Emergency alarm" and "Silence alarm horns" on the various I-Bus modules
– Integrated in the I-Bus flat cable (for this purpose 2 lines lead via all modules to the E3X10.)

Emergency alarm

In the event of **simultaneous alarm and malfunction** of the master module and / or control console B3Q... (Emergency alarm) the alarm signal is reduced as follows:

– Combined alarm at control console B3Q... level (visual and buzzer),
– Alarm horns are activated and can be silenced at control console B3Q... level
– Remote alarm is activated via contact at the CPU.

9.5   Important components

1
2
X60
X61
Clock
F28
F29
F30
F31
F32
F19
X15
3
F17
F18
F20
F21
F22
F23
F24
F25
F9
4
Flash
E3X102/103
μP
F12
F10
X16
5
S5
1
ON
Flash
F11
F13
6
R178
R179
F14
F15
7
ST2
R197
8
ASIC
C-BUS
R198
J2
R196
F6
F5
9
X30
J1
R199
F16
F7
F8
10
S1
1
11
S4
ON
F2
F1
F26
F27
F501
F503
X17
12
1
K2
6
13
ASIC
I-BUS
S3
QN
1
ST1
F502
14
F3
15
S10
S2
ON
1
1
16
K1
4
17
18
19
20
21
22
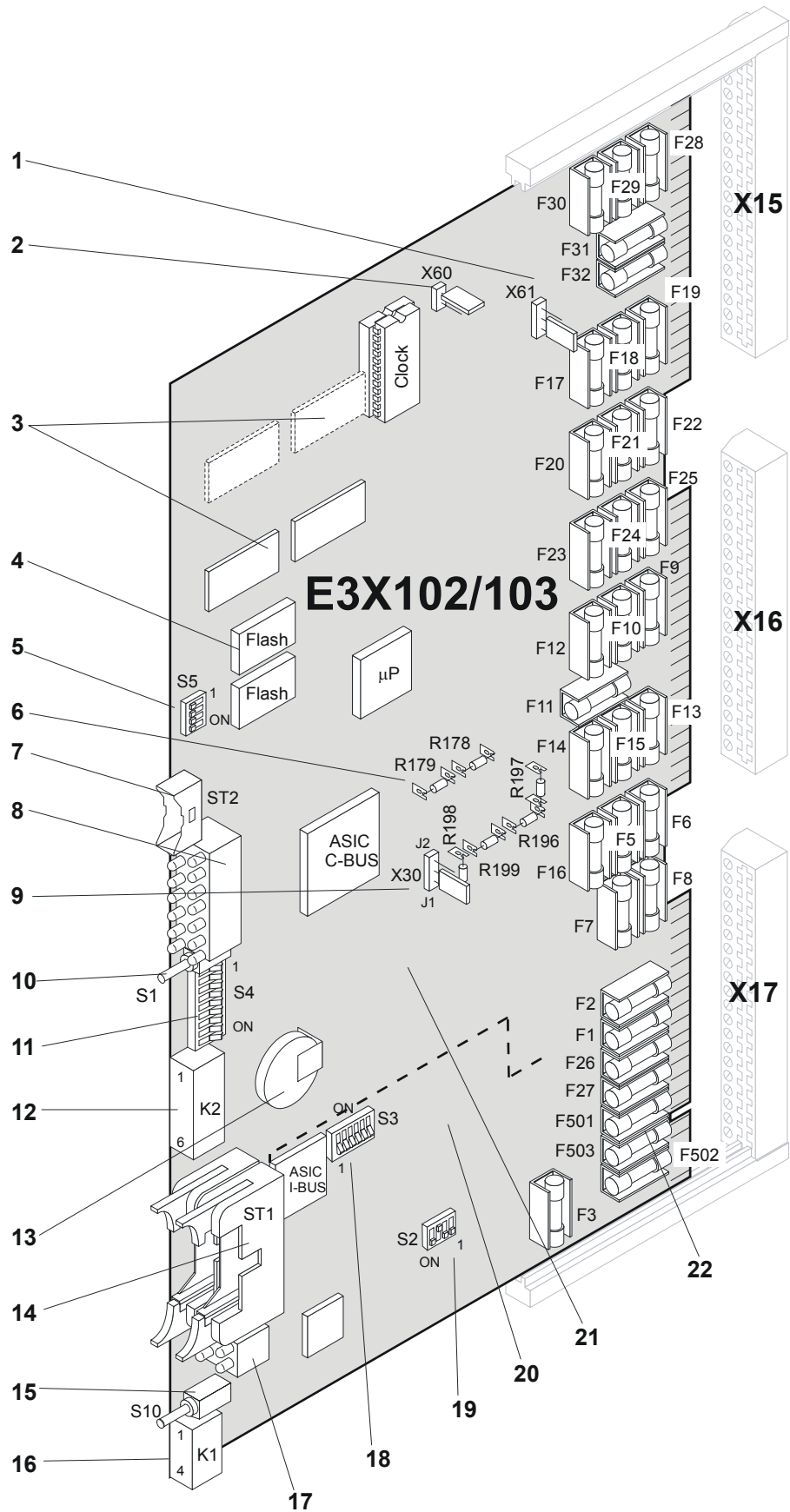
Legend:
1   Jumper 'X61': Remote alarm" make / break contact
      Jumper on   2-3 = make contact (factory setting)
                          1-2 = break contact
2   Jumper "X60": Ground fault monitoring 'control unit'
      'out'   = inactive (factory setting)
      'in'   = active
      ➔ Details application see chapter 6
3   SRAM
      E3X102: 2x512Kx8Bit:
      E3X103: 4x512Kx8Bit
      user data and standard text

4   Flash-ROM 2MBx8Bit: Software factory programmed:
      E3X102 program file CCX00xxx
      E3X103 program file CCY00xxx

5   Programmable switch 'S5': "Service and horn functions"
      'S5-1...4' are set to "off" at the factory

S5-1	on	durability reset (maintenance function for testing purpose only)
	off	normal operation
S5-2*	off	flash programming disabled
	on	flash programming enabled (this function for production and service engineer only)
S5-3	off	control line alarm horns on continuous tone
	on	control line alarm horns intermittent 1 s/ 1 s (during emergency operation the alarm horns are switched to continuous tone)
S5-4	on	unused

*) Carry out a CPU reset (switch 'S1') after each switch over of 'S5-2'.

6   Resistances to adapt the C-Bus impedance:

Position	Impedance value 110 Ω, e.g. for G51 0.6 $\varnothing$	Impedance value 50 Ω, e.g. for MICC
R178 / 179	402 Ω	182 Ω
R196 / 197 / 198 / 199	110 Ω	49.9 Ω

(between the two rows of the middle column: *inserted at factory*)

–   Impedance adaptation only required if C-bus line is > 100 m.
–   For calculation of adaptation resistors for other impedance values than 110 Ω or 50 Ω –> see document 1594

7   Connector "ST2": RS232 (2x HCMOS level), connection to E3I020
        – is also used as interface to the maintenance PC

8   LED indicator block "CPU functions"

H1	yellow	"Emergency operation"
	green	"Normal operation" 1)
H2	red	Output Q1 active
	red	Output Q2 active
H3	red	Output Q3 active
	red	Output Q4 active
H4	red	Output Q5 active
	red	Output Q6 active
H5	red	Output Q7 active
	red	Output Q8 active
H6	red	Horn 1 active
	red	Horn 2 active
H7	red	Remote transmission "Alarm" active
	red	Remote transmission "Fault" active
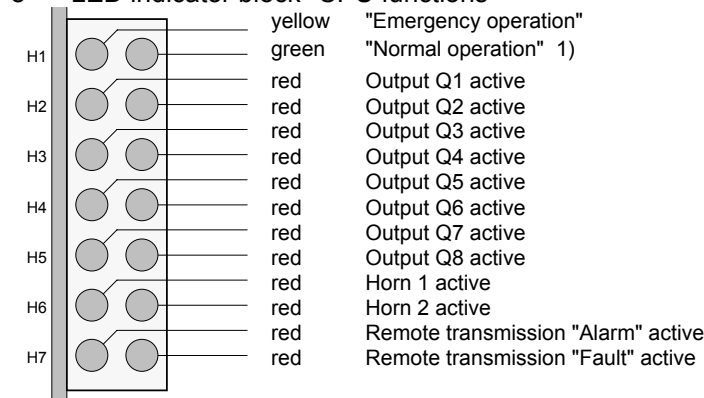
1) fast flashing: no data loaded yet; slow flashing: data loaded

9   Jumper "X30": Ground fault monitoring 'C-Bus'
        'J1'   = not monitored (factory setting)

'J2'   = monitored
'removed'   = the other monitors
➔ Details application see chapter 6

10   Key "S1": Reset CPU

11   Maintenance switch "S4": "Maintenance functions"
'S4-1...10' are set to "off" at the factory

S4-1....7	**on**	unused
S4-8	off	event memory, normal mode
	on	event memory, freeze current contents
S4-9	**on**	Switch on / off red LEDs (H2...H7) on E3X10.
S4-10	**on**	Maintenance mode. Blocks all control outputs and activates the corresponding LED:

Module	Control outputs	LEDs
E3X102/103	Q1.....Q8	H2...H5
	Horn1+2	H6
	FUE Alarm/Fault	H7
E3L020	I/O1...I/O16	H1...H16
E3G050	K1....K8	H1...H8
E3G060	1.....6	J1....H6
E3G070	Q1....Q7	H5...H11

● Also blocks the monitoring of the 'Emergency operation circuit fire alarm'.
● Extinguishing control module E3G080 is not included in the blocking of the S4-10.

12   Plug-in terminals "K2": Remote transmission equipment
13   Lithium battery 3 V / 70 mAh: RAM buffering for clock, user data etc.
  – data storage time: minimum 2 weeks, typical >100 days
  – maintenance-free
14   Double flat cable header "ST1" (26-pin): I-Bus
15   Key "S10": System start only with battery (without mains voltage)
16   Plug-in terminals "K1": Supply for the "I-Bus" modules

17   LED indicator block "Battery charger"

H501   yellow   "Power supply fault"
           green   "Mains operation"
           yellow   "Battery fault"
H502   yellow   unused

Indicators vary in meaning according to application:

a) Battery operation and symmetry monitoring	**LED "Power supply fault** – Input voltage > 31.0 V –> power unit malfunction – Battery voltage > 29.5 V or < 25 V –> charger malfunction – Charger malfunction – Charger shut down (via software function) – Temperature sensor open line / short circuit – Temperature sensor measures > 55 °C – EEPROM check sum error
	LED "Power on" – Input voltage > 28.5 V
	LED "Battery fault – Battery voltage < 23 V – Asymmetry > 1.0 V or fuse F503 blown – Possibly cell short circuit – Open line to battery or fuse F501 / F502 blown – Autom. test to indicate battery presence negative – Autom. battery load test negative

b) Battery operation without symmetry monitoring	**LED "Power supply fault** – Input voltage > 31.0 V –> power unit malfunction – Battery voltage > 29.5V or < 25 V –> charger malfunction – Charger malfunction – Charger shut down (via software function) – Temperature sensor open line / short circuit – Temperature sensor measures > 55 °C – EEPROM check sum error
	LED "Power on" – Input voltage > 28.5 V

	LED "Battery fault – Battery voltage < 23 V – Open line to battery or fuse F501 / F502 blown – Autom. test to indicate battery presence negative – Autom. battery load test negative
c) Operation with external voltage (instead of battery)	**LED "Power supply fault** – Input voltage > 31.0 V –> power unit malfunction – EEPROM check sum error
	LED "Power on" – Input voltage > 28.5 V
	LED "Battery fault – Battery voltage or external voltage < 23 V or > 31.0 V – Autom. presence test (external voltage) negative or fuse F501 / F502 blown
d) Operation without battery or external voltage	**LED "Power supply fault** – Input voltage > 31.0 V –> power unit malfunction – EEPROM check sum error
	LED "Power on" – Input voltage > 28.5 V
	LED "Battery fault – no function

18   Programming switch "S3": Choice of "I-Bus address battery charger"

To set I-Bus address for the **Function unit "Charge /monitor battery"**. This unit is an I-Bus user (as e.g. line module) and must have an individual address (number). This is set on programming switch "S3".

Maximum 16 I-Bus devices

No.	Function / I-Bus address		S3-1	S3-2	S3-3	S3-4	S3-5	S3-6
0	Module out of commission (unused)		off	off	off	off	off	off
1	I-Bus user number	1	**on**	off	off	off	off	off
2		2	off	**on**	off	off	off	off
3		3	**on**	**on**	off	off	off	off
4		4	off	off	**on**	off	off	off
5		5	**on**	off	**on**	off	off	off
6		6	off	**on**	**on**	off	off	off
7		7	**on**	**on**	**on**	off	off	off
8		8	off	off	off	**on**	off	off
9		9	**on**	off	off	**on**	off	off
10		10	off	**on**	off	**on**	off	off
11		11	**on**	**on**	off	**on**	off	off
12		12	off	off	**on**	**on**	off	off
13		13	**on**	off	**on**	**on**	off	off
14		14	off	**on**	**on**	**on**	off	off
15		15	**on**	**on**	**on**	**on**	off	off
16		16	off	off	off	off	**on**	off

"S3-1...6" are set to "off" at the factory

19   Programming switch "S2": Choice of "battery type"

To set temperature compensation according to information from the various battery manufacturers

Possible battery variants			Programming switch S2			
Var.	Battery manufacturer	Battery model	S2-1	S2-2	S2-3	S2-4
0			off	off	off	off
1			on	off	off	off
2	Varta Shin-Kobe (Hitachi) Kobe PSD (Power Storage Germany)	CF 12-24 (VM 1224) HP..-12 HP..-12	off	on	off	off
3	Genesis	G12V120W15	on	on	off	off
4	Sunrise Panasonic	LCL 12V24S LCL 12V..P	off	off	on	off
5	Phoenix (Korea)	FNC 12..0	on	off	on	off
6	Yuasa	NP..–12B	off	on	on	off
7	Sonnenschein Dryfit	A212/..G5	on	on	on	off
8	Power–Sonic	PS12..0	off	off	off	on
9	Hagen Drysafe	HDS–12..0NB	on	off	off	on
10	Sonnenschein Dryfit	A512/..G5	off	on	off	on
11	ALARMCOM (FIAMM) 1)	FG...	on	on	off	on
12			off	off	on	on
13			on	off	on	on
14			off	on	on	on
15			on	on	on	on

"S2" is set to variant 11 (ALARMCOM) at the factory

9.5.1   Floating charge voltage as a function of temperature

20   Battery charging section

21   CPU section

22   Fuses

F1	630 mA/T	supply 5 V/12 V
F2	63 mA/T	auxiliary supply ASIC
F3	63 mA/T	Control line alarm horn 1
F5, F6	2 A/T*	Control line alarm horn 2
F7, F8	2 A/T*	unused
F9	2 A/T*	Emergency operation circuit "Silence horn"
F10	2 A/T*	Emergency operation circuit "Common"
F11	2 A/T*	Emergency operation circuit "Fire alarm"
F12	2 A/T*	Supply "Control console AlgoPilot B3Q..." +
F13, F14	2 A/T*	Supply "Control console AlgoPilot B3Q..." –
F15, F16	2 A/T*	programmable control outputs "Q1...Q8"
F17...F25	0,5 A/T*	Supply "Remote transmission"
F26	2 A/T*	Supply "Reserve"
F27	2 A/T*	programmable control inputs "I1...I4"
F28...F32	2 A/T*	battery (F501 "Positive" / F502 "Negative" / F503 "Center")
F501...F503	6,3 A/T*	supply 5 V/12 V

* Fuse with high breaking capacity

9.6 Connections

E3X102/103

Terminal block X15

Programmable control inputs, EMI-protected	I1	F28	1	Signal transmitter (contact) (also permissible outside control unit housing)
	I2	F29	2	
	I3	F30	3	
	I4	F31	4	
	C	F32	5	
Remote transmission ALARM (LED H7 L.)	Y8 X8	1A/30V	6 / 7	To remote transmission equipment
Remote transmission FAULT (LED H7 R.) (Normal operation = 9/10 closed)		1A/30V	8 / 9 / 10	
Module chassis ground			11	(connect to chassis ground)
Programmable control outputs, 24V/40mA, EMI-protected	Q1	LED H2 L. F17	- 12	Relay (also permissible outside control unit housing)
	Q2	H2 R. F18	- 13	
	Q3	H3 L. F19	- 14	
	Q4	H3 R. F20	- 15	
	Q5	H4 L. F21	- 16	
	Q6	H4 R. F22	- 17	
	Q7	H5 L. F23	- 18	
	Q8	H5 R. F24	- 19	
	C	F25	+ 20	

L. = left
R. = right

Signal transmitter (contact)
(also permissible outside control unit housing)

Relay
(also permissible outside control unit housing)

Terminal block X16

programmable control in-/outputs (as output max. 24V/40mA)	Q/I1	F9	1		
Emergency operation circuit, EMI-protected	Silence horn	F10	2	K6-2	- Connection required if B3Q... should have "Emergency operation" capability - essential with at least one control console - parallel to all B3Q... (and E3X10. and E3H020) if several have to be linked
	Fire alarm	F12	3	K6-1	
	C	F11	- 4	K7-3	
unused			5		
C-Bus	A1		6	K5-4	- Cabling C-Bus max. 1000m per loop with ø0.6 mm wire max. 1400m per loop with ø0.8mm wire (always including return line) - for cable type (impedance adaption see table adapt C-Bus impedance
	B1		7	K5-3	
Supply B3Q..., 24V/max. 2A 2)		F13	+ 8	K7-1	
		F15	- 9	K7-3	
Ground			10	K7-2	
			11	K7-5	
C-Bus (feedback)	A2		12	K5-2	
	B2		13	K5-1	
Supply for B3Q..., second supply line 2)		F14	+ 14	K7-4	
		F16	- 15	K7-6	
unused			16		
Monitored control line: Alarm horn 1	LED H6 L.	F5 / F6	- 17 / + 18		max. 2A 4.75kΩ External audible alarm devices
Monitored control line: Alarm horn 2	LED H6 R.	F7 / F8	- 19 / + 20		max. 2A 4.75kΩ

B3Q...

or

1) 3)
24V

1) The polarity at terminals 17...20 applies to the active state
2) Supply outputs to AlgoPilot B3Q... X16-8, 9, 14, 15 are not monitored
3) Terminate not used horn lines with a 4.75kΩ resistor

E3X102/103

Terminal block **X17**			
Supply neutral point, 20...30V (not protected by fuse)		+	1
		+	2
Input voltage, 29,6V 2%		+	3
		+	4
		-	5
0V (not fuse-protected)		-	6
		-	7
Monitored supply for remote transmission	F26	+	8
		-	9
Monitored auxiliary supply	F27	+	10
		-	11
Battery 24V max. 42Ah, symmetry monitored	F501	+	12
	F503		13
	F502	-	14
Temperature sensor for battery			15
			16
Inputs power supply FAULT (default = not active)	Emerg. power		17
	Power supply		18
	Battery		19
	C		20

⊕ — from converter B2F020
⊖

24V/max. 2A — to remote transmission equipment

24V/max. 2A — to other **internal** users

red — 12V
green — Battery (internal) **or** 24V external voltage **2)**
blue — 12V

white
brown — PTC **1)**

monitors other power supply (internal only)

Plug-in terminals **K1**			
Supply for I-Bus modules	GND	-	1
		-	2
	5V	+	3
	24V	+	4

blue
blue — to the I-Bus modules
green
red

Plug-in terminals **K2**		
Remote alarm	switch off	1
	reset	2
		3
	blocked	4
	malfunction	5
	C	6

white
brown — to remote transmission equipment (using cable set Z3I390)

Double flat cable header **ST1**		
Data communication I-Bus modules	26 Pin	>
	26 Pin	>

to the I-Bus modules

Flat cable header (Mini) **ST2**		
Data communication RS232	20 Pin	>

According to application
- RS232 module (E3I020)
- Printer B2Q191
- Maintenance PC (B3D021)
- PSA/Pager interface K3I090

1) PTC is always required including for operation "with external voltage" or "without battery".
2) Function "24 V external voltage" or function "without battery" is programmable via maintenance PC. With the function "External voltage" the battery presence monitoring can be programmed as "active" (i.e. the external voltage is monitored).

10 K3N010 RAM extension card

10.1 Overview

- Option for master module E3X100/101
- RAM extension card is addressed in addition to the RAM on the E3X100/101
- Requires special EPROM set CCW00xxx

10.2 Application

For larger systems (table of quantities) with station type CC1143
Processing capacity see document 'Planning' (1076 EP5, 008725 EP7F-Z1)

10.3 Key data

RAM size	1 M Byte (8 x 128kx8Bit)

10.4 Mechanical design
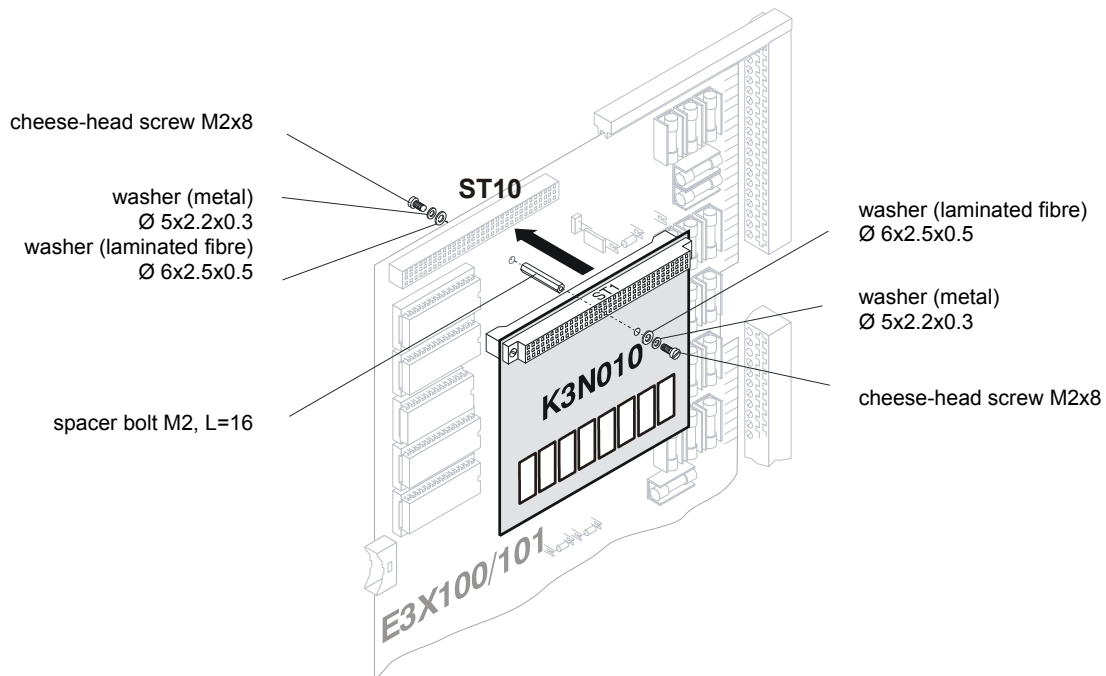
10.5 Connection
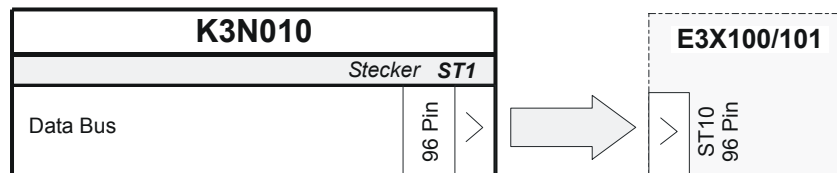
11 E3C010 Battery charging module (superseded by E3C011)

11.1 Overview

- For the charging and monitoring of the 24 V emergency power battery (the same function unit is contained in the E3X10. master module
- I-Bus module with processor
- Designed for the AC/DC converter B2F020
- Temperature compensation via external temperature sensor
- Choice of functions (via maintenance PC)
  - emergency power available   yes/no   yes *
  - battery available   yes/no   yes *
  - charging   yes/no   yes *
  - presence monitoring   yes/no   yes *
  - symmetry monitoring   yes/no   yes *
  - automatic battery load test   yes/no   yes *
  - Fault signal delay upon mains failure   1 …30 min.

  * factory setting is possibly overwritten if E3C010 is run via I-Bus (via AlgoWorks)

- Card format 100 mm x 200 mm

11.2 Application

➜ see page 24
- For auxiliary batteries
- As an autonomous battery charger for AlgoPilot B3Q... control consoles installed at a great distance

11.3 Eckdaten

Input voltage	29.6 VDC ±2 % (B2F020)
Battery	2 x 12 V / 6...42 Ah, lead battery (full battery recharging up to 80 % within 24 h)
Charging characteristics	Can be adjusted to 16 makes of battery using programming switch "S2"
Charging current	max: 1.7 A (current limitation)
Battery monitoring	Battery presence test every 55 sec
Symmetry monitoring	Asymmetry > 1 V = Fault
Battery test	automatic battery load test (3 A for 10 sec once every 23 h), Can also be activated manually via AlgoPilot B3Q... control console
EMI-protected battery line	no
Low discharge protection	Battery operation switches off when voltage is ≥ 21.0 V
Quiescent current	100 mA when on emergency power operation 125 mA when on mains operation without battery charging

Terminal block X17 (20 terminals)
– mounted on module chassis
– for the connection of the prefabricated cable for battery, temperature sensor and power unit

Battery terminals (+, –, Center tap)

Temperature sensor

Card chassis
– mounted on module chassis

11.4   Important components

Legend:

1   Fuses

F501	6,3 A/T*	Battery "Positive"
F502	6,3 A/T*	Battery "Negative"
F503	6,3 A/T*	Battery "Center"

* Fuse with high breaking capacity (sand-filled)

2   Programming switch "S3": Set "I-Bus address"

Each element (module) connected to I-Bus must have an individual address (number).

This is set on programming switch "S3".

Maximum 16 I-Bus users.

Function / I-Bus address		Programming switch S3					
No.		S3-1	S3-2	S3-3	S3-4	S3-5	S3-6
0	Module out of commission (unused)	off	off	off	off	off	off
1	I-Bus user number 1	**on**	off	off	off	off	off
2	2	off	**on**	off	off	off	off
3	3	**on**	**on**	off	off	off	off
4	4	off	off	**on**	off	off	off
5	5	**on**	off	**on**	off	off	off
6	6	off	**on**	**on**	off	off	off
7	7	**on**	**on**	**on**	off	off	off
8	8	off	off	off	**on**	off	off
9	9	**on**	off	off	**on**	off	off
10	10	off	**on**	off	**on**	off	off
11	11	**on**	**on**	off	**on**	off	off
12	12	off	off	**on**	**on**	off	off
13	13	**on**	off	**on**	**on**	off	off
14	14	off	**on**	**on**	**on**	off	off
15	15	**on**	**on**	**on**	**on**	off	off
16	16	off	off	off	off	**on**	off

"S3-1...6" are set to "off" at the factory

3   Programming switch "S2": Set battery type

To set temperature compensation according to information from the various battery manufacturers.

Possible battery variants			Programming switch S2			
Var.	Battery manufacturer	Battery model	S2-1	S2-2	S2-3	S2-4
0			off	off	off	off
1			**on**	off	off	off
2	Varta Shin-Kobe (Hitachi) Kobe PSD (Power Storage Germany)	CF 12-24 (VM 1224) HP..-12 HP..-12	off	**on**	off	off
3	Genesis	G12V120W15	**on**	**on**	off	off
4	Sunrise Panasonic	LCL 12V24S LCL 12V..P	off	off	**on**	off
5	Phoenix (Korea)	FNC 12..0	**on**	off	**on**	off
6	Yuasa	NP..–12B	off	**on**	**on**	off
7	Sonnenschein Dryfit	A212/..G5	**on**	**on**	**on**	off
8	Power–Sonic	PS12..0	off	off	off	**on**
9	Hagen Drysafe	HDS–12..0NB	**on**	off	off	**on**
10	Sonnenschein Dryfit	A512/..G5	off	**on**	off	**on**
11	ALARMCOM (FIAMM) 1)	FG...	**on**	**on**	off	**on**
12			off	off	**on**	**on**
13			**on**	off	**on**	**on**
14			off	**on**	**on**	**on**
15			**on**	**on**	**on**	**on**

"S2" is set to variant 11 (ALARMCOM) at the factory

1) available from index 'CB' onwards

➔ Floating charge voltage as a function of temperature, or for diagrams of the various types of battery see page 44

4   Flat cable header "ST1" (26-pin): I-Bus

5   LED indicator block "Power supply status"

H501
H502

yellow   "Power supply fault"
green   "Mains operation"
yellow   "Battery fault"
yellow   unused

Indicators vary in meaning according to application:

a) Battery operation and symmetry monitoring	**LED "Power supply fault** – Input voltage > 31.0 V –> power unit malfunction – Battery voltage > 29.5 V or < 25 V –> charger malfunction – Charger malfunction – Charger shut down (via software function) – Temperature sensor open line / short circuit – Temperature sensor measures > 55 °C – EEPROM check sum error
	LED "Power on" – Input voltage > 28.5 V
	LED "Battery fault – Battery voltage < 23 V – Asymmetry > 1.0 V or fuse F503 blown – Possibly cell short circuit – Open line to battery or fuse F501 / F502 blown – Autom. test to indicate battery presence negative – Autom. battery load test negative
b) Battery operation without symmetry monitoring	**LED "Power supply fault** – Input voltage > 31.0 V –> power unit malfunction – Battery voltage > 29.5V or < 25 V –> charger malfunction – Charger malfunction – Charger shut down (via software function) – Temperature sensor open line / short circuit – Temperature sensor measures > 55 °C – EEPROM check sum error
	LED "Power on" – Input voltage > 28.5 V

LED "Battery fault
– Battery voltage < 23 V
– Open line to battery or fuse F501 / F502 blown
– Autom. test to indicate battery presence negative
– Autom. battery load test negative

c) Operation with external voltage (instead of battery)

LED "Power supply fault
– Input voltage > 31.0 V –> power unit malfunction
– EEPROM check sum error
LED "Power on"
– Input voltage > 28.5 V
LED "Battery fault
– Battery voltage or external voltage < 23 V or > 31.0 V
– Autom. presence test (external voltage) negative or fuse F501 / F502 blown

d) Operation without battery or external voltage

LED "Power supply fault
– Input voltage > 31.0 V –> power unit malfunction
– EEPROM check sum error
LED "Power on"
– Input voltage > 28.5 V
LED "Battery fault
– no function

6   Key "S1": System start only with battery (without mains voltage)
7   Plug-in terminals "K1": Supply for the modules "I-Bus"

11.5 Anschlüsse
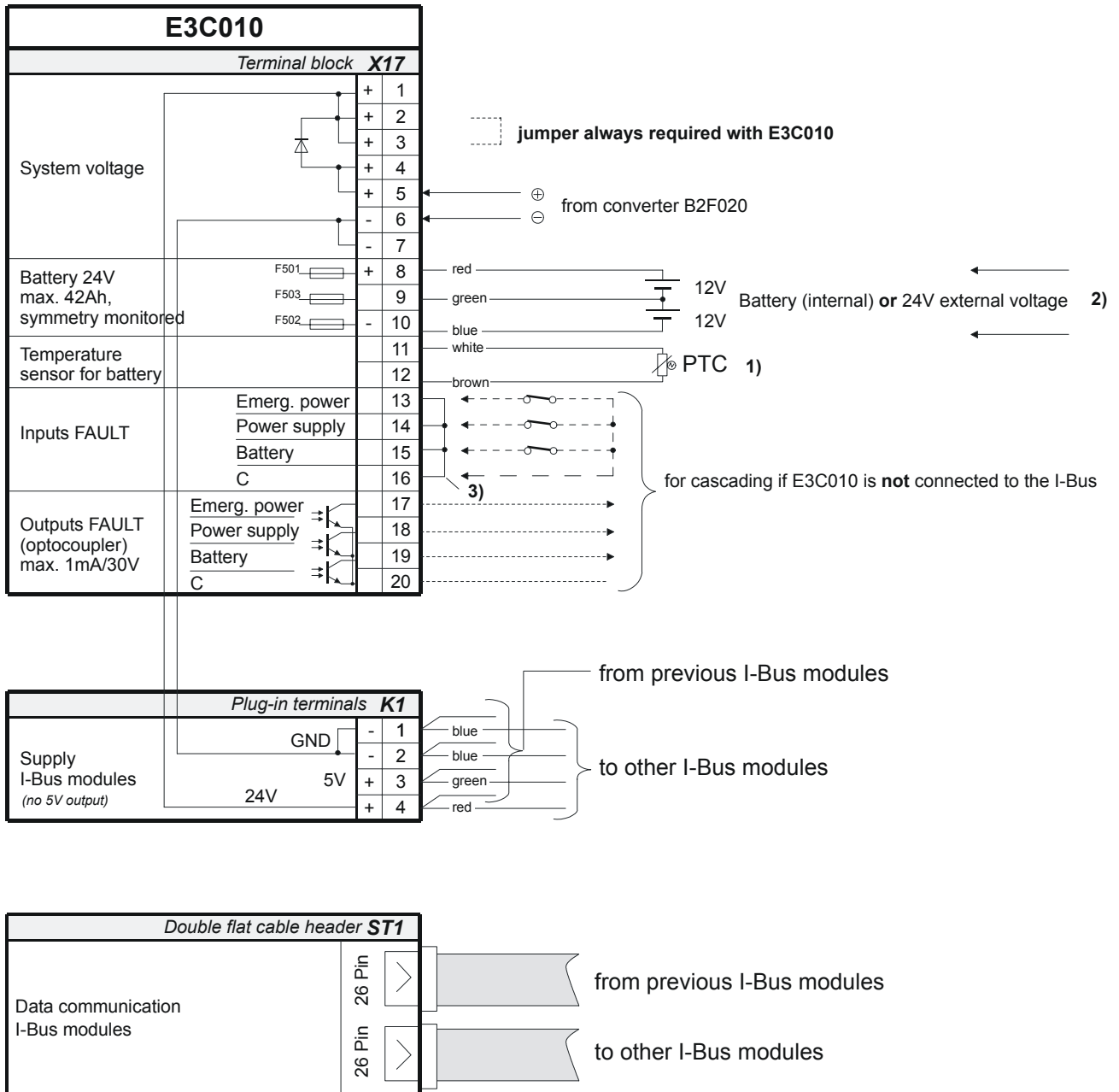
1) PTC is always required including for operation "with external voltage" or "without battery".
2) Function "24 V external voltage" or "without battery" can be programmed via maintenance PC. With the function "external voltage", battery presence monitoring can be programmed as "active" (i.e. the external voltage is monitored).
3) Remove jumper when using these inputs.

12 E3C011 Battery charging module (supersedes E3C010)

12.1 Overview

- For the charging and monitoring of the 24 V emergency power battery (the same function unit is contained in the E3X10. master module
- I-Bus module with processor
- Designed for the AC/DC converter B2F020
- Temperature compensation via external temperature sensor
- Choice of functions (via maintenance PC)
  - emergency power available   yes/no   yes *
  - battery available   yes/no   yes *
  - charging   yes/no   yes *
  - presence monitoring   yes/no   yes *
  - symmetry monitoring   yes/no   yes *
  - automatic battery load test   yes/no   yes *
  - Fault signal delay upon mains failure   1 …30 min.

  * factory setting is possibly overwritten if E3C011 is run via I-Bus (via AlgoWorks)
- Card format 100 mm x 200 mm

12.2 Application

- → see page 24
- For auxiliary batteries
- As an autonomous battery charger for AlgoPilot B3Q... control consoles installed at a great distance

12.3 Key data

Input voltage	29.6 VDC ±2 % (B2F020)
Battery	2 x 12 V / 6...42 Ah, lead battery (full battery recharging up to 80 % within 24 h)
Charging characteristics	Can be adjusted to 16 makes of battery using programming switch "S2"
Charging current	max: 1.7 A (current limitation)
Battery monitoring	Battery presence test every 55 sec
Symmetry monitoring	Asymmetry > 1 V = Fault
Battery test	automatic battery load test (3 A for 10 sec once every 23 h), Can also be activated manually via AlgoPilot B3Q... control console
EMI-protected battery line	no
Low discharge protection	Battery operation switches off when voltage is ≤ 21.0 V
Quiescent current	20 mA when on emergency power operation 40 mA when on mains operation without battery charging
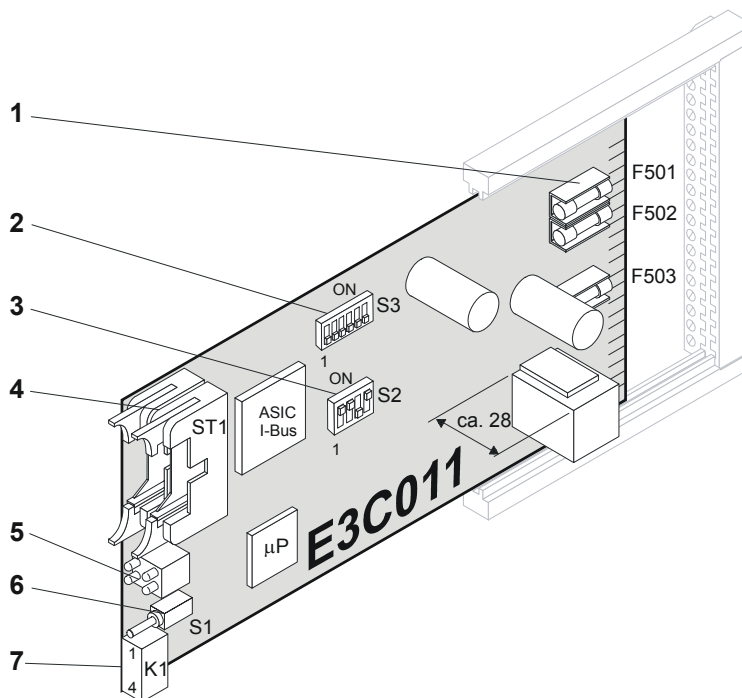
Terminal block X17 (20 terminals)
– mounted on module chassis
– for the connection of the prefabricated cable for battery, temperature sensor and power unit

Battery terminals (+, –, Center tap)

Temperature sensor

Card chassis
– mounted on module chassis

12.4 Important components

Legend:

1 Fuses

F501	6,3 A/T*	Battery "Positive"
F502	6,3 A/T*	Battery "Negative"
F503	6,3 A/T*	Battery "Center"

* Fuse with high breaking capacity (sand-filled)

2 Programming switch "S3": Set "I-Bus address"

Each element (module) connected to I-Bus must have an individual address (number).
This is set on programming switch "S3".
Maximum 16 I-Bus users.

No.	Function / I-Bus address		Programming switch S3					
			S3-1	S3-2	S3-3	S3-4	S3-5	S3-6
0	Module out of commission (unused)		off	off	off	off	off	off
1	I-Bus user number	1	on	off	off	off	off	off
2		2	off	on	off	off	off	off
3		3	on	on	off	off	off	off
4		4	off	off	on	off	off	off
5		5	on	off	on	off	off	off
6		6	off	on	on	off	off	off
7		7	on	on	on	off	off	off
8		8	off	off	off	on	off	off
9		9	on	off	off	on	off	off
10		10	off	on	off	on	off	off
11		11	on	on	off	on	off	off
12		12	off	off	on	on	off	off
13		13	on	off	on	on	off	off
14		14	off	on	on	on	off	off
15		15	on	on	on	on	off	off
16		16	off	off	off	off	on	off

"S3-1...6" are set to "off" at the factory

3 Programming switch "S2": Set battery type

To set temperature compensation according to information from the various battery manufacturers.

	Possible battery variants		Programming switch S2			
Var.	Battery manufacturer	Battery model	S2-1	S2-2	S2-3	S2-4
0			off	off	off	off
1			**on**	off	off	off
2	Varta Shin-Kobe (Hitachi) Kobe PSD (Power Storage Germany)	CF 12-24 (VM 1224) HP..-12 HP..-12	off	**on**	off	off
3	Genesis	G12V120W15	**on**	**on**	off	off
4	Sunrise Panasonic	LCL 12V24S LCL 12V..P	off	off	**on**	off
5	Phoenix (Korea)	FNC 12..0	**on**	off	**on**	off
6	Yuasa	NP..–12B	off	**on**	**on**	off
7	Sonnenschein Dryfit	A212/..G5	**on**	**on**	**on**	off
8	Power–Sonic	PS12..0	off	off	off	**on**
9	Hagen Drysafe	HDS–12..0NB	**on**	off	off	**on**
10	Sonnenschein Dryfit	A512/..G5	off	**on**	off	**on**
11	ALARMCOM (FIAMM) 1)	FG...	**on**	**on**	off	**on**
12			off	off	**on**	**on**
13			**on**	off	**on**	**on**
14			off	**on**	**on**	**on**
15			**on**	**on**	**on**	**on**

"S2" is set to variant 11 (ALARMCOM) at the factory

1) available from index '-A' onwards

➔ Floating charge voltage as a function of temperature, or for diagrams of the various types of battery see page 44

4 Flat cable header "ST1" (26-pin): I-Bus

5 LED indicator block "Power supply status"

yellow	"Power supply fault"
green	"Mains operation"
yellow	"Battery fault"
yellow	unused

H501
H502

Indicators vary in meaning according to application:

a) Battery operation and symmetry monitoring

LED "Power supply fault
– Input voltage > 31.0 V –> power unit malfunction
– Battery voltage > 29.5 V or < 25 V –> charger malfunction
– Charger malfunction
– Charger shut down (via software function)
– Temperature sensor open line / short circuit
– Temperature sensor measures > 55 °C
– EEPROM check sum error

LED "Power on"
– Input voltage > 28.5 V

LED "Battery fault
– Battery voltage < 23 V
– Asymmetry > 1.0 V or fuse F503 blown
– Possibly cell short circuit
– Open line to battery or fuse F501 / F502 blown
– Autom. test to indicate battery presence negative
– Autom. battery load test negative

b) Battery operation without symmetry monitoring

LED "Power supply fault
– Input voltage > 31.0 V –> power unit malfunction
– Battery voltage > 29.5V or < 25 V –> charger malfunction
– Charger malfunction
– Charger shut down (via software function)
– Temperature sensor open line / short circuit
– Temperature sensor measures > 55 °C
– EEPROM check sum error

LED "Power on"
– Input voltage > 28.5 V

LED "Battery fault
– Battery voltage < 23 V
– Open line to battery or fuse F501 / F502 blown
– Autom. test to indicate battery presence negative
– Autom. battery load test negative

c) Operation with external voltage (instead of battery)

LED "Power supply fault
– Input voltage > 31.0 V –> power unit malfunction
– EEPROM check sum error

LED "Power on"
– Input voltage > 28.5 V

LED "Battery fault
– Battery voltage or external voltage < 23 V or > 31.0 V
– Autom. presence test (external voltage) negative or fuse F501 / F502 blown

d) Operation without battery or external voltage

LED "Power supply fault
– Input voltage > 31.0 V –> power unit malfunction
– EEPROM check sum error

LED "Power on"
– Input voltage > 28.5 V

LED "Battery fault
– no function

6   Key "S1": System start only with battery (without mains voltage)

7   Plug-in terminals "K1": Supply for the modules "I-Bus"

12.5 Connections

E3C011

	Terminal block **X17**		

System voltage
- + 1
- + 2
- + 3
- + 4
- + 5 ← ⊕ from converter B2F020
- - 6 ← ⊖
- - 7

Battery 24V max. 42Ah, symmetry monitored
- F501 + 8 — red — 12V
- F503 9 — green — 12V — Battery (internal) **or** 24V external voltage **2)**
- F502 - 10 — blue — 12V

Temperature sensor for battery
- 11 — white
- 12 — brown — PTC **1)**

Inputs FAULT
- Emerg. power 13
- Power supply 14
- Battery 15
- C 16 **3)** for cascading if E3C010 is **not** connected to the I-Bus

Outputs FAULT (optocoupler) max. 1mA/30V
- Emerg. power 17
- Power supply 18
- Battery 19
- C 20

	Plug-in terminals **K1**		

from previous I-Bus modules

Supply I-Bus modules *(no 5V output)*
- GND - 1 — blue
- - 2 — blue — to other I-Bus modules
- 5V + 3 — green
- 24V + 4 — red

	Double flat cable header **ST1**		

Data communication I-Bus modules
- 26 Pin > from previous I-Bus modules
- 26 Pin > to other I-Bus modules

1) PTC is always required including for operation "with external voltage" or "without battery".
2) Function "24V external voltage" or "without battery" can be programmed via maintenance PC. With the function "external voltage", battery presence monitoring can be programmed as "active" (i.e. the external voltage is monitored).
3) Remove jumper when using these inputs.

13 B2F020 Converter

13.1 Overview

- Converts the **Mains** voltage to the **system** voltage
- Consistent with the battery-charging function units E3X10. and E3C...
- Designed for an output current of 6 A at 29.6 VDC
- Requires no special cooling
- Built-in thermal fuse
- Current limited
- Short circuit proof
- Parallel operation
- Switches on primary side
- With metal shielding
- Dimensions 200 x 100 x 40 mm

Power supply general

The power supply for the CS1140 series of fire detection system control units consists of the following three components:

– **Converter** B2F020
– **Battery-charging function unit** either as an integrated component in the E3X10. (for details see E3X10.) or as a separate battery-charging module E3C... (for details see E3C...)
– **Emergency power battery**, capacity according to quiescent current and the required mains autonomy; see document 1076 (EP5), 008725 (EP7F-Z1) "Emergency power calculation")

Over voltage protection

Additional surge protectors are only necessary in **Special cases** e.g. where there is a particular risk from lightning, overhead mains lead etc. (see Z3I041, Z3I121 –> page 76)

13.2 Key data

Mains voltage	115 / 230 VDC +10 %/–15 % 50...60Hz
Power consumption	40...320 VA
Mains fuse	3.15 A/T, permanently integrated, not exchangeable on site
Output current	max. 6 A continuous (limited)
Output voltage	29.6 VDC +/–2 %
Residual ripple	max. 300 mVpp
Quiescent current with battery operation	0 mA
Temperature range	0...+70 °C without ventilator, automatic switch-off at > 90 °C
Standard	CE / prEN54-4

13.3 Important components
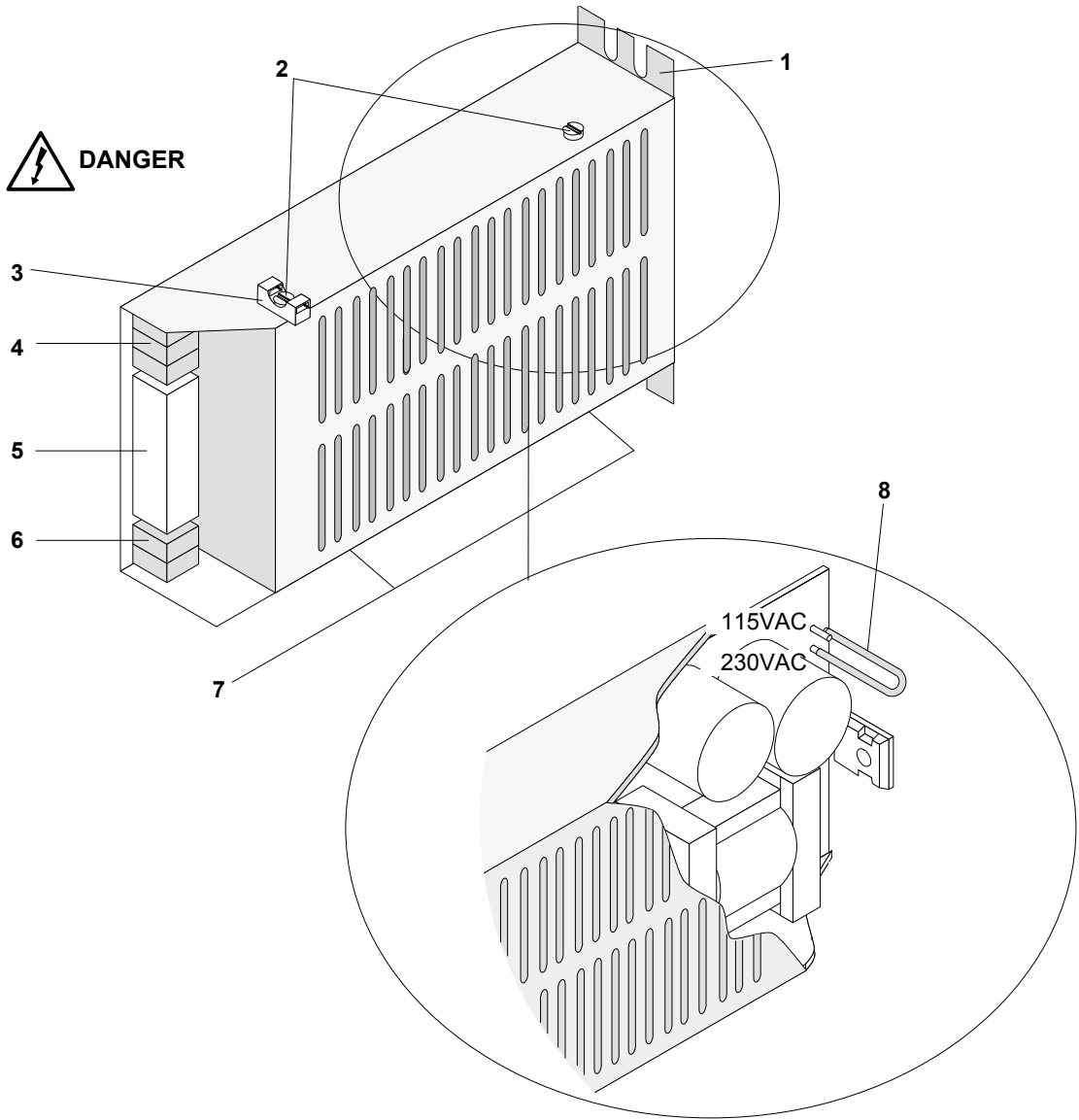
DANGER

115VAC
230VAC

➔ Check mains voltage setting before commissioning

⚠	**DANGER**	The converter is supplied by the factory at 230 VAC. To switchover to 115 VAC –> remove metal shield (remove screws) and then plug in jumper at the "115 VAC" pin

Legend:
1 Mounting flange
2 Mounting screws for metal shield
3 Clamp to fasten the mains cable
4 Power supply (Mains)
5 unused
6 24 V-Load (24 V)
7 Mounting screws for metal shield
8 Jumper for switchover 115 VAC / 230 VAC

13.4   Connections

B2F020		
Input voltage (115VAC) 230VAC / 50...60Hz max. 320VA	L	
	N	
	E	
	Opt	
	Sd	
	-	
	- S	
	+ S	
	+	
Output voltage 29.6VDC / max. 6A	-	
	+	

Mains

⚠ **DANGER**

Jumpers inserted at the factory (essential)

24V-load

6
5 E3C...

5
4 E3X10. terminal block X17

13.5   Application limits

B2F020 as "Standard power supply"
● As basic emergency power supply.
Maximum load:
1 x E3X10. with max. 2 x 12 V, 42 Ah batteries and 1 x E3C... with max. 2 x 12 V, 42 Ah batteries (E3X10. incl. lines- / control modules, AlgoPilot B3Q... control console etc.)

B2F020 as "Auxiliary power supply"
● In parallel operation with the standard power supply.
E.g. if long duration of emergency operation is required.
Maximum load:
3 x E3C... each with 2 x 12 V, 42 Ah batteries

Note
– B2F020, E3X10. and all E3C... must be installed in the same housing (or in housings mounted solidly together)
– The required emergency power supply battery capacity (number of batteries) must be calculated based on the individual quiescent current (see document 1076 / EP5, 008725 / EP7F-Z1 "Calculating emergency power supply")
– Batteries larger than 42 Ah per E3X10. or E3C... are impossible if the recharging of a battery is to be done according to regulations (to 80 % capacity within 24 h)
– for interconnection principle –> see page 24

14 B1F120 Converter

14.1 Overview

- Converts the **Mains** voltage to **System** voltage
- Designed for an output current of 3 A at 24 VDC
- Requires no special cooling
- Built-in thermal fuse
- Current limited
- Short circuit proof
- Parallel operation
- Switches on primary side
- With metal shield
- Dimensions 140 x 100 x 38 mm

14.2 Key data

Mains voltage	115 / 230 VDC +10 % /–15 %, 50...60 Hz
Power consumption	140 VA
Mains fuse	3.15 A/T, permanently integrated, not exchangeable on site
Output current	max. 3 A, with current limitation ≥ 4 A max. 1 min.
Output voltage	24 VDC (28 V)
Residual ripple	max. 300 mVpp
Temperature range	0...+70 °C without ventilator, automatic switch-off at > 90 °C
Standard	IEC 950

14.3   Important components
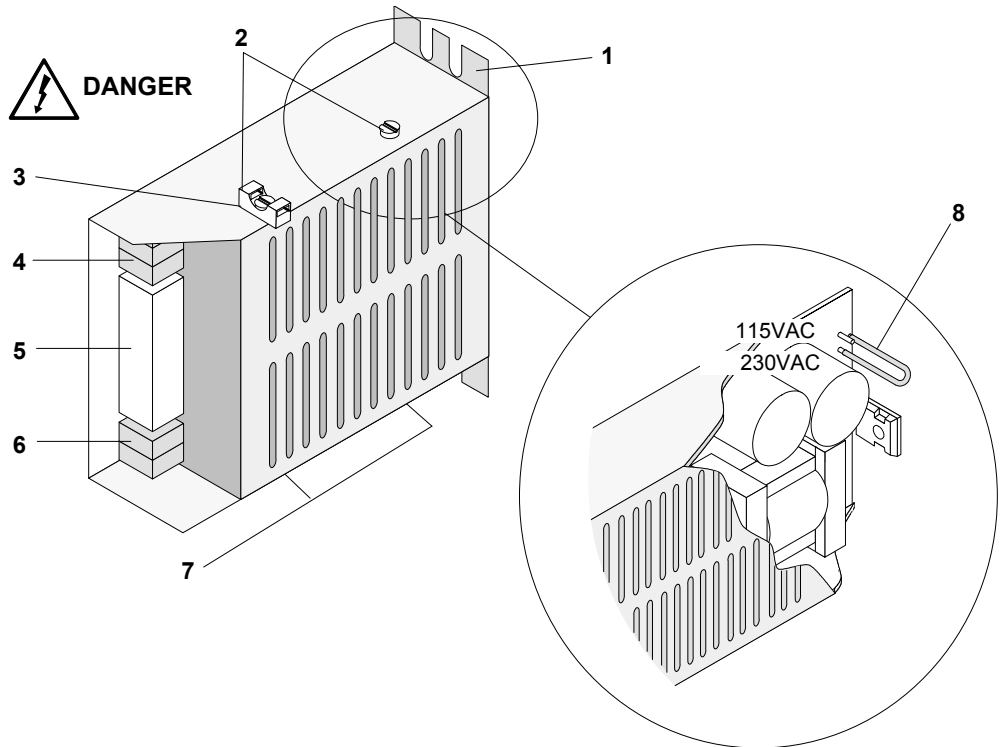
→ Check mains voltage setting before commissioning
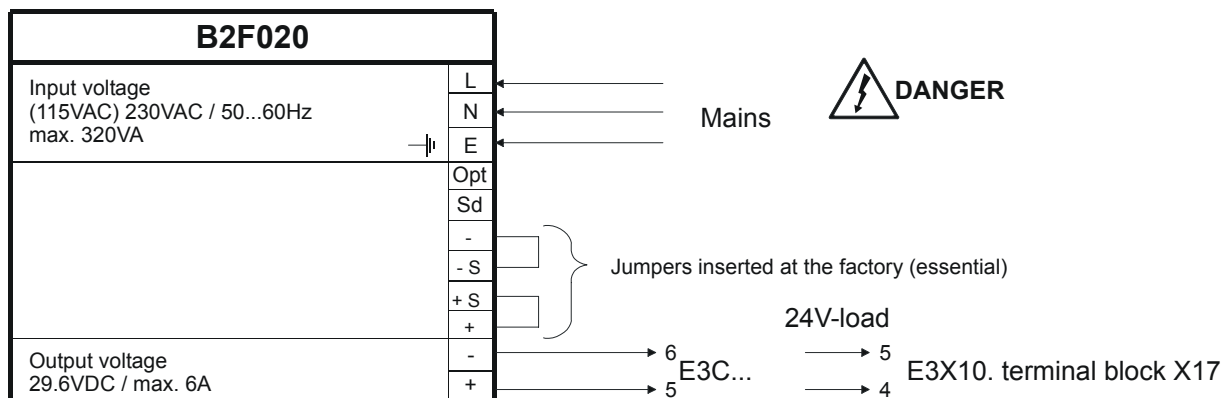
⚠	**DANGER**	The converter is supplied by the factory at 230 VAC. To switchover to 115 VAC remove metal shield (remove screws) and then plug in jumper at the "115 VDC" pin.

Legend:
1   Mounting flange
2   Mounting screws for metal shield
3   Clamp to fasten the mains cable
4   Power supply (Mains)
5   unused
6   24 V load (24 V)
7   Mounting screws for metal shield
8   Jumper for switchover 115 VAC / 230 VAC

14.4   Connections
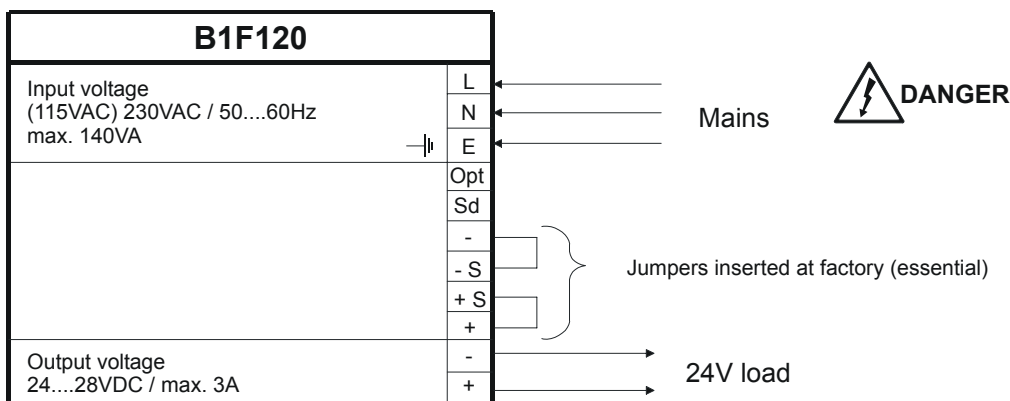
15   Z3I040, Z3I120, Z3I130 Surge protector set (superseded by Z3I041, Z3I121)

15.1   Overview

- Additional protection against surge voltage peaks in the mains lead (Option)
- 3 different surge protector sets available
  - Z3I120: 110 VAC
  - Z3I040: 230 VAC
  - Z3I130: and zero point floating ground (= 380 VAC type)

Application
- In systems particularly at risk from lightning, such as transformer systems or alpine transmitting stations etc.
- Z3I120 can also be used as a supplementary measure against static discharge on detection lines or data lines
- 1 surge protector set per switchgear cabinet or per mains lead is enough
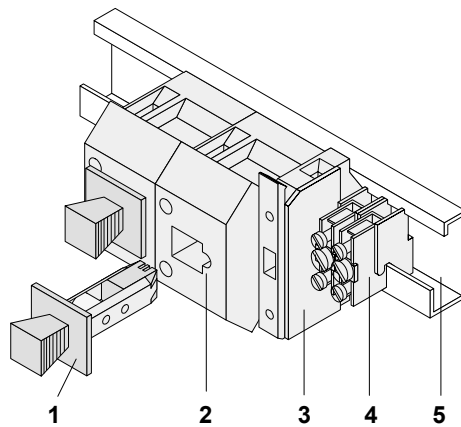
Legend:
1   Surge protector cartridge UCV... (2x)
2   Surge protector terminal (2x)
3   Fuse terminal (1x)
4   Ground terminal (2x)
5   Can be mounted on DIN extruded section in the control unit (instead of mains terminals)

15.2   Application example
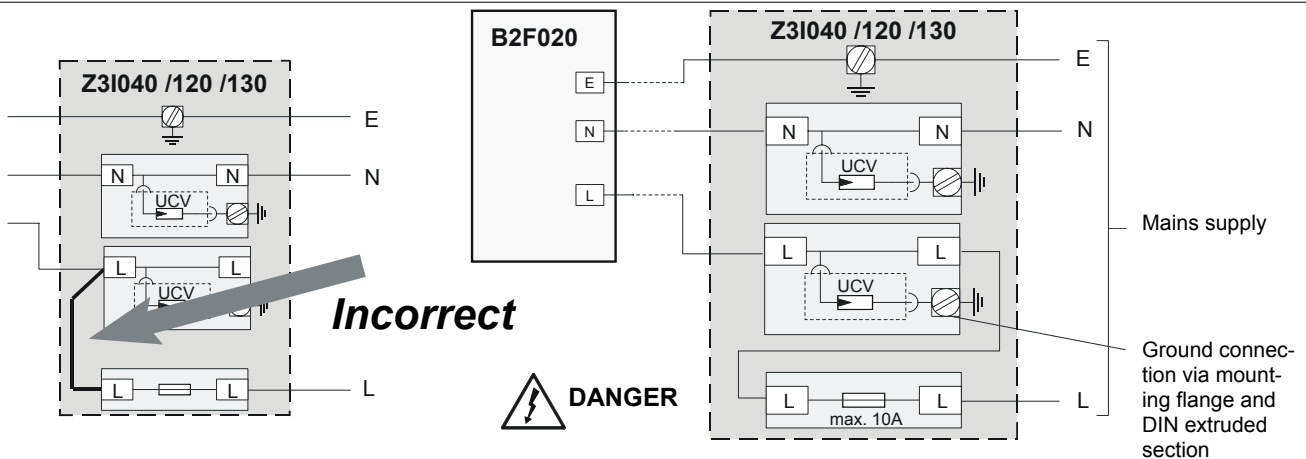
Function of the fuse

Essential to interrupt the mains lead after spark over of the surge protector.

➔ Only use slow-blow fuses with "high breaking capacity". Depending on the fuse in the mains lead, use fuses between 6 A and 10 A.

Surge protector cartridges (UCV...)

The plug-in surge protector cartridges model UCV... consist of an inert gas-filled, high-performance surge protector with zinc oxide varistor connected in parallel.

Inspection and replacement:

– Make a visual check when servicing the control unit. Preventive replacement of the UCV is not necessary
– brown or black discoloration of the porcelain body = defective UCV

16   Z3I041, Z3I121 Surge protector set

(supersedes Z3I040, Z3I120)

16.1   Overview

- Additional protection against surge voltage peaks in the mains lead (Option)
- 2 different surge protector sets available
  - Z3I041   –> 230 VAC
  - Z3I121   –> 120 VAC

16.2   Application

- In systems particularly at risk from lightning, such as transformer systems or alpine transmitter stations etc.
- Z3I121 can also be used as a supplementary measure against static discharge on detection lines or data lines
- 1 surge protector set per switchgear cabinet or per mains lead is enough
- 1 central neutral point per system
- for detailed information see document 1683

16.3   Functions

- The EnerPro...CG over voltage limiters is equipped with 2 cut-off devices (AT). Upon applying the operating voltage, a green LED indicates operational availability.
- The circuit is also so designed that only the surge protector is disconnected from the mains. Operational availability of the system to be protected continues to be provided.
- Malfunction of the surge protector is indicated by the quenching of the green LED. The EnerPro must be replaced.
- If the varistor indicate too high leakage currents due to overloading, they are disconnected from the mains by the AT. As the EnerPro are over dimensioned for the other effects of lightning, this case will seldom arise.

Function of the fuse
- Essential to interrupt the mains lead. Only use slow-blow fuses "with high breaking capacity". Depending on the degree of fuse protection required for the mains lead, uses fuse rating of between 0.8 A and 10 A.

16.4   Important components
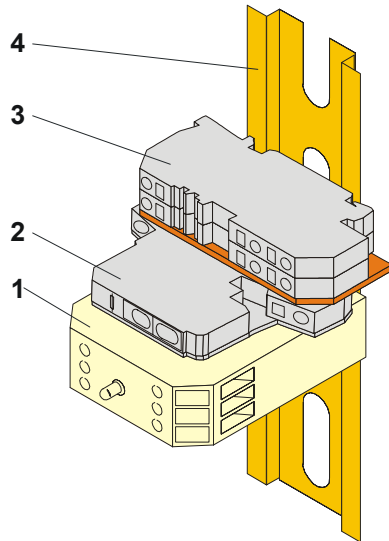
Legend:

1   Voltage surge limiter EnerPro120CG or EnerPro230CG
2   Fused terminal 4 mm^2 with fuse 5 x 20 mm
     Z3I041 –> 0.8 A / 4 A / 6.3 A
     Z3I121 –> 1.6 A / 8 A / 10 A
3   Ground terminals 10 mm^2, not insulated
4   To fit DIN extruded section in the control unit (instead of mains terminals)

16.5   Connections

DANGER

Central neutral point terminal strip of
surge protector set

DANGER   Mains supply
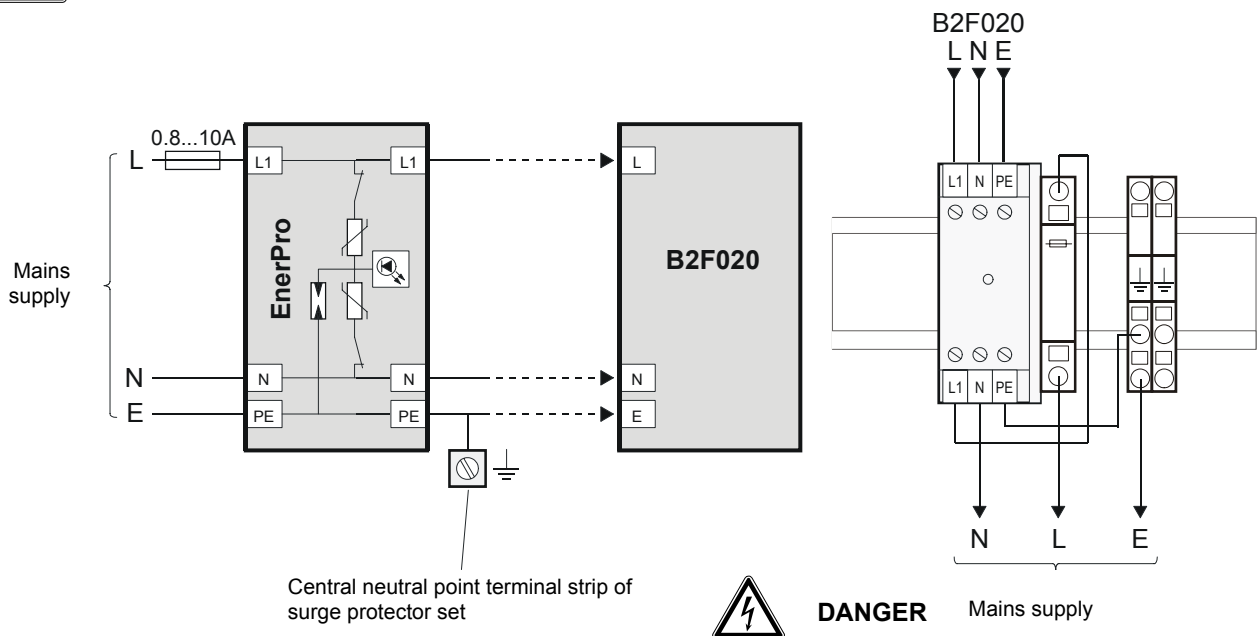
17   B3P020 Mains filter

17.1   Overview

- Additional protection measures against HF mains interference (Option)
- Is inserted between power supply in the mains lead
- Can be subsequently installed

17.2   Application

– Against extreme HF mains interference e.g. from thyristor controls etc.
– to fit DIN extruded section in the control unit (instead of mains terminals)
– can also be combined with surge protectors
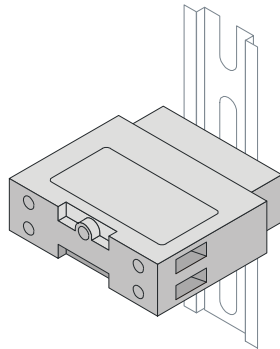
To fit DIN extruded section in the control unit (instead of mains terminals)

17.3   Connections

separate ground terminal

Ground connection via mounting flange and DIN extruded section
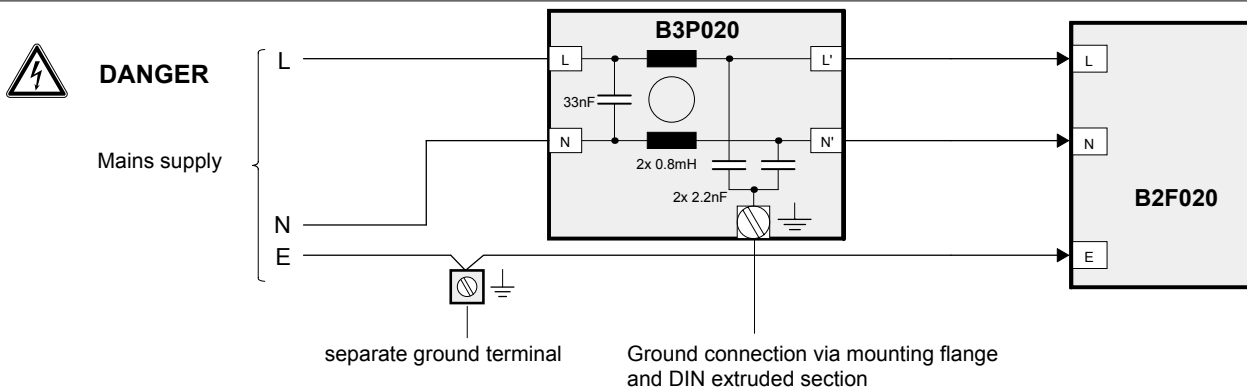
17.3.1   Application combined with surge protector

separate ground terminal

Ground connection via mounting flange and DIN extruded section
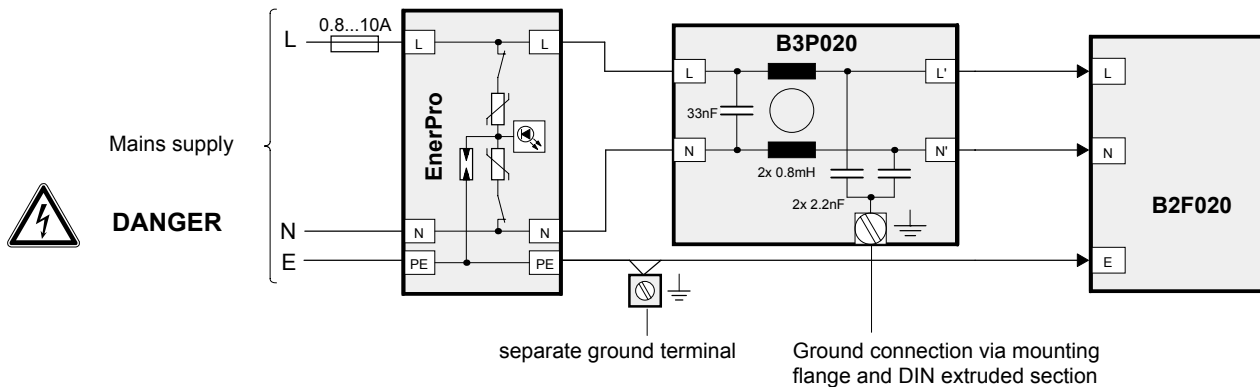
18   E3M060 Line module "MS9i"

18.1   Overview

- Line module for addressable detectors MS9i
- I-Bus module with line processor and independent emergency operation processor
- Designed for 1 loop line or stub line
- Line inputs protected against over voltage
- Card format 100 mm x 200 mm
- I-Bus address is set at the programming switch "S3"

18.2   Key data

Addresses	max. 50
Number of wires	2
Twisted cable	necessary
Line resistance	...50 Ω (with 50 MS9i elements) 1)
Line capacitance	...300 nF
Short–circuit proof	yes (line separator in each MS9i detector or MS9i element)
T-branch	no
Quiescent current at 24 V	170 mA with 50 detectors

1) With < 50 elements a higher line resistance is permissible, for details –> see document 825

Terminal block X20 (20 terminals)
– mounted on module chassis
– for the connection of the prefabricated cable to connection level, or
– for direct connection of the periphery

Card chassis
– mounted on module chassis

79

18.3 Important components

Legend:

1 Programming switch "S3": "I-Bus address setting"

Each element (module) connected to I-Bus must have an individual address (number).
This is set on programming switch "S3".

Maximum 16 I-Bus devices.

Function / I-Bus address		Programming switch S3					
No.		S3-1	S3-2	S3-3	S3-4	S3-5	S3-6
0	Module out of commission (unused)	off	off	off	off	off	off
1	I-Bus user number 1	**on**	off	off	off	off	off
2	2	off	**on**	off	off	off	off
3	3	**on**	**on**	off	off	off	off
4	4	off	off	**on**	off	off	off
5	5	**on**	off	**on**	off	off	off
6	6	off	**on**	**on**	off	off	off
7	7	**on**	**on**	**on**	off	off	off
8	8	off	off	off	**on**	off	off
9	9	**on**	off	off	**on**	off	off
10	10	off	**on**	off	**on**	off	off
11	11	**on**	**on**	off	**on**	off	off
12	12	off	off	**on**	**on**	off	off
13	13	**on**	off	**on**	**on**	off	off
14	14	off	**on**	**on**	**on**	off	off
15	15	**on**	**on**	**on**	**on**	off	off
16	16	off	off	off	off	**on**	off

"S3-1...6" are set to "off" at the factory

2 Flat cable header "ST1" (26-pin): I-Bus

3 Connector "ST10": Mimic display (active only with "Emergency alarm")

4 Plug-in terminals "K1": Power supply for modules "I-Bus"

5 Fuse 'F7' 1.6 A/F Module supply (SMD fuse can only be changed at factory)

6 Fuses: 'F3...F6'   0.5 A/T   MS9i line (Fuses with high breaking capacity, sand-filled)

18.4 Connections

E3M060		
Terminal block **X20**		

Unused		1
		2
		3
		4
		5
		6
		7
		8
		9
		10
Module chassis ground		11	(connect to chassis ground)
Unused		12
		13
		14
		15
Ground		16
MS9i line	Feedback	F6 − 17
		F5 + 18
	Start	F4 − 19
		F3 + 20

Detectors = MS9i / MS9-Plus (max. 50 addresses)

Plug-in terminals **K1**		
Supply for I-Bus modules	GND − 1	blue
	− 2	blue
	5V + 3	green
	F7 24V + 4	red

from previous I-Bus modules

to other I-Bus modules

Double flat cable header **ST1**		
Data communication I-Bus modules	26 Pin	from previous I-Bus modules
	26 Pin	to other I-Bus modules

Flat cable header (Mini) **ST10**		
Mimic display	12 Pin	for special applications only

for special applications only
- open collector per line for ext. LED
- active upon emergency alarm

Pin assignment ST10

Pin	1	2	3	4	5	6	7	8	9	10	11	12
Line	1											
			GND			GND			GND			GND

19 E3M070 Line module "Interactive" (superseded by E3M071)

19.1 Overview

- Line module for **interactive detectors**
- I-Bus module with line processor and independent emergency operation processor
- Designed for **1 loop line or stub line**
- With 24 V supply output
- Line inputs and supply outputs protected against over voltage
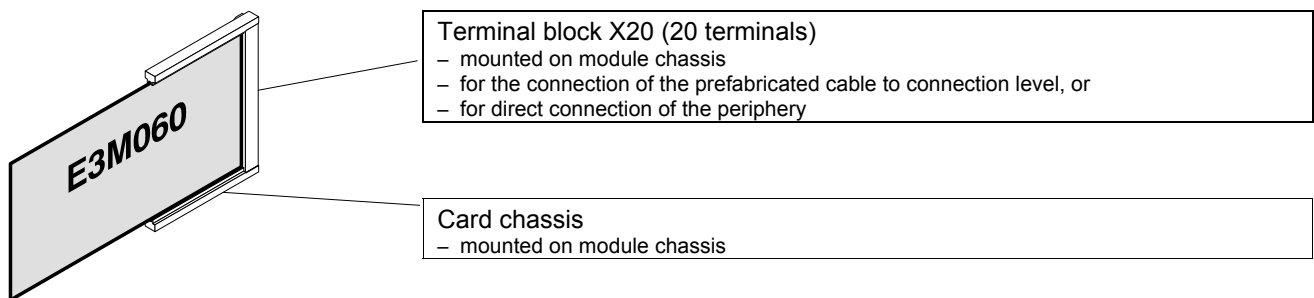- Card format 100 mm x 200 mm
- I-Bus address is set at programming switch "S3"

19.2 Key data

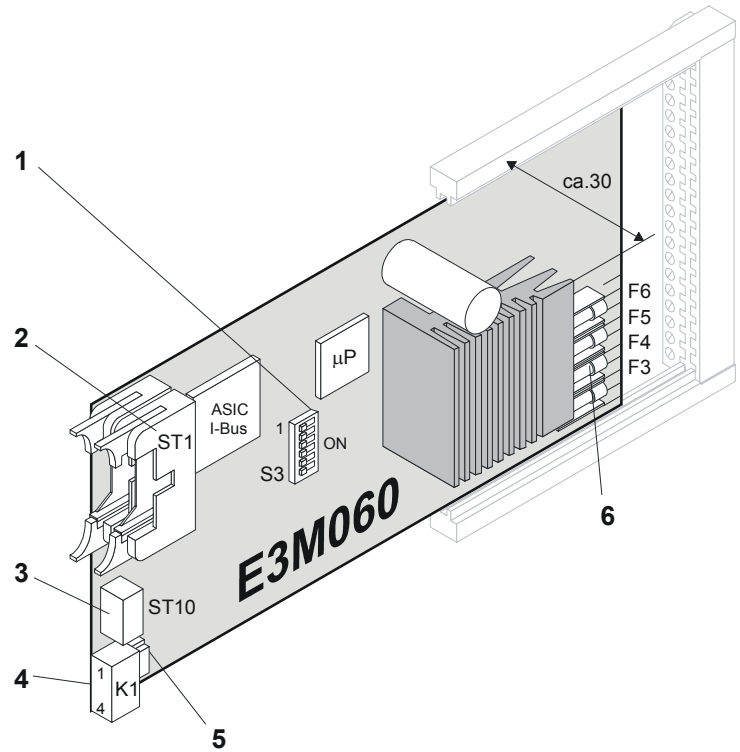|	
Addresses	...100 1)
Number of wires	2
Twisted cable	necessary
Line resistance	...100 Ω 1) 2)
Line capacitance	...300 nF 1) 2)
Short-circuit proof line	yes (line separator in each manual call point and E/A module, automatic detectors are available with or without line separator)
T-branch	yes
Quiescent current at 24 V	215 mA with 100 detectors and supply output unloaded (135 mA without detector)
Current at supply output	...500 mA / 20...30 VDC (not stabilized)

1) Limitations –> see document 1102

2) with MICC max. 1000 m from the control unit to the last detector, with RADOX max. 2000 m
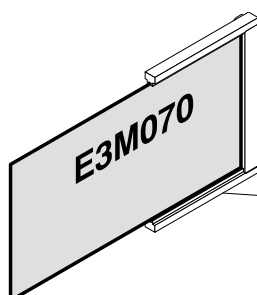
E3M070

Terminal block X20 (20 terminals)
– mounted on module chassis
– for the connection of the prefabricated cable to connection level, or
– for direct connection of the periphery

Card chassis
– mounted on module chassis

19.3 Special functions

Emergency operation
– Alarm evaluation upon "Emergency operation" via **Emergency operation processor** and "Emergency operation" in the detector
– Upon emergency alarm, control console B3Q... gives a "combined alarm" **with** flashing response indicator at the detector
– Upon line short circuit **and** failure of the line processor there is **no** "Emergency alarm"
– Mimic display output (connectors ST10) only active with emergency alarm

Line separator
Upon short circuit the part of the line which malfunctions must be separated from the rest of the line. This is carried out by line separators integrated in the detectors, manual call points and input/output modules (however, there are detectors without integrated separator).
A line separator is always integrated in the manual call points and input/output modules.
According to EN54 a "simple error" can cause the malfunction of up to 32 detectors (i.e. install a line separator at least after every 32 detectors).

19.4   Important components

Legend:

1   Programming switch "S3": "I-Bus address" setting

Each element (module) connected to I-Bus must have an individual address (number).
This is set on programming switch "S3".

Maximum 16 I-Bus devices.

Function / I-Bus address		Programming switch S3					
No.		S3-1	S3-2	S3-3	S3-4	S3-5	S3-6
0	Module out of commission (unused)	off	off	off	off	off	off
1	I-Bus user number 1	**on**	off	off	off	off	off
2	2	off	**on**	off	off	off	off
3	3	**on**	**on**	off	off	off	off
4	4	off	off	**on**	off	off	off
5	5	**on**	off	**on**	off	off	off
6	6	off	**on**	**on**	off	off	off
7	7	**on**	**on**	**on**	off	off	off
8	8	off	off	off	**on**	off	off
9	9	**on**	off	off	**on**	off	off
10	10	off	**on**	off	**on**	off	off
11	11	**on**	**on**	off	**on**	off	off
12	12	off	off	**on**	**on**	off	off
13	13	**on**	off	**on**	**on**	off	off
14	14	off	**on**	**on**	**on**	off	off
15	15	**on**	**on**	**on**	**on**	off	off
16	16	off	off	off	off	**on**	off

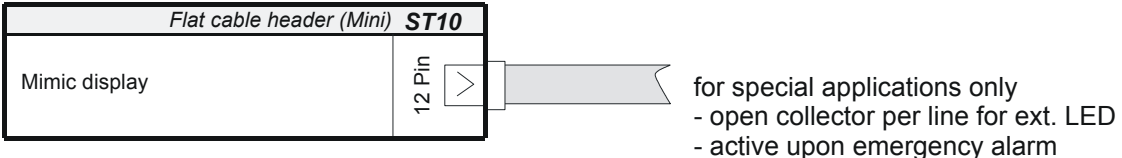"S3-1...6" are set to "off" at the factory
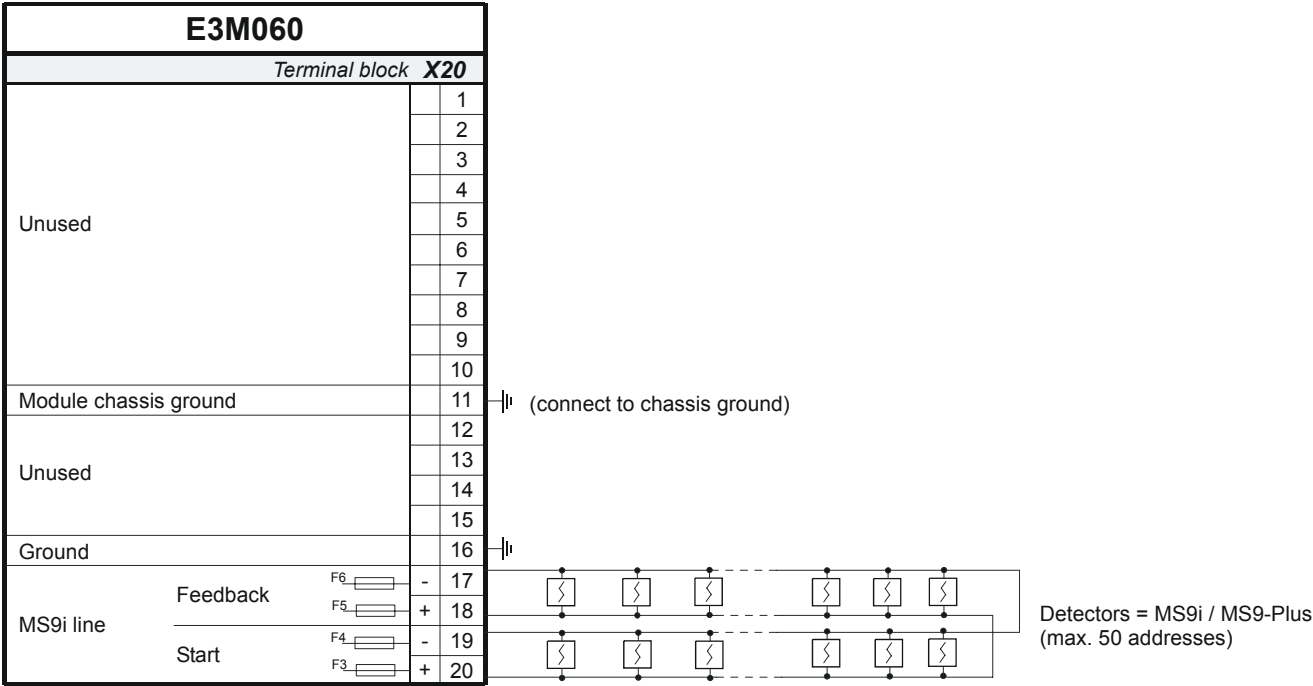

2   Flat cable header "ST1" (26-pin): I-Bus
3   Connector "ST10": Mimic display (only active with "emergency operation")
4   Plug-in terminals "K1": Supply to "I-Bus" modules
5   Fuse 'F7' 1.6 A/F Module supply (SMD fuse can only be changed at factory)
6   Fuses: F1 / F2   0.5 A/T*   Supply for DS11 modules
                  F3 ... F6   1 A/T*   DS11 line (D-Bus)
                  * Fuse with high breaking capacity (sand-filled)

19.5 Connections

E3M070		
Terminal block **X20**		
		1
		2
		3
		4
unused		5
		6
		7
		8
		9
		10
Module chassis ground		11
Supply voltage for DS11 modules, 24V max. 500mA, not monitored	F2 −	12
	−	13
	+	14
	F1 +	15
Ground		16
DS11-Line — Feedback	F6 −	17
	F5 +	18
DS11-Line — start	F4 −	19
	F3 +	20

11 — (connect to chassis ground)

not suitable for air sampling smoke detection system AD1 (rush current)

24V

DS11 interactive detectors max. 100 addresses

DC..

Plug-in terminals **K1**		
Supply for I-Bus modules	GND −	1	blue
	−	2	blue
	5V +	3	green
	F7 24V +	4	red

from previous I-Bus modules

to other I-Bus modules

Double flat cable header **ST1**	
Data communication I-Bus modules	26 Pin
	26 Pin

from previous I-Bus modules

to other I-Bus modules

Flat cable header (Mini) **ST10**	
Mimic display	12 Pin

for special applications only
- open collector per line for ext. LED
- active upon emergency alarm

Pin assignment ST10

Pin	1	2	3	4	5	6	7	8	9	10	11	12
Line	1											
			GND			GND			GND			GND

20   E3M071 Line module "Interactive" (supersedes E3M070)

20.1   Overview

- Line module for **interactive detectors**
- I-Bus module with line processor and independent emergency operation processor
- Designed for **1 loop line or stub line**
- With 24 V supply output
- Line inputs and supply outputs protected against over voltage
- integrated ground fault monitoring (not contained in E3M070)
- Line is galvanically isolated from the control unit (not contained in E3M070)
- Card format 100 mm x 200 mm
- I–Bus address is set at programming switch "S3"

20.2   Key data

Addresses	...128 1)	(E3M070 ....100)
Number of wires	2	
Twisted cable	necessary	
Line resistance	...120 Ω 1) 2)	
Line capacitance	...300 nF 1) 2)	
Short-circuit proof line	yes (line separator in each manual call point and E/A module, automatic detectors are available with or without line separator)	
T-branch	yes	
Quiescent current at 24 V	115 mA with 128 detectors and supply output unloaded (50 mA without detector + 0.5 mA per D-Bus element)	
Current at supply output	...500 mA / 18...30 VDC (not stabilized)	

1) Limitations –> see document 001508

2) With MICC max. 1000 m from the control unit to the last detector, with RADOX max. 2000 m

E3M071
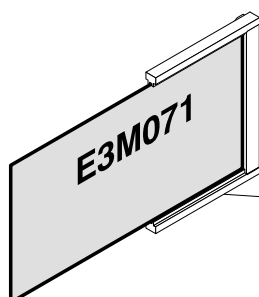
Terminal block X20 (20 terminals)
– mounted on module chassis
– for the connection of the prefabricated cable to connection level, or
– for direct connection of the periphery

Card chassis
– mounted on module chassis

20.3   Special functions

Emergency operation
– Alarm evaluation upon "Emergency operation" via **Emergency operation processor** and "Emergency operation" in the detector
– Upon emergency alarm, control console B3Q... gives a "combined alarm" **with** flashing response indicator at the detector
– Upon line short circuit **and** failure of the line processor there is **no** "Emergency alarm"
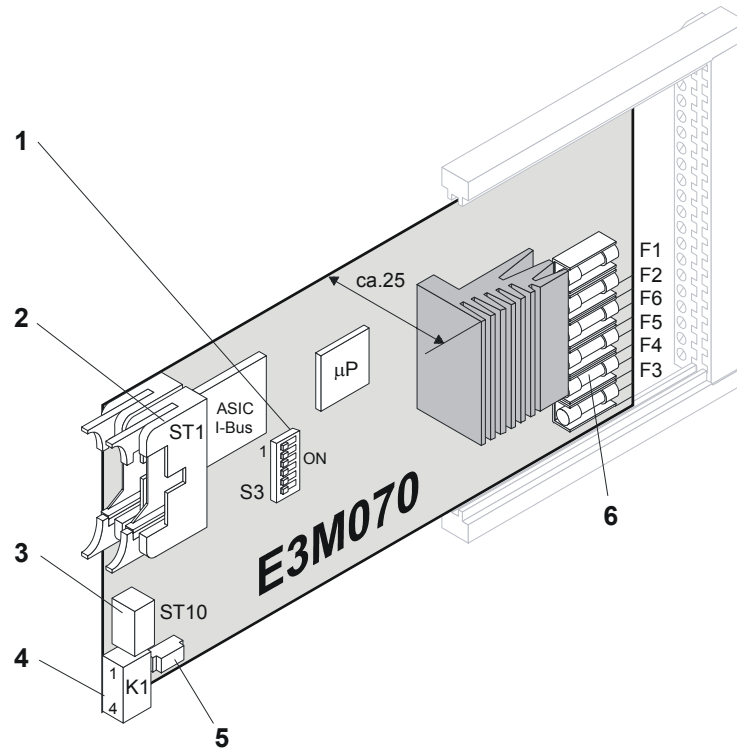– Mimic display output (connectors ST10) only active with emergency alarm

Line separator
Upon short circuit the part of the line which malfunctions must be separated from the rest of the line. This is carried out by line separators integrated in the detectors, manual call points and input/output modules (however, there are detectors without integrated separator).
A line separator is always integrated in the manual call points and input/output modules.
According to EN54 a "simple error" can cause the malfunction of up to 32 detectors (i.e. install a line separator at least after every 32 detectors).
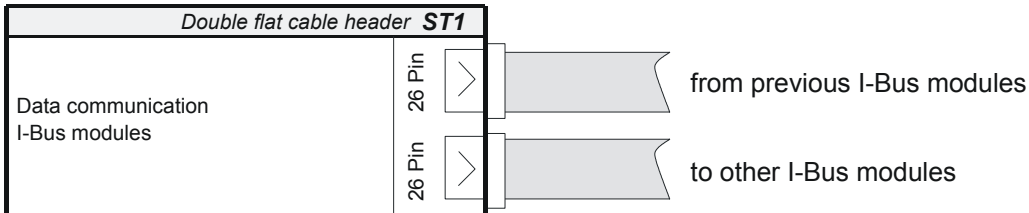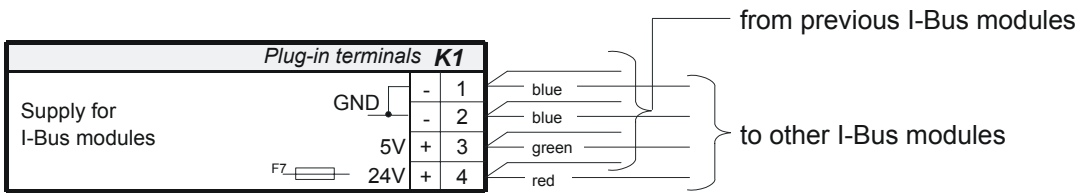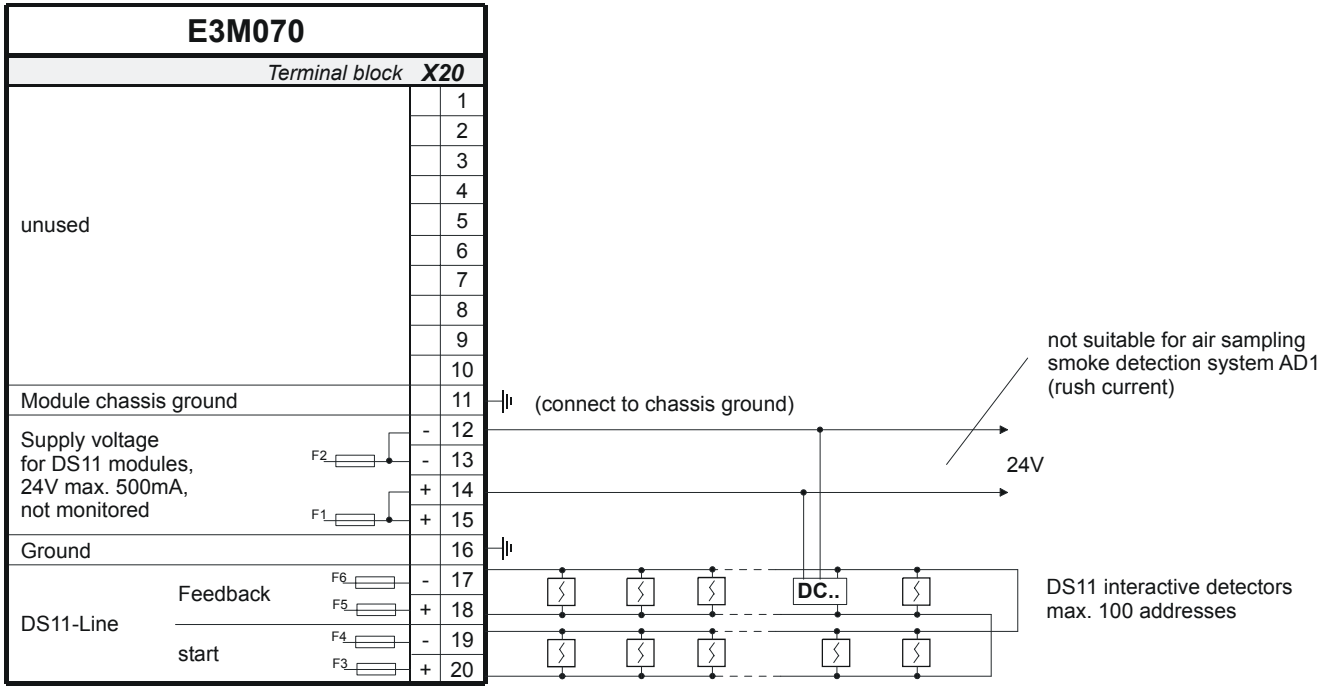
20.4   Important components

Legend:

1   Programming switch "S3": "I-Bus address" setting

 Each element (module) connected to I-Bus must have an individual address (number).

 This is set on programming switch "S3".

 Maximum 16 I-Bus devices.

Function / I-Bus address		Programming switch S3					
No.		S3-1	S3-2	S3-3	S3-4	S3-5	S3-6
0	Module out of commission (unused)	off	off	off	off	off	off
1	I-Bus user number 1	**on**	off	off	off	off	off
2	2	off	**on**	off	off	off	off
3	3	**on**	**on**	off	off	off	off
4	4	off	off	**on**	off	off	off
5	5	**on**	off	**on**	off	off	off
6	6	off	**on**	**on**	off	off	off
7	7	**on**	**on**	**on**	off	off	off
8	8	off	off	off	**on**	off	off
9	9	**on**	off	off	**on**	off	off
10	10	off	**on**	off	**on**	off	off
11	11	**on**	**on**	off	**on**	off	off
12	12	off	off	**on**	**on**	off	off
13	13	**on**	off	**on**	**on**	off	off
14	14	off	**on**	**on**	**on**	off	off
15	15	**on**	**on**	**on**	**on**	off	off
16	16	off	off	off	off	**on**	off

 "S3-1...6" are set to "off" at the factory

2   Flat cable header "ST1" (26-pin): I-Bus

3   Maintenance LED: "H1" red –> 'Emergency alarm' / "H2" yellow -> 'Emer-
      gency operation'

4   Connector "ST10": Mimic display (only active with "emergency operation")

5   Plug-in terminals "K1": Supply to "I-Bus" modules

6   Fuse: 'F7' 1.6 A/F   Module supply (SMD fuse can only be changed at factory)

7   Fuses: 'F1 / F2'   0,5 A/T*   Supply for DS11 modules
              'F3 .. F6'   1 A/T*   DS11 line (D-Bus)
              * Fuse with high breaking capacity (sand-filled)

20.5   Connections

E3M071	
Terminal block **X20**	

	1	
	2	
	3	
	4	
unused	5	
	6	
	7	
	8	
	9	
	10	
Module chassis ground	11	(connect to chassis ground)
Supply voltage for DS11 modules, 24V max. 500mA, not monitored	- 12	
	- 13	F2
	+ 14	
	+ 15	F1
Ground	16	
DS11-Line Feedback	- 17	F6
	+ 18	F5
DS11-Line start	- 19	F4
	+ 20	F3

not suitable for air sampling smoke detection system AD1 (rush current)

24V

DS11 interactive detectors max. 128 addresses

DC..

Plug-in terminals **K1**		
Supply for I-Bus modules	GND - 1	blue
	- 2	blue
	5V + 3	green
	F7 24V + 4	red

from previous I-Bus modules

to other I-Bus modules

Double flat cable header **ST1**	
Data communication I-Bus modules	26 Pin
	26 Pin

from previous I-Bus modules

to other I-Bus modules

Flat cable header (Mini) **ST10**	
Mimic display	12 Pin

for special applications only
- open collector per line for ext. LED
- active upon emergency alarm

Pin assignment ST10

Pin	1	2	3	4	5	6	7	8	9	10	11	12
Linie	1											
			GND			GND			GND			GND

21 E3M171 Line module "Interactive" Ex Detectors

21.1 Overview

- Line module for **interactive Ex detectors** (and standard detectors)
- I-Bus module with line processor and independent emergency operation processor
- Designed for **1 stub line**
- Line inputs protected against over voltage
- The ground fault monitoring is disabled, because Ex barrier must be grounded on the plus conductor
- Line is galvanically isolated from the control unit
- Card format 100 mm x 200 mm
- I-Bus address is set at programming switch "S3"

21.2 Key data

Addresses	...32 (normal and/or Ex detectors) 1)
Number of wires	2
Twisted cable	necessary
Line resistance (total)	...70 Ω 1) 2) 3)
Line capacitance (from SB3 on)	...70 nF 1) 2) 3)
T-branch	yes
Quiescent current at 24 V	70 mA with 32 detectors (50 mA without detector + 0.5 mA per D-Bus element with IMK=1)

1) Limitations –> see document 001508
2) With MICC max. 1000 m from the control unit to the last detector, with RADOX max. 2000 m
3) –> see document 1204

Terminal block X20 (20 terminals)
– mounted on module chassis
– for the connection of the prefabricated cable to connection level, or
– for direct connection of the periphery

Card chassis
– mounted on module chassis
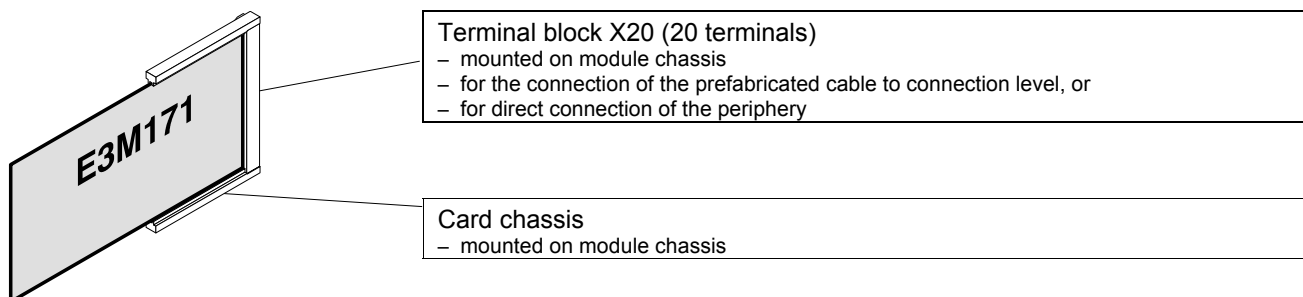
21.3 Special functions

Emergency operation
– Alarm evaluation upon "Emergency operation" via **Emergency operation processor** and "Emergency operation" in the detector
– Upon emergency alarm, control console B3Q... gives a "combined alarm" **with** flashing response indicator at the detector
– Upon line short circuit **and** failure of the line processor there is **no** "Emergency alarm"
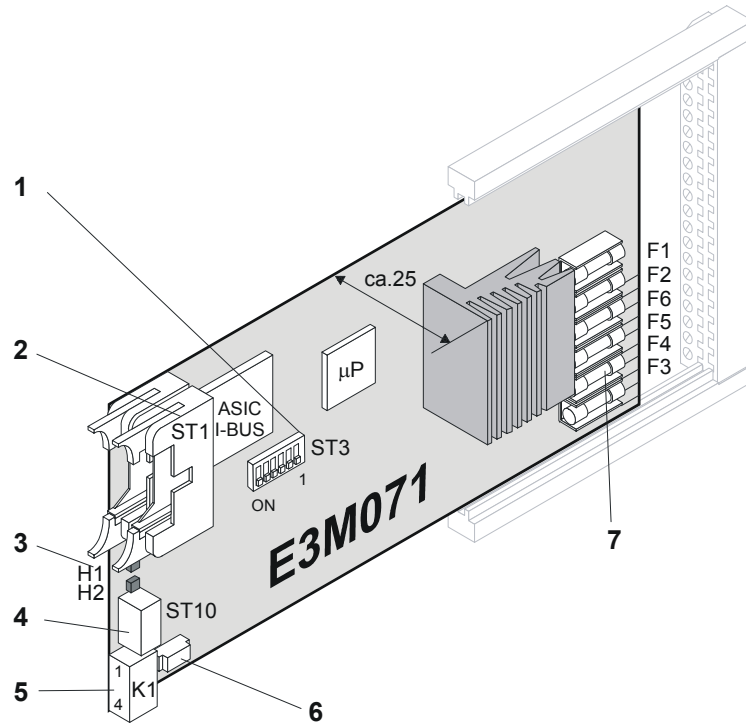– Mimic display output (connectors ST10) only active with emergency alarm

21.4   Important components

Legend:

1   Programming switch "S3": "I-Bus address" setting

Each element (module) connected to I-Bus must have an individual address (number).
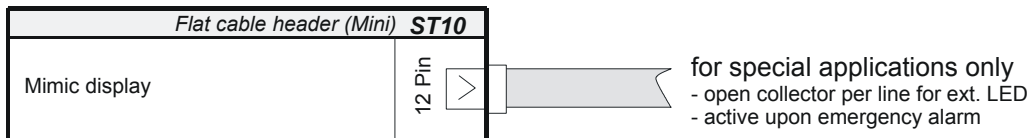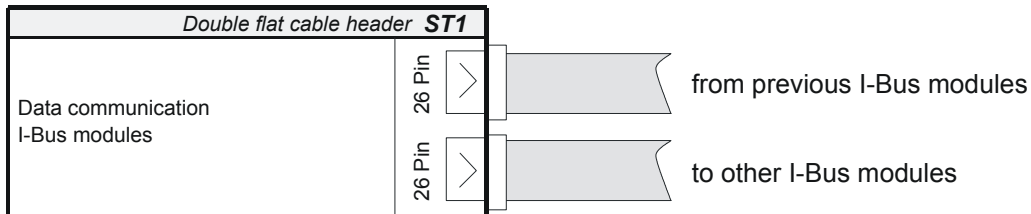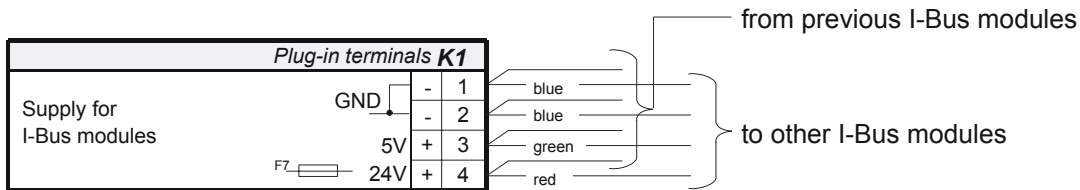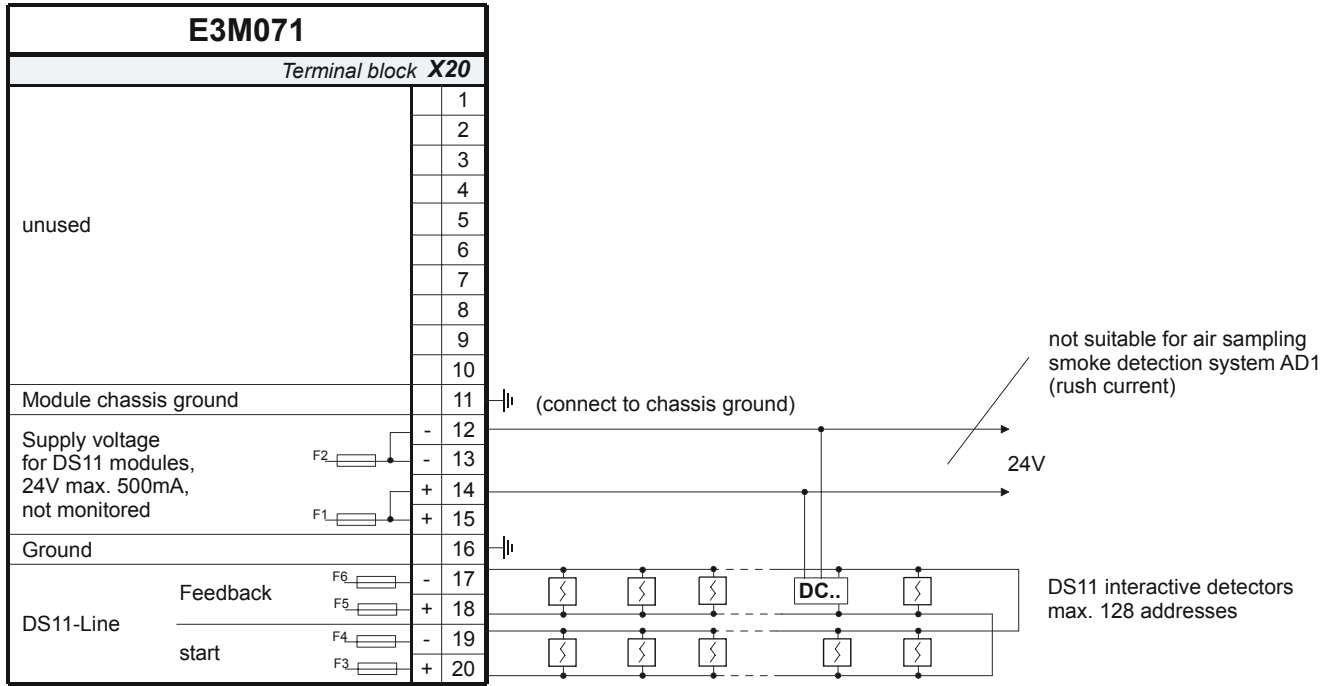This is set on programming switch "S3".

Maximum 16 I-Bus devices.

Function / I-Bus address		Programming switch S3					
No.		S3-1	S3-2	S3-3	S3-4	S3-5	S3-6
0	Module out of commission (unused)	off	off	off	off	off	off
1	I-Bus user number 1	on	off	off	off	off	off
2	2	off	on	off	off	off	off
3	3	on	on	off	off	off	off
4	4	off	off	on	off	off	off
5	5	on	off	on	off	off	off
6	6	off	on	on	off	off	off
7	7	on	on	on	off	off	off
8	8	off	off	off	on	off	off
9	9	on	off	off	on	off	off
10	10	off	on	off	on	off	off
11	11	on	on	off	on	off	off
12	12	off	off	on	on	off	off
13	13	on	off	on	on	off	off
14	14	off	on	on	on	off	off
15	15	on	on	on	on	off	off
16	16	off	off	off	off	on	off

"S3-1...6" are set to "off" at the factory

2   Flat cable header "ST1" (26-pin): I-Bus
3   Maintenance LED: "H1" red –> 'Emergency alarm' / "H2" yellow -> 'Emergency operation'
4   Connector "ST10": Mimic display (only active with "emergency operation")
5   Plug-in terminals "K1": Supply to "I-Bus" modules
6   Fuse: 'F7'   1 A/F   Module supply (SMD fuse can only be changed at factory)
7   Fuses: 'F3, F4'   1 A/T   DS11 line (D-Bus) (Fuses with high breaking capacity, sand-filled)

21.5   Connections

E3M171		
Terminal block **X20**		
unused		1
		2
		3
		4
		5
		6
		7
		8
		9
		10
Module chassis ground		11
unused		12
		13
		14
		15
Ground		16
unused		17
		18
DS11-Line	F4 −	19
	F3 +	20

(connect to chassis ground)

⚠ The control unit software cannot determine whether the detectors installed in the explosion-hazard area really are explosion-proof. The commissioning engineer and the system operator are responsible for installing the right detectors in the explosion-hazard area!

max. 32 addresses

1)   Ex detectors

SB3

DS11 interactive Ex detectors

3)   2) ⏚ **Explosion hazard area**

from previous I-Bus modules

Plug-in terminals **K1**			
Supply for I-Bus modules	GND −	1	blue
	−	2	blue
	5V +	3	green
	F7 24V +	4	red

to other I-Bus modules

Double flat cable header **ST1**	
Data communication I-Bus modules	26 Pin >
	26 Pin >

from previous I-Bus modules

to other I-Bus modules

Flat cable header (Mini) **ST10**	
Mimic display	12 Pin >

for special applications only
- open collector per line for ext. LED
- active upon emergency alarm

Pin assignment ST10

Pin	1	2	3	4	5	6	7	8	9	10	11	12
Linie	1											
			GND			GND			GND			GND

1) Details regarding max. admissible line resistance –> see document 1204

2) Local ground connection

3) Standard detectors allowed in front of the safety barrier (SB3)

22 E3M080 Line module "Collective"

22.1 Overview

- Line module for **collective detectors** (digital comparator) DS11, MS6, MS7, MS9, MS24
- I-Bus module with common line processor for all **8 lines**
- Various line types available (programmable via AlgoWorks) depending on the connected detector series
- Line termination depending on programmable line type
- Short circuit can be evaluated as fault or alarm per module (Programming switch 'S4')
- Line inputs protected against over voltage
- Card format 100 mm x 200 mm
- I-Bus address is set at programming switch 'S3'

22.2 Key data

Line type 1) ≥ Index 'BD' + Software ≥ 4.4x	**Type 1** 1)	**Type 11**	**Type 3** 1)
≤ Index 'BD' or SW ≤ V4.4x	Type 2 1)	Type 11	Type 13 1)
Connectable detector series	MS6 / 7 / 9 / 24 / (DS11)	DS11 / MS9 / 716	coll. Ex-detectors
	–> Details see table 'Compatibility' chapter 22.5		
Number of detectors per line	max. 25 2)		
Number of wires	2		
Twisted cable	recommended		
Line resistance	max. 250 Ω	max. 150 Ω	max. 50 Ω
Line capacitance	max. 4 μF		max. 57nF 3)
Line termination element **≥ Index 'BD' + Software ≥ V4.4x 4)**	**EOL22 (Ex)**	**Transzorb 20V**	**EOL22 (Ex)**
≤ Index 'BD' 4) or SW ≤ V4.4x	Z-Diode 18V	Transzorb 20V	SBE2 Ex
Line voltage	–> see table 'line voltage' chapter 22.3		
Alarm current limit	45… 60 mA during AI pulse max. 4.5 mA during AI "dark" phase		
Line voltage limit	26.5... 27.7 V		
Quiescent line current	max. 4.5 mA		
Reset time	3 sec.		
Turn-on alarm delay	4.6 sec.		
Fault delay	0.5 sec. (≥ index 'BF' 15 sec.)		
Module quiescent current at 24 V	85 mA		

1) When parameterize the line types (AlgoWorks) it must be known whether the E3M080 line module is ≥ index 'BD' or older
2) Limitations –> see documents 825 and 001508
3) Details –> see document 1204
4) If an old E3M080 (<Index 'BD') is exchanged for a new E3M080 (≥Index 'BD'), and the software ≥ V 4.4x is loaded in the control unit, when using line types 1 and 3, the end-of-line elements must also be exchanged (Detection of the wrong end-of-line element is not guaranteed)
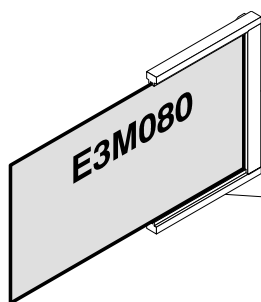
Terminal block X20 (20 terminals)
– mounted on module chassis
– for the connection of the prefabricated cable to connection level, or
– for direct connection of the periphery

Card chassis
– mounted on module chassis

E3M080

22.3 Line voltage

Line type 1

'Quiescent' **18,9 - 22,2V**

'Alarm' **3,2 ... 16,4V**

'Short circuit' **0 - 3,7V**

'Open line' **21,4 - 27,7V**

0 [V]

'Leak' **15,7 - 19,7V**

Line type 11

'Alarm' **3,2 ... 16,4V**

'Quiescent' **17,3-24,1V**

'Short circuit' **0 - 3,7V**

'Open line' **23,3 - 27,7V**

0 [V]

'Leak' **15,7 - 18,0V**

Line type 3

'Quiescent' **20,9 - 24,0V**

'Alarm' **5,1 ... 17,7V**

'Short circuit' **0 - 5,7V**

'Leak' **17,0-21,7V**

'Open line' **23,2 - 27,7V**

0 [V]
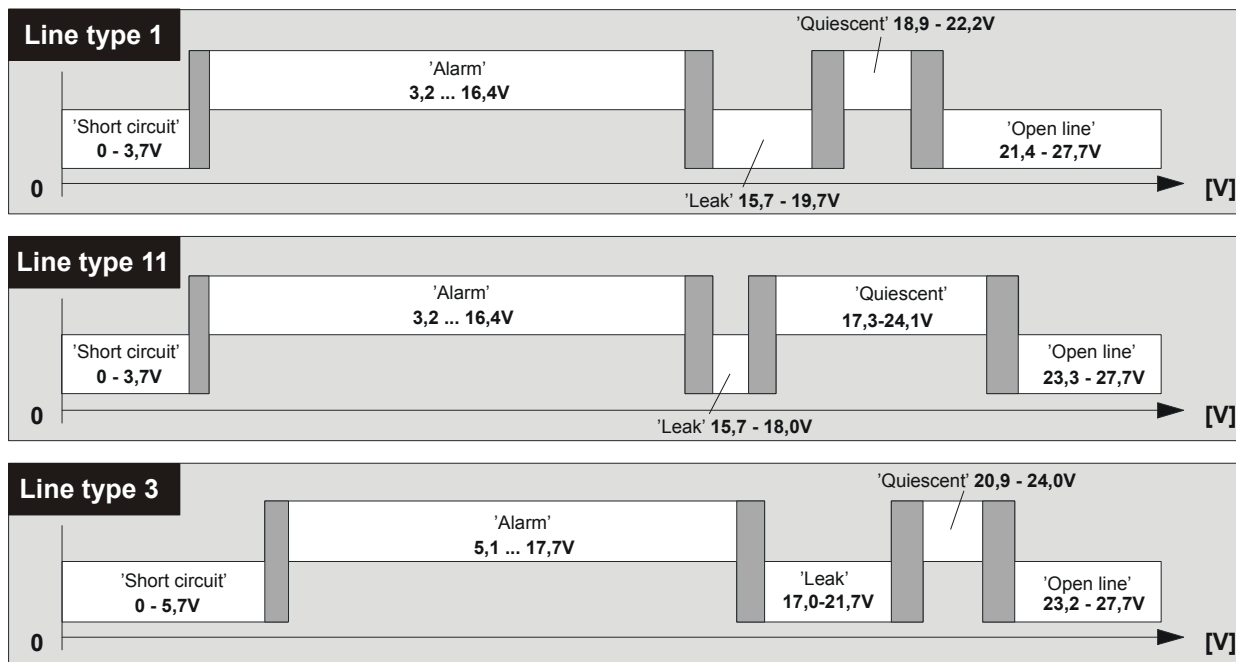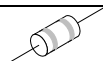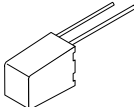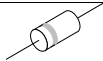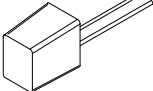
Note:
The different line voltage ranges are overlapping (tolerances). However, there is only one state at the time possible (visible at the control unit)
Overlapping

22.4 Line termination element

Transzorb	(Part number 460051)	
EOL22 (Ex)	(Part number 516222)	
Z–Diode (18 V)	(Part number 471710)	
SBE2 Ex	(Part number 484710)	

22.5 Compatibility (detector <–> line type)

	Incompatible – AT3 – ATAN3 – MS6 detectors – External response indicators with incandescent lamps – SE20 with incandescent lamp as response indicator – FES 7.5 detectors – 220 V detectors

Line type 11
➔ Line termination with Transzorb 20 V
Standard application, also for Ex detectors via
DC1192
	Compatible
	AlgoRex detectors:
	DO110x , DT110x , DM110x, DC1192
	Older detectors:
	MS716 , MS9 , MLK20 , T2416/18 , D2417 , SE22, AT4x, AT5x without SE2
	Base: Z74*, Z74A*, Z90, Z94, Z96
	* Limitations: Z74 and Z74A only from the 1988 model (year index W)
	  D900 only from the 1983 model (year index R)
	  –> if in doubt use line type 1
	Ex detectors (without restrictions)
	used via DC1192 with SB3: DO110x Ex, DT110x Ex
	  F911, D901, D921 with base Z91C/Z94C
	  D2401 Ex, S2406Ex
	  F6A Ex, D6A Ex

Line type 1 ➔ Line termination with EOL22(Ex) for older detectors, also for mixed lines (newer and older detector types) Note: – replaces line type 2	**Compatible** AlgoRex detectors: DLO1191, (with mixed lines also DO110x, DT110x, DM110x, DC1192) **Older detectors:** MS6* , MS7*, MS9 , MS24 , SE20* , SE22 , MLK20, AT4x, AT5x, SE2 Base electronics: Z70, Z72, Z72A, Z74, Z74A, Z90, Z94, Z96 Limitations: For MS6 and MS7 note the listed detector types and applications as stated under 'Incompatibility' ➔ Not permissible with line type 2: DO110x, DLO1191

Line type 3 (Ex)
➔ Via safety barrier SB2 and line termination
  EOL22 (Ex)
For Ex detectors with limitations
 	
Note:
– replaces line type 13
	For Explosion hazard area with limitations:
	– Only with safety barrier SB2
	– Only without short to earth monitoring
	– Only 1 Ex-line per installation
	or
	– several Ex lines, however with a common ground connection off all SB2s to the con-
	  trol unit, whereby the ground conductor must have a min. cross-sectional area of
	  1.5 mm^2 and be no longer then 50 m
	➔ Comply with the local safety regulations
	Compatible
	DO110x Ex, DT110x Ex
	F911, D901, D921 with base Z91C, Z94C
	D2401 Ex, S2406 Ex
	F6A Ex , D6A Ex
	➔ Not permissible with line type 13: DO110x Ex

22.6   Important components
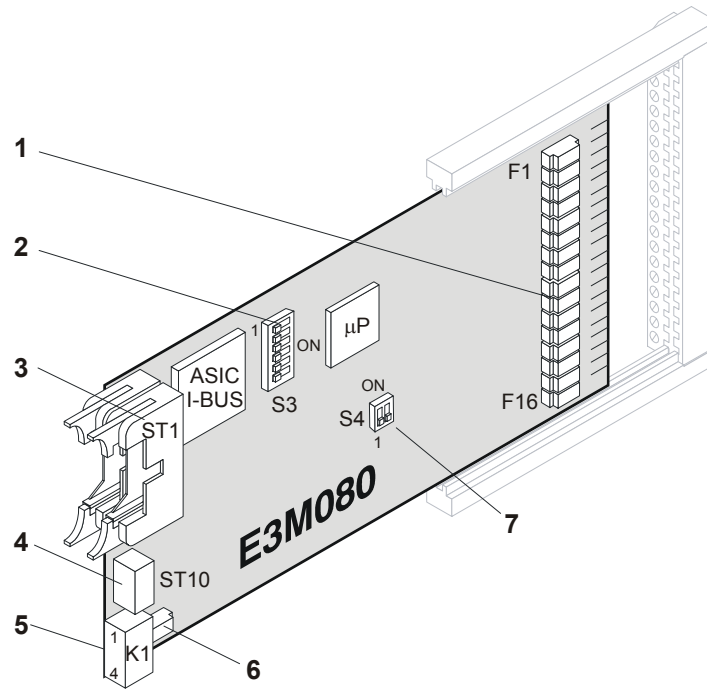
Legend:

1   Fuses:

F1/F2	1 A/F	Line 1
F3/F4	1 A/F	Line 2
F5/F6	1 A/F	Line 3
F7/F8	1 A/F	Line 4
F9/F10	1 A/F	Line 5
F11/F12	1 A/F	Line 6
F13/F14	1 A/F	Line 7
F15/F16	1 A/F	Line 8

SMD fuses (can only be changed at factory)

2   Programming switch "S3": "I-Bus address" setting

Each element (module) connected to I-Bus must have an individual address (number).
This is set on programming switch "S3".

Maximum 16 I-Bus devices.

Function / I-Bus address		Programming switch S3					
No.		S3-1	S3-2	S3-3	S3-4	S3-5	S3-6
0	Module out of commission (unused)	off	off	off	off	off	off
1	I-Bus user number 1	**on**	off	off	off	off	off
2	2	off	**on**	off	off	off	off
3	3	**on**	**on**	off	off	off	off
4	4	off	off	**on**	off	off	off
5	5	**on**	off	**on**	off	off	off
6	6	off	**on**	**on**	off	off	off
7	7	**on**	**on**	**on**	off	off	off
8	8	off	off	off	**on**	off	off
9	9	**on**	off	off	**on**	off	off
10	10	off	**on**	off	**on**	off	off
11	11	**on**	**on**	off	**on**	off	off
12	12	off	off	**on**	**on**	off	off
13	13	**on**	off	**on**	**on**	off	off
14	14	off	**on**	**on**	**on**	off	off
15	15	**on**	**on**	**on**	**on**	off	off
16	16	off	off	off	off	**on**	off

"S3-1...6" are set to "off" at the factory

3   Flat cable header "ST1" (26-pin): I-Bus
4   Connector "ST10": Mimic display (only active with "emergency operation")
5   Plug-in terminals "K1": Supply to "I-Bus" modules

6   Fuse: 'F17'   1 A/F   Module supply (SMD fuse, can only be changed at factory)

7   Programming switch "S4": Allows the line short circuit to be evaluated either as fault or alarm(common to all 8 lines)

S4-2	ON	=	Short circuit evaluated as alarm (AI pulse generator active)
	OFF	=	Short circuit evaluated as fault
S4-1		=	no function

S4-2 = set to "off" at the factory

22.7   Connections

E3M080

Terminal block **X20**

Line 1	F1 / F2	+ 1 / - 2
Line 2	F3 / F4	+ 3 / - 4
Line 3	F5 / F6	+ 5 / - 6
Line 4	F7 / F8	+ 7 / - 8
unused		9 / 10
Module chassis ground		11
unused		12
Line 5	F9 / F10	+ 13 / - 14
Line 6	F11 / F12	+ 15 / - 16
Line 7	F13 / F14	+ 17 / - 18
Line 8	F15 / F16	+ 19 / - 20

Max. 25 coll. DS11 detectors
MS6, MS7, MS9, MS24 depending of detector type, see docu 825

Line type 11 or 1   ∗

Transzorb 20V
resistor 1.2kΩ   alarm contact   ∗   or   Z-diode 5.6V   Z-diode 5.6V   Z-diode 5.6V   ∗   **4)**

Transzorb 20V

∗   **Line type 11 = Transzorb 20V**
1 = EOL22 (Ex)

(connect to chassis ground)

3)   Ex detector
SB2   **EOL22 (Ex)**
Line type 3   **1) 2)**
Explosion hazard area

Transzorb 20V
Transzorb 20V   **2)**
Line type 11 or 1   ∗   DC1192   SB3   Ex detector   **EOL22 (Ex)**
24VDC   **3)**   **Explosion hazard area**

Plug-in terminals **K1**

Supply I-Bus modules	GND	- 1	blue
		- 2	blue
	5V	+ 3	green
	24V	+ 4	red

from previous I-Bus modules
to other I-Bus modules

Double flat cable header **ST1**

Data communication I-Bus modules

26 Pin > from previous I-Bus modules
26 Pin > to other I-Bus modules

Flat cable header (Mini) **ST10**

Mimic display

12 Pin > to emergency operation link E3G110
- open collector per line for ext. LED
- active upon emergency alarm

Pin assignment ST10

Pin	1	2	3	4	5	6	7	8	9	10	11	12
Line	1	2	GND	3	4	GND	5	6	GND	7	8	GND

1) No detectors may be connected in front of the safety barrier (SB2). This application is without limitation only once permissible per control unit and in installation with E3X.. / E3G070 only if the earth leak detection is set to 'inactive' (further details see page 95)
2) Details regarding max. admissible line resistance see document 1204
3) Local ground connection
4) To read in technical alarms. Do not mix with detectors on the same line.

23   E3M110 Line module "AnalogPLUS" (superseded by E3M111)

23.1   Overview

> **i**
>
> E3M110 ≤ Index 'CE' is only compatible with EP3 and EP3a
> E3M110 ≥ Index 'CE' is fully compatible with EP3, EP3a, EP4; (further details refer to MI221)

- Line module for **AnalogPLUS detectors**
- I-Bus module with line processor and independent emergency operation processor
- Designed for **4 loop lines or stub lines**
- Line inputs protected against over voltage
- Card format 100 mm x 200 mm
- I-Bus address is set at programming switch "S3"

23.2   Key data

Addresses per line	...128 1)
Number of wires	2
Twisted cable	recommended
Line resistance	...150 Ω with 128 detectors 1)
Line capacitance	...300 nF 1)
Short-circuit proof line	yes (autom. detectors, manual call points, input/output modules with line separator)
T-branch	yes (using DC1135)
Quiescent current at 24 V	210 mA with 512 detectors (50 mA without detectors + 0.31 mA per D-Bus user)

1) Limitations –> see document 001508
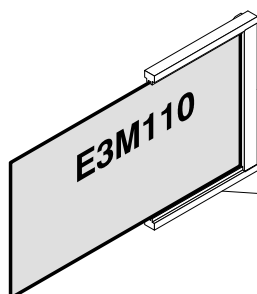
Terminal block X10 (20 terminals)
– mounted on module chassis
– for the connection of the prefabricated cable to connection level, or
– for direct connection of the periphery

Card chassis
– mounted on module chassis

23.3   Special functions

Line separator
Upon short circuit the part of the line which malfunctions must be separated from the rest of the line. This is carried out by line separators integrated in each detector, manual call point and input/output module. According to EN54, a "simple error" may not cause the malfunction of more than 32 detectors. After the short circuit the line automatically reverts to "Normal operating condition".

23.4   Important components

Legend:

1   Programming switch "S3": "I-Bus address" setting

Each element (module) connected to I-Bus must have an individual address (number).

This is set on programming switch "S3".
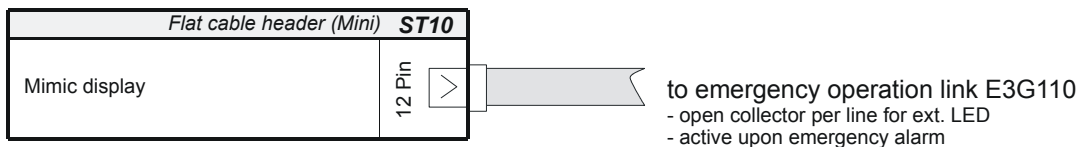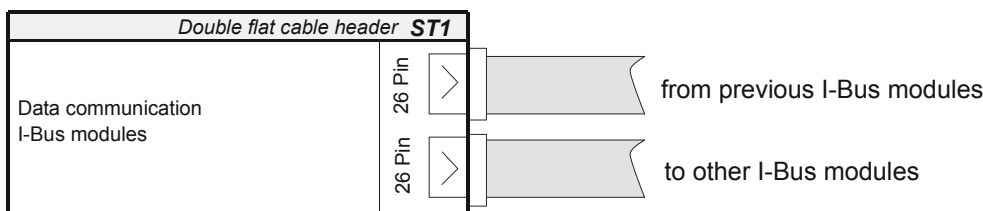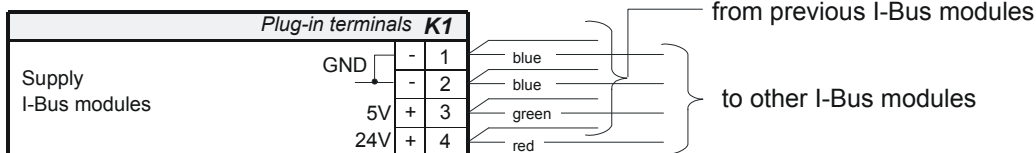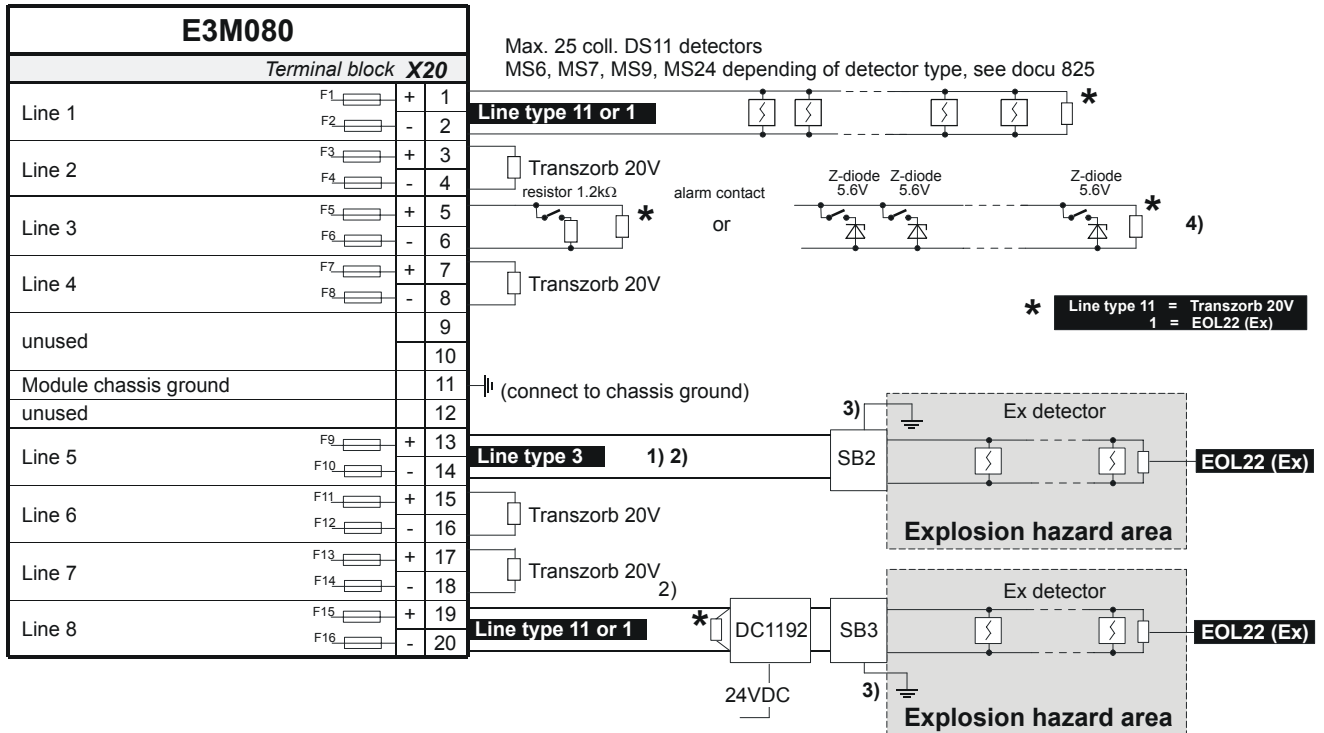
Maximum 16 I-Bus devices.

Function / I-Bus address		Programming switch S3					
No.		S3-1	S3-2	S3-3	S3-4	S3-5	S3-6
0	Module out of commission (unused)	off	off	off	off	off	off
1	I-Bus user number 1	on	off	off	off	off	off
2	2	off	on	off	off	off	off
3	3	on	on	off	off	off	off
4	4	off	off	on	off	off	off
5	5	on	off	on	off	off	off
6	6	off	on	on	off	off	off
7	7	on	on	on	off	off	off
8	8	off	off	off	on	off	off
9	9	on	off	off	on	off	off
10	10	off	on	off	on	off	off
11	11	on	on	off	on	off	off
12	12	off	off	on	on	off	off
13	13	on	off	on	on	off	off
14	14	off	on	on	on	off	off
15	15	on	on	on	on	off	off
16	16	off	off	off	off	on	off

"S3-1...6" are set to "off" at the factory

2   Flachband-Header "ST1" (26-polig): I-Bus

3   Fuses: F17   1 A/T*   Module supply 24 V

              F18   1 A/T*   Module supply 5 V

  * Fuse with high breaking capacity (sand-filled)

4   Plug-in terminals "K1": Supply to "I-Bus" modules

5   Maintenance LED "H1":

   pulsating   = Communication with detection line(s) ok

   continuous   = Module probably defective

   not active   = no line connected, or not programmed

6 Fuses: 'F1...F16' 1 A/F Lines 1..4 (SMD fuses can only be changed at factory)

23.5 Connections

E3M110

Terminal block **X10**

Line 1 AnalogPLUS detector Loop or stub line	F1	+	1
	F2	-	2
With loop line: Feedback	F3	+	3
	F4	-	4
Line 2 AnalogPLUS detector Loop or stub line	F5	+	5
	F6	-	6
With loop line: Feedback	F7	+	7
	F8	-	8
Line 3 AnalogPLUS detector Loop or stub line	F9	+	9
	F10	-	10
Module chassis ground		⏚	11
With loop line: Feedback	F11	+	12
	F12	-	13
Line 4 AnalogPLUS detector Loop or stub line	F13	+	14
	F14	-	15
Module chassis ground		⏚	16
With loop line: Feedback	F15	+	17
	F16	-	18
unused	F19	+	19
	F20	-	20

DS11 AnalogPLUS detector Max. 128 addresses

≥ EP7F, wire the unused lines as loop line

(connect to chassis ground)

DS11 AnalogPLUS detector Max. 128 addresses

DC..

24V

Plug-in terminals **K1**

Supply for I-Bus modules	GND	-	1	blue
		-	2	blue
	F18 5V	+	3	green
	F17 24V	+	4	red

from previous I-Bus modules

to other I-Bus modules

Double flat cable header **ST1**

Data communication I-Bus modules	26 Pin	>
	26 Pin	>

from previous I-Bus modules

to other I-Bus modules

24 E3M111 Line module "AnalogPLUS" (supersedes E3M110)

24.1 Overview

- Line module for **AnalogPLUS detectors**
- I-Bus module with line processor and independent emergency operation processor
- Designed **4 four loop lines or stub lines**
- Line inputs protected against over voltage
- Card format 100 mm x 200 mm
- I-Bus address is set at programming switch "S3"

24.2 Key data

Addresses per line	...128 1)
Number of wires	2
Twisted cable	recommended
Line resistance	...150 Ω with 128 detectors 1)
Line capacitance	...300 nF 1)
Short-circuit proof line	yes (autom. detectors, manual call points, input/output modules with line separator)
Quiescent current at 24 V	210 mA with 512 detectors (50 mA without detectors + 0.31 mA per D–Bus user)
Current at supply output	....500 mA / 18...30 VDC (not stabilized)

1) Limitations –> see document 001508

Terminal block X10 (20 terminals)
– mounted on module chassis
– for the connection of the prefabricated cable to connection level, or
– for direct connection of the periphery

Card chassis
– mounted on module chassis

E3M111
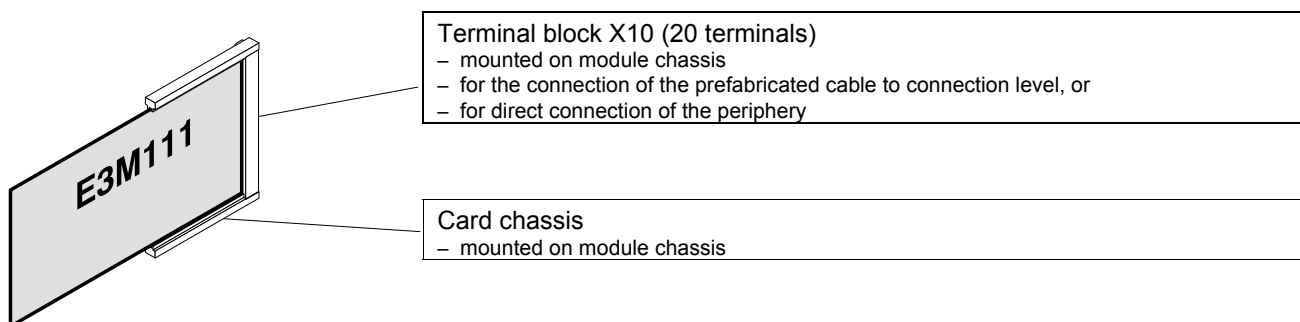
24.3 Special functions

Line separator
Upon short circuit the part of the line which malfunctions must be separated from the rest of the line. This is carried out by line separators integrated in each detector, manual call point and input/output module. According to EN54, a "simple error" may not cause the malfunction of more than 32 detectors. After the short circuit the line automatically reverts to "Normal operating condition".

24.4 Important components

Legend:

1   Programming switch "S3": "I-Bus address" setting
Each element (module) connected to I-Bus must have an individual address (number).
This is set on programming switch "S3".
Maximum 16 I-Bus devices.

Function / I-Bus address		Programming switch S3					
No.		S3-1	S3-2	S3-3	S3-4	S3-5	S3-6
0	Module out of commission (unused)	off	off	off	off	off	off
1	I-Bus user number 1	on	off	off	off	off	off
2	2	off	on	off	off	off	off
3	3	on	on	off	off	off	off
4	4	off	off	on	off	off	off
5	5	on	off	on	off	off	off
6	6	off	on	on	off	off	off
7	7	on	on	on	off	off	off
8	8	off	off	off	on	off	off
9	9	on	off	off	on	off	off
10	10	off	on	off	on	off	off
11	11	on	on	off	on	off	off
12	12	off	off	on	on	off	off
13	13	on	off	on	on	off	off
14	14	off	on	on	on	off	off
15	15	on	on	on	on	off	off
16	16	off	off	off	off	on	off

"S3-1...6" are set to "off" at the factory

2   Flat cable header "ST1" (26-pin): I-Bus
3   Connector 'ST10': Mimic display (active only with "Emergency alarm")
4   Plug-in terminals "K1": Supply to "I-Bus" modules
5   Fuses: 'F17'   1 A/T*   Module supply 24 V
                   'F18'   1 A/T*   Module supply 5 V
     * Fuse with high breaking capacity (sand-filled)
6   Maintenance LED "H1":
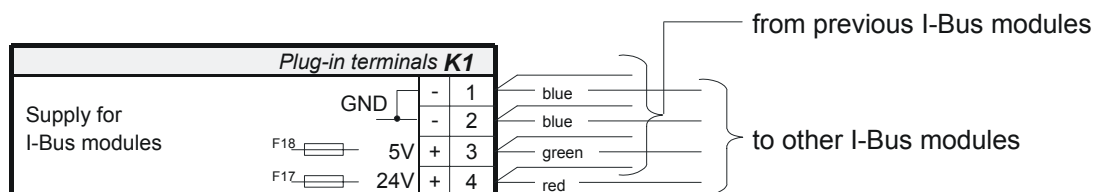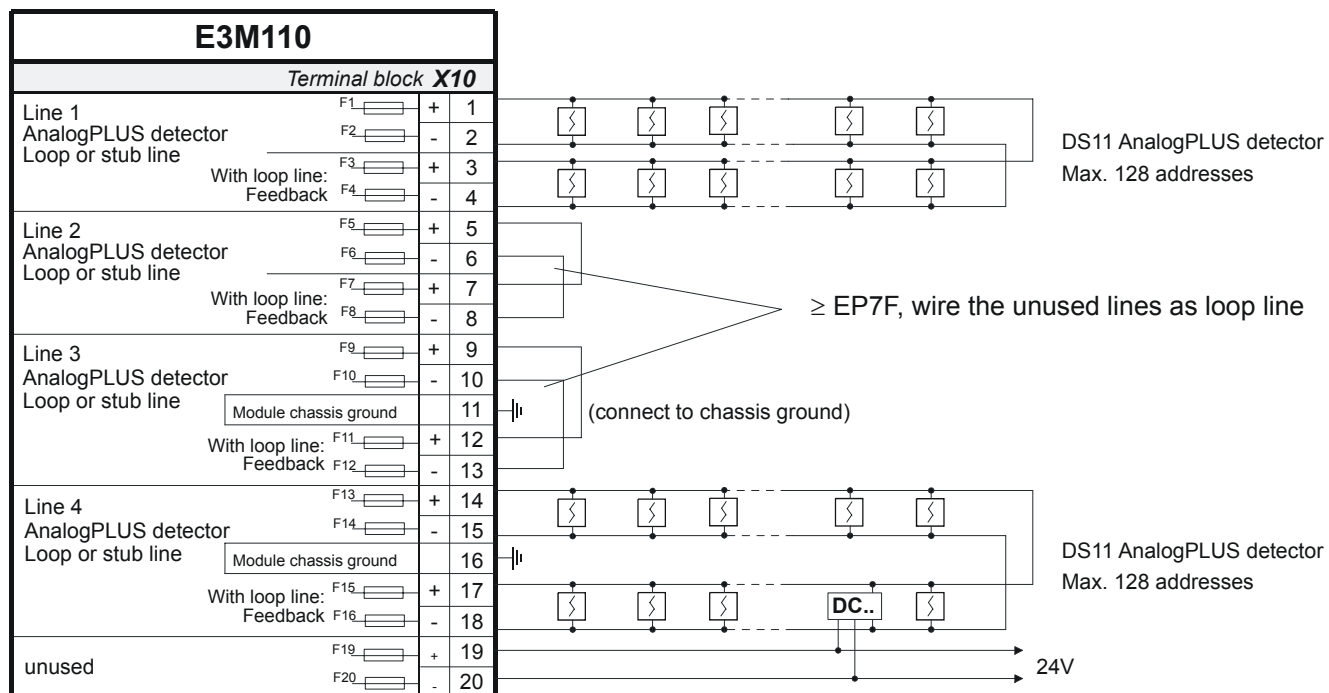   pulsating   = Communication with detection line(s) ok
     continuous   = Module probably defective
     not active   = no line connected, or not programmed

7   Fuses: 'F19/F20'   1 A/F   Supply voltage for DC modules (SMD fuses can only be changed at factory)

8   Fuses: 'F1...F16'   1 A/F   Lines 1..4 SMD fuses (can only be changed at factory)

24.5 Connections
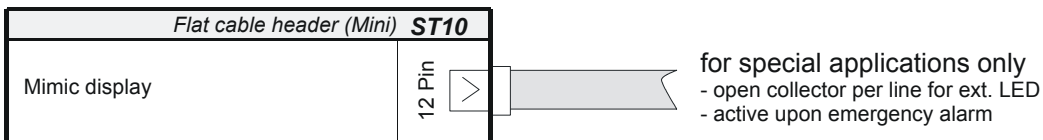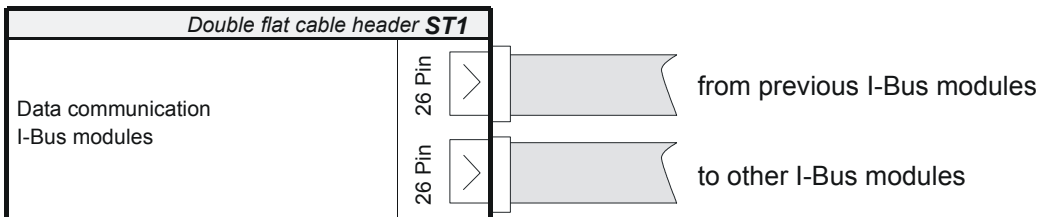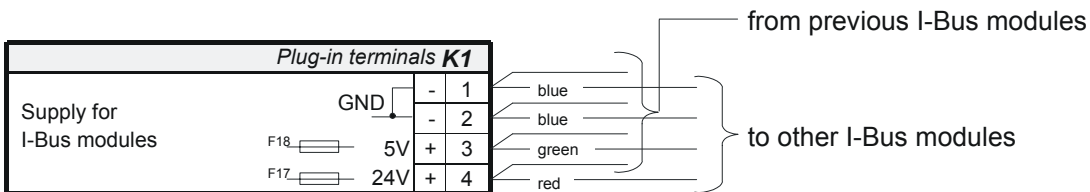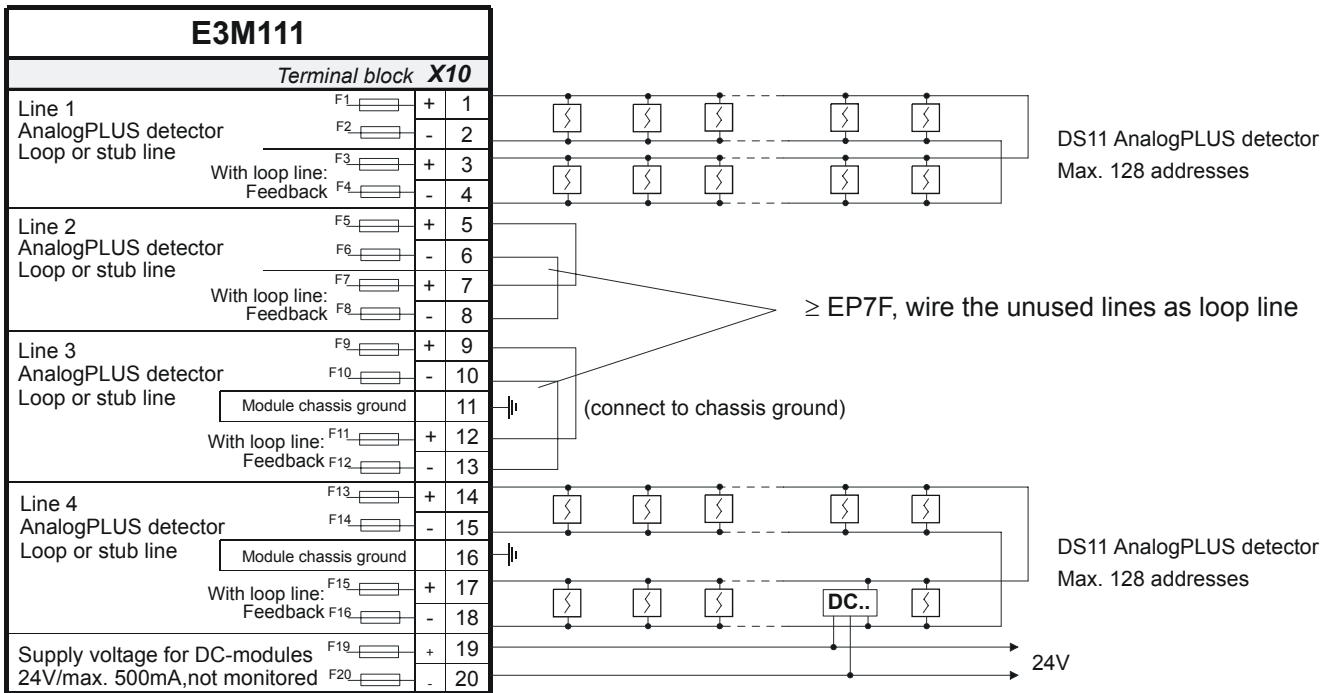
Pin assignment ST10

Pin	1	2	3	4	5	6	7	8	9	10	11	12
Line	1	2		3	4							
			GND			GND			GND			GND

25 E3M120 Line module "CBA8000/TS9000"

25.1 Overview

- Line module for **CBA8000/TS9000 detectors**
- I–Bus module with one IB processor and one line processor
- Designed for **4 loop lines (no stub lines)**
- Line inputs protected against over voltage
- Main card format 100 mm x 200 mm; Daughter card format 100 mm x 160 mm
- I-Bus address is set at programming switch "S1"

25.2 Key data

Addresses per line	...119
Number of wires	2
Twisted cable	not necessary
Line resistance	...30 Ω 1)
Line capacitance	...100 nF 1)
Short-circuit proof line	yes (separate isolator device available)
Quiescent current at 24 V	8.5 mA + 1.3 mA per D-Bus user
Quiescent current at 5 V	65 mA
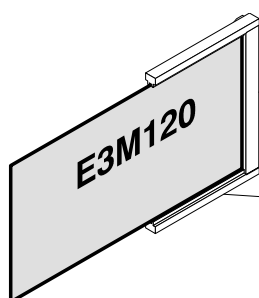
Terminal block J4 (20 terminals)
– mounted on module chassis
– for the connection of the prefabricated cable to connection level, or
– for direct connection of the periphery

Card chassis
– mounted on module chassis

25.3 Special functions

Line separator
Upon short circuit the part of the line which malfunctions must be separated from the rest of the line. This is carried out by line separators integrated in each detector, manual call point and input/output module. According to EN54, a "simple error" may not cause the malfunction of more than 32 detectors. After the short circuit the line automatically reverts to "Normal operating condition".

25.4   Important components
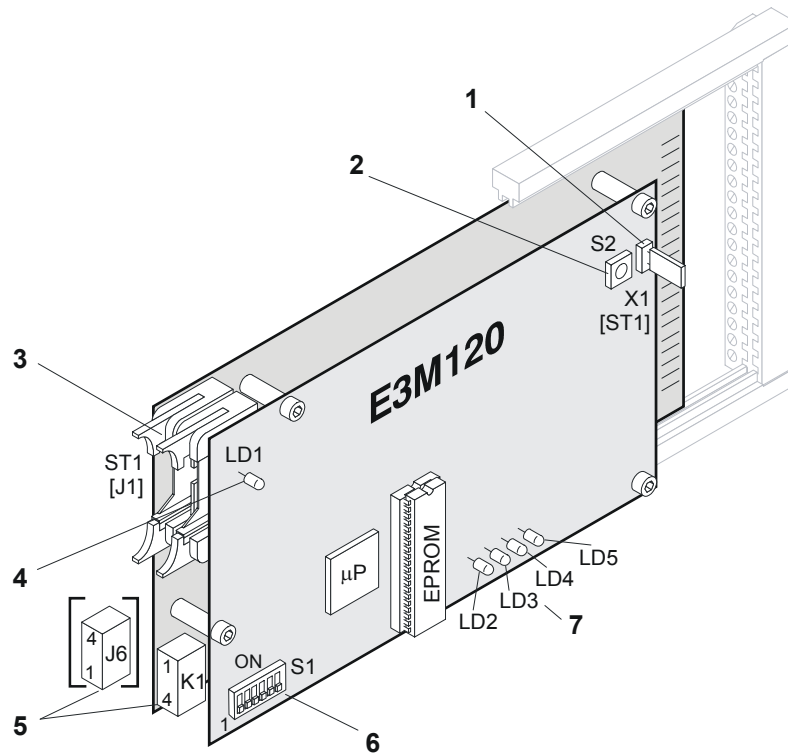
Legend:

1   Jumper "X1" [ST1]:   'in'   = Watchdog active (factory setting)
                                       'out' = for development only
2   Key "S2": Reset line interface µP (not I-Bus controller)
3   Flat cable header "ST1" [J1] (26-pin): I-Bus
4   LED green "LD1": indicates power ON
5   Plug-in terminals "K1" [J6]: Supply to "I-Bus" modules
6   Programming switch "S1": "I-Bus address" setting

Each element (module) connected to I-Bus must have an individual address (number).
This is set on programming switch "S1".

Maximum 16 I-Bus devices.

Function / I-Bus address		Programming switch S1					
No.		S1-1	S1-2	S1-3	S1-4	S1-5	S1-6
0	Module out of commission (unused)	off	off	off	off	off	off
1	I-Bus user number 1	on	off	off	off	off	off
2	2	off	on	off	off	off	off
3	3	on	on	off	off	off	off
4	4	off	off	on	off	off	off
5	5	on	off	on	off	off	off
6	6	off	on	on	off	off	off
7	7	on	on	on	off	off	off
8	8	off	off	off	on	off	off
9	9	on	off	off	on	off	off
10	10	off	on	off	on	off	off
11	11	on	on	off	on	off	off
12	12	off	off	on	on	off	off
13	13	on	off	on	on	off	off
14	14	off	on	on	on	off	off
15	15	on	on	on	on	off	off
16	16	off	off	off	off	on	off

"S1-1...6" are set to "off" at the factory

7   LED red "LD2...LD5":
    pulsating   = Communication between I-Bus and E3M120 ok
    continuous   = Line reset or line pulled down to 0 V (short circuit)

25.5   Connections

```
┌─────────────────────────────────────────┐
│              E3M120                       │
├───────────────────────────┬──────────────┤
│         Terminal block  J4 │              │
```

E3M120 — Terminal block J4		
Line 1 CBA8000/TS9000 detectors Loop line	Start +	1
	−	2
	Feedback +	3
	−	4
Line 2 CBA8000/TS9000 detectors Loop line	Start +	5
	−	6
	Feedback +	7
	−	8
Line 3 CBA8000/TS9000 detectors Loop line	Start +	9
	−	10
	Module chassis ground	11
	Feedback +	12
	−	13
Line 4 CBA8000/TS9000 detectors Loop line	Start +	14
	−	15
	Feedback +	16
	−	17
unused		18
		19
		20

CBA8000/TS9000 detectors
Max. 119 addresses

from EP7F, wire the unused lines as loop line

(connect to chassis ground)

Plug-in terminals K1 [J6]				
Supply for I-Bus modules	GND	−	1 [4]	blue
		−	2 [3]	blue
	5V	+	3 [2]	green
	24V	+	4 [1]	red

from previous I-Bus modules

to other I-Bus modules

Double flat cable header ST1 [J1]	
Data communication I-Bus modules	26 Pin
	26 Pin

from previous I-Bus modules

to other I-Bus modules

26 E3M140 Line module "FD20"

26.1 Overview

- Line module for addressable **Sinteso^{TM} devices**
- I-Bus module with line processor and P2-LineDriver
- Designed for **2 loop lines or 2 stub lines**
- Line inputs protected against over voltage
- integrated ground fault monitoring
- Lines are galvanically isolated from the control unit
- Card format 100 mm x 200 mm
- I-Bus address is set at programming switch "I-BUS ADR"
- Synchronization of the alarm devices in the FDnet

26.2 Key data

Addresses per line	... 126
Number of wires	2
Cable	all type of cables (twisted recommended)
Line resistance	max. 210 Ω per loop/stub 1) 2)
Line capacitance	330 nF for shielded cable
	500 nF for non-shielded cable 1) 2)
Short-circuit proof line	yes
T-branch	yes
Quiescent current at 24 V	80 mA without devices (+0.47 mA per load factor)

1) Depending on type of cable –> see document 001508 and 008478

2) Max. distance from control unit to the element furthest away is 2500 m

Terminal block X17 (20 terminals)
– mounted on module chassis
– for the connection of the prefabricated cable to connection level, or
– for direct connection of the periphery

Card chassis
– mounted on module chassis
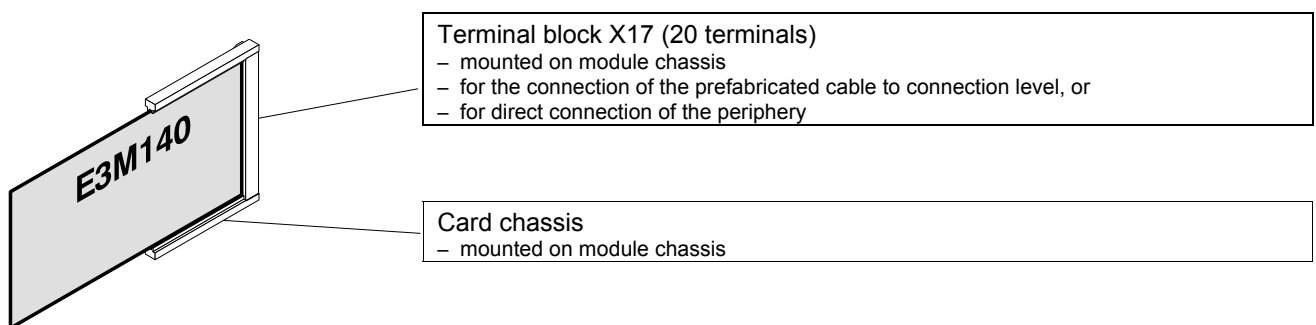
26.3 Special functions

Emergency operation
– Alarm evaluation upon "Emergency operation" via **line processor**
– Upon emergency alarm, control console B3Q... gives a "combined alarm" **with** flashing response indicator at the detector
– Upon line short circuit **and** failure of the line processor there is **no** "Emergency alarm"
– Mimic display output (connector SYNOPTIK) only active with emergency alarm

Line separator
Upon short circuit the part of the line which malfunctions must be separated from the rest of the line. This is carried out by line separators integrated in the devices.

26.4 Important components
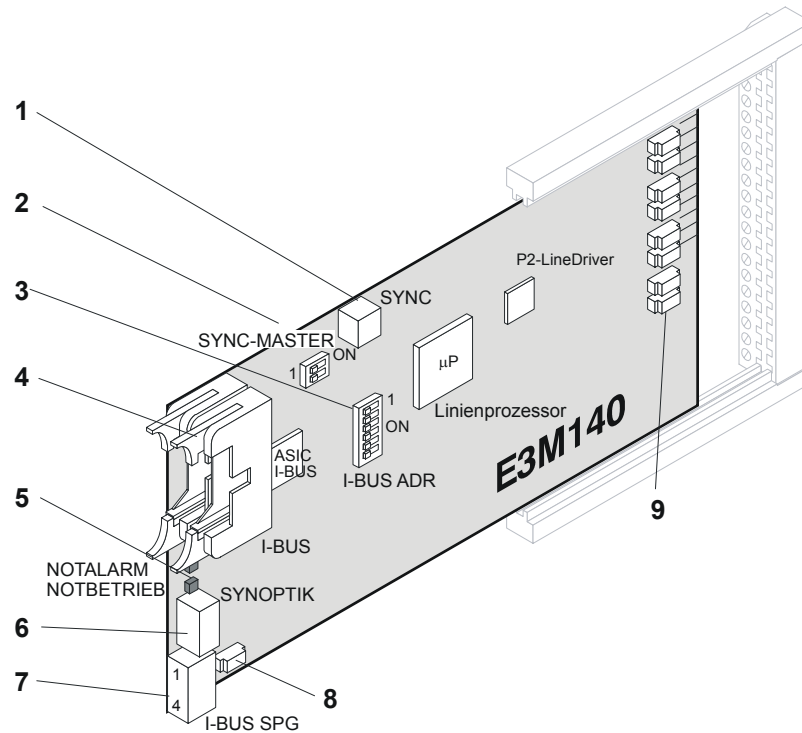
Legend:
1   Plug-in terminals "SYNC": Synchronization of the alarm devices
2   Programming switch "SYNC-MASTER": "Synchronization alarm devices" setting

1	on	The line module is the **'master'** and sends the pulse in intervals of one second to all line modules attached to the plug-in terminals 'SYNC' (only valid in the same station)
	off	The line module is the **'slave'** and receives the pulse cycle from the 'master' via the plug-in terminals 'SYNC'
2	on	no function
	off	

'SYNC-MASTER' are set to "off" at the factory

3   Programming switch "I-BUS ADR": "I-Bus address" setting
Each element (module) connected to the I-Bus must have an individual address (number). This is set on programming switch "I-BUS ADR".
Maximum 16 I-Bus devices.

| Function / I-Bus address | | Programming switch I-BUS ADR | | | | | |
No.		1	2	3	4	5	6
0	Module out of commission (unused)	off	off	off	off	off	off
1	I-Bus user number 1	**on**	off	off	off	off	off
2	2	off	**on**	off	off	off	off
3	3	**on**	**on**	off	off	off	off
4	4	off	off	**on**	off	off	off
5	5	**on**	off	**on**	off	off	off
6	6	off	**on**	**on**	off	off	off
7	7	**on**	**on**	**on**	off	off	off
8	8	off	off	off	**on**	off	off
9	9	**on**	off	off	**on**	off	off
10	10	off	**on**	off	**on**	off	off
11	11	**on**	**on**	off	**on**	off	off
12	12	off	off	**on**	**on**	off	off
13	13	**on**	off	**on**	**on**	off	off
14	14	off	**on**	**on**	**on**	off	off
15	15	**on**	**on**	**on**	**on**	off	off
16	16	off	off	off	off	**on**	off

'1... 6' are set to "off" at the factory

4 Flat cable header "I-BUS" (26-pin): I-Bus
5 Maintenance LED: "NOTALARM" red 'Emergency alarm'
"NOTBETRIEB" yellow 'Emergency operation'
6 Connector "SYNOPTIK": Mimic display (only active with "emergency opera-tion")
7 Plug-in terminals "I-BUS SPG": Supply to "I-Bus" modules
8 Fuse: Module supply SMD fuse (can only be changed at factory)
9 Fuses: for SintesoTM detector lines (SMD fuse can only be changed at fac-tory)

26.5 Connections

E3M140

Terminal block **X17**

Line 1 SintesoTM devices Loop or stub line	+	1	
	-	2	
With loop line:	+	3	
Feedback	-	4	
Line 2 SintesoTM devices Loop or stub line	+	5	
	-	6	
With loop line:	+	7	
Feedback	-	8	
unused		9	
		10	
Module chassis ground		11	
		12	
		13	
		14	
unused		15	
		16	
		17	
		18	
		19	
		20	

FD20 SintesoTM devices
max. 126 Addresses

Total 252 Addresses

wire the unused lines as loop line

(connect to chassis ground)

'Master'

Plug-in terminals **SYNC**

Synchronisation Alarm devices	1
	2

'Slave' **SYNC**
| 1 |
| 2 |

'Slave' **SYNC**
| 1 |
| 2 |

Plu-in terminals **I-BUS SPG**

Supply for I-Bus modules	GND -	1	blue
	-	2	blue
	5V +	3	green
	24V +	4	red

from previous I-Bus modules

to other I-Bus modules

Double flat cable header **I-BUS**

Data communication I-Bus modules	26 Pin
	26 Pin

from previous I-Bus modules

to other I-Bus modules

Flat cable header (Mini) **SYNOPTIK**

Mimic display	12 Pin

for special applications only
- open collector per line for ext. LED
- active upon emergency alarm

Pin assignment

Pin	1	2	3	4	5	6	7	8	9	10	11	12
Line	1			2								
			GND			GND			GND			GND

27 E3M220 MS5 Adapter

27.1 Overview

⚠️

NOTE	The module E3M220 is **not** CE-conform!

- Connection of **existing MS5 detectors** (220 VDC) to the CS1140 control unit
- Converts the signal on the MS5 detection line into a conventional detector signal (collective 20 V)
- Designed for **2 detection lines with bi-directional signal conversion**
- **Only use in combination with the E3M080 line module**
- **Requires a separate supply 24 V**
- Card format (100 mm x 200 mm)
- Number of MS5 detectors per detection line: FES5, DES5, MES5: unlimited
  FES7.5: max. 25
  RES5, SES5: max. 5

27.2 Key data

Operating status of the MS5 detection line		Conversion	Operating status of the collective line	
Alarm	AI flashes	–>	Alarm	on corresponding line
Short circuit	< 40 V		Short circuit	on corresponding line
Open line	> 232 V	–>	Open line	on corresponding line
Converter failure	220 V missing	–>	Open line	on both detection lines
switched on	218 ... 232 V	<–	switched on	20 V on corresponding line
Reset	0 V	<–	Reset	0 V on corresponding line
OFF	0 V	<–	OFF	0 V on corresponding line
switched on	with autom. reset	<–	Detector test mode	with autom. reset
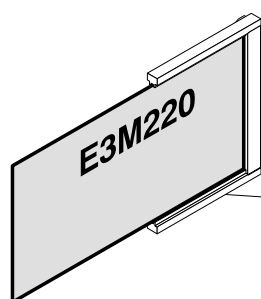
Terminal block X10 (20 terminals)
– mounted on module chassis
– for the connection of the prefabricated cable to connection level, or
– for direct connection of the periphery

Card chassis
– mounted on module chassis

27.3 Interconnection principle
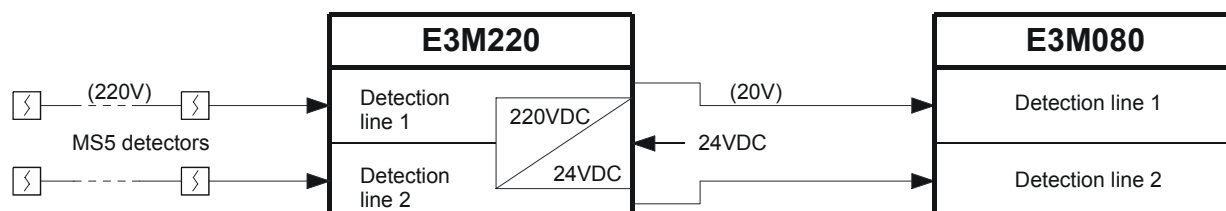
27.4   Important components
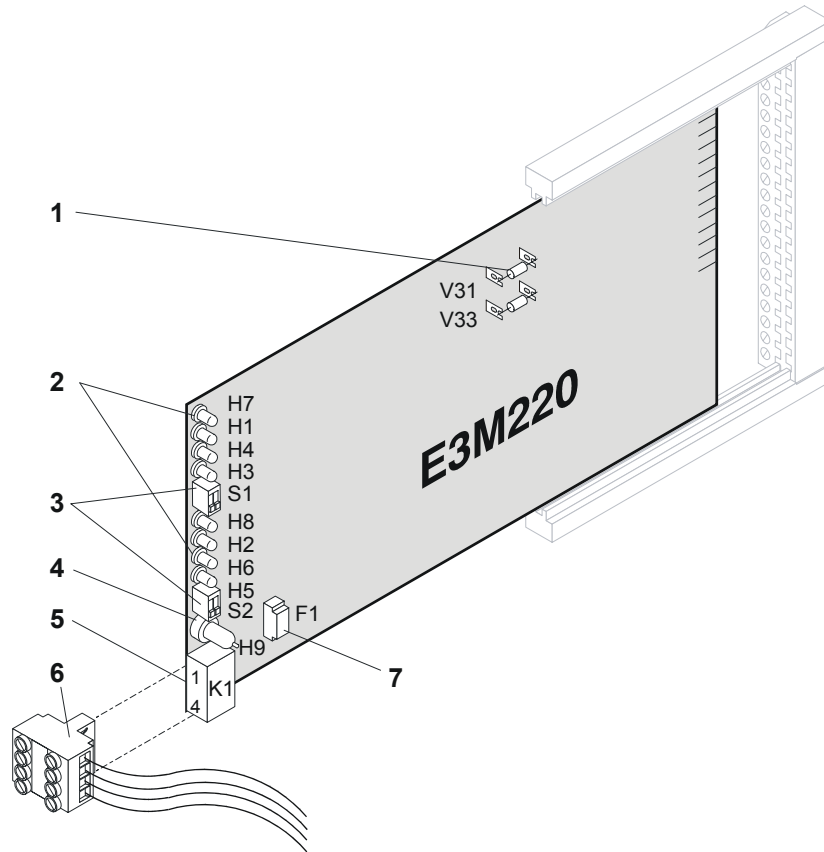
Legend:

1   Transzorb (20 V, inserted at factory) "V31" and "V33": Line termination element

2   LED "H7, H1, H4, H3": Display detection line 1
    LED "H8, H2, H6, H5": Display detection line 2

LED indicator block for detection line 1				**LED indicator block for detection line 2**			
E	H7	green	Normal operation	E	H8	green	Normal operation
K	H1	yellow	Short circuit	K	H2	yellow	Short circuit
A	H4	red	Alarm	A	H6	red	Alarm
O	H3	yellow	Open line	O	H5	yellow	Open line

3   Switch "S1": Evaluation open line/ short circuit on detection line 1
    Switch "S2": Evaluation open line/short circuit on detection line 2

Switch		**Detection line 1**	**Switch**		**Detection line 2**
S1-1	**below**	Open line –> Fault	S2-1	**below**	Open line –> Fault
S1-1	above	Open line –> Alarm	S2-1	above	Open line –> Alarm
S1-2	**below**	Short circuit –> Fault	S2-2	**below**	Short circuit –> Fault
S1-2	above	Short circuit –> Alarm	S2-2	above	Short circuit –> Alarm

4   Glow lamp "H9" (65 V, 1.5 mA): 220 V ON
5   Plug-in terminals "K1": Module supply 24 V
6   4-pin female connector strip with connection cable
7   Fuse: 'F1' 1 A/F   Module supply (SMD fuse can only be changed at factory)

27.5   Current consumption

24 V	Quiescent condition	both lines with 150 kΩ end-of-line resistor	227 mA
		both lines with 82 kΩ end-of-line resistor	247 mA
	Alarm status		+ 120 mA per line Alarm status
	max.	both lines short circuit	695 mA

27.6   Connections

E3M220

Terminal block **X10**

Line 1	Line termination Pos V31 Transzorb 20V	+	1
		-	2
Line 2	Line termination Pos V33 Transzorb 20V	+	3
		-	4
			5
Line 1 / MS5		+	6
		-	7
Line 2 / MS5		+	8
		-	9

Important 220V

to E3M080

End-of-line resistor 82 ... 150kΩ

End-of-line resistor 82 ... 150kΩ

Please note:
- Exchange existing (82kΩ) end -of-line resistors for 150kΩ end-of-line resistors, in order to reduce the quiescent current
- Manual call points require a 10kΩ/2Ω resistor, in order to activate alarm
- Line resistor up to 250Ω

Plug-in terminals **K1**

Input Supply	0V	-	1	-
		-	2	24V
			3	
	F1	+	4	+

28 E3I040 I-Bus/LON module

28.1 Overview

- Converter I-Bus to LON-Bus
- Up to 32 LON-Bus devices connectable
- With 24 V supply output
- Selectable ground fault monitoring, detected via master module E3X10. (for application details see chapter 6)
- Board format 100 mm x 200 mm
- I-Bus address is set at programming switch "S3"
- Only one module per station possible

28.2 Application

Required for all LON applications within CS1140, such as:
- LON-I/O p.c.b. K3I110
- LON/Mimic Display converter K3I050 with Mimic display drivers K3R071/072 (or panels B3R051)
- Floor panels B3Q580
- Fire Brigade Terminals B3Q590/595

Terminal block X2 (20 terminals)
- mounted on module chassis
- for the connection of the prefabricated cable to connection level, or
- for direct connection of the periphery

Card chassis
- mounted on module chassis

28.3 Key data

Number of devices per line		...32
LON-Bus:	number of wires	2
	cable type	twisted (10 twists per m)
	max. cable length	– standard cable twisted 0.8mm Ø unshielded as 'stub line' ...1000m
		– same but as 'free topology' 1) 500m
		– using MICC-cable 700m
		– using MICC-cable as 'free topology' 1) 300m
		– using special cable Belden 85102 or 8471 ...2700m
LON-Bus: connection		twisted cable necessary
Typical current consumption (24 V)		15 mA without load on output (pin 9/10)
Rating supply output (pin 9/10)		max. 860 mA / 20....29.6 V

1) Free topology see chapter 28.4.2

28.4 Wiring principle

28.4.1 LON-Bus as stub line
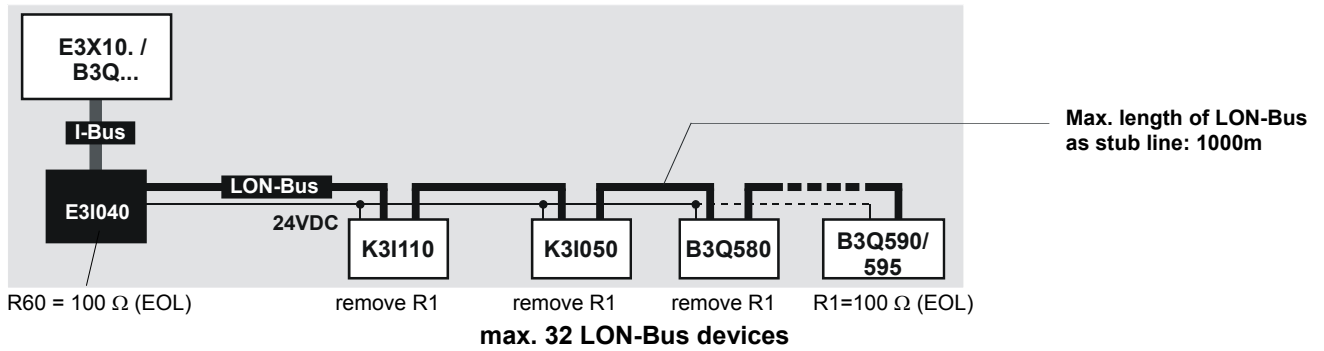
The EOL resistors R1 (100 Ω) have to be removed on all LON-Bus devices except the last one on the line.

28.4.2 LON-Bus as free topology
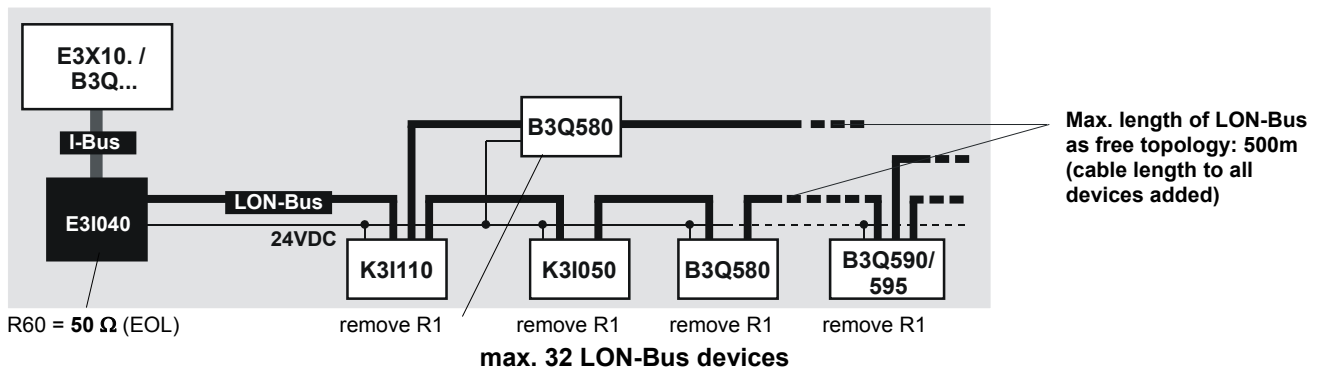
The EOL resistors R1 (100 Ω) have to be removed on all LON-Bus devices. The EOL resistor R60 on E3I040 has to be changed to 50 Ω (e.g. use 2 resistors of 100 Ω in parallel circuit).
T-taps are only possible from the terminal blocks of the LON-Bus devices.

28.5 Important components
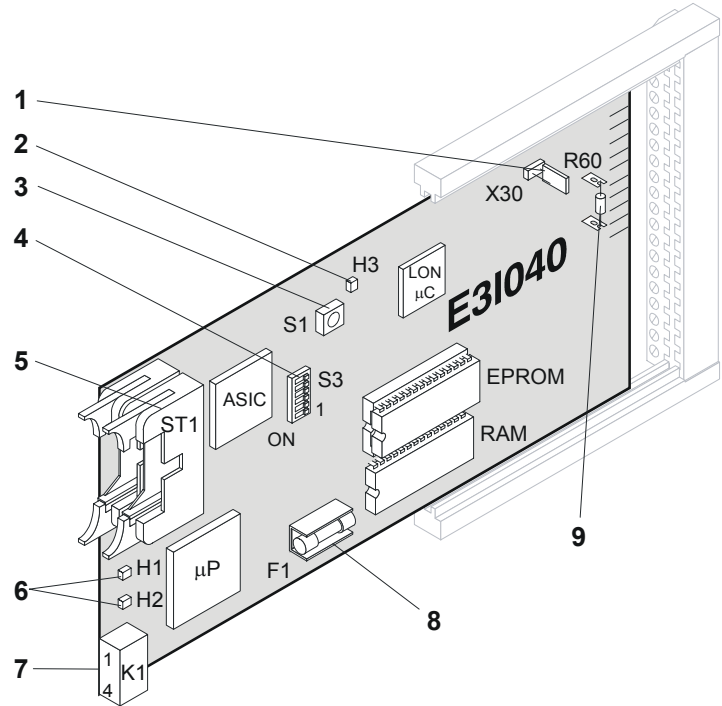
Legend:

1   Jumper "X30": Ground fault monitoring 'LON-Bus'
    'out'   =   inactive (factory setting)
    'in'   =   active
    (Details application –> see chapter 6)

2   LED "H3":   inactive   –> normal operation
                lit or flashing –> EPROM is missing or faulty

3   Service key "S1": no function

4   Programming switch "S3": "I-Bus address" setting
Each element (module) connected to I-Bus must have an individual address (number).
This is set on programming switch "S3".
Maximum 16 I-Bus devices.

No.	Function / I-Bus address	S3-1	S3-2	S3-3	S3-4	S3-5	S3-6
				Programming switch S3			
0	Module out of commission (unused)	off	off	off	off	off	off
1	I-Bus user number 1	**on**	off	off	off	off	off
2	2	off	**on**	off	off	off	off
3	3	**on**	**on**	off	off	off	off
4	4	off	off	**on**	off	off	off
5	5	**on**	off	**on**	off	off	off
6	6	off	**on**	**on**	off	off	off
7	7	**on**	**on**	**on**	off	off	off
8	8	off	off	off	**on**	off	off
9	9	**on**	off	off	**on**	off	off
10	10	off	**on**	off	**on**	off	off
11	11	**on**	**on**	off	**on**	off	off
12	12	off	off	**on**	**on**	off	off
13	13	**on**	off	**on**	**on**	off	off
14	14	off	**on**	**on**	**on**	off	off
15	15	**on**	**on**	**on**	**on**	off	off
16	16	off	off	off	off	**on**	off

"S3-1...6" are set to "off" at the factory

5   Flat cable header "ST1" (26-pin): I-Bus

6   LED "H1": lights up during data transfer between E3I040 and LON-Bus
     LED "H2": lights up during data transfer between I-Bus and E3I040
7   Plug-in terminals "K1": Supply to modules "I-Bus"
8   Fuse: 'F1'   2 A/T   for output 24 VDC (Fuse with high breaking capacity
     sand-filled)
9   Resistor "R60" 100 Ω: EOL (LON-Bus) to be replaced by resistor of 50 Ω, if
     LON-Bus is connected as free topology
     –> see chapter 28.4.2

28.6   Connections

Building Technologies   001260_k_en_--.doc
Fire Safety & Security Products   02.2005
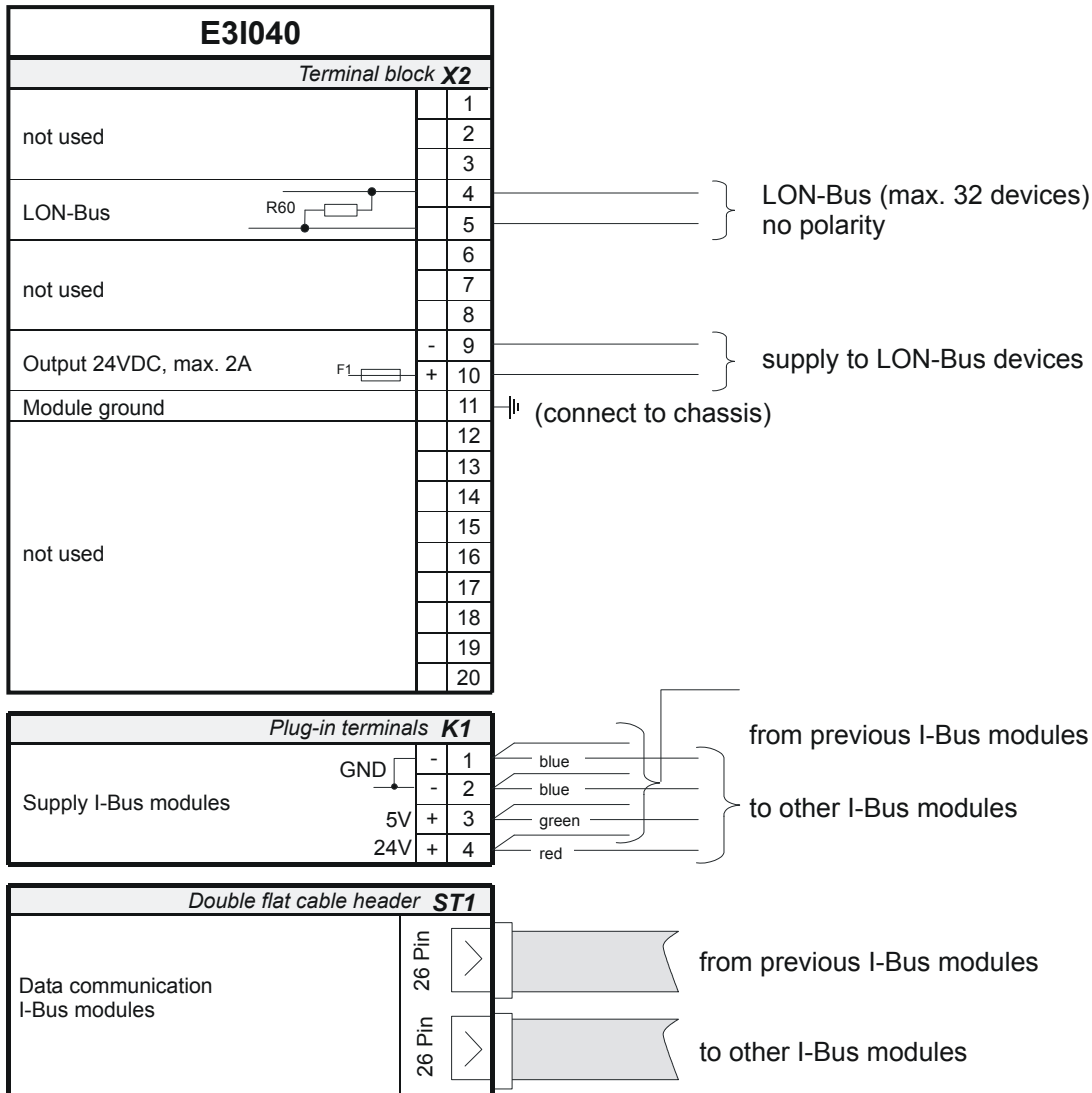
29   E3I020 RS232 module

29.1   Overview

● Optional device to E3X1.. master module and control console AlgoPilot B3Q...
● Contains 2 serial RS232 interfaces
● Function of interfaces is programmable
● For the conversion of the HCMOS level to RS232
● An interface with extended functions e.g. for telephone modems
● Both interfaces galvanically isolated and with EMI protection
● Communication and supply via flat cable
● Card format 100 mm x 160 mm

29.2   Application

Two application possibilities are provided:
a) Installation in the control unit
b) Installation at the rear of the control console AlgoPilot B3Q...

Application a)
– 2 RS232 interfaces from master module E3X10.
– Mounted on the module chassis via card chassis immediately next to the E3X10. (mounting space 32)

Application b)
– 2 RS232 interfaces from control console AlgoPilot B3Q...
– screwed to the rear of the control console B3Q... and protected with a special shielding (–> see document 1393 Installation instructions)

As module in the control unit
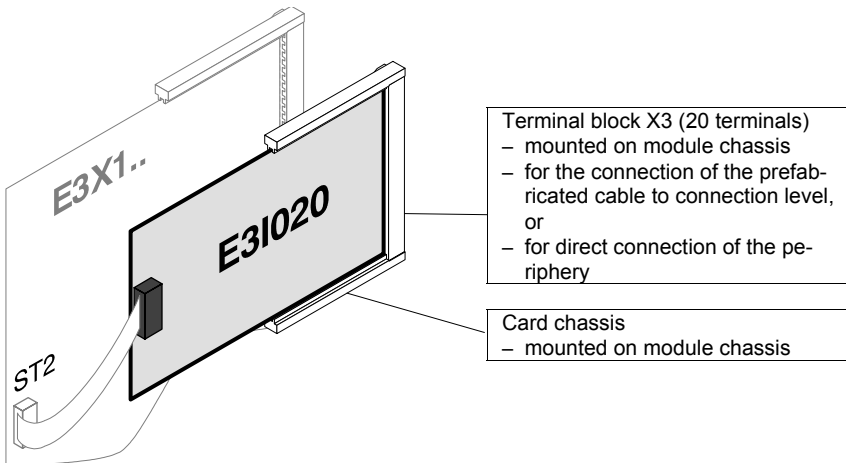
As accessory to AlgoPilot B3Q...
Mounting accessory Z1B020   E3I020

Terminal block X3 (20 terminals)
– mounted on module chassis
– for the connection of the prefab-ricated cable to connection level, or
– for direct connection of the pe-riphery

Card chassis
– mounted on module chassis
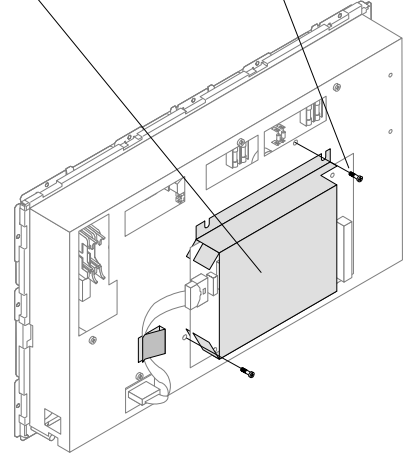
29.3   Key data

Operating voltage	5 V from E3X10. via flat cable or B3Q... via flat cable
Quiescent current increase E3X10. / B3Q... when operating one E3I020	25 mA (increase on 24 V-side)

29.4 Wiring principle
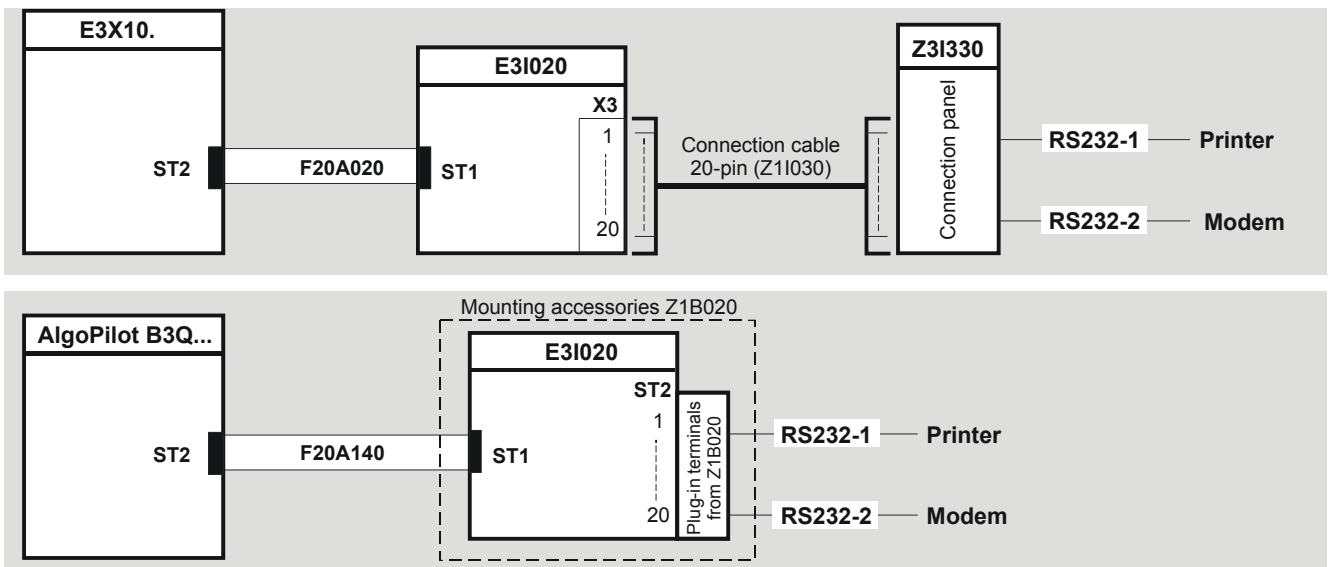
29.5 Important components
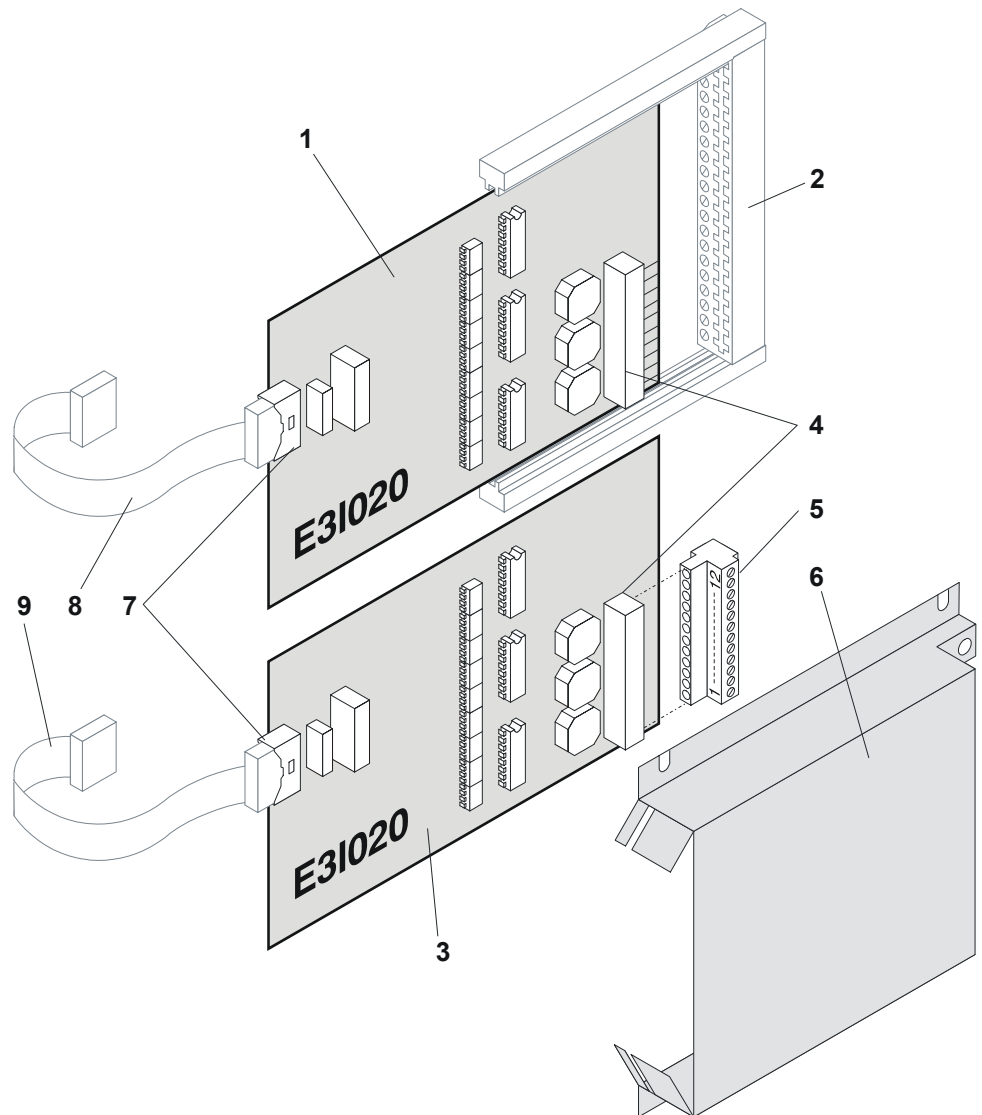
Legend:

1   Installation in control unit
2   Terminal block (supplied with Z1I030)
3   Application at level B3Q...
4   Connector "ST2": for the insertion of a plug-in terminal block
5   Plug-in terminals for "ST2" (supplied with Z1B020)
6   Metal shield (supplied with Z1B020)
7   Connector "ST1": RS232 (2 x HCMOS level)
8   Flat cable F20A020 for application in control unit with E3X10. connector "ST2"
9   F20A140 for application at level AlgoPilot B3Q... connector "ST2"

29.6   Connections

Depending on type of modem the signals 'RTS/CTS' must not be wired
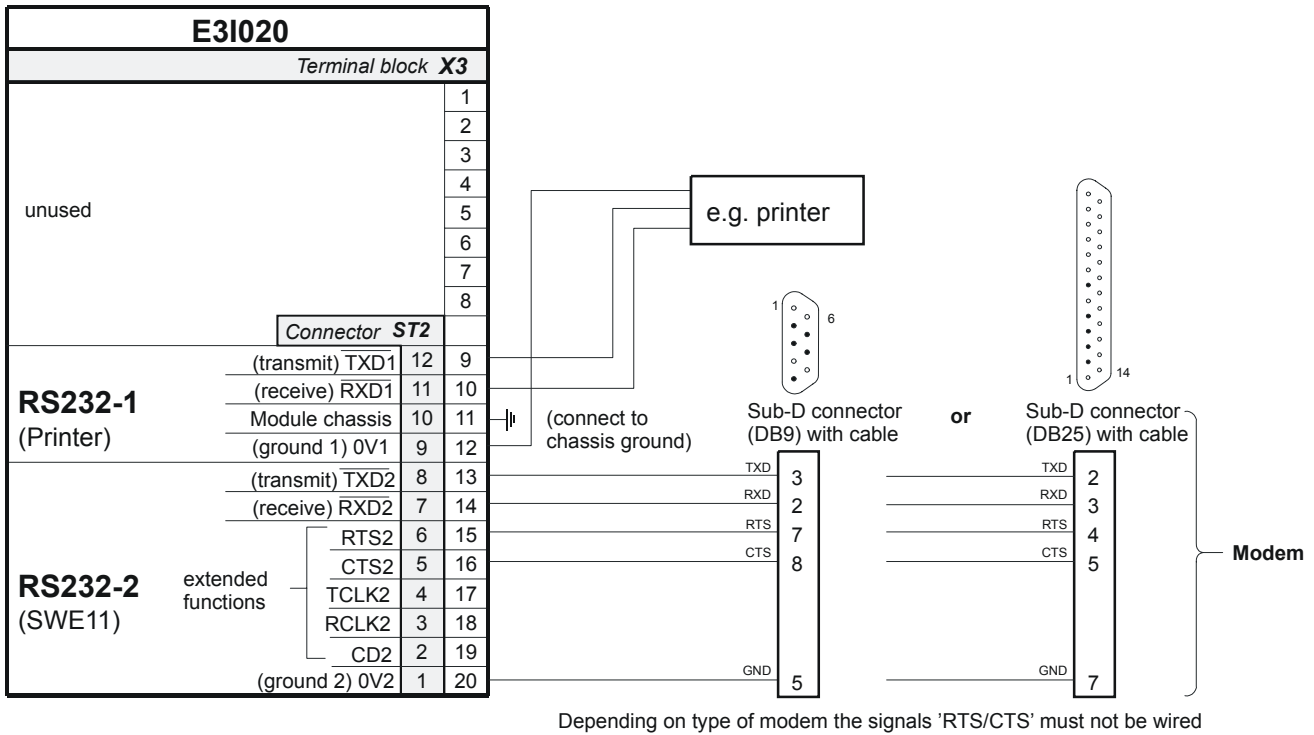
30 E3H020 C-Bus Gateway

30.1 Overview

- Connection C-Bus network <–> DMS / LMS via V28 interface (RS232)
- Conversion of **C-Bus <–> CERLOOP/CERBAN/ISO1745**
- All interfaces galvanically isolated
- Ground fault monitoring, detected via master module E3X10. (for application details see chapter 6)
- Lithium battery for RAM buffering
- Card format 233 mm x 200 mm

30.2 Application C-Bus <–> CERLOOP / CERBAN / ISO1745

	≤EP5	≥EP7F
Max. number of Gateways per C-Bus	1	15
Station type CK1142	✓	✓
Station type CK1143	–	✓
Download of CK configuration data necessary	–	✓
Processing capacity	–> see document 1076	–>see document 008725

- for connection to CERLOOP or NK8000 networks, additional hardware is required
- automatic data transfer of all **CI**s or **CC**s to **CK** in the start-up phase
- for **CK1142**　–>　**CKQ00xxx**　(EPROM set 2x 512Kx8Bit)
  Z3S070　(RAM set 2x 512Kx8Bit)
  Z3S080　(RAM set 2x 256Kx8Bit)
- for **CK1143**　–>　**CKW00xxx**　(EPROM set 2x 512Kx8Bit)
  Z3S070　(RAM set 2x 512Kx8Bit)
- supports ISO1745 protocol
- install preferably in the fire detection system control unit housing
- can also be operated autonomously with its own power supply
  (E3C011+B2F020+battery)
- integrated emergency operation circuit

X2 — Terminal block X1 and X2 (20 terminals each)
- mounted on module chassis
- for the connection of the prefabricated cable to connection level, or
- for direct connection of the periphery

X1 — Card chassis
- mounted on module chassis
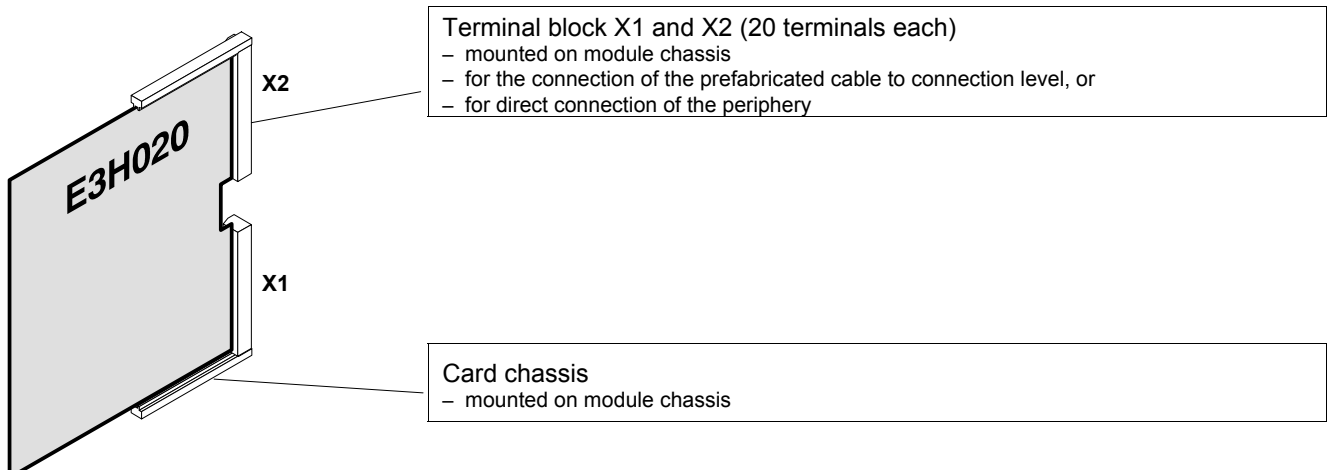
30.3 Key data

Operating voltage		9...30 VDC
Current consumption	quiescent	approx. 100 mA
	max.	approx. 220 mA
Transmission rate	max.	CERBAN 300 Bd / 600 Bd
		CERLOOP 1200 Bd / 2400 Bd
		Ethernet 10 Mbit/ sec
		Service port 9600 Bd, 8 data, 1 stop, no parity
RAM		CK1142: 8x256Kx8Bit or 4x512Kx8Bit
		CK1143: 8x512Kx8Bit

30.4 Wiring principle

Building Technologies
Fire Safety & Security Products
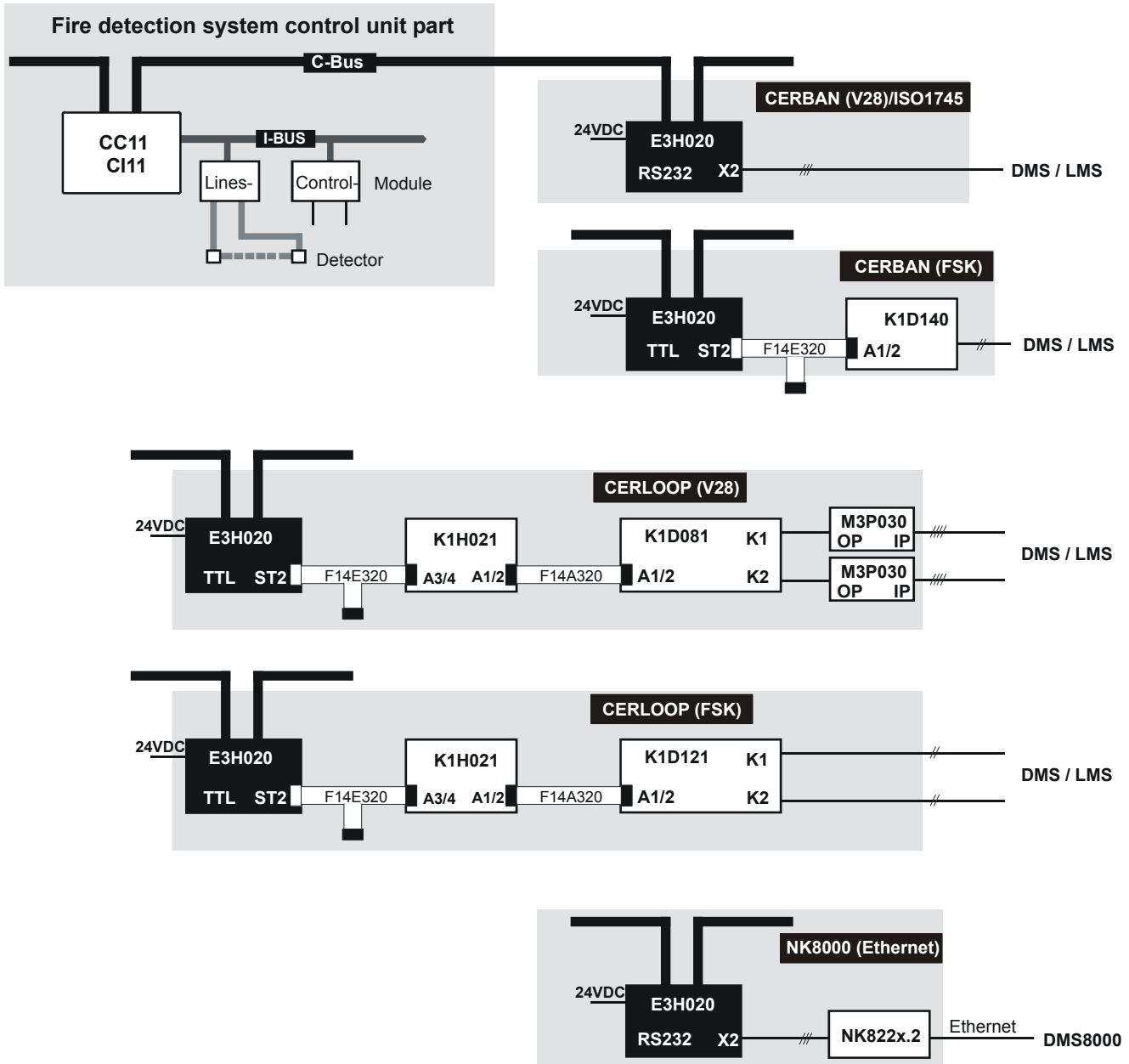
30.5 Supply wiring principle
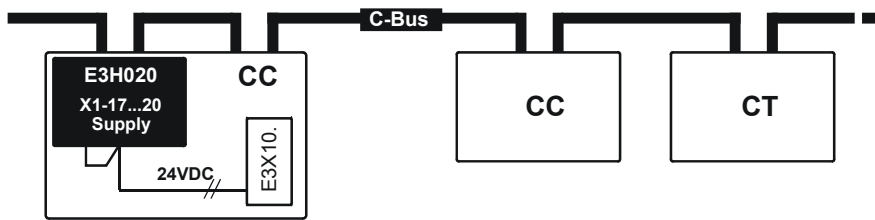
E3H020 is placed <u>inside</u> the control unit housing:
– 24 V Supply single wire
– Jumpers 17-18, 19-20
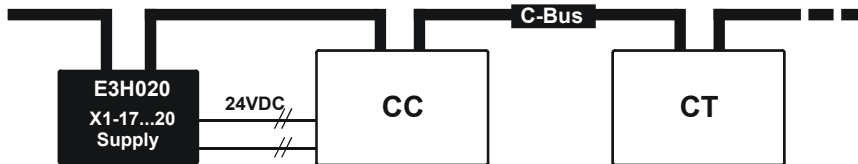
E3H020 is placed <u>outside</u> the control unit housing:
– 24V supply must be wired as double supply
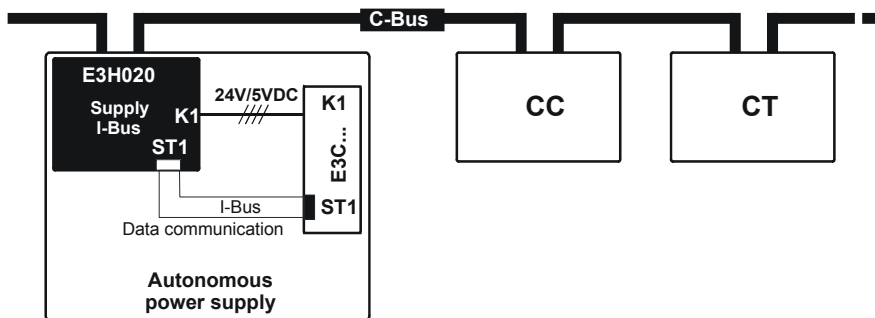
E3H020 is placed <u>outside</u> the control unit housing:

Autonomous power supply
With autonomous power supply the E3C011 has the following configuration:
– Emergency power supply provided
– Symmetry monitoring active
– Presence monitoring active
– Battery charging active
– Battery load test active
– Battery integrated
– I-Bus address = 1

123

30.6   Important components
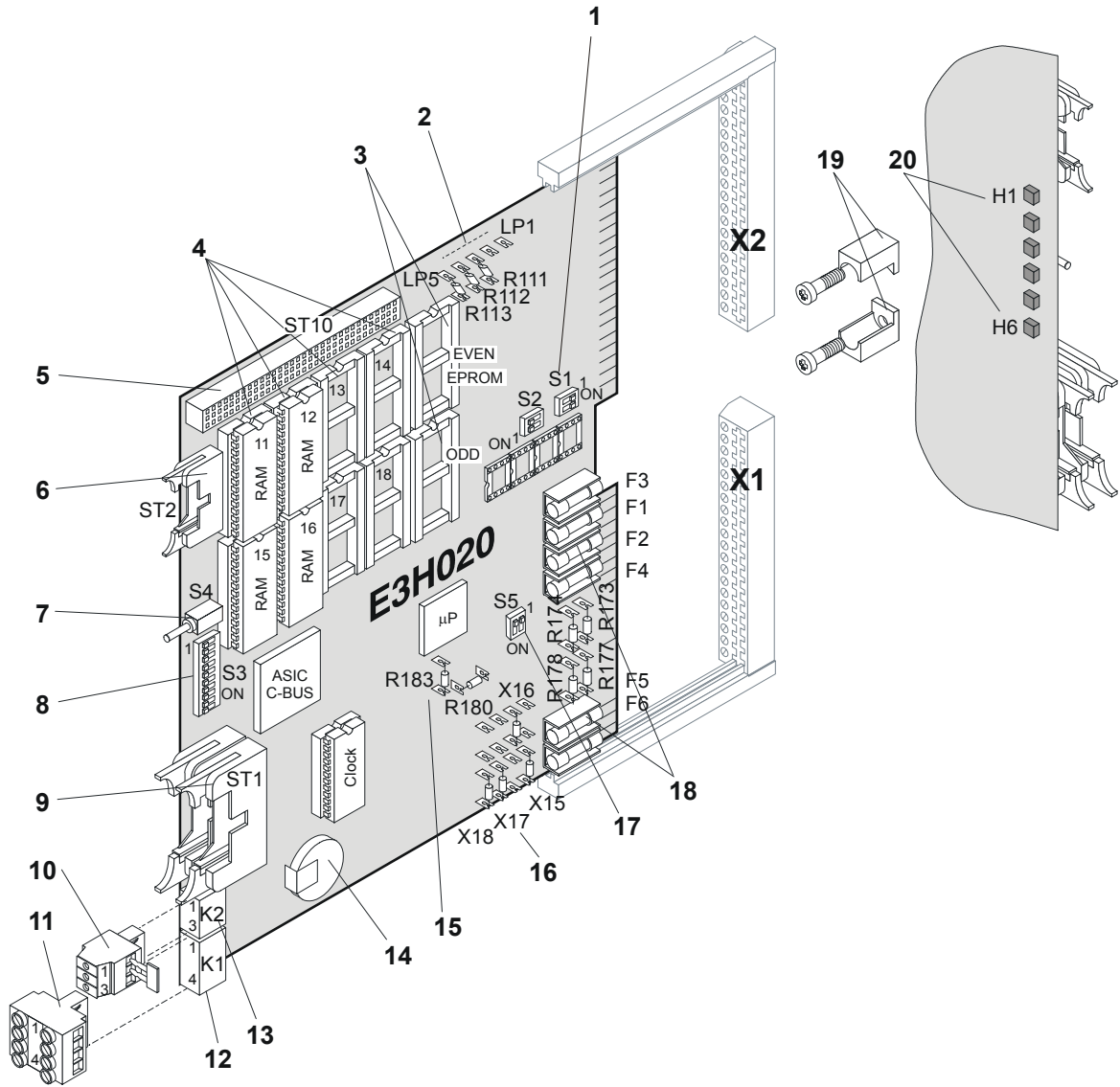
Legend:

1   Programming switches "S1" + "S2": All switches are set to 'ON' at the factory. Switches must **always** be 'ON'

Interface	Line		Programming switch S2			
			S1-1	S1-2	S2-1	S2-2
RS232-1	"transmit"	direct	**on**			
		unused	off			
	"receive"	direct		**on**		
		unused		off		
RS232-2	"transmit"	direct			**on**	
		unused			off	
	"receive"	direct				**on**
		unused				off

2   0-Ω resistors R111, R112 und R113
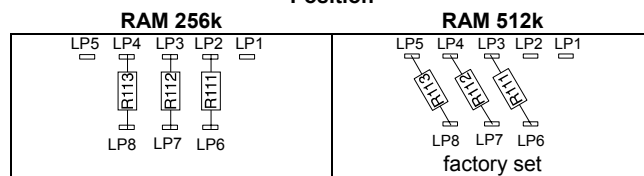
3   EPROM plug-in spaces EVEN / ODD: Software
4   RAM plug-in spaces (static RAM)

CK1142:   8 pcs. 256Kx8Bit / Pos. D11… D18 or
4 pcs. 512Kx8Bit / Pos. D11, D12, D15, D16 (ex works)

CK1143:   8 pcs. 512Kx8Bit / Pos. D11… D18

5   Connector (96-pin) "ST10": for interface extension
6   Connector "ST2" (14-pin): "Asynchronous" interface (TTL) to K1D012, K1D081, K1D121 or K1H021 and AlgoWorks service port
7   Key "S4": Reset

8   Programming switch "S3": "Station address" setting

To set the station address and whether **with or without** autonomous power supply

Function	Programming switch S3									
	1	2	3	4	5	6	7	8	9	10
≤ EP5: Station address 16	off	off	off	off	**on**					
≥ EP7F: unused (via SW)	off	off	off	off	off					
E3C011 used								**on**		
E3C011 unused								off		

9   Double flat cable header "ST1" (26-pin):I-Bus from E3C011 (if used)
10   3-pin female connector with 2-pin jumper
11   4-pin female connector
12   Plug-in terminals "K1": Supply line from E3C011 (if used)
13   Plug-in terminals "K2"
14   Lithium battery 3 V / 70 mAh: RAM buffering and clock supply
      – Data safeguarded: minimum 2 weeks, typical >100 days
      – maintenance free

15   Resistors to modify the C-Bus impedance:

Position	Impedance value **110Ω**, e.g. for G51 0.6mm Ø	Impedance value **50Ω**, e.g. for MICC
R180 / 183	402 Ω	182 Ω
R173 / 174 / 177 / 178	110 Ω	49.9 Ω

Impedance adaptation only required if C-Bus line is > 100m. For other impedance values than 110 Ω or 50 Ω –> see document 1594.

16   Programming of "X1":

Use of E3H020	0 Ω-resistors
"CK" + supply from control unit (Input) (X1-17.. 20)	X15 + X16 + X17 + X18
"CK" + autonomous supply (Output) (X1-17.. 20)	Y15 + Y16 + Y17 + Y18

17   Programming switch "S5": Interfaces RS232-1 and RS232-2, choice of path via header "ST2" (external modem) or via terminal block "X2" (internal modem).

Interface	Application	Programming switch S5	
		1	2
RS232-1	internal modem via terminal block "X2"	off	–
	external modem via header "ST2"	**on**	–
RS232-2 (Service port)	internal modem via terminal block "X2"	–	off
	external modem via header "ST2"	–	**on**

Set to "off" at factory

125

| 18 | Fuses: | 'F1...F4' | 2 A/T | Emergency operation lines |
| | | 'F5, F6' | 0.8 A/T | Supply input |

Fuses with high breaking capacity (sand-filled)

19   Mounting bracket for terminal blocks "X1" + "X2"

20   LEDs "H1... H6" at rear side:

H1	yellow	gateway "down" / emergency operation
H2	green	normal operation (fast flashing: no data loaded yet; slow flashing: data loaded)
H3	yellow	≤ **EP5:** unused ≥ **EP7F:** network fault
H4	yellow	≤ **EP5:** unused ≥ **EP7F:** network fatal fault
H5 + H6	yellow	unused

30.7 Connections

E3H020		
Terminal block **X2**		
unused		1
		2
	CD	3
	TCLK	4
extended functions	RCLK	5
	CTS	6
V28-1 (RS232)	RTS	7
	GND1	8
	(receive) RXD	9
	(transmit) TXD	10
Module chassis ground		11
	(receive) RXD	12
V28-2 (RS232)	(transmit) TXD	13
	GND2	14
		15
		16
		17
unused		18
		19
		20

Details see document 007798

COM1 (DB9/F)		NK822x.2	CN1 (RJ45)	Ethernet	**DMS8000**
5	GND				
3	TXD		CN3		Supply 24VDC (monitored)
2	RXD		+ 1		
			E 2 — (connect to chassis ground)		
			- 3		
			LON A 4	unused	
			LON B 5		

(connect to chassis ground)

CERBAN (LMS/DMS or MK7022)
or ISO1745 protocol

(connect to chassis ground)

AlgoWorks Service-Port, only active if 'S5' is set accordingly

Terminal block **X1**		
unused	F3	1
Emergency operation circuit EMI-protected	Silence horn F1	2
	Fire alarm F2	3
	C F4 −	4
C-Bus	B1	5
	A1	6
C-Bus (feedback)	B2	7
	A2	8
unused		9
		10
Module chassis ground		11
		12
		13
unused		14
		15
		16
	0V	17
Supply		18
	9...30V F5 +	19
	F6 +	20

AlgoPilot B3Q...

	E3X10.
K6-2	X16-2
K6-1	X16-3
K7-3	X16-4
K5-3 (B2)	
K5-4 (A2)	
K5-1 (B1)	
K5-2 (A1)	

- Cabling C-Bus
  for max. length per loop and cable type/
  see table impedance adaption

(connect to chassis ground)

Supply 1

Supply 2

1) 2)

Plug-in terminals **K2**		
24V	+	1
24V OUT	+	2
GND	−	3

Jumper must always be inserted (inserted at factory)

1) Supply 2 for dual supply if E3H020 is connected separately, but is supplied by the control unit with 24 V. Details –> see supply wiring principle page 123
2) Configuration as In-/or output see also jumpers X15, X16, X17, X18, Y15, Y16, Y17, Y18 table on page 125

E3H020 C-Bus Gateway

Plug-in terminals **K1**			
Supply I-Bus modules	GND 5V 24V	- 1 - 2 + 3 + 4	blue blue green red

to E3C... with autonomous power supply

Details -> see supply wiring principle

Double flat cable header **ST1**	
Data communication I-Bus modules	26 Pin > 26 Pin >

to E3C...
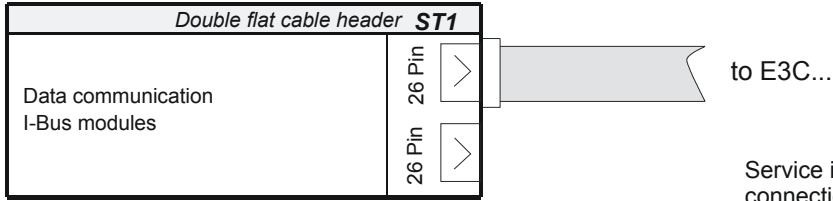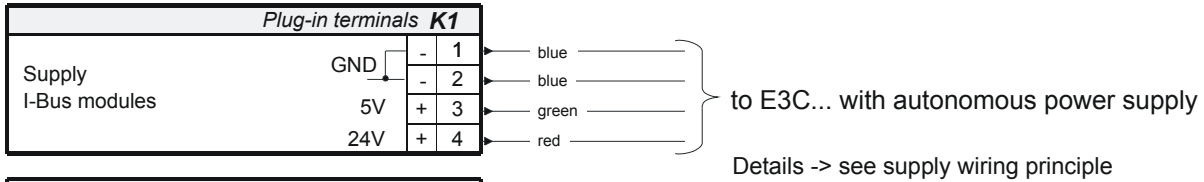
Service interface for application **CERBAN**
connection via **terinal block "X2"**

* F14E320 — Modem box A1 B3D021 K1 — PC

not used

red marking
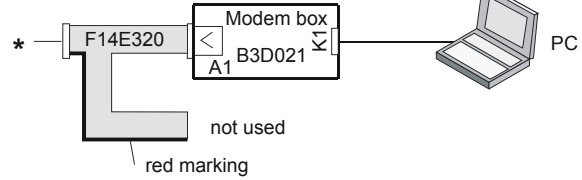
Service interface for application
CERBAN > 1000m (FSK-modem)

* F14E320 — Modem box A1 B3D021 K1 — PC

K1D140 A1/2 K1 — CERBAN

red marking

only active if 'S5' is set accordingly

Flat cable header **ST2**	
Interface asynchronous TTL	14 Pin > *
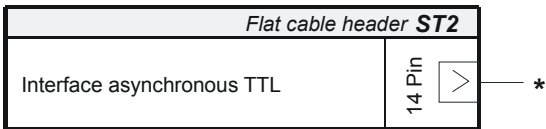
Service interface for application **MK7011 CERLOOP**

PC

* F14E320 — Modem box A1 B3D021 K1

K1H021 A3/4 A1/2 >

red marking

F14A320 < A1/2 K1D081 K1 — M3P030 OP IP
K2 — M3P030 OP IP — CERLOOP

or

F14A320 < A1/2 K1D121 K1 K2 — CERLOOP
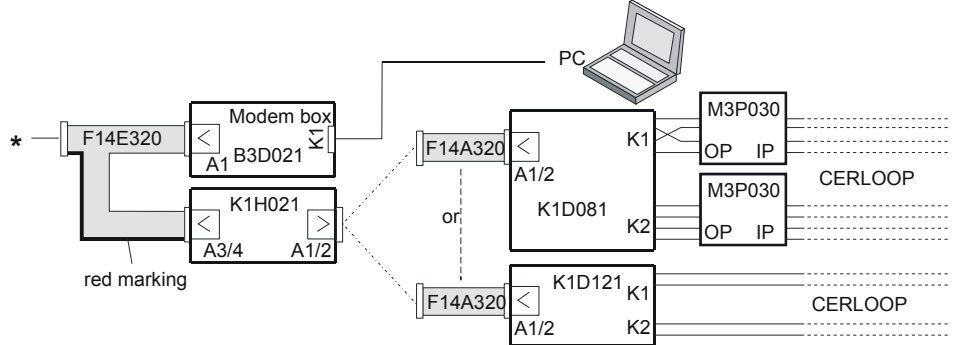
Note:
K1D081: 4 relays 463 498 necessary
K1D121: 2 relays 463 498 necessary

Service interface for application **MK7022 CERBAN**

* F14E320 — Modem box A1 B3D021 K1 — PC

K1H021 A3/4 A1/2 > F14A320 < A1/2 K1D012 K1 — M3P030 OP IP — CERBAN

red marking
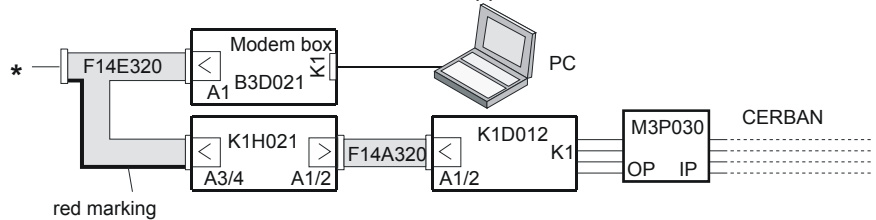
1) Details modem and filter see document 1062

31 E3L020 Control module "I/O"

31.1 Overview

- Control module for 16 control inputs/outputs
- Driver output or control input as required
- I-Bus module
- Inputs/outputs with voltage surge and EMI protection
- Individual function allocation of inputs/outputs
- Ground fault monitoring, detected via master module E3X10. (for application details see chapter 6)
- Card format 100 mm x 200 mm
- I-Bus address is set at programming switch "S3"

31.2 Key data

Control outputs	16, load capacity up to 40 mA (24 VDC)
Control inputs	16 via volt-free contacts
Quiescent current at 24 V	22 mA

Terminal block X10 (20 terminals)
– mounted on module chassis
– for the connection of the prefabricated cable to connection level, or
– for direct connection of the periphery

Card chassis
– mounted on module chassis
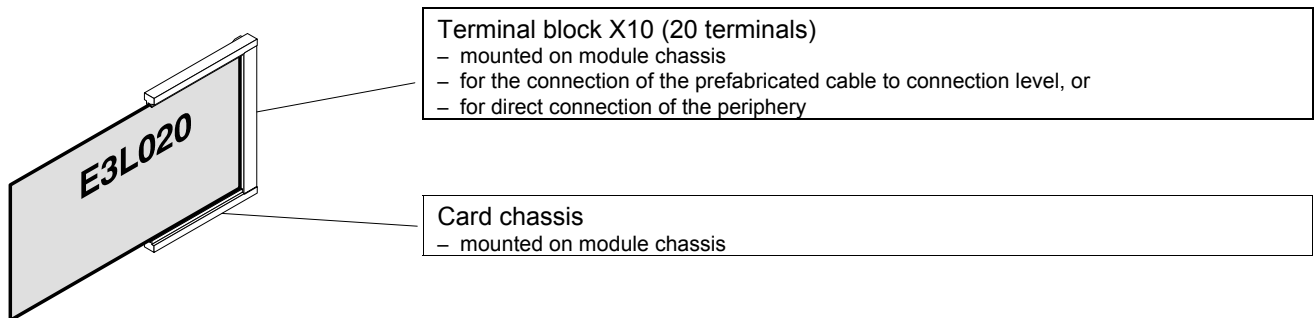
31.3 Important components
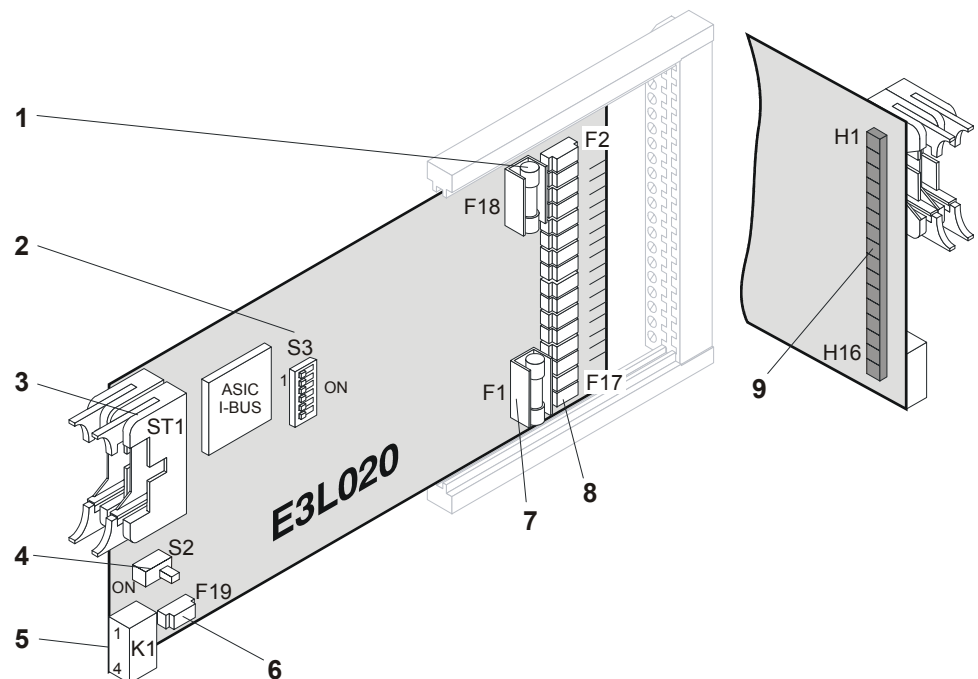
Legend:

1 Fuses: "F18" 1.25 A/F (monitored) Fuse with high breaking capacity (sand-filled)

2 Programming switch "S3": "I-Bus address" setting
Each element (module) connected to I-Bus must have an individual address (number).
This is set on programming switch "S3".
Maximum 16 I-Bus devices.

Function / I-Bus address		Programming switch S3					
Nr.		S3-1	S3-2	S3-3	S3-4	S3-5	S3-6
0	Module out of commission (unused)	off	off	off	off	off	off
1	I-Bus user number 1	**on**	off	off	off	off	off
2	2	off	**on**	off	off	off	off
3	3	**on**	**on**	off	off	off	off
4	4	off	off	**on**	off	off	off
5	5	**on**	off	**on**	off	off	off
6	6	off	**on**	**on**	off	off	off
7	7	**on**	**on**	**on**	off	off	off
8	8	off	off	off	**on**	off	off
9	9	**on**	off	off	**on**	off	off
10	10	off	**on**	off	**on**	off	off
11	11	**on**	**on**	off	**on**	off	off
12	12	off	off	**on**	**on**	off	off
13	13	**on**	off	**on**	**on**	off	off
14	14	off	**on**	**on**	**on**	off	off
15	15	**on**	**on**	**on**	**on**	off	off
16	16	off	off	off	off	**on**	off

"S3-1...6" are set to "off" at the factory

3 Flat cable header "ST1" (26-pin): I-Bus

4 Maintenance switch "S2": Test LEDs H1...H16 Switch on / off. To switch on maintenance LEDs for test purposes. In addition to driver output, enables the corresponding LED (H1...H16) to be activated. **S2-on** = LED (H1… H16) lights if output is activated.

5 Plug-in terminals "K1": Supply to the "I-Bus" modules

6 Fuse: "F19" 1.6 A/F Module supply (SMD fuse can only be changed at factory)

7 Fuse: "F1" 0.5 A/T (monitored) Fuse with high breaking capacity (sand-filled)

8 Fuses: "F2...F17" 1 A/F inputs/outputs 1....16 (not monitored) SMD fuses (can only be changed at factory)

9 Test LEDs "H1...H16" at rear. Allocation of LED see chapter 31.4

31.4 Connections

E3L020					
Terminal block X10					
			F18	+	1
Input/output	1	LED H1	F2	-	2
	2	H2	F3	-	3
	3	H3	F4	-	4
Outputs max 40mA 24V, EMI-protected	4	H4	F5	-	5
	5	H5	F6	-	6
	6	H6	F7	-	7
	7	H7	F8	-	8
	8	H8	F9	-	9
	9	H9	F10	-	10
Module chassis ground					11
Input/output	10	H10	F11	-	12
	11	H11	F12	-	13
	12	H12	F13	-	14
	13	H13	F14	-	15
	14	H14	F15	-	16
	15	H15	F16	-	17
	16	H16	F17	-	18
					19
		0V	F1		20

Function "Output"

Relay
(also permissible outside control unit housing)

(connect to chassis ground)

Function "Input"

Contact
(also permissible outside control unit housing)

Plug-in terminals K1				
Supply for I-Bus modules	GND	-	1	blue
		-	2	blue
	5V	+	3	green
	F19 24V	+	4	red

from previous I-Bus modules

to other I-Bus modules

Double flat cable header ST1	
Data communication I-Bus modules	26 Pin
	26 Pin

from previous I-Bus modules

to other I-Bus modules

32   E3L030 Control module VdS (VdS module)

32.1   Overview

I-Bus module for the connection of VdS peripheral equipment:

➔ **FBF**   Feuerwehr-Bedienfeld: Fire department control panel
➔ **ÜE**   Übertragungseinrichtung: Transmission device
➔ **FSD**   Feuerwehrschlüsseldepot: Fire department key cabinet
➔ **SST**   Standardschnittstelle (VdS) für fremde Lösch-Steuereinrichtung:
            Standard interface (VdS) for 3rd party extinguishing activating device
➔ **TK**   Türkontakt Zentrale: Door switch control unit (door open = ÜE disabled)

● Connection line to ÜE, FSD and SST monitored
● All inputs/outputs to the peripheral equipment with EMI and over voltage protection
● Emergency operation capability
● Card format 233 mm x 200 mm
● I-Bus address is set at programming switch "S3"

32.2   Application

● The VdS module is required for connection of the above mentioned peripheral equipment.
● It is possible to use several VdS modules or one single VdS module for all CPUs within a C-Bus system.
  Restriction: If one single VdS module is used for all CPUs, it must not be placed in a CI1145–station. Activation in emergency operation mode would not be possible.
  Several VdS modules per CPU would be possible if separate transmission paths are required for different detector types (automatic/manual).
● The VdS module is **not** FM compliant. It may be used in a ground fault monitored installation, but it is not monitored itself. (For details –> see chapter 6)
● All inputs/outputs are fix allocated (exception LED4)

32.3   Key data

Line resistance for FBF	max. 5 Ω or 20 Ω per wire *
Line resistance for FSD	max. 5 Ω or 50 Ω per wire *
Line resistance for ÜE	max. 10 Ω per wire *
Line resistance for SST	max. 10 Ω per wire *
Control output load	max. 40 mA with EMI protection
Quiescent current at 24 V	18 mA (Normal operating mode)

* Detail –> see page 135

Terminal block X1 and X2 (20 terminals)
– mounted on module chassis
– for the connection of the prefabricated cable to connection level, or
– for direct connection of the periphery

Card chassis
– mounted on module chassis
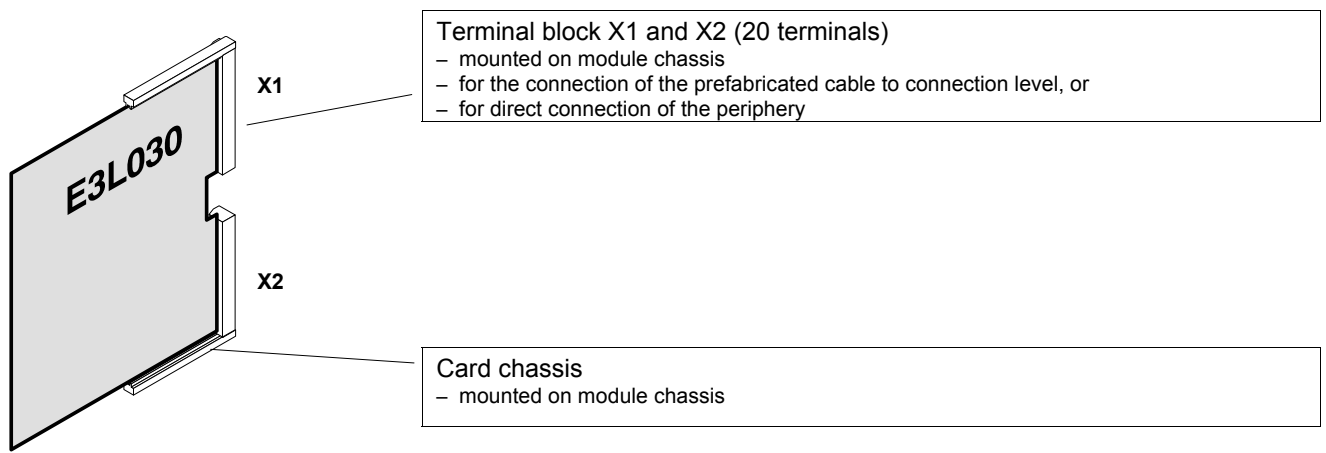
32.4   Important components
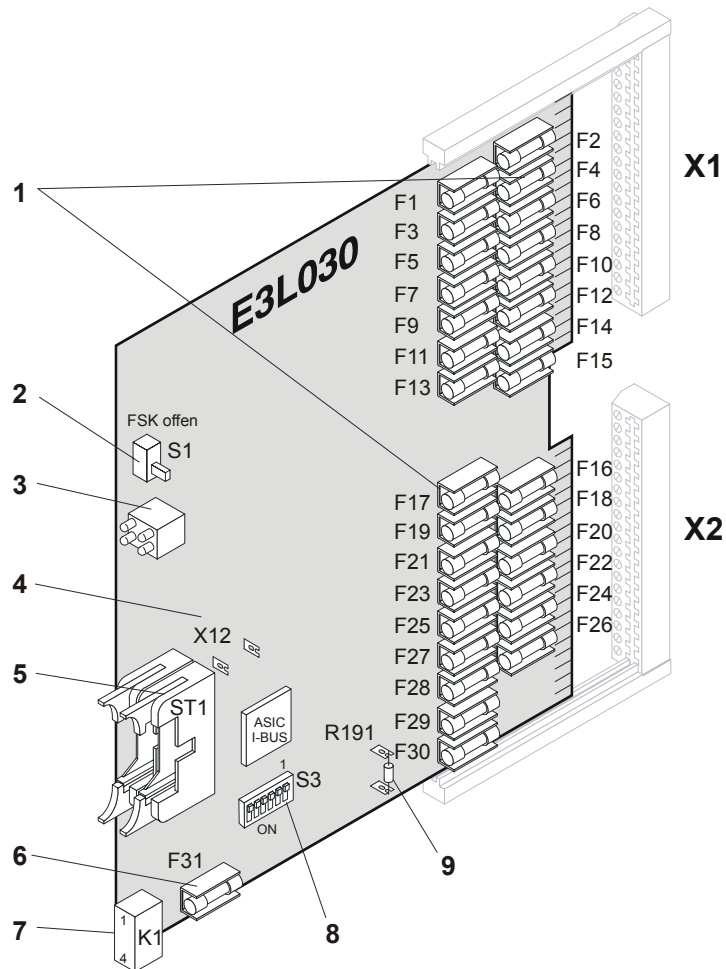
Legend:

1   Fuses: 'F1, F3...F23, F25, F27...F30'   1 A/T
                       'F2, F24, F26'   2 A/T
                       'F31'   2 A/T   Module supply
                       (Fuses with high breaking capacity, sand-filled)

2   Switch "S1": manual unlocking of FSD (Position "down" = Normal operating
     mode)

3   LED indicator block

H2		yellow	"Emergency operation E3L030 or E3X... or AlgoPilot B3Q..."
		green	"Activate unlocking"
H1		yellow	"Activate extinguishing"
		red	"Activate ÜE"
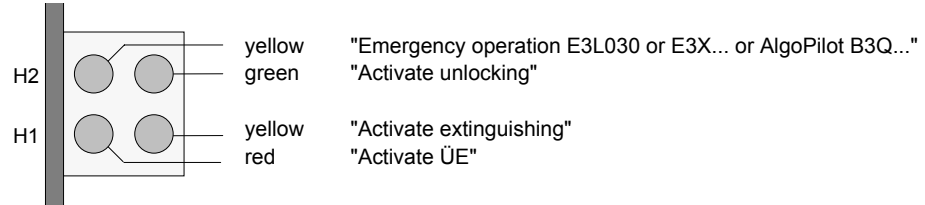
4   0 Ω resistor "X12": For the allocation of "LED4" active when the E3L030 is in emergency operation mode (LED4 is provided as a "spare" in FBF).
     0 Ω resistor "X12" **inserted**: LED 4 is active when E3L030 is in emergency operation mode (fault)
     0 Ω resistor "X12" **not inserted** (factory set)
5   Flat cable header "ST1" (26-pin): I-Bus
6   Fuse: 'F31'   2 A/T   Module supply (Fuse with high breaking capacity sand-filled)
7   Plug-in terminals "K1": Supply for "I-Bus" modules
8   Programming switch "S3": Setting "I-Bus address"

 Each element (module) connected to I-Bus must have an individual address (number).
 This is set on programming switch "S3".

Maximum 16 I-Bus devices.

Function / I-Bus address		Programming switch S3					
Nr.		S3-1	S3-2	S3-3	S3-4	S3-5	S3-6
0	Module out of commission (unused) 1)	off	off	off	off	off	off
1	I-Bus user number 1	**on**	off	off	off	off	off
2	2	off	**on**	off	off	off	off
3	3	**on**	**on**	off	off	off	off
4	4	off	off	**on**	off	off	off
5	5	**on**	off	**on**	off	off	off
6	6	off	**on**	**on**	off	off	off
7	7	**on**	**on**	**on**	off	off	off
8	8	off	off	off	**on**	off	off
9	9	**on**	off	off	**on**	off	off
10	10	off	**on**	off	**on**	off	off
11	11	**on**	**on**	off	**on**	off	off
12	12	off	off	**on**	**on**	off	off
13	13	**on**	off	**on**	**on**	off	off
14	14	off	**on**	**on**	**on**	off	off
15	15	**on**	**on**	**on**	**on**	off	off
16	16	off	off	off	off	**on**	off

"S3-1...6" are set to "off" at the factory
1) E3L030 functions in "emergency operation" with I-Bus address 0

32.5   Special functions

Emergency operation
An alarm which occurs during system malfunction (emergency operation) can still be handled via FBF and ÜE and FSD can also still be activated.

Function overview during "emergency operation"

Function	Emergency opera-tion E3L030	Emergency opera-tion CPU
FBF		
Indicator "ÜE activated"	●	●
Indicator "LEDs 5, 6, 7, T5 operational"	–	●
Function "Silence audible signal"	●	●
ÜE		
Function "Activate ÜE"	●	●
FSD		
Function "Activate FSD unlocking"	●	●
SST (Extinguishing standard interface)	–	–
TK (Door switch control unit)	–	●

134

32.6   Connections

E3L030

Terminal block **X1**

max. 5Ω / wire   3)
max. 20Ω / wire 3)

FBF

Peripheral equipment outside the control unit housing

+24V	*	F1	+	1	max. 1A
Common	*	F2	-	2	
Indicator ÜE activated		F3		3	max. 50mA
Exting. system released		F4		4	max. 50mA
Spare		F5		5	max. 50mA
Audible signals disabled		F6		6	max. 50mA
Reset fire alarm contr. unit		F7		7	max. 50mA
Disable ÜE		F8		8	max. 50mA
Aud. sign. disabled (key 5)		F9		9	max. 50mA
Fire controls disabled (LED)		F10		10	max. 50mA
Module chassis ground				11	Connect to chassis ground
Audible signals disabled		F11		12	
Reset fire alarm contr. unit		F12		13	
Disable ÜE		F13		14	
Check ÜE		F14		15	
Fire controls disabled 1)		F15		16	
				17	
unused				18	
				19	
* Fuses F1, F2 monitored				20	

LED 1, LED 2, LED 3, LED 4, LED 5, LED 6, LED 7, LED T5

3) Depending on the required length of line, possibly run several wires in parallel

1) applies for control zones with the attribute 'FIRE control zone switching off'

max. 10Ω / wire   3)
max. 50Ω / wire
max. 5Ω / wire   3)

Terminal block **X2**

+24V	F16	+	1	I2	ÜE
Actuate	F17		2	I6	
Actuated	F18		3	I4	
Common	F19	-	4	I5	
Monitoring (sabotage)	F20	+	5		FSD
	F21	-	6	2k2	
Activate unlocking	F22		7	max. 320mA	
Acknowledgem. unlocking	F23		8		
Common	F24		9		
Door contact	F25	+	10		
Module chassis ground			11	Connect to chassis ground	
Door switch	F26	-	12		
Remote transmission fire	F27	+	13	E3X...	
	F28	-	14	X15-6, X15-7	
Actuate		A	15	680Ω R191	SST
		B	16		
Actuated or fault	F29	+	17	3k3 680Ω	
	F30 R191	-	18		
unused			19		3rd party extinguishing control unit
			20	max. 50Ω / wire	

2) Door contact in control unit

2) If the control unit door is open, the contact must close

(only if several E3X... are used)

Plug-in terminals **K1**

Supply for I-Bus modules

	GND	-	1	blue
		-	2	blue
	5V	+	3	green
F31	24V	+	4	red

from previous I-Bus modules

to other I-Bus modules

Double flat cable header **ST1**

Data communication I-Bus modules

26 Pin — from previous I-Bus modules
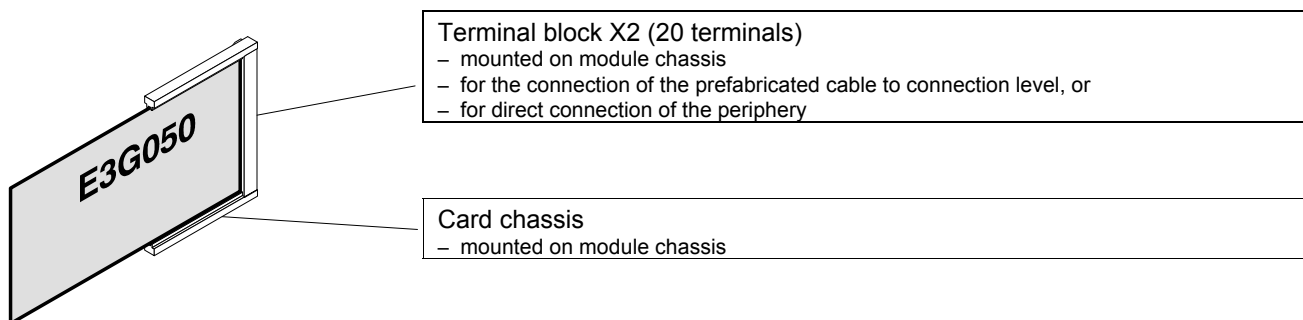
26 Pin — to other I-Bus modules

33 E3G050 Control module "Contacts"
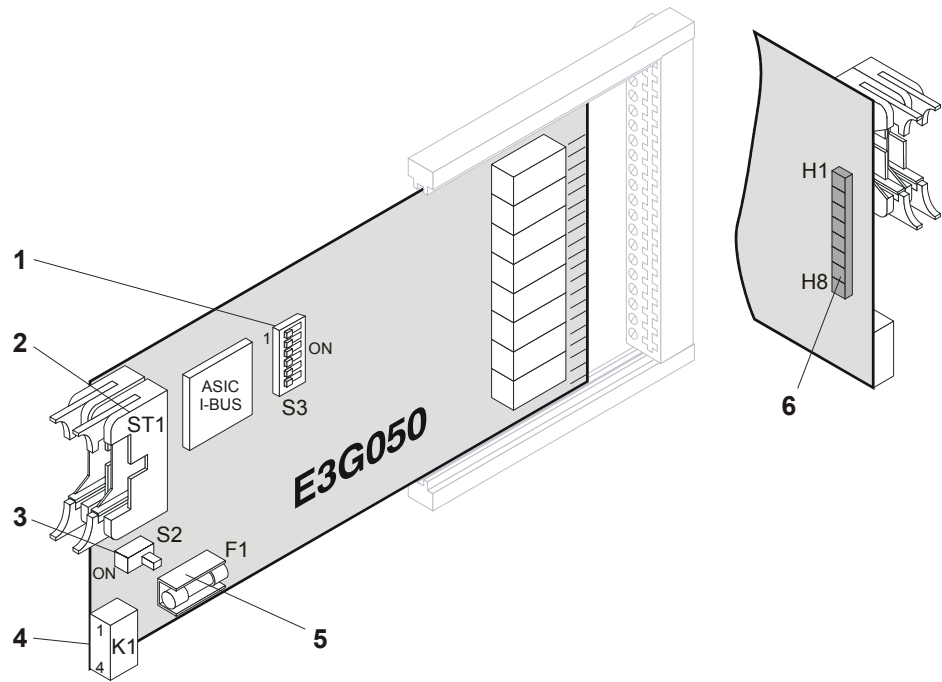
33.1 Overview

- Control module with 8 outputs (volt-free contacts)
- 3 changeover and 5 make contacts
- I-Bus module
- Individual function allocation of the output contacts
- Card format 100 mm x 200 mm
- I-Bus address is set at programming switch "S3"

33.2 Key data

Output contacts	8
Contact load	24 W / 60 VDC, 1 A
Quiescent current at 24 V	10 mA

Terminal block X2 (20 terminals)
– mounted on module chassis
– for the connection of the prefabricated cable to connection level, or
– for direct connection of the periphery

Card chassis
– mounted on module chassis

33.3   Important components

Legend:

1   Programming switch "S3": "I-Bus address" setting

Each element (module) connected to I-Bus must have an individual address (number).
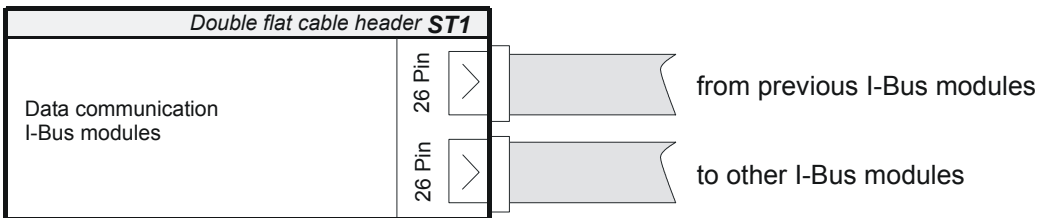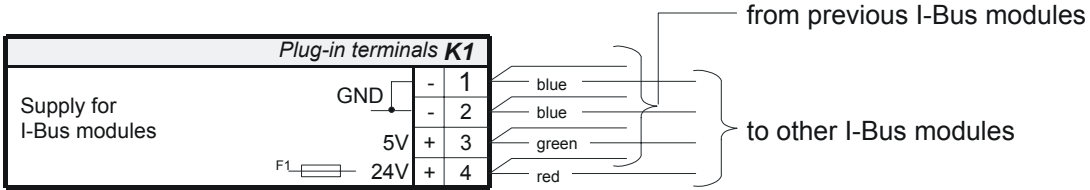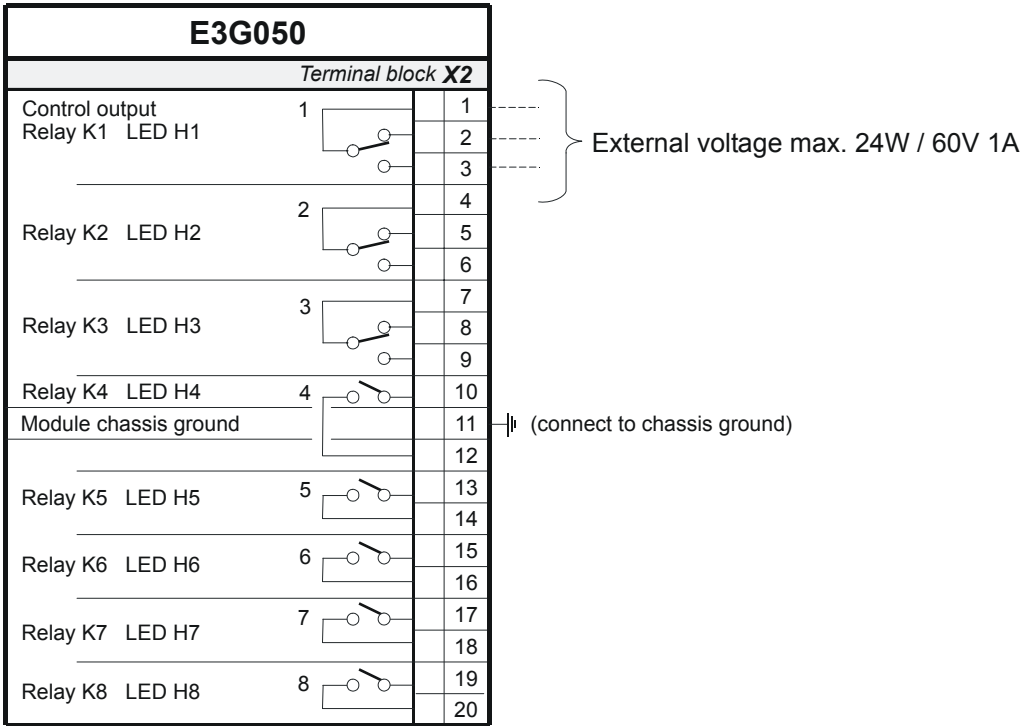
This is set on programming switch "S3".

Maximum 16 I-Bus devices.

	Function / I-Bus address	Programming switch S3					
Nr.		S3-1	S3-2	S3-3	S3-4	S3-5	S3-6
0	Module out of commission (unused)	off	off	off	off	off	off
1	I-Bus user number 1	on	off	off	off	off	off
2	2	off	on	off	off	off	off
3	3	on	on	off	off	off	off
4	4	off	off	on	off	off	off
5	5	on	off	on	off	off	off
6	6	off	on	on	off	off	off
7	7	on	on	on	off	off	off
8	8	off	off	off	on	off	off
9	9	on	off	off	on	off	off
10	10	off	on	off	on	off	off
11	11	on	on	off	on	off	off
12	12	off	off	on	on	off	off
13	13	on	off	on	on	off	off
14	14	off	on	on	on	off	off
15	15	on	on	on	on	off	off
16	16	off	off	off	off	on	off

"S3-1...6" are set to "off" at the factory

2   Flat cable header "ST1" (26-pin): I-Bus
3   Maintenance switch "S2": To switch on maintenance LEDs for test purposes.
      In addition to the relay output, it also enables activation of the corresponding
      LED (H1...H8)
      S2-on = LED (H1..H8) lights if output is activated.
4   Plug-in terminals "K1": Supply for "I-Bus" modules
5   Fuse: 'F1'   0.5 A/T   Module supply
6   Test LEDs 'H1...H8' at rear. Allocation of the individual LEDs –> see page 138

33.4 Connections

E3G050			
*Terminal block **X2***			
Control output Relay K1 LED H1	1	1	External voltage max. 24W / 60V 1A
		2	
		3	
Relay K2 LED H2	2	4	
		5	
		6	
Relay K3 LED H3	3	7	
		8	
		9	
Relay K4 LED H4	4	10	
Module chassis ground		11	(connect to chassis ground)
		12	
Relay K5 LED H5	5	13	
		14	
Relay K6 LED H6	6	15	
		16	
Relay K7 LED H7	7	17	
		18	
Relay K8 LED H8	8	19	
		20	

from previous I-Bus modules

*Plug-in terminals **K1***			
Supply for I-Bus modules	GND	-	1	blue
		-	2	blue
	5V	+	3	green
F1	24V	+	4	red

to other I-Bus modules

*Double flat cable header **ST1***
Data communication I-Bus modules

26 Pin — from previous I-Bus modules

26 Pin — to other I-Bus modules

138

34   E3G060 Control module "monitored" (Part No 460514)

34.1   Overview

- Control module for monitored alarm devices
- 6 monitored control lines 24 V, 2 A with EMI and over voltage protection
- Individual allocation of control lines via maintenance PC (AlgoWorks)
- It is possible to specify separately whether or not each line must be activated in "Emergency alarm" mode
- Card format 100 mm x 200 mm
- I-Bus address is set at programming switch "S3"

34.2   Application

– the E3G060 module is required in systems with more than 2 monitored control lines for alarm / or similar equipment
– the current on one control line may not exceed 2 A; however, the total current for all 6 control lines may not exceed 4 A

34.3   Key data

| Control outputs | number | 6 |
	max. load	2 A each at 24...29.6 V
	termination resistor	4.75 kΩ
Quiescent current at 24 V		25 mA (no control line active)
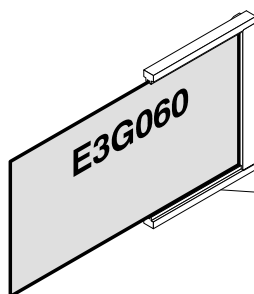
Terminal block X1 (20 terminals)
– mounted on module chassis
– for the connection of the prefabricated cable to connection level, or
– for direct connection of the periphery

Card chassis
– mounted on module chassis

139

34.4 Important components (Part No 460514)
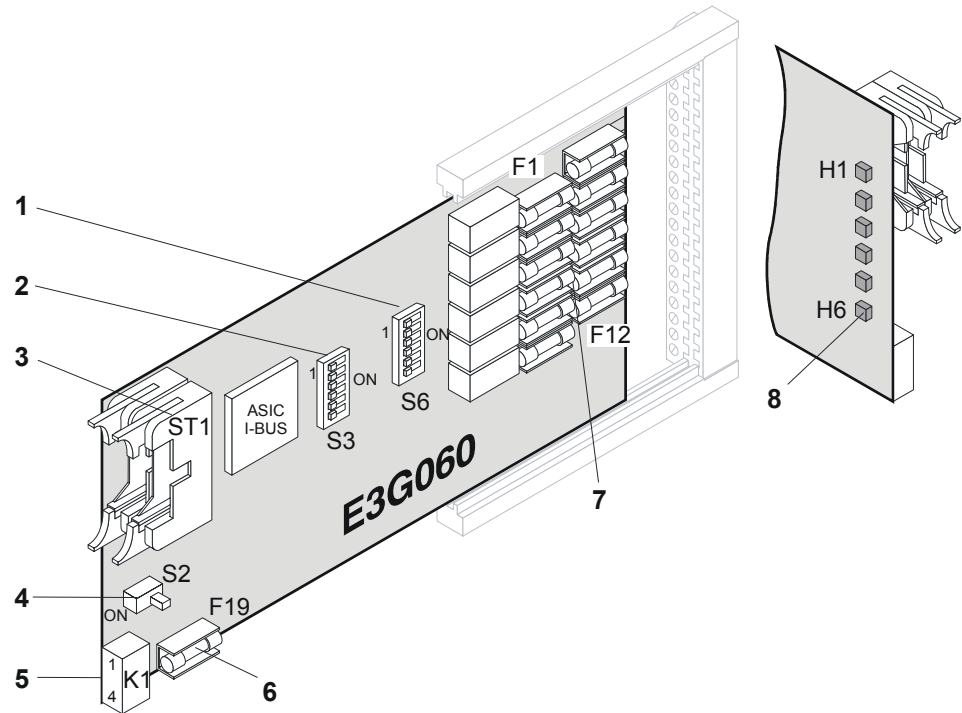
Legend:

1 Emergency operation –> Programming switch "S6": Allocation activation by "Emergency operation mode"

If required, the 6 control lines can also be activated even if an alarm is given during system malfunction (emergency operation). This function can be selected for each control line via the "S6" programming switch.

Affiliation: "S6-1" = Control line 1...
"S6-6" = Control line 6

"**OFF**" Position = Control line is activated in "Emergency operation mode"

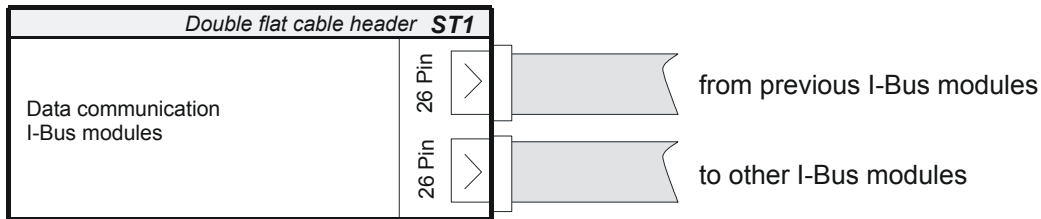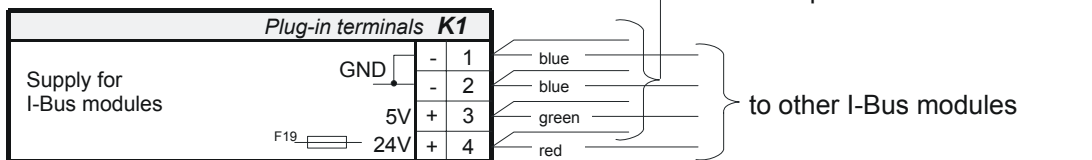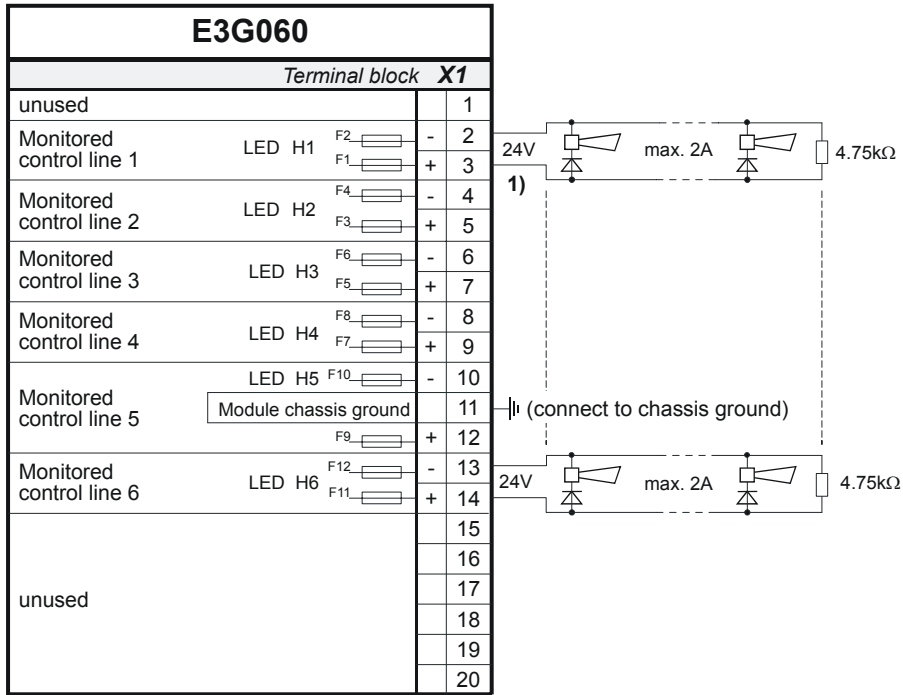2 Programming switch "S3": "I-Bus address" setting

Each element (module) connected to I-Bus must have an individual address (number). This is set on programming switch "S3".

Maximum 16 I-Bus devices.

Function / I-Bus address		Programming switch S3					
Nr.		S3-1	S3-2	S3-3	S3-4	S3-5	S3-6
0	Module out of commission (unused)	off	off	off	off	off	off
1	I-Bus user number 1	**on**	off	off	off	off	off
2	2	off	**on**	off	off	off	off
3	3	**on**	**on**	off	off	off	off
4	4	off	off	**on**	off	off	off
5	5	**on**	off	**on**	off	off	off
6	6	off	**on**	**on**	off	off	off
7	7	**on**	**on**	**on**	off	off	off
8	8	off	off	off	**on**	off	off
9	9	**on**	off	off	**on**	off	off
10	10	off	**on**	off	**on**	off	off
11	11	**on**	**on**	off	**on**	off	off
12	12	off	off	**on**	**on**	off	off
13	13	**on**	off	**on**	**on**	off	off
14	14	off	**on**	**on**	**on**	off	off
15	15	**on**	**on**	**on**	**on**	off	off
16	16	off	off	off	off	**on**	off

"S3-1...6" are set to "off" at the factory

3   Flat cable header "ST1" (26-pin): I-Bus
4   Maintenance switch "S2": To switch on maintenance LEDs for test purposes.
    In addition to the control line, it also enables the activation of the corresponding LED (H1...H6).
    S2-on = LED (H1..H6) lights if the control line is activated.
5   Plug-in terminals "K1": Supply for "I-Bus" modules
6   Fuse: 'F19'   6.3 A/T   Module supply
7   Fuses: 'F1...F12'   2 A/T   Control lines monitored (Fuses with high breaking capacity, sand-filled)
8   Test LEDs H1...H6 at rear allocation of the individual LEDs H1...H6 see page 142

34.5 Connections (Part No 460514)

E3G060			
Terminal block		**X1**	
unused			1
Monitored control line 1	LED H1	F2 / F1	- / +	2 / 3
Monitored control line 2	LED H2	F4 / F3	- / +	4 / 5
Monitored control line 3	LED H3	F6 / F5	- / +	6 / 7
Monitored control line 4	LED H4	F8 / F7	- / +	8 / 9
Monitored control line 5	LED H5 F10 / Module chassis ground / F9	- / / +	10 / 11 / 12
Monitored control line 6	LED H6	F12 / F11	- / +	13 / 14
unused			15
			16
			17
			18
			19
			20

24V — max. 2A — 4.75kΩ   **1)**

(connect to chassis ground) — terminal 11 Module chassis ground

24V — max. 2A — 4.75kΩ

Plug-in terminals		**K1**	
Supply for I-Bus modules	GND	-	1	blue
		-	2	blue
	5V	+	3	green
	F19 24V	+	4	red

from previous I-Bus modules

to other I-Bus modules

Double flat cable header	**ST1**
Data communication I-Bus modules	26 Pin >
	26 Pin >

from previous I-Bus modules

to other I-Bus modules

1) The indicated polarity at the terminals 2...14 applies to the active state

35 E3G060 Control module "monitored" (Part No 542539)

35.1 Overview

- Control module for monitored alarm devices
- 6 monitored control lines 24 V, 2 A with EMI and over voltage protection
- Individual allocation of control lines via maintenance PC (AlgoWorks)
- It is possible to specify separately whether or not each line must be activated in "Emergency alarm" mode (programming switch "S6")
- Drive horns by internal or external oscillator (intermitted Horn output)
- Max. 8 x E3G060 cards per system (synchronized over plug-in terminal K2)
- Ground fault monitoring, detected via master module E3X10. (for application details see chapter 6)
- Card format 100 mm x 200 mm
- I-Bus address is set at programming switch "S3"

35.2 Application

- the E3G060 module is required in systems with more than 2 monitored control lines for alarm / or similar equipment
- the current on one control line may not exceed 2 A; however, the total current for all 6 control lines may not exceed 4 A (internal supply K1)

35.3 Key data

Control outputs	number	6
	max. load	2 A each at 20.. 30 V; total 4 A (internal supply, K1)
		2 A each at 24 V 1); total 12 A (external supply, K3)
	termination resistor	4.75 kΩ
Quiescent current at 24 V		25 mA (no control line active)

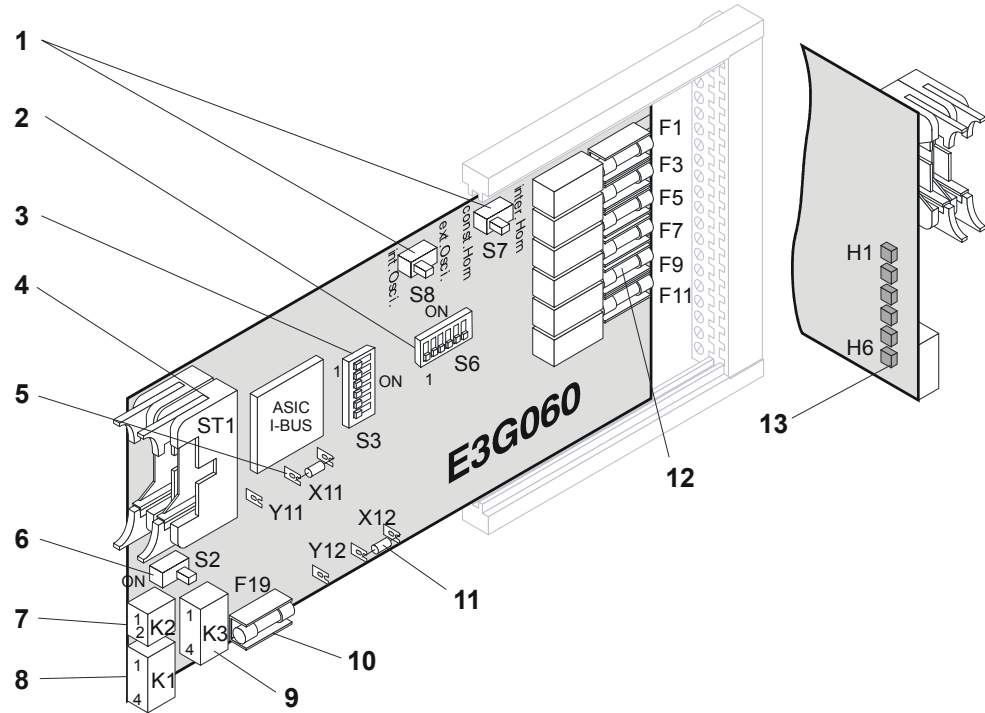1) Output at same voltage range as from the external supply (K3)
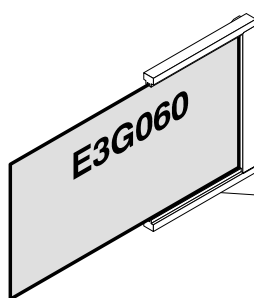
Terminal block X1 (20 terminals)
– mounted on module chassis
– for the connection of the prefabricated cable to connection level, or
– for direct connection of the periphery

Card chassis
– mounted on module chassis

E3G060

35.4 Important components (Part No 542539)

Legend:

1   Programming switch "S7" & "S8": Horn mode setting

Function	Programming switch	
	S7	S8
constant horn output (factory setting)	**const. Horn**	**int. osci**
intermitted horn output for all horns with internal oscillator (1sec. on / 1sec. off) horns driven by other E3G060 cards can be synchronized, by through contacting K2 plug contacts	inter. Horn	int. osci
external oscillator input to drive all horns in intermitted mode with external oscillator	inter. Horn	ext. osci
not used	const. Horn	ext. osci

Note: Switch "S7" defines global horn mode for all horn outputs. Invert this mode (constant / intermitted) individually for each horn output by connecting common (X1-1) with corresponding control input (X1-15.. 20).

2   Emergency operation –> Programming switch "S6": Allocation activation by "Emergency operation mode"

If required, the 6 control lines can also be activated even if an alarm is given during system malfunction (emergency operation). This function can be selected for each control line via the "S6" programming switch.

Affiliation: "S6-1" = Control line 1...

                        "S6-6" = Control line 6

"**OFF**" Position = Control line is activated in "Emergency operation mode"

3   Programming switch "S3": "I-Bus address" setting

Each element (module) connected to I-Bus must have an individual address (number).
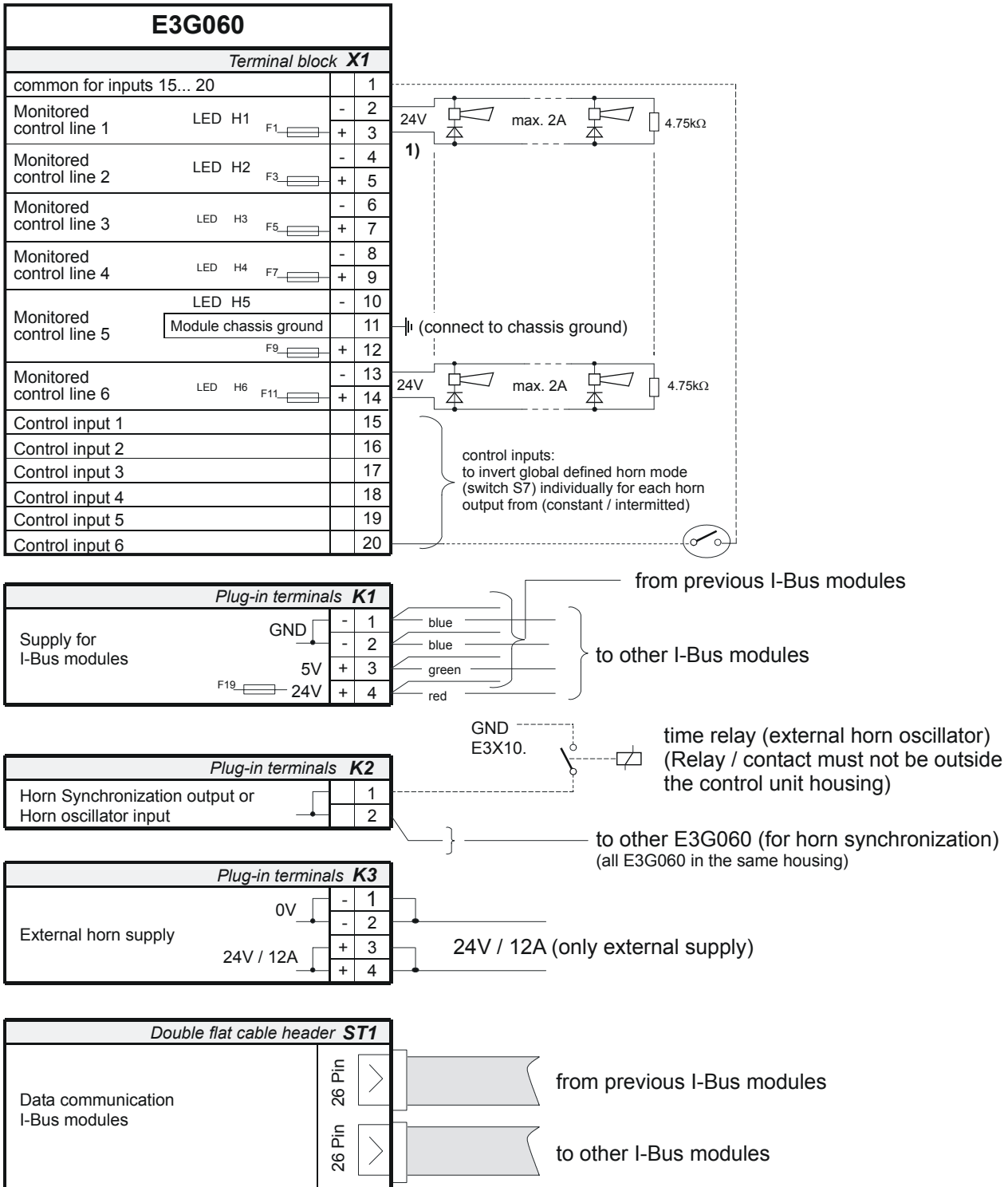This is set on programming switch "S3".
Maximum 16 I-Bus devices.

Function / I-Bus address		Programming switch S3					
Nr.		S3-1	S3-2	S3-3	S3-4	S3-5	S3-6
0	Module out of commission (unused)	off	off	off	off	off	off
1	I-Bus user number 1	**on**	off	off	off	off	off
2	2	off	**on**	off	off	off	off
3	3	**on**	**on**	off	off	off	off
4	4	off	off	**on**	off	off	off
5	5	**on**	off	**on**	off	off	off
6	6	off	**on**	**on**	off	off	off
7	7	**on**	**on**	**on**	off	off	off
8	8	off	off	off	**on**	off	off
9	9	**on**	off	off	**on**	off	off
10	10	off	**on**	off	**on**	off	off
11	11	**on**	**on**	off	**on**	off	off
12	12	off	off	**on**	**on**	off	off
13	13	**on**	off	**on**	**on**	off	off
14	14	off	**on**	**on**	**on**	off	off
15	15	**on**	**on**	**on**	**on**	off	off
16	16	off	off	off	off	**on**	off

"S3-1...6" are set to "off" at the factory

4   Flachband-Header "ST1" (26-polig): I-Bus
5   0 Ω resistor: no function (factory setting X11)
6   Maintenance switch "S2": To switch on maintenance LEDs for test purposes.
     In addition to the control line, it also enables the activation of the correspond-
     ing LED (H1...H6).
     S2-on = LED (H1..H6) lights if the control line is activated.
7   Plug-in terminals "K2": to synchronize Horns or external oscillator input
8   Plug-in terminals "K1": Supply for "I-Bus" modules
9   Plug-in terminals "K3": External horn supply
10   Fuse: 'F19' 6.3 A/T for internal module and horn if internal supply (K1)
11   0 Ω resistor: Supply for 6 horn outputs (X1-2..14)
     X12 = internal supply (factory setting) (K1)
     Y12 = external supply (K3)
12   Fuses: 'F1, F3, F5, F7, F9, F11' 2 A/T Control lines monitored (Fuses with
     high breaking capacity, sand-filled)
13   Test LEDs 'H1...H6' at rear allocation of the individual LEDs H1...H6 –> see
   page 146

35.5 Connections (Part No 542539)

E3G060		
Terminal block **X1**		
common for inputs 15... 20		1
Monitored control line 1 LED H1 F1	-	2
	+	3
Monitored control line 2 LED H2 F3	-	4
	+	5
Monitored control line 3 LED H3 F5	-	6
	+	7
Monitored control line 4 LED H4 F7	-	8
	+	9
Monitored control line 5 LED H5	-	10
Module chassis ground		11
F9	+	12
Monitored control line 6 LED H6 F11	-	13
	+	14
Control input 1		15
Control input 2		16
Control input 3		17
Control input 4		18
Control input 5		19
Control input 6		20

24V   max. 2A   4.75kΩ

1)

(connect to chassis ground)

24V   max. 2A   4.75kΩ

control inputs:
to invert global defined horn mode
(switch S7) individually for each horn
output from (constant / intermitted)

Plug-in terminals **K1**		
Supply for I-Bus modules GND	-	1	blue
	-	2	blue
5V	+	3	green
F19 24V	+	4	red

from previous I-Bus modules

to other I-Bus modules

Plug-in terminals **K2**	
Horn Synchronization output or Horn oscillator input	1
	2

GND
E3X10.

time relay (external horn oscillator)
(Relay / contact must not be outside
the control unit housing)

to other E3G060 (for horn synchronization)
(all E3G060 in the same housing)

Plug-in terminals **K3**		
External horn supply 0V	-	1
	-	2
24V / 12A	+	3
	+	4

24V / 12A (only external supply)

Double flat cable header **ST1**	
Data communication I-Bus modules	26 Pin
	26 Pin

from previous I-Bus modules

to other I-Bus modules

1) The indicated polarity at the terminals 2...14 applies to the active state

36 E3G070 Control module "universal"

36.1 Overview

- Universal control module for smaller systems (instead of E3X10.)
- 2 contacts for remote transmission "Alarm and fault"
- 2 monitored control lines for alarm devices with EMI and over voltage protection
- 7 programmable control outputs / inputs
- Monitored supply output for internal devices
- Integrated ground fault monitoring
- Card format 100 mm x 200 mm
- I-Bus address is set at programming switch "S3"

36.2 Key data

"Remote transmission" contacts	max. load type	24 W (60 V, 1 A), choice of make / break contact
"Alarm horn line"	max. load	2 A (24 V), with EMI protection
Inputs	max. load activation	40 mA (24 V), internal only via volt-free contact
Supply output	max. load	630 mA (24 V), internal only
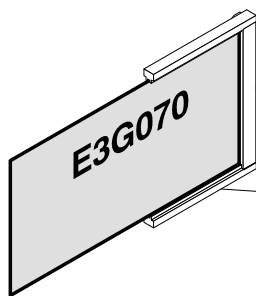
Terminal block X1 (20 terminals)
– mounted on module chassis
– for the connection of the prefabricated cable to connection level, or
– for direct connection of the periphery

Card chassis
– mounted on module chassis

36.3 Important components
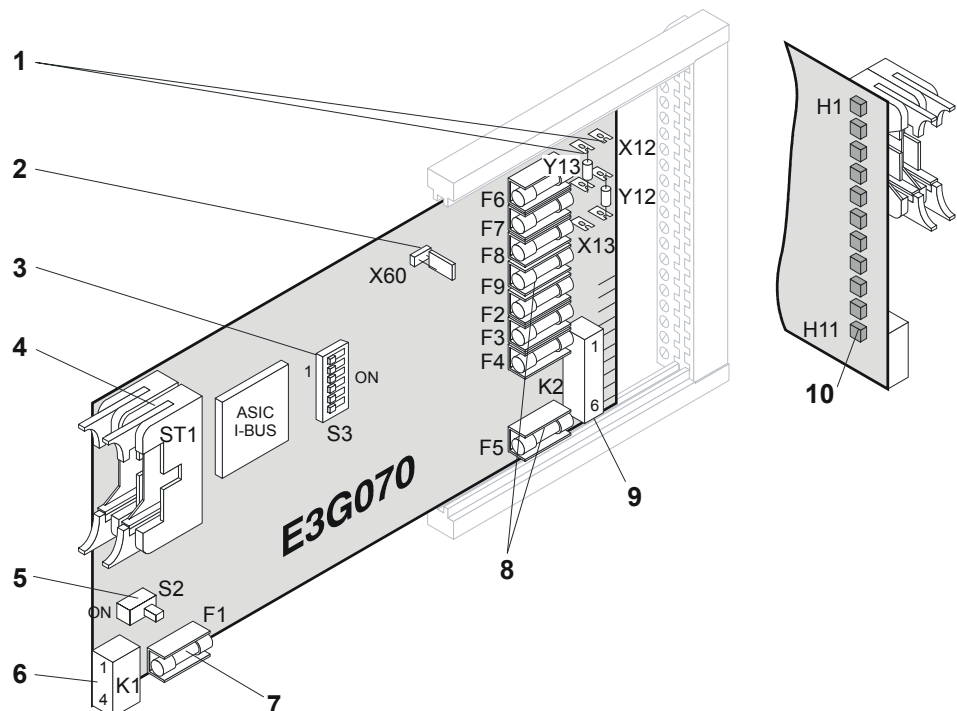
Legend:

1   0 Ω resistors

"Y12"	=	Remote transmission alarm as make contact (factory setting)
"X12"	=	Remote transmission alarm as break contact
"Y13"	=	Remote transmission fault as break contact (factory setting)
"X13"	=	Remote transmission fault as make contact

2   Jumper "X60": Ground fault monitoring 'control unit'

    'out' = inactive (factory setting)

    'in' = active (for application details –> see chapter 6)

3   Programming switch "S3": "I-Bus address" setting

Each element (module) connected to I-Bus must have an individual address (number). This is set on programming switch "S3".

Maximum 16 I-Bus devices.

Function / I-Bus address		Programming switch S3					
Nr.		S3-1	S3-2	S3-3	S3-4	S3-5	S3-6
0	Module out of commission (unused)	off	off	off	off	off	off
1	I-Bus user number 1	on	off	off	off	off	off
2	2	off	on	off	off	off	off
3	3	on	on	off	off	off	off
4	4	off	off	on	off	off	off
5	5	on	off	on	off	off	off
6	6	off	on	on	off	off	off
7	7	on	on	on	off	off	off
8	8	off	off	off	on	off	off
9	9	on	off	off	on	off	off
10	10	off	on	off	on	off	off
11	11	on	on	off	on	off	off
12	12	off	off	on	on	off	off
13	13	on	off	on	on	off	off
14	14	off	on	on	on	off	off
15	15	on	on	on	on	off	off
16	16	off	off	off	off	on	off

"S3-1...6" are set to "off" at the factory

4   Flat cable header "ST1" (26-pin): I-Bus

5   Maintenance switch "S2": to switch on maintenance LEDs for test purposes. In addition to driver output, enables the corresponding LED (H1... H11) to be activated

    S2-on = LED (H1… H11) lights if output is activated.

6   Plug-in terminals "K1": Supply for "I-Bus" modules

7   Fuse   'F1'   5 A/T   Module supply

8   Fuses: 'F2, F3'   0.63 A/T   Supply output

           'F4, F5'   0.25 A/T   Control outputs / inputs

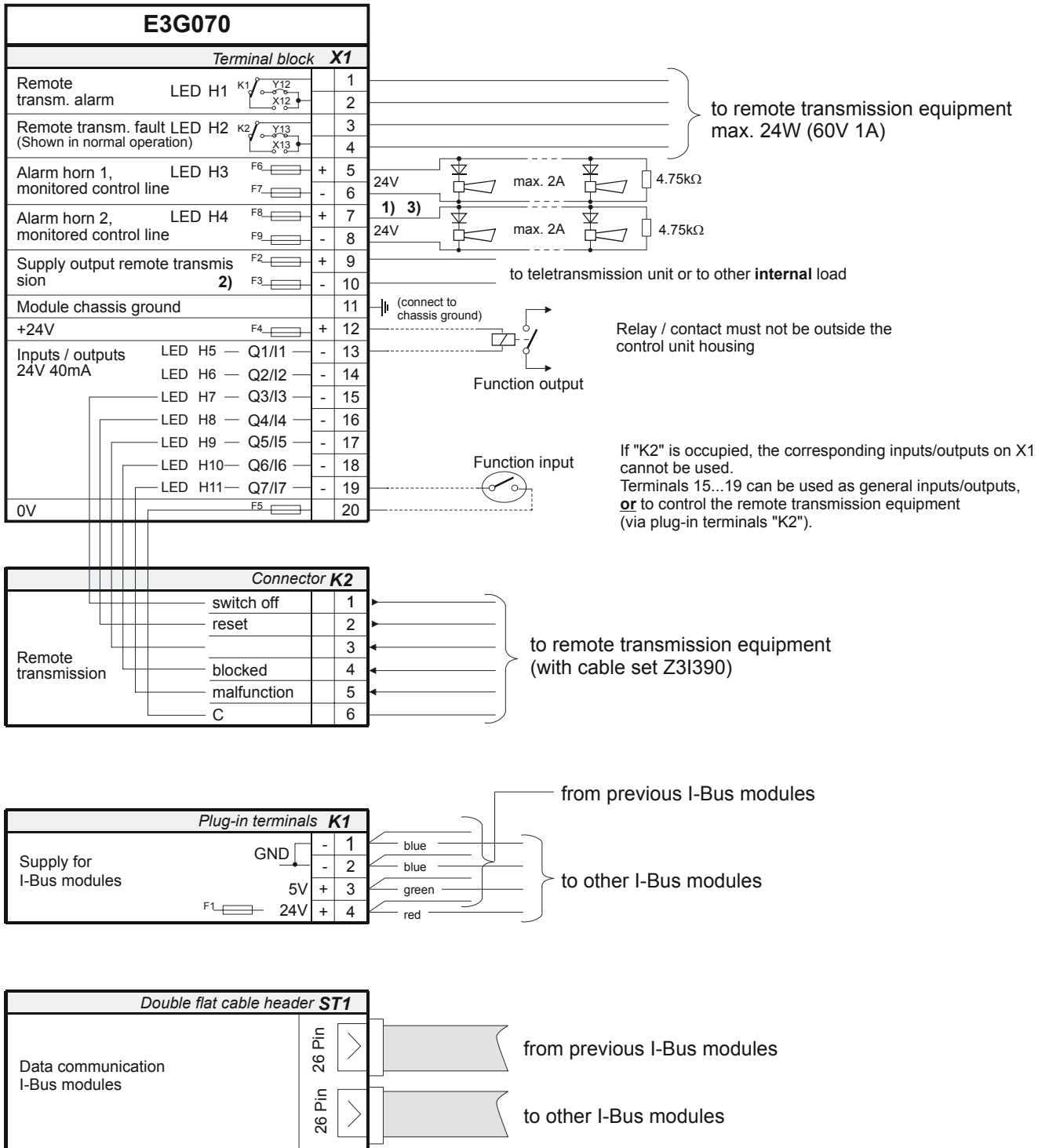   'F6...F9'   2 A/T*   Control lines for alarm devices

           * Fuse with high breaking capacity (sand-filled)

9   Connector "K2" to fit cable set Z3I390 for the remote transmission equipment

10   Test LEDs H1...H11 at rear. Allocation of the individual LEDs see page 149

36.4   Connections

E3G070		
Terminal block	**X1**	
Remote transm. alarm LED H1 K1 Y12 X12	1	} to remote transmission equipment max. 24W (60V 1A)
	2	
Remote transm. fault LED H2 (Shown in normal operation) K2 Y13 X13	3	
	4	
Alarm horn 1, LED H3 F6 +	5	
monitored control line F7 −	6	
Alarm horn 2, LED H4 F8 +	7	1) 3)
monitored control line F9 −	8	
Supply output remote transmission 2) F2 +	9	to teletransmission unit or to other **internal** load
F3 −	10	
Module chassis ground	11	(connect to chassis ground)
+24V F4 +	12	Relay / contact must not be outside the control unit housing
Inputs / outputs 24V 40mA LED H5 — Q1/I1 −	13	
LED H6 — Q2/I2 −	14	Function output
LED H7 — Q3/I3 −	15	
LED H8 — Q4/I4 −	16	If "K2" is occupied, the corresponding inputs/outputs on X1 cannot be used.
LED H9 — Q5/I5 −	17	Terminals 15...19 can be used as general inputs/outputs, **or** to control the remote transmission equipment (via plug-in terminals "K2").
LED H10 — Q6/I6 −	18	Function input
LED H11 — Q7/I7 −	19	
0V F5	20	

Connector	**K2**	
	switch off	1	to remote transmission equipment (with cable set Z3I390)
Remote transmission	reset	2	
		3	
	blocked	4	
	malfunction	5	
	C	6	

Plug-in terminals	**K1**	
		from previous I-Bus modules
Supply for I-Bus modules	GND − 1 blue	
	− 2 blue	to other I-Bus modules
	5V + 3 green	
	F1 24V + 4 red	

Double flat cable header	**ST1**	
Data communication I-Bus modules	26 Pin	from previous I-Bus modules
	26 Pin	to other I-Bus modules

1) The indicated polarity at the terminals 5...8 applies to the active state
2) Valid from EP7F the output X1-9, 10 is always monitored. Up to EP5 this output can be programmed as monitored.
3) Terminate not used horn lines with a 4.75 kΩ.

37 E3G080 Control module "Extinguishing"

37.1 Overview

- I-Bus module as control module for **one extinguishing SECTION**
- 4 monitored control lines for
  - "Sector valve"
  - "Main valve"
  - "Alarm horn"
  - "Illuminated warning panel"
- 5 Monitored detection lines for
  - "Manual activation"
  - "Stop or blocking button" (Function selectable)
  - Signal contact "Loss of extinguishing agent"
  - Signal contact "Extinguishing blocked"
  - Signal contact "Extinguishing activated"
- LON interface for separate extinguishing B3Q440 control consoles
  - Enables up to 4 local B3Q440 extinguishing control consoles
  - Line and equipment are monitored (not short circuit proof)
- Individual parameterization via maintenance PC (AlgoWorks)
- Downloading of user functions from AlgoWorks via control unit and storage on E3G080 direct
- Maintenance switch for automatic calibration and line read–in function
- Integrated emergency operation function
- Selectable ground fault monitoring, detected via master module E3X10. (for application details –> see chapter 6)
- I-Bus address is set with programming switch "S3"
- Card format 100 mm x 200 mm

37.2 Application

- module E3G080 is required for each extinguishing SECTION
- a B3Q440 control console is required for each extinguishing SECTION (max. 4 possible)
- Application without the B3Q440 control console is possible, but not recommended
- the total current per E3G080 (valve, alarm horn, illuminated warning panel etc. active) may not exceed 4 A

Separate extinguishing control console B3Q440

Terminal block X10 (20 terminals)
– mounted on module chassis
– for the connection of the prefabricated cable to connection level, or
– for direct connection of the periphery

Card chassis
– mounted on module chassis
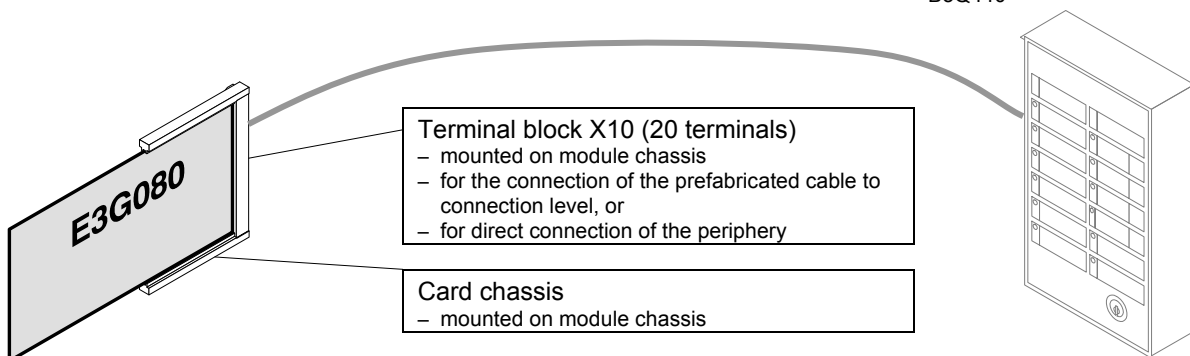
37.3   Key data for E3G080 until index 'AB'

Type of line	Termi-nals X10–..	Line voltage 'quiescent' (line termination with 4k75)	Monitoring current	Line voltage 'open line'	Line voltage 'short circuit'	Line voltage 'active' Section
Control lines 'Sector valve' 'Main valve'	1/2 2/3	without R60/61 –> **80..800 mV** without R60/61 –> **0.3...1.6 V**	5 mA	≥ 880 mV ≥ 1.75 V	≤ 100 mV ≤ 200 mV	24...30 V
Control lines 'Alarm horn' 'Illuminated warning panel'	4/5 6/7	**2.3 V** ± 10 %	0.5 mA	≥ 3.5 V	≤ 350 mV	24...30 V *
Detection lines 'Manual activation' 'Stop/blocking button'	8/9 9/10	**14.25 V** ± 10 %	3 mA	≥ 15 V	≤ 1.7 V	2...10 V
Detection lines 'Loss of extinguishing agent' 'Extinguishing blocked'	12/13 14/15	**2.3 V** ± 10 %	0.5 mA	≥ 3.5 V	≤ 350 mV	400 mV..1.3 V
Detection line 'Extinguishing activated'	16/17	17 V **	resistor 3k3	≥ 22 V **	≤ 2.7 V **	3...14 V **
Control console for B3Q440 serial interface	18/19	Voltage cannot be measured with a voltmeter				

*   reversed polarity in 'active' status
**   with mains operating 29 V

37.4   Key data for E3G080 from index ≥ 'AB' (Type FM)

Type of line	Termi-nals X10–..	Line voltage 'quiescent' (line termination with 4k75)	Monitoring current	Line voltage 'open line'	Line voltage 'short circuit'	Line voltage 'active' Section
Control lines 'Sector valve' 'Main valve'	1/2 2/3	ohne R60/61 –> **80..800 mV** mit R60/61 –> **0,3...1,6 V**	5 mA	≥ 880 mV ≥ 1,75 V	≤ 100 mV ≤ 200 mV	24...30 V
Control lines 'Alarm horn' 'Illuminated warning panel'	4/5 6/7	**2,3 V** ± 10 %	0,5 mA	≥ 3,5 V	≤ 350 mV	24...30 V *
Detection lines 'Manual activation' 'Stop/blocking button'	8/9 9/10	**14,25 V** ± 10 %	4,7 mA	≥ 25 V	≤ 2,6 V	3...12 V
Detection lines 'Loss of extinguishing agent' 'Extinguishing blocked'	12/13 14/15	**2,3 V** ± 10 %	0,5 mA	≥ 3,5 V	≤ 350 mV	400 mV..1,3 V
Detection line 'Extinguishing activated'	16/17	17 V **	resistor 2k25	≥ 22 V **	≤ 2,7 V **	3...14 V **
Control console for B3Q440 serial interface	18/19	Spannung nicht messbar mit Voltmeter				

*   reversed polarity in 'active' status
**   with mains operating 29 V

37.5   Control lines

37.5.1   Control line "Sector valve"

– To activate the extinguishing valve up to a max. 2 A total current
– active upon **'extinguishing released'** upon expiry of the delay period until expiry of the permissible operating time or until reset
– monitored for open line / short circuit
– Upon open line / short circuit, in addition to a fault signal, an "autom. + manual activation blocked" signal is given
– valve coil as line termination element
– automatic calibration by means of maintenance key **"S4"** (–> see page 156)
➔ Parameters can be set via AlgoWorks –> see document 005109

37.5.2   Control line "Main valve"

- – To activate the pneumatic circuit up to max. 2A total current
- – Active upon **'Extinguishing command'** or '**Blocking input active'** (terminal 20) until expiry of permissible operating time or until reset
- – Monitored for open line / short circuit
- – Upon open line / short circuit, in addition to a fault signal, an "autom. + manual activation blocked" signal is given
- – valve coil as line termination element
- – automatic calibration by means of maintenance key **"S4"** (–> see page 156)
- – Also operational with 'Emergency operation E3G080'
- ➔ Parameters can be set via AlgoWorks –> see document 005109

37.5.3   Control line "Alarm horn"

- – To activate electronic alarm horns up to a max. of 2 A total current
- – Start of 'Active status' selectable
- – Monitored for open line / short circuit according to the principle of reversed polarity
- – Function change of alarm tone mode:
  - ➔ Until **EP5**: possible by combining with 'Illuminated warning panel' output (Connection –> see page 158)
  - ➔ **≥ EP7F**: Programmable via AlgoWorks (Connection –> see page 158)
- – Line termination with resistor 4k75
- – steady or pulsating is programmable
- ➔ Parameters can be set via AlgoWorks –> see document 005109

37.5.4   Control line "illuminated warning panel"

- – To activate illuminated warning panels up to a max. of 2A total current
- – immediately active upon **'Extinguishing command'** (inevitable as long as sector valve is active)
- – monitored for open line / short circuit according to the principle of reversed polarity
- – Line termination with resistor 4k75
- ➔ Parameters can be set via AlgoWorks –> see document 005109

37.6   Detection lines

37.6.1   Detection lines "Manual activation"

- – for the initialization of the manual activation of extinguishing (independent of the control unit)
- – generates **'Extinguishing command'** (even if the control unit malfunctions)
- – designed for manual call points, collective (mandatory Z-diode 5.6 V)
- – function 'AI pulse generator'
- – function 'break glass'
- – monitored for open line / short circuit
- – Max. 150 Ω line resistance
- – line termination with resistor 4k75

37.6.2   Detection line "stop/blocking button"

- – for external blocking of activation of extinguishing via special push button or door switch (alarm resistor 1k2 or Z-Diode 5.6 V)
- – can be used as required for function 'Stop button' or 'Blocking button'
- – monitored for open line / short circuit
- – Upon open line / short circuit, in addition to a fault signal, an 'autom. + man. activation blocked' signal is given
- – Max. 150 Ω line resistance
- – Line termination with resistor 4k75
- ➔ Parameters can be set via AlgoWorks –> see document 005109

37.6.3   Detection line "Loss of extinguishing agent"

- – for signal transmitters such as cylinder weighing device, manometer etc. (if used)
- – select as required for make or break contacts with alarm resistor 1k2
- – monitored for open line / short circuit
- – Max. 150 Ω line resistance
- – line termination with resistor 4k75
- ➔ Parameters can be set via AlgoWorks –> see document 005109

37.6.4   Detection line "Extinguishing blocked"

- – for signal transmitters of the blocking mechanism (if used)
- – select as required for make or break contacts with alarm resistor 1k2
- – monitored for open line / short circuit
- – Max. 150 Ω line resistance
- – Line termination with resistor 4k75
- ➔ Parameters can be set via AlgoWorks –> see document 005109

37.6.5   Detection line "Extinguishing activated"

- – for **genuine confirmation** of release of extinguishing agent
- – for signal transmitters such as pressure switches (pressostats) or activating mechanisms (if used)
- – Active status generates "Extinguishing activated" (activates alarm horn and illuminated warning panel (if not already active)
- – if the active status follows within <10 sec of reset, a fault signal is also activated
- – select as required for make or break contacts with alarm resistor 1k2
- – monitored for open line / short circuit
- – Max. 150 Ω line resistance
- – Line resistance with 4k75 resistance
- ➔ Parameters can be set via AlgoWorks –> see document 005109

37.7 Control consoles

37.7.1 Connection line

– enables on-the-spot operation of the extinguishing SECTION
– it is possible to have four B3Q440 control consoles each with identical functions
– monitored for open line and for equipment presence
– separate supply and data lines (however, they can be run in the same cable)
– individual stub lines to each B3Q440 and parallel branching permissible
– twisted cable required (data line)
– Max. length of line between E3G080 and B3Q440 600m (0.8 mm wire gauge)
  – with several B3Q440s on the same stub line, the line will be correspondingly shorter –> see connection page158)

Setting parameters
With each B3Q440 control console, the device address must be set via the DIP switch "**S3**" (for details –> see B3Q440 page 238)

37.8 Interlinking of several E3G080

Purpose
In systems in which several extinguishing SECTIONS have **common reserves of extinguishing agent**, several E3G080 can be interlinked. This prevents the simultaneous release of extinguishing agent in several extinguishing SECTIONS.

Function
As soon as voltage 0V is applied to terminal 20, activation of extinguishing for all the E3G080 concerned is blocked and 'Main valve' is activated. Within a group of interlinked E3G080s, the first E3G080 activated blocks the rest.

Interlinking of several E3G080s
To interlink several E3G080s, terminal 20 must be connected to all E3G080. The main valve can therefore be connected to any E3G080, even if the appropriate E3G080 is in emergency operation.

37.9 Important components
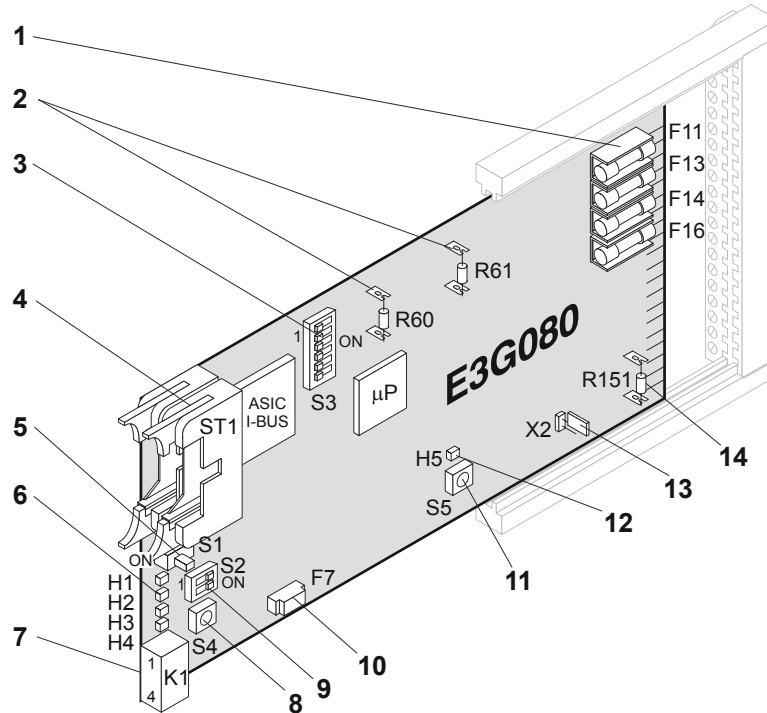
Legend:

1 Fuses: "F11, F13, F14, F16"   2 A/T   Main / sector valve / alarm horn / illuminated warning panel (Fuses with high breaking capacity, sand-filled)

2 Resistors "R60/61": Choice of internal resistor sector for the main/sector valve
Two areas can be selected for the monitoring of the valves by inserting or removing resistors. R60 (71k5) is for the sector valve and R61 (71k5) for the main valve.
R60/61 are inserted at the factory.

- Valve coil 16...160 Ω = R60/61 removed
- Valve coil 161...320 Ω = R60/61 inserted

3 Programming switch "S3": "I-Bus address" setting
Each element (module) connected to I-Bus must have an individual address (number).
This is set on programming switch "S3".
Maximum 16 I-Bus devices.

	Function / I-Bus address	Programming switch S3					
Nr.		S3-1	S3-2	S3-3	S3-4	S3-5	S3-6
0	Module out of commission (unused)	off	off	off	off	off	off
1	I-Bus user number 1	**on**	off	off	off	off	off
2	2	off	**on**	off	off	off	off
3	3	**on**	**on**	off	off	off	off
4	4	off	off	**on**	off	off	off
5	5	**on**	off	**on**	off	off	off
6	6	off	**on**	**on**	off	off	off
7	7	**on**	**on**	**on**	off	off	off
8	8	off	off	off	**on**	off	off
9	9	**on**	off	off	**on**	off	off
10	10	off	**on**	off	**on**	off	off
11	11	**on**	**on**	off	**on**	off	off
12	12	off	off	**on**	**on**	off	off
13	13	**on**	off	**on**	**on**	off	off
14	14	off	**on**	**on**	**on**	off	off
15	15	**on**	**on**	**on**	**on**	off	off
16	16	off	off	off	off	**on**	off

"S3-1...6" are set to "off" at the factory

4 Flat cable header "ST1" (26-pin): I-Bus

5 Maintenance switch "S1": Test to block all outputs

For testing of all outputs but without real activation. State 'active' is only simulated (visible on service LEDs H1...H4) instead of real activation.

S1 **on** = a) All outputs blocked. Only service LEDs light up on activation

b) Main / and sector valve also blocked **hardware wise**

c) input 'extinguishing actuated' blocked but line monitoring remains

Note: The function of switch 'S1' is equal to the blocking function via AlgoPilot menu.

Only difference: If blocked via AlgoPilot menu, valves are **not** blocked hardware wise

6 Test LEDs "H1...H4" (Maintenance LEDs) for maintenance work

LED **"H1"** sector valve active / short circuit / open line
LED **"H2"** main valve active / short circuit / open line
LED **"H3"** alarm horn active / short circuit / open line
LED **"H4"** illuminated warning active / short circuit / open line
panel

Function	Status
LED on continuously	active
LED flashes rapidly	short circuit
LED flashes slowly	open line / fuse blown / end-of-line resistor missing

7 Plug-in terminals "K1": Supply for "I-Bus" modules

8 Key "S4": for initialization of commissioning functions. Only effective if switch "S1" is set to on.

Pressing **"S4"** has the following effect:

a) Alignment of main / and sector valve (automatic calibration of the monitoring current on the internal resistance of the valve coil) Alignment of alarm horn, illuminated warning panel

b) Read in all detection lines (store what is connected to the detection lines: end-of-line resistor, make/break contact)

c) Error diagnosis (see document 1456 EP5, 005109 EP7F 'Commissioning Extinguishing')

9 Programming switch "S2": Selectable functions in operating condition "Emergency operation" (malfunction of module E3G080) (–> see page 21 " Emergency operation")

Function	Programming switch S2	
	S2-1	S2-2
Blocking input (terminal 20) active in emergency operation mode = activates "Main valve"	**on**	
Detection line 'Extinguishing activated' active in emergency operation mode = 'Emergency alarm + illuminated warning panel' active		**on**
Function cancelled	off	off

"S2-1/2" are set to "on" at the factory

10 Fuse: "F7" 1A/F Module supply (SMD fuse can only be changed at factory)

11 Key "S5": no function

12   Test LED "H5": For fault diagnosis LON interface

LED **"H5"**   Error diagnosis of communication to B3Q440 control console

Function	Status
LED on continuously	program in LON-IC not loaded
LED flashes	network parameter LON not loaded
LED inactive	LON normal operating mode

13   Jumper "X2": Ground fault monitoring 'LON-Bus'
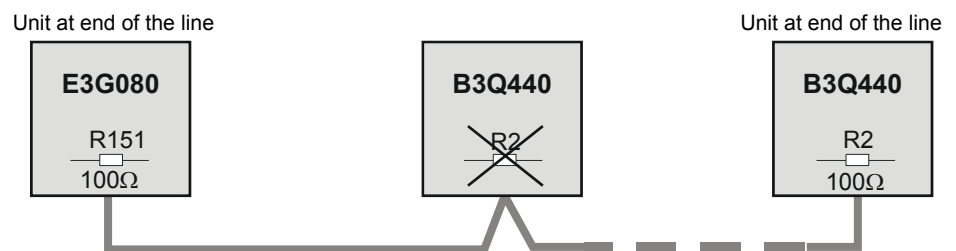   'out'   = inactive (factory setting)
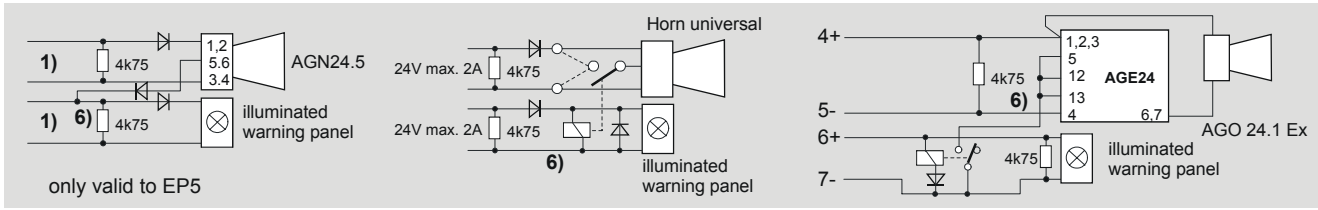   'in'   = active
      (for details application –> see chapter 6)

14   Resistor "R151": Line termination element for the communication circuit to the
      B3Q440 control console

The LON communication circuit must be terminated at both ends with a resistor
100 Ω.

– Resistor R151 inserted   =   unit at end of the line
– Resistor R151 not inserted   =   no unit at end of the line

Unit at end of the line   Unit at end of the line

E3G080	B3Q440	B3Q440
R151	R2	R2
100Ω		100Ω

37.10 Connections

Notes:

1) The polarity indicated at terminals 4...7 applies to active status.
2) Instead of the alarm resistor (1k2) A Z diode (5.6 V) can also be inserted for the stop/blocking button.
3) Choice of make or break contact. Zener diodes forbidden!
4) Max. 600m between E3G080 and one B3Q440 with a wire gauge of 0.8mm (twisted);
   - with several B3Q440 on the same stub line, correspondingly shorter,
   - the deciding factor is the maximum current per B3Q440,
   - in the supply line to the last B3Q440, a voltage drop of max. 6 V is permissible.
5) If control lines / detection lines are not used, a termination resistor need not be connected.
6) **only valid for EP5:** For change of tone, depending on alarm horn, use either the positive pole of the "Illuminated warning panel" output,
or intermediate relay

38   K5L020 Dual sector extinguishing p.c.b

38.1   Overview

- Autonomous card for the monitoring and control of magnetic extinguishing valves or valve actuators
- It is also suitable merely to monitor the presence of spare extinguishing agent batteries
- Comprises 2 monitored control lines that can be calibrated individually
- Each control line can be actuated via 2 control inputs with AND functionality
- Max. 2 A/24 V per control line
- Output contact for collective fault signal

38.2   Key data

Control line	Max. 2 A/24 V available upon activation active as long as voltage is applied to control input permissible valve resistance 15....200 Ω
Collective fault signal	Changeover contact volt-free max. 1 A/30 V
Current consumption at 24V	Quiescent 26 mA activated 45 mA without load
Operating voltage	18....32 VDC

use Z1K030

Terminal block (20 terminals) – mounted on module chassis – for direct connection of the periphery

Card chassis – mounted on module chassis

159

38.3 Important components
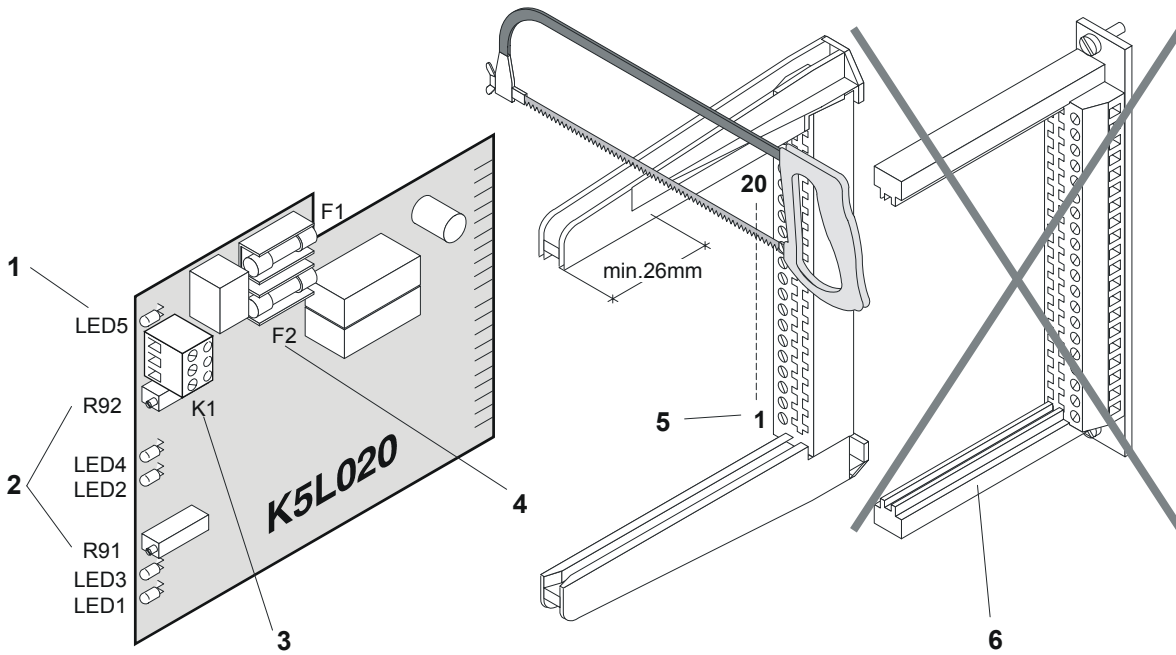
Legend:

1   LEDs

LED 5	green	on	=	normal operation
LED 1/2	red	on	=	'extinguishing actuating element' control line activated
		on	=	short circuit on 'extinguishing actuating element' control line
LED3/4	yellow	flashing	=	open line or blown / missing fuse for 'extinguishing actuating element' control line

2   Potentiometer "R91/92": Calibration of short circuit monitoring of 'extinguishing actuating element' control line

3   Plug-in terminal "K1": Relay collective fault signal

4   Fuse "F1" 2 A/T: control line 1
      Fuse "F2" 2 A/T: control line 2

5   Use Z1K030: to adhere the terminal numbering

6   For use in the CS1140, the enclosed card holder can not be used.

38.4 Adjust control line

Precondition

Valves are connected correctly. Valve pyrotechnic actuators must be switched all in series (≥15 Ω)

Procedure

Turn the corresponding potentiometer R91 or R92 anti-clockwise until LED3 or LED4 (yellow) lights up.
Turn the potentiometer back (clockwise) until the yellow LED is extinguished.

Once again turn the potentiometer in a clockwise direction according to the following table:

| Valve resistance approx. | 15 Ω | ¼ turns in a clockwise direction |
	25 Ω	½
	50 Ω	1
	100 Ω	2
	150 Ω	3
	200 Ω	4

Short circuit test:

Valve short circuit. The yellow LED must light up. If not, repeat the calibration procedure.

38.5 Connections
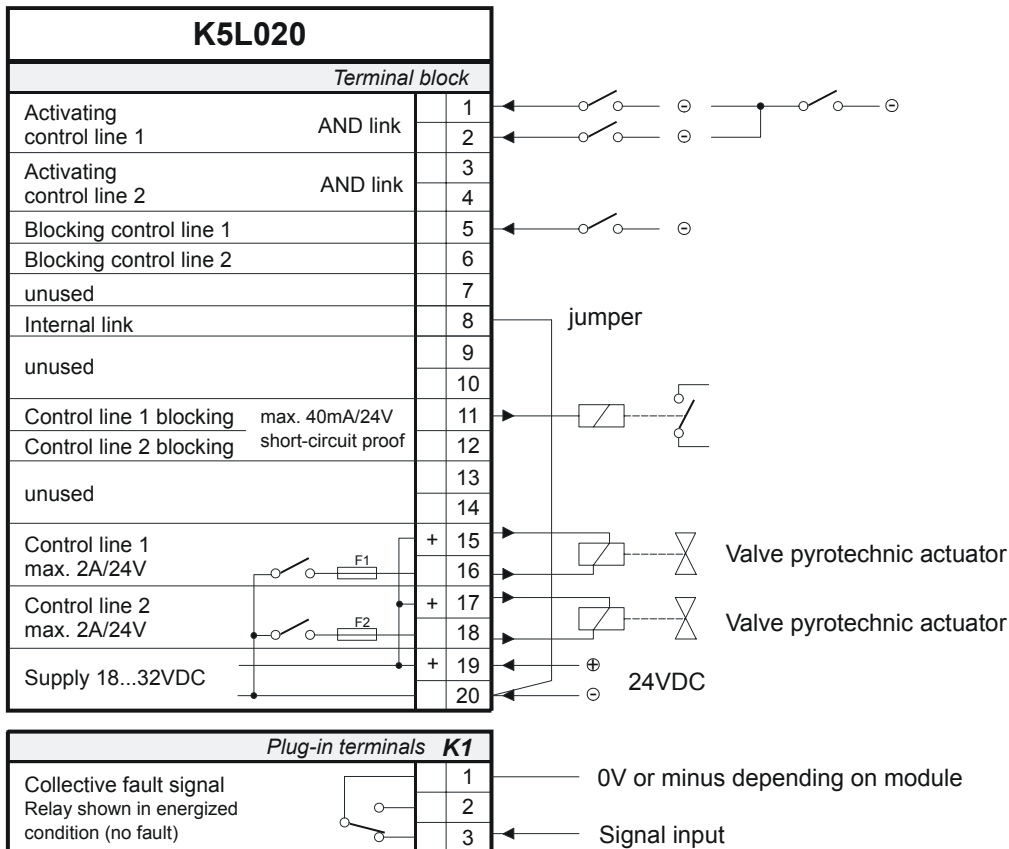
38.6   Application example

The K5L020 monitoring card is used to monitor valves for a spare battery of cylinders. Upon open line or short circuit on one of the valve lines, an extinguishing control fault is signaled. The spare extinguishing agent battery of cylinders can be connected to the extinguishing control device by means of a key and a slave relay. At the same time the active extinguishing agent battery of cylinders is connected to the K5L020.
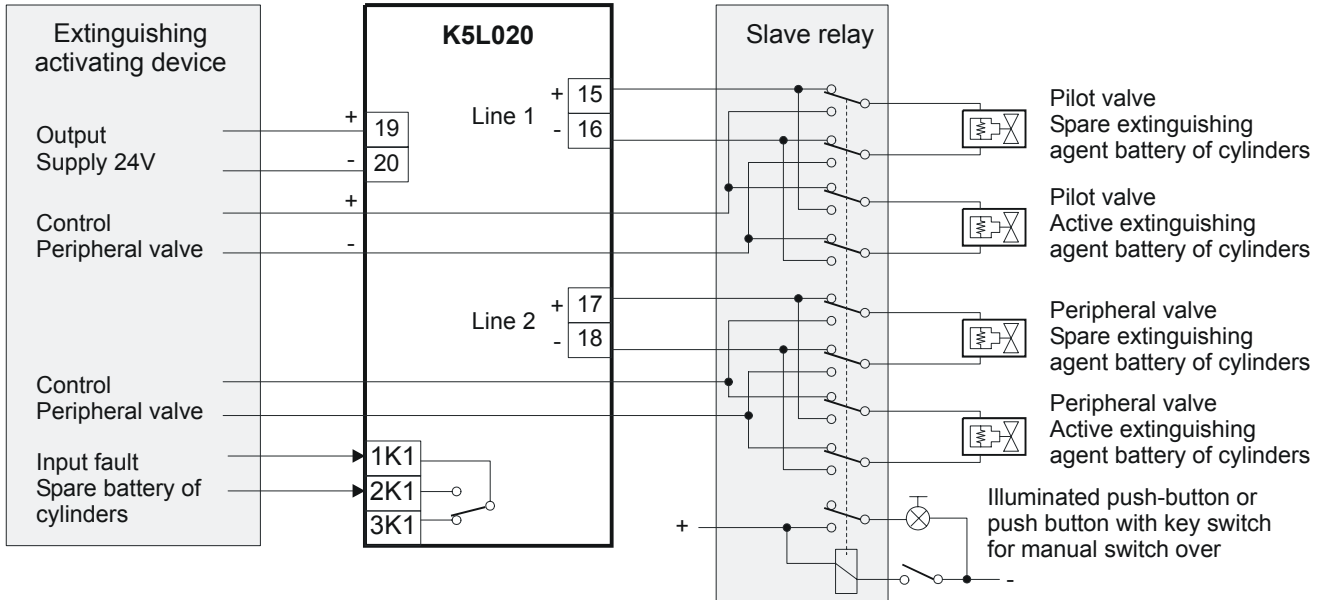
39 E3G091 Remote transmission interface

39.1 Overview

- Interface for remote transmission equipment with several alarm criteria
- Designed for 4 channels
- Enables activation via make or break contact as well as the de-coupled activation of all channels upon "Emergency alarm"
- Test LED for each channel (active upon activation)
- Activation upon "Emergency alarm"
- Card format 100 mm x 100 mm

39.2 Application

Only necessary in systems with several **remote alarm** criteria

39.3 Key data

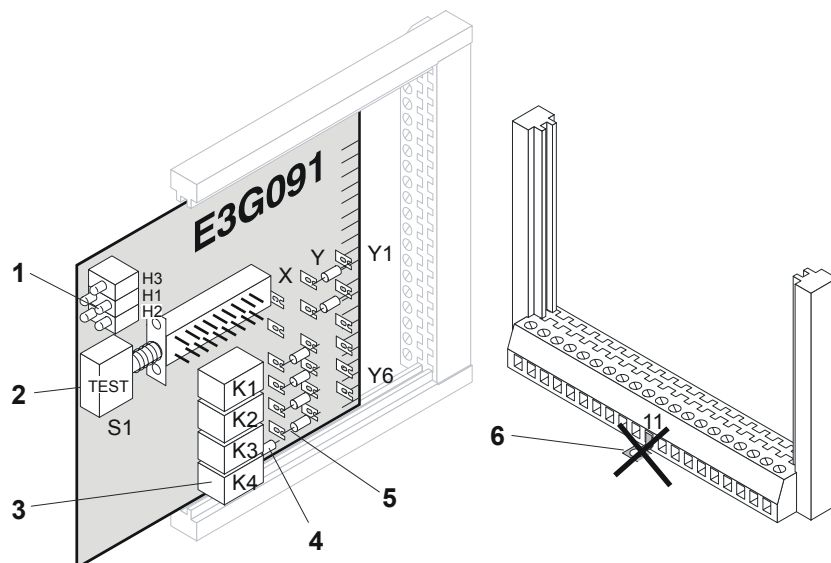| Voltage		20...32 VDC
Output contacts		4
Contact load		30 VA
Quiescent current	at 24VDC	0 mA
max. current		100 mA

Terminal block X15 (20 terminals)
– mounted on module chassis
– for the connection of the prefabricated cable to connection level, or
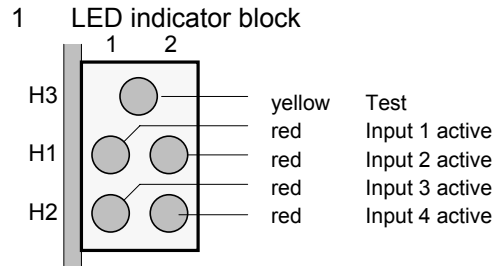– for direct connection of the periphery

Card chassis
– mounted on module chassis

39.4 Important components

Legend:

1   LED indicator block

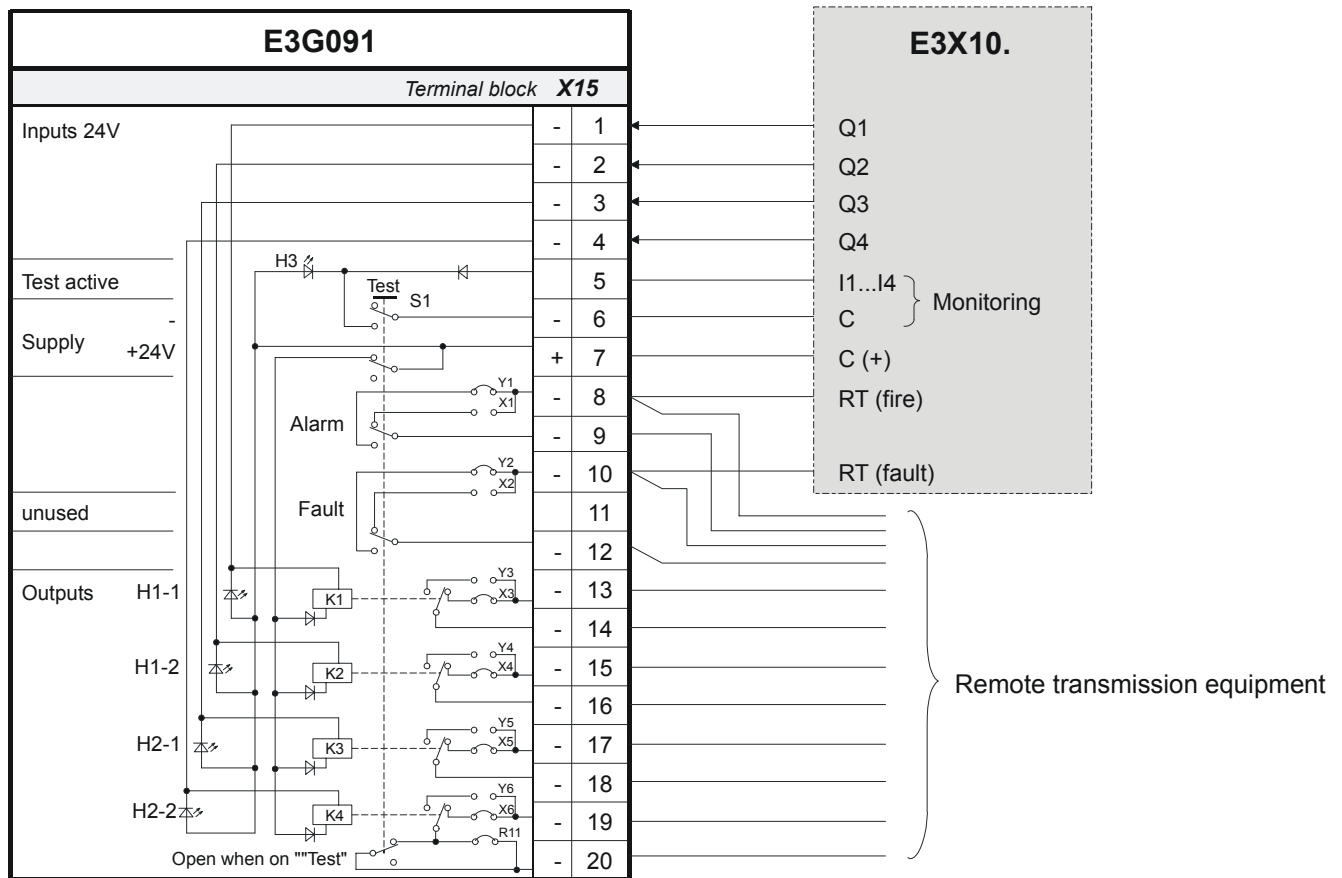|	
yellow	Test
red	Input 1 active
red	Input 2 active
red	Input 3 active
red	Input 4 active

2   Test key "S1" : Test key pressed –> LED "H3" lights (Test mode)

3   4 miniature relays 24 VDC / 1 A "K1...K4"

4   0-Ω resistor: "Y1...Y6"= break contact
                     "X1...X6"= make contact
                     (Y1,Y2, X3...X6 fitted at factory)

39.5   Connections

40 E3G110 Emergency operation link

40.1 Overview

- Optional unit to E3G080 'Extinguishing' control module (vital function in 'D')
- Enables autom. activation of extinguishing upon malfunction of the main CPU when linked to 2 detectors
- Receives "Emergency alarm" via the Mimic display output of the line module belonging to the extinguishing SECTION
- 1..8 line modules can be allocated to 1..4 link channels
- E3G110 is independent of control unit software
- Allocation made by inserting jumpers in the 'Mini distributor board' in the E3G110
- Link to the line modules E3M060, E3M070, E3M071, E3M080, E3M111, E3M140 and E3M171
- Card format 100 mm x 200 mm

40.2 Application

- The detectors in the extinguishing SECTION must be assigned to **2 independent** detection lines.
- With collective detectors the 2 detection lines can be on the same or different modules.
- Several link channels can be connected in parallel if several line pairs belong to the extinguishing SECTION.
- The flat cables F12A100 (0.4 m) or F12A470 (1.5 m) are used for the connection between line module E3M... and E3G110.
- In order to monitor the presence of the E3G110, the manual activation line (E3G080) can be 'looped' via the E3G110. However, the E3G110 can also be connected to the E3G080 as a 'stub' line.
- For further details –> see Principle of interlinking, page 166

## 40.3 Key data

Inputs	8 (Flat cables ST1 - ST8) designed for Mimic display outputs E3M....
Outputs	4 (Link channels) designed for 'Simulation of manual activation' E3G080
Quiescent current	0 mA

E3G110
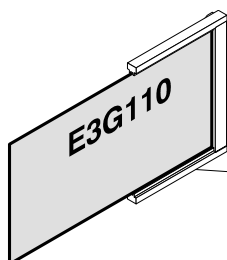
Terminal block X10 (20 terminals)
– mounted on module chassis
– for connection to control module E3G080 (manual activation)

Card chassis
– mounted on module chassis

40.4 Important components
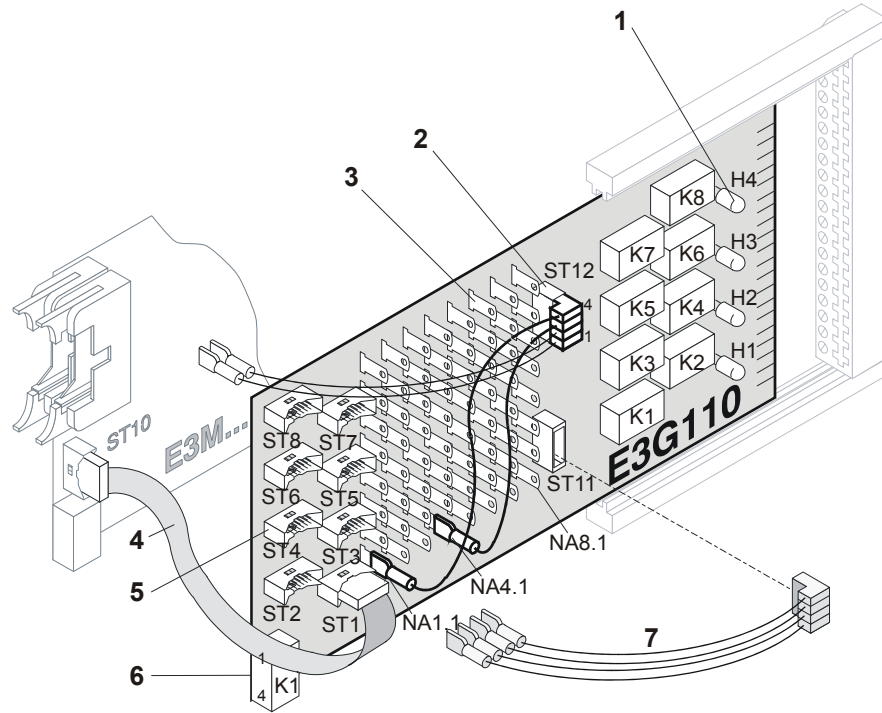
Legend:

1   LED "H1...H4" : on when the AND operation is completed
2   Connectors "ST11 and ST12" : for distributor cable
3   Pins "NA1.1....NA8.8" : to connect the distributor cable
4   Flat cables F12A100 / F12A470 : connection to line module (must be ordered separately)
5   Connectors ST1....ST8 : line module inputs via flat cable
6   Plug-in terminals "K1": Supply for "I-Bus" modules (for 24 V)
7   Distributor cable: for individual connection (contained in module)

40.5 Principle of interlinking

Example with 2 interactive line modules
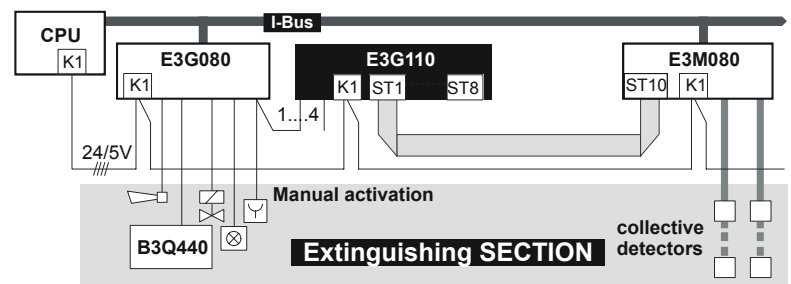
Important:
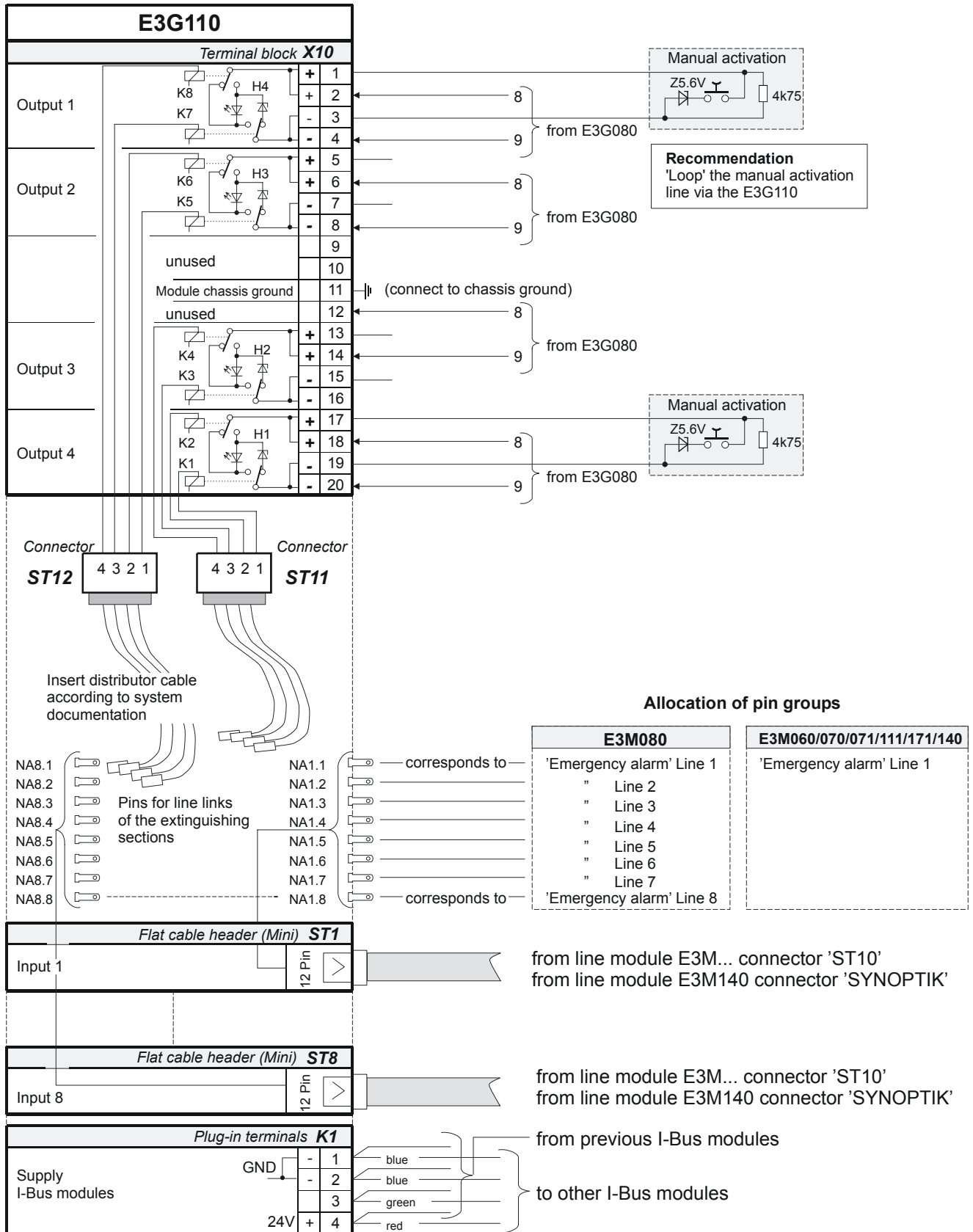Only detectors which belong to the extinguishing SECTION may be connected to the lines
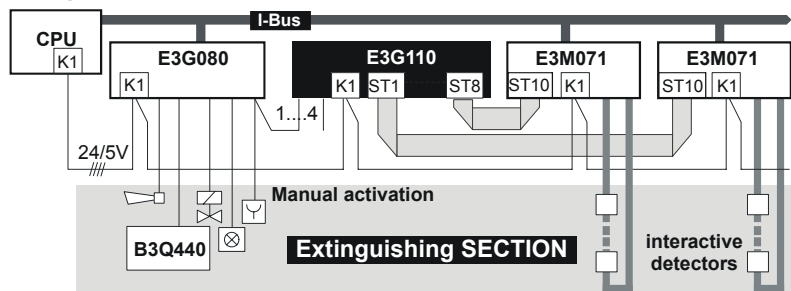
Example with 1 collective line module

Note:
Only use E3M080 from index b/c onwards together with E3G110

166

40.6   Connections

E3G110

Terminal block *X10*

Output 1	K8 / H4 / K7	**+** 1
		+ 2 ← 8
		- 3
		- 4 ← 9 } from E3G080
Output 2	K6 / H3 / K5	**+** 5
		+ 6 ← 8
		- 7
		- 8 ← 9 } from E3G080
	unused	9
		10
	Module chassis ground	11 ⊣⊢ (connect to chassis ground)
	unused	12 ← 8
Output 3	K4 / H2 / K3	**+** 13
		+ 14 ← 9 } from E3G080
		- 15
		- 16
Output 4	K2 / H1 / K1	**+** 17
		+ 18 ← 8
		- 19
		- 20 ← 9 } from E3G080

Manual activation
Z5.6V 4k75

Recommendation
'Loop' the manual activation line via the E3G110

Manual activation
Z5.6V 4k75

Connector **ST12**   4 3 2 1   4 3 2 1   **ST11** *Connector*

Insert distributor cable according to system documentation

NA8.1
NA8.2
NA8.3   Pins for line links
NA8.4   of the extinguishing
NA8.5   sections
NA8.6
NA8.7
NA8.8

NA1.1 — corresponds to —
NA1.2
NA1.3
NA1.4
NA1.5
NA1.6
NA1.7
NA1.8 — corresponds to —

Allocation of pin groups

E3M080	E3M060/070/071/111/171/140
'Emergency alarm' Line 1	'Emergency alarm' Line 1
" Line 2	
" Line 3	
" Line 4	
" Line 5	
" Line 6	
" Line 7	
'Emergency alarm' Line 8	

Flat cable header (Mini) **ST1**

Input 1   12 Pin >

from line module E3M... connector 'ST10'
from line module E3M140 connector 'SYNOPTIK'

Flat cable header (Mini) **ST8**

Input 8   12 Pin >

from line module E3M... connector 'ST10'
from line module E3M140 connector 'SYNOPTIK'

Plug-in terminals **K1**

Supply I-Bus modules	GND	-	1	blue
		-	2	blue
			3	green
	24V	+	4	red

from previous I-Bus modules

to other I-Bus modules

41 Z3B171 Relay module

41.1 Overview

- Interface (Potential isolation) to 3rd party systems (Fire doors, ventilation system etc.)
- Activated via driver outputs E3X10. (Q1...Q8) or E3L020
- Contains 1 changeover contact 250 VAC / 10 A
- Latched on to extruded section
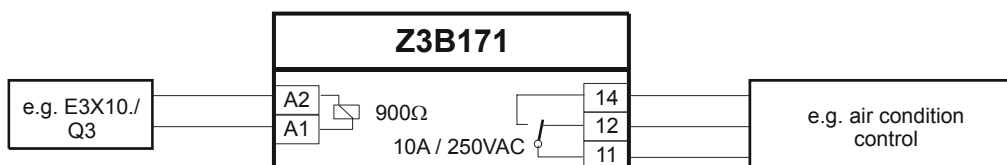- Quiescent current 33 mA at 29.6 V (27 mA at 24 V)
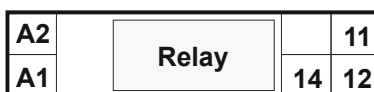
41.2 Important components
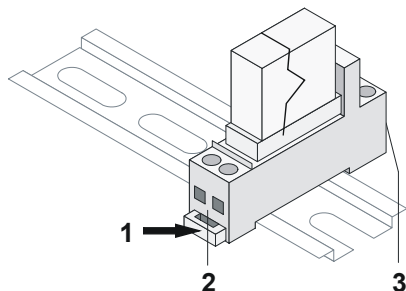
Legend:

1   Remove with screwdriver in order to release the relay module from the extruded section
2   Control unit voltage side (coil)
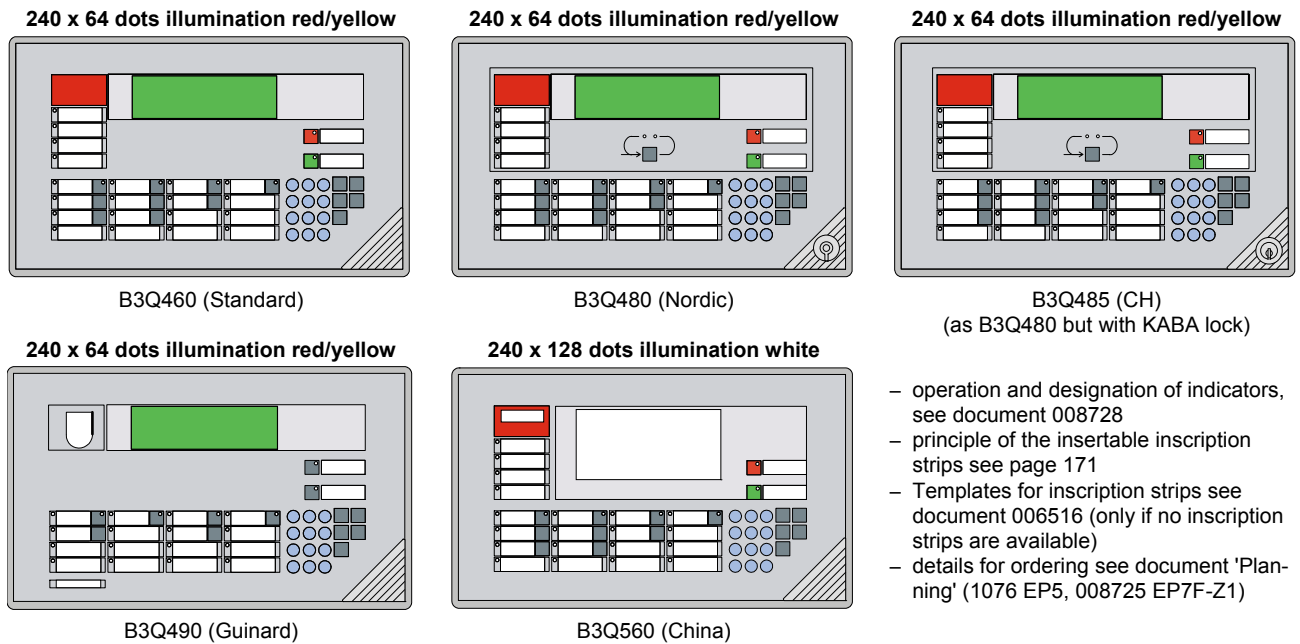3   External voltage side (contact)

41.3 Connections

Terminal layout

42   B3Q4.. / 560 Control terminal AlgoPilot

42.1   Overview

240 x 64 dots illumination red/yellow

B3Q460 (Standard)

240 x 64 dots illumination red/yellow

B3Q480 (Nordic)

240 x 64 dots illumination red/yellow

B3Q485 (CH)
(as B3Q480 but with KABA lock)

240 x 64 dots illumination red/yellow

B3Q490 (Guinard)

240 x 128 dots illumination white

B3Q560 (China)

– operation and designation of indicators,
  see document 008728
– principle of the insertable inscription
  strips see page 171
– Templates for inscription strips see
  document 006516 (only if no inscription
  strips are available)
– details for ordering see document 'Plan-
  ning' (1076 EP5, 008725 EP7F-Z1)

● Control terminal for the fire detection series **CS1140**
● Can simultaneously also be used as 'main-CPU'
● For full system operating
● Can be used for **single** or **multi** AREA operating
● Selectable ground fault monitoring, detected via master module E3X10. or via
  control module E3G070
● Emergency operating facility integrated
● Operating access via password and/or key switch
● Insertable inscription strips in different languages
● to be built into the housing of the control unit or remote located in separate hous-
  ing

42.2   Application

- Remote location for the AlgoPilot:
  - either with own local power supply, or 24 V supplied from the control unit
- Option '9 V battery':
  - Allows fault indication upon total failure of power supply (mains + battery) see page 172
- EPROM+/RAM set
  - According to system size (table of quantities) choose the corresponding EPROM+RAM set
  - Processing capacity see document 'Planning' (1076 EP5, 008725 EP7F-Z1)

	EPROM set				RAM set		
for	Control terminal 'CT'	Parallel control terminal 'CA'	Control terminal and main CPU combined 'CI'	Notes	for application 'CT' and 'CI'	for application 'CA'	Notes
B3Q4..	CTQ00xxx	CAR00xxx		2x 512Kx8Bit international		Z3S080 (2x 256Kx8Bit)	1 Set
			CIQ00xxx	2x 1024Kx8Bit international			1 Set
B3Q560	CTQT1xxx	CAQT1xxx	CIQT1xxx	2x 1024Kx8Bit China simplified	Z3S070 (2x 512Kx8Bit)		1 Set
			CIWT1xxx				2 Sets
	CTQTExxx	CAQTExxx	CIQTExxx	2x 1024Kx8Bit China traditional			1 Set
			CIWTExxx				2 Sets
	CTQTLxxx	CAQTLxxx	CIQTLxxx	2x 1024Kx8Bit Korea standard			1 Set
			CIWTLxxx				2 Sets
	CTQT5xxx	CAQT5xxx	CIQT5xxx	2x 1024Kx8Bit Thailand			1 Set
			CIWT5xxx				2 Sets

Recommended EPROMs: 27C040, 27C4001 (512Kx8Bit, 100 ns, DIP32) and
27C801 (1024Kx8Bit, 100 ns, DIP32)

42.3   Key data

	B3Q4..	B3Q560
Operating voltage	18...45 VDC	18...45 VDC
Quiescent current (illumination of the LCD inactive)	100 mA (24 V)	75 mA (24 V)
Maximum current (LCD backlight active + lamp test)	400 mA (24 V)	260 mA (24 V)

42.4   Functions

Interfaces
- C-Bus –> Plug-in terminals 'K5'
- I-Bus –> Connector 'ST1'
- 2 x RS232 –> Connector 'ST2'
- Parallel indicator panel B3R051, Mimic Display board /K3R071/072 –> Connector 'ST4'
- Emergency operation circuit –> Plug-in terminals 'K6'

Control inputs
- external key switch (see Operation enabled)
- monitoring of autonomous power supply
- monitoring of Plexiglas door (open / closed)

Operation enabled
- this is normally done via password at the keyboard
- an integrated key switch, (photoelectric) is available as an option which can also be used to lock the Plexiglas door (if used).
- operation can also be enabled by an external key switch

42.5   Mechanical design

– front terminal with foil and integrated keyboard
– inscription with insertable inscription strips
– electronics shielded by metal cover
– key switch (option) to lock the Plexiglas door (can also be used to enable operation)
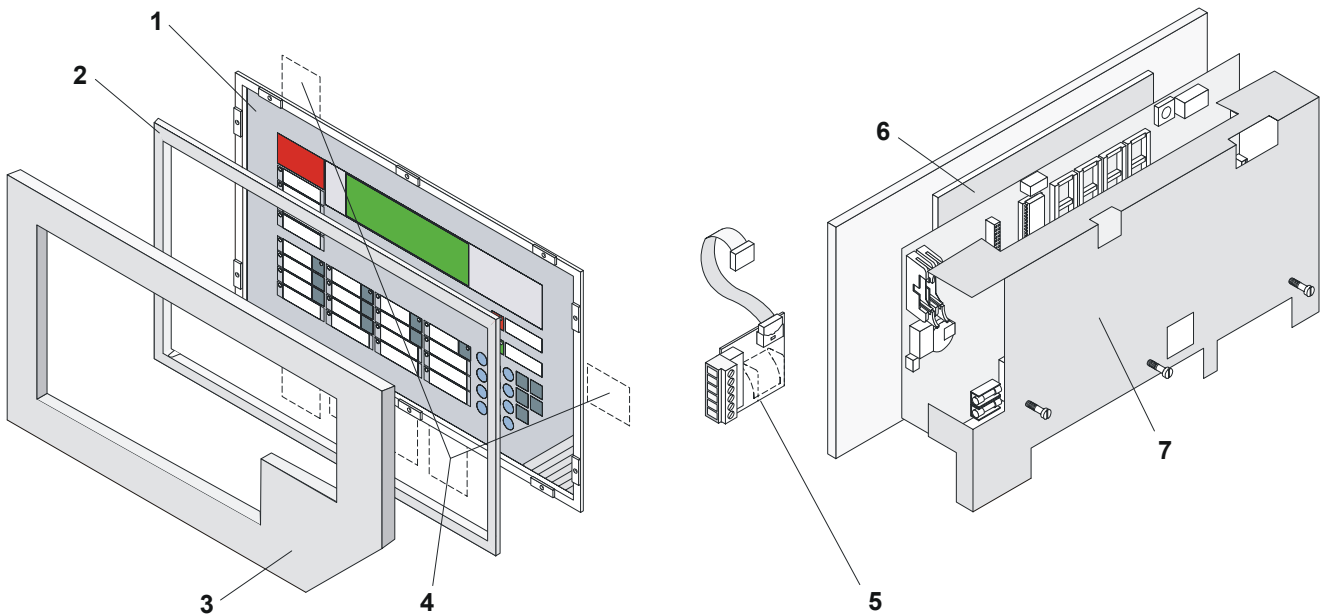
Legend:
1   Foil
2   Cover frame
3   Plexiglas door H26T020 (Option)
4   Insertable inscription strips
5   Adapter Z3I530, flat cable –> terminals: Connection outside housing to the parallel indicator panel B3R051 etc.
6   Display
7   Protective cover: The protective cover must be removed to insert the EPROMs and the RAMs.

➔ Mounting –> see document 1393

42.6   Important components B3Q4..
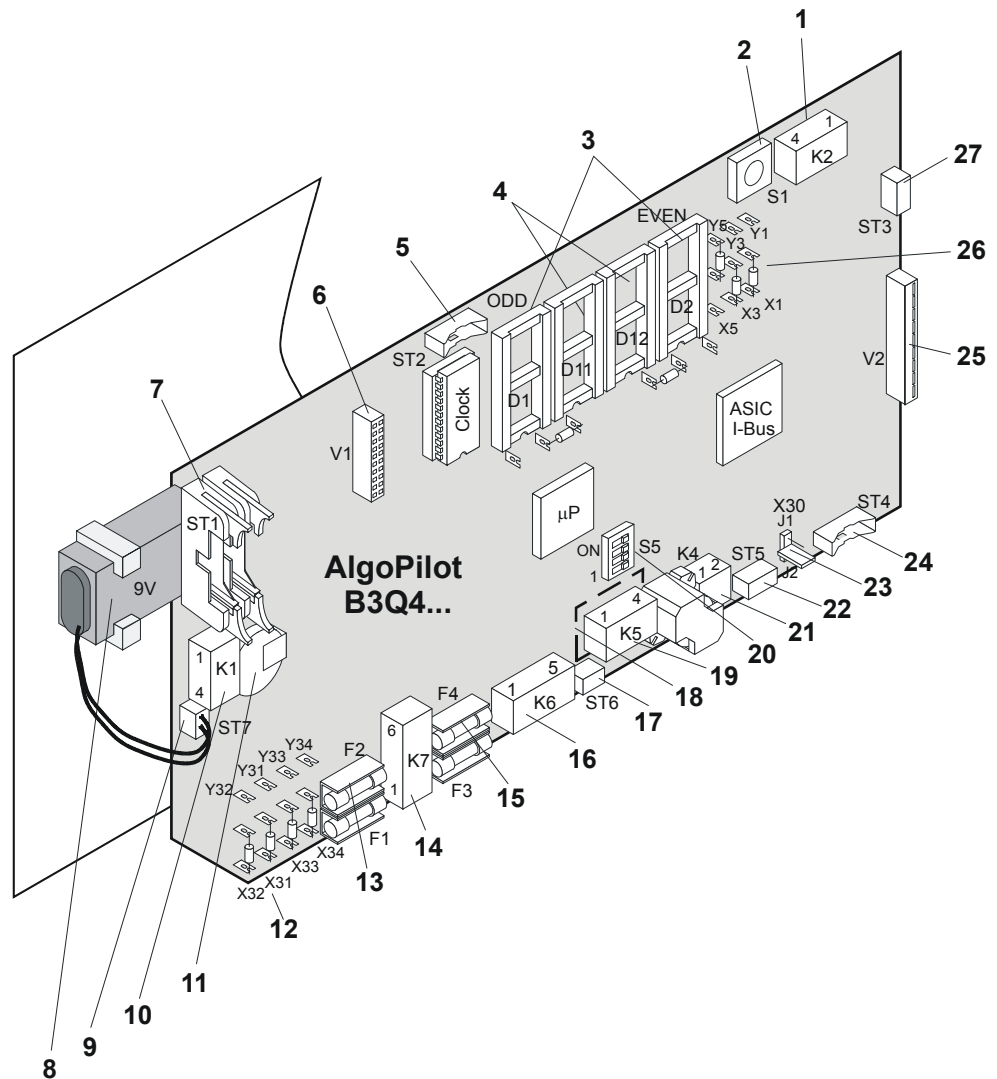
Legend:

1   Plug-in terminals 'K2' (black 4-pin): Inputs "Monitoring power supply"
2   Key "S1": Reset
3   EPROM plug-in spaces D1 / D2: Software
4   RAM plug-in spaces 'D11' / 'D12': User data and standard text
5   Connector "ST2": RS232 (2 x HCMOS level), connection to E3I020, is also used as interface to maintenance PC
6   Connector "V1": LCD
7   Double flat cable header ST1" (26-pin): I-Bus
8   9V Lithium battery: Option '3rd voltage source' (cable required V2G040 for 9V battery)
9   Connector "ST7": 9 V battery (trouble signal if 24 V fails)
10   Plug-in terminals "K1" (orange 4-pin): Supply for the modules "I-Bus"
11   Rechargeable Lithium battery 3 V / 70 mAh: RAM buffering for clock, user data etc.
      - data storage time: minimum 2 weeks, typically >100 days
      - maintenance not required

12   Jumpers "X/Y31…X/Y34": Programming of terminals "K7"

Use of AlgoPilot B3Q...	0 Ω resistors
"CT" + Supply from control unit (Input)	**X31 + X32 + X33 + X34**
"CT" + autonomous supply (Output)	Y31 + Y32 + Y33 + Y34
"CI" + autonomous supply (Output)	Y31 + Y32 + Y33 + Y34

13   Fuses 'F1', 'F2' 0.8 A/T: Supply input / supply output with high breaking ca-
      pacity (sand-filled)

14   Plug-in terminals 'K7': (orange 6-pin): "24 V supply voltage" (18...45 VDC)

15   Fuses 'F3', 'F4' 0.5 A/T: Input/output emergency operation circuit (Fuses with
      high breaking capacity, sand-filled)

16   Plug-in terminals 'K6' (orange 5-pin): "Emergency operation circuit"

17   Connector 'ST6': Hall switch to monitor the Plexiglas door (option)

18   Resistors to modify the C-Bus impedance:

Position	Impedance value 110 Ω, e.g. for G51 0.6Ø	Impedance value 50 Ω, e.g. for MICC
R49 / 50	402 Ω	182 Ω
R31 / 32 / 33 / 34	110 Ω	49,9 Ω

Impedance adaptation only required if C-Bus line is > 100 m. For other impedance
values than 110 Ω or 50 Ω consult document e1594.

19   Plug-in terminals 'K5' (grey 4-pin): "C-Bus"

20   Switch 'S5': "Service functions" S1-1...4 must be set to OFF

S5-1	on	Maintenance mode: Blocks all control outputs	S5-3	
S5-2	off	Event memory, normal mode	S5-4	unused
	on	Event memory, freeze current contents		

21   Plug-in terminals 'K4' (orange 2-pin): "External operation enabling"

22   Connector 'ST5': unused (tamper contact)

23   Jumper 'X30': Ground fault monitoring 'C-Bus'
      J1   =   not monitored
      J2   =   monitored
      'removed'   =   the other monitors (factory setting)
      ➔ for application details –> see chapter 6

24   Connector 'ST4': Parallel indicator panel B3R051, Mimic display board
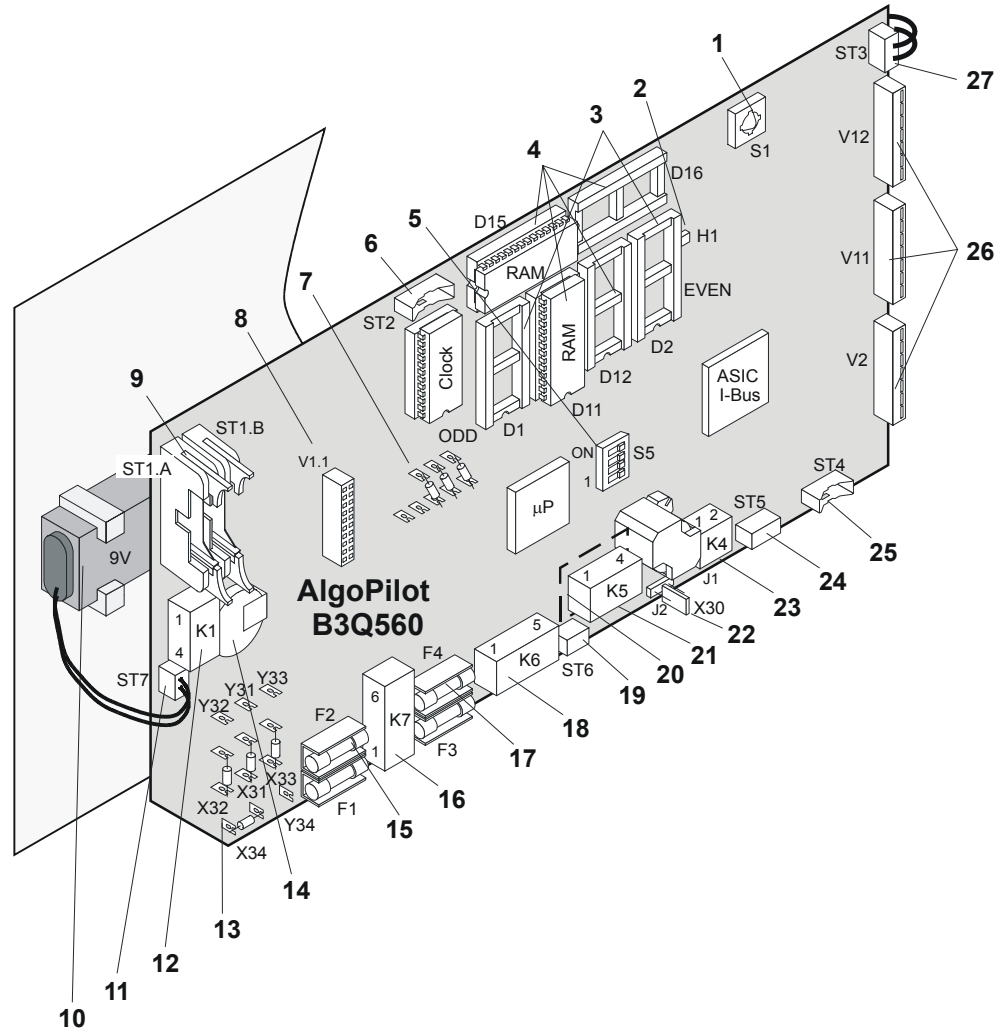   K3R071/72

25   Connector 'V2': Foil-covered keys (front terminal)

26   Programming for RAM/EPROM:

RAM/EPROM:	RAM 256Kx8Bit or 512Kx8Bit	EPROM 512Kx8Bit	EPROM 1024Kx8Bit
0 Ω resistors	X1	X2 / X3 / X4 / Y5	X2 / X3 / X4 / X5

27   Connector 'ST3': Illumination for LCD

42.7 Important components B3Q560

Legend:

1   Key "S1": Reset

2   LED "H1" (green) Indicator 'System on'

3   EPROM plug-in spaces 'D1' / 'D2': Software

4   RAM plug-in spaces 'D11', 'D12', 'D15', 'D16': User data and standard text

5   Switch "S5": "Service functions" S1-1...4 must be set to OFF

S5-1	on	Maintenance mode: Blocks all control outputs	S5-3	
S5-2	off	Event memory, normal mode	S5-4	unused
	on	Event memory, freeze current contents		

6   Connector 'ST2':RS232 (2 x HCMOS level), connection to E3I020, is also used as interface to maintenance PC

7   Jumper "R500…R502": settings for RAM size

2 pcs. 256Kx8Bit or 4 pcs. 256Kx8Bit	LP11 LP12 LP13 R500 R501 R502 LP6 LP7 LP8 LP9 LP10	mixed sizes **not** possible	LP11 LP12 LP13 R500 R501 R502 LP6 LP7 LP8 LP9 LP10	2 pcs. 512Kx8Bit or 4 pcs. 512Kx8Bit

8   Connector 'V1.1': LCD

9   Double flat cable header 'ST1' (26-pin): I-Bus

10   9 V Lithium battery: Option '3rd voltage source', cable required V2G040 for
     9 V battery

11   Connector "ST7": 9 V battery (trouble signal if 24 V fails)

12   Plug-in terminals "K1" (orange 4-pin): Supply for the modules "I-Bus"

13   Jumpers "X/Y31…X/Y34": Programming of terminals "K7":

Use of AlgoPilot B3Q...	0 Ω resistor
"CT" + Supply from control unit (Input)	X31 + X32 + X33 + X34
"CT" + autonomous supply (Output)	Y31 + Y32 + Y33 + Y34
"CI" + autonomous supply (Output)	Y31 + Y32 + Y33 + Y34

14   Rechargeable Lithium battery 3 V / 70 mAh: RAM buffering for clock, user data etc.
     - data storage time: minimum 2 weeks, typically >100 days
     - maintenance not required

15   Fuses 'F1', 'F2' 0.8 A/T: Supply input / supply output with high breaking capacity (sand-filled)

16   Plug-in terminals 'K7': (orange 6-pin): "24 V supply voltage" (18...45 VDC)

17   Fuses 'F3', 'F4' 0.5 A/T: Input/output emergency operation circuit (Fuses with high breaking capacity, sand-filled)

18   Plug-in terminals "K6" (orange 5-pin): "Emergency operation circuit"

19   Connector "ST6": Hall switch to monitor the Plexiglas door (option) ('door open')

20   Resistors to modify the C-Bus impedance:

Position	Impedance value 110 Ω, e.g. for G51 0.6Ø	Impedance value 50 Ω, e.g. for MICC
R49 / 50	402 Ω	182 Ω
R31 / 32 / 33 / 34	110 Ω	49,9 Ω

Impedance adaptation only required if C-Bus line is > 100m. For other impedance values than 110 Ω or 50 Ω consult document e1594.

21   Plug-in terminals "K5" (grey 4-pin): "C-Bus"

22   Jumper 'X30': Ground fault monitoring 'C-Bus'
     J1   =   not monitored
     J2   =   monitored
     'removed'   =   the other monitors (factory setting)
     ➔ for application details –> see chapter 6

23   Plug-in terminals 'K4' (orange 2-pin): "External operation enabling"

24   Connector 'ST5': unused (tamper contact)

25   Connector 'ST4': Parallel indicator panel B3R051, Mimic display board K3R071/72

26   Connector 'V2','V11', 'V12': Foil-covered keys (front terminal)

27   Connector 'ST3': Illumination for LCD

42.8   Connections B3Q4..
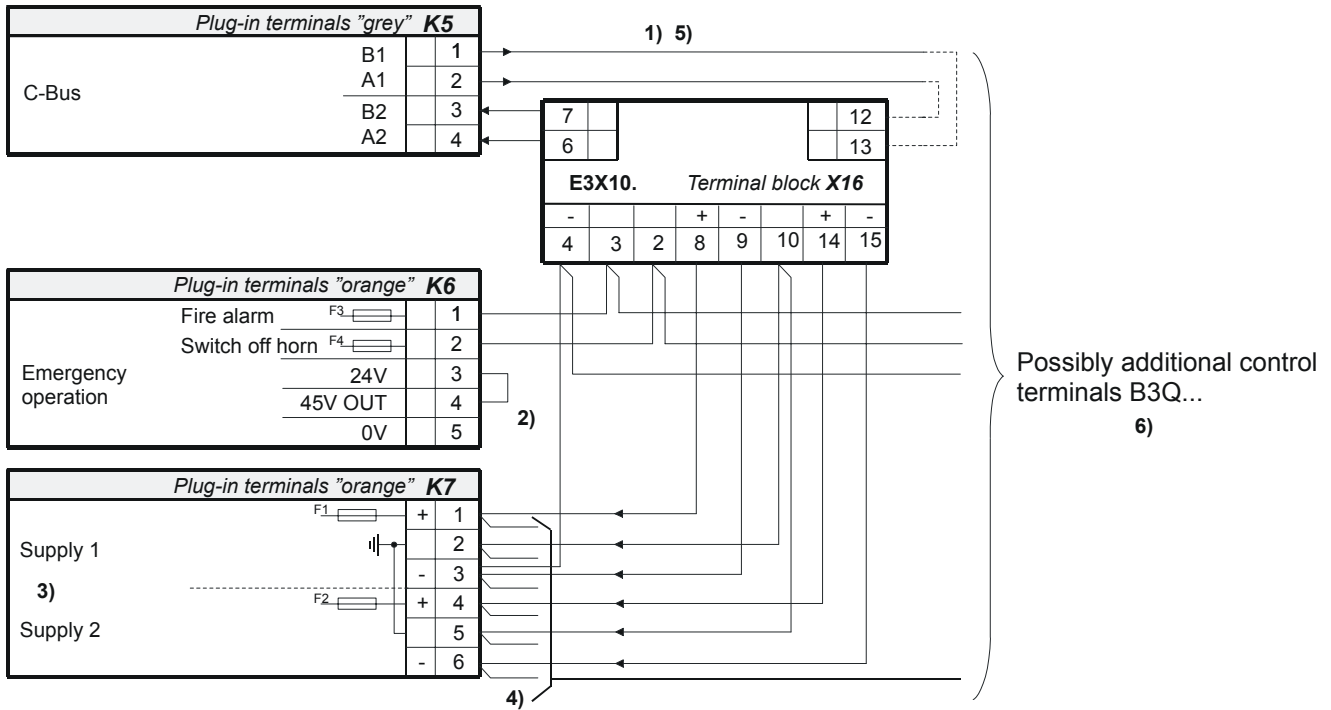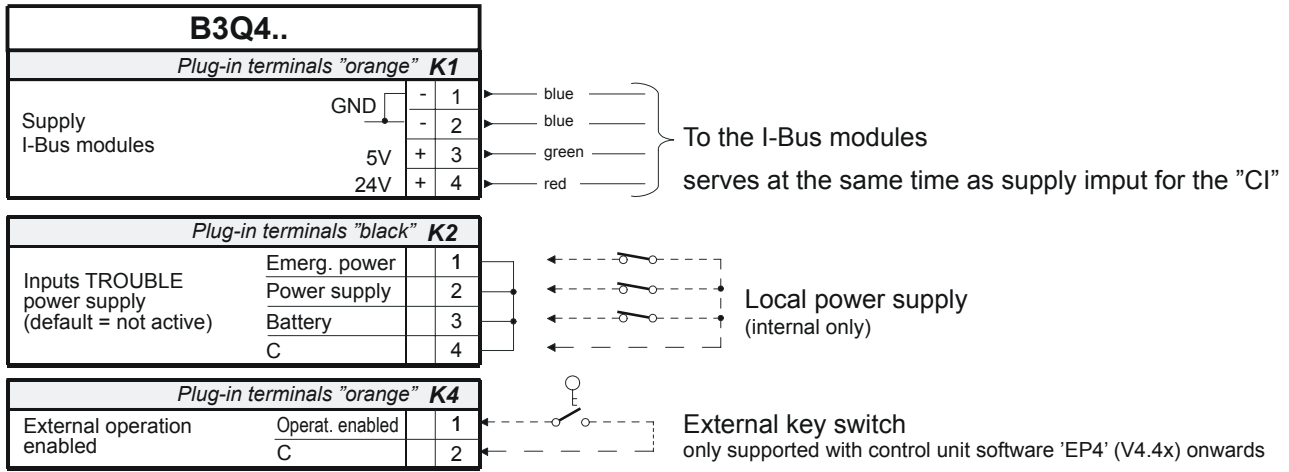
1) C-Bus must always be wired as a loop line (even with built-in control terminal AlgoPilot B3Q...)
2) Jumper must always be inserted
3) Configuration as in-/or output see jumpers X31, X32, X33, X34, Y31, Y32, Y33, Y34 on page 173 and 23
4) For application as "CI", external control terminals ("CT") are connected on K7
5) Cabling C-bus: max. 1000m per loop with Ø 0.6 mm wire
                        max. 1400m per loop with Ø 0.8 mm wire
                        (always including return line) for cable type (impedance adaptation) see page 173
6) "Cabling principle AlgoPilot B3Q..." –> see page 23

42.9 Connections B3Q560

B3Q560		
Plug-in terminals "orange" **K1**		
Supply I-Bus modules	GND	-	1	blue
	-	2	blue
	5V	+	3	green
	24V	+	4	red

To the I-Bus modules

serves at the same time as supply imput for the "CI"

Plug-in terminals "orange" **K4**		
External operation enabled	Operat. enabled	1
	C	2

External key switch
only supported with control unit software 'EP4' (V4.4x) onwards

Plug-in terminals "grey" **K5**		
C-Bus	B1	1
	A1	2
	B2	3
	A2	4

1) 5)

| 7 | | | | | 12 |
| 6 | | | | | 13 |

E3X10. *Terminal block* **X16**

| - | | | + | - | | + | - |
| 4 | 3 | 2 | 8 | 9 | 10 | 14 | 15 |

Plug-in terminals "orange" **K6**		
Emergency operation	Fire alarm F3	1
	Switch off horn F4	2
	24V	3
	45V OUT	4
	0V	5

2)

Possibly additional control
terminals B3Q...
6)

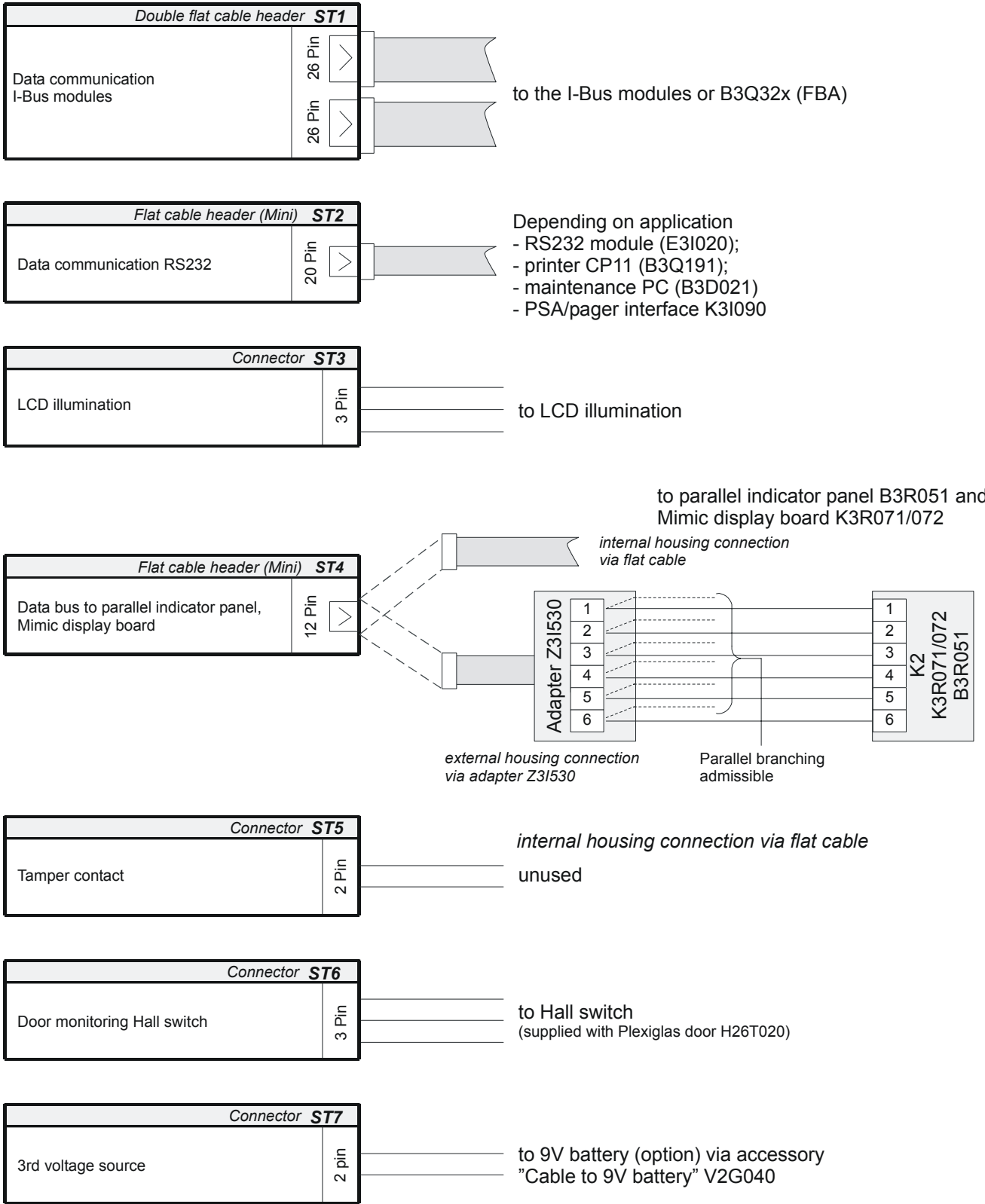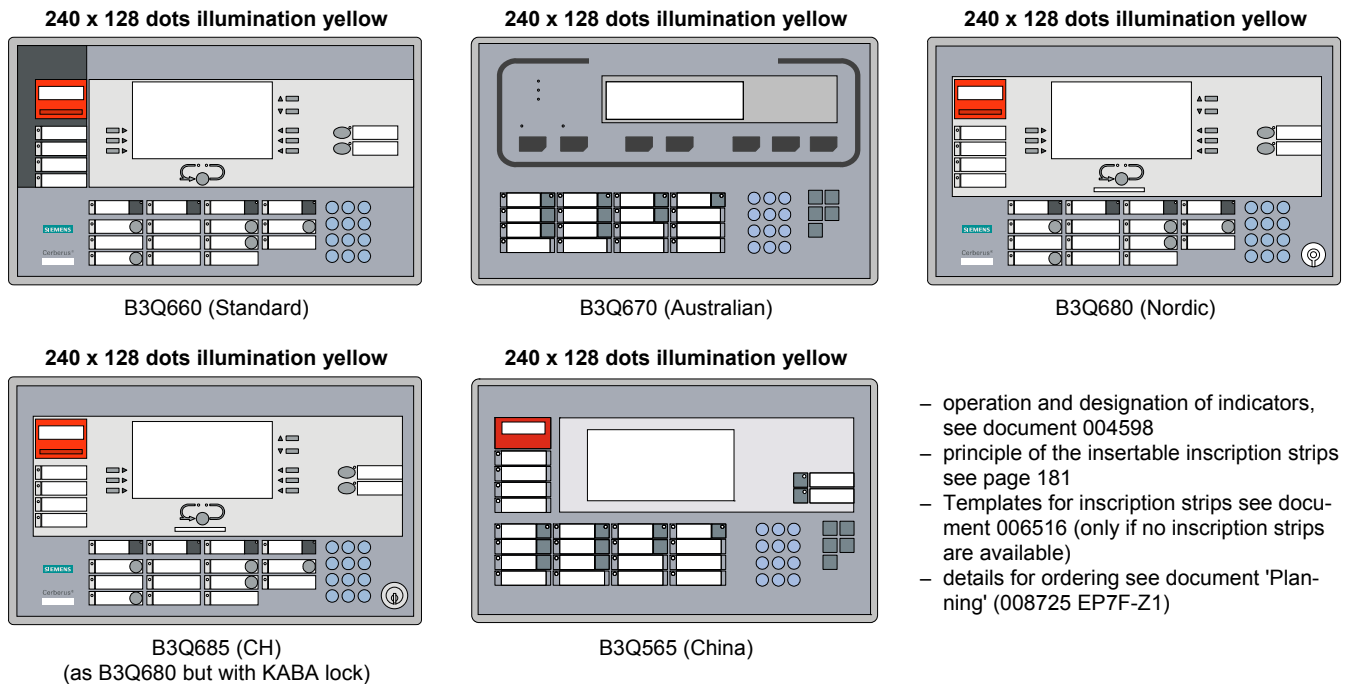| *Plug-in terminals "orange"* **K7**		
Supply 1	F1	+	1
		2
3)		-	3
	F2	+	4
Supply 2		5
		-	6

4)

1) CC-Bus must **always** be wired as a loop line (even with built-in control terminal AlgoPilot B3Q...)
2) Jumper must always be inserted
3) Configuration as in-/or output see jumpers X31, X32, X33, X34, Y31, Y32, Y33, Y34 on page 175
4) For application as "CI", external control terminals ("CT") are connected on K7
5) Cabling C-bus: max. 1000 m per loop with Ø 0.6 mm wire
                           max. 1400 m per loop with Ø 0.8 mm wire
   (always including return line) for cable type (impedance adaptation) see page 175
6) "Cabling principle AlgoPilot B3Q..." –> see page 23

42.10 Connectors B3Q4.. , B3Q560

Double flat cable header	ST1
Data communication I-Bus modules	26 Pin / 26 Pin

to the I-Bus modules or B3Q32x (FBA)

Flat cable header (Mini)	ST2
Data communication RS232	20 Pin

Depending on application
- RS232 module (E3I020);
- printer CP11 (B3Q191);
- maintenance PC (B3D021)
- PSA/pager interface K3I090

Connector	ST3
LCD illumination	3 Pin

to LCD illumination

to parallel indicator panel B3R051 and
Mimic display board K3R071/072

Flat cable header (Mini)	ST4
Data bus to parallel indicator panel, Mimic display board	12 Pin

*internal housing connection
via flat cable*

Adapter Z3I530

	K2 K3R071/072 B3R051
1	1
2	2
3	3
4	4
5	5
6	6

*external housing connection
via adapter Z3I530*

Parallel branching
admissible

Connector	ST5
Tamper contact	2 Pin

internal housing connection via flat cable

unused

Connector	ST6
Door monitoring Hall switch	3 Pin

to Hall switch
(supplied with Plexiglas door H26T020)

Connector	ST7
3rd voltage source	2 pin

to 9V battery (option) via accessory
"Cable to 9V battery" V2G040

43   B3Q6.. / 565 Control terminal AlgoPilot

43.1   Overview

240 x 128 dots illumination yellow   **240 x 128 dots illumination yellow**   **240 x 128 dots illumination yellow**

B3Q660 (Standard)   B3Q670 (Australian)   B3Q680 (Nordic)

240 x 128 dots illumination yellow   **240 x 128 dots illumination yellow**

B3Q685 (CH)
(as B3Q680 but with KABA lock)

B3Q565 (China)

– operation and designation of indicators, see document 004598
– principle of the insertable inscription strips see page 181
– Templates for inscription strips see document 006516 (only if no inscription strips are available)
– details for ordering see document 'Planning' (008725 EP7F-Z1)

- Control terminal for the fire detection series **CS1140**
- Can simultaneously also be used as 'main-CPU'
- For full system operating
- Can be used for **single** or **multi** AREA operating
- Emergency operating facility integrated
- Flash–ROM 2MBx8Bit as program memory, programming via Flash-Tool (PC)
- SRAM for user data and standard text
- Selectable ground fault monitoring, detected via master module E3X10. or via control module E3G070 (for application details see chapter 6)
- Operating access via password and/or key switch
- Insertable inscription strips in different languages
- to be built into the housing of the control unit or remote located in separate housing

43.2   Key data

Operating voltage	18...45 VDC
Quiescent current (illumination of the LCD inactive)	100 mA (24 V)
Alarm current	330 mA (24 V)
Maximum current (LCD backlight active + lamp test)	420 mA (24 V)

43.3   Application

- Remote location for the AlgoPilot:
    - either with own local power supply or
    - 24 V supplied from the control unit
- Option 9 V battery:
    - Allows fault indication upon total failure of power supply (mains + battery) –> see page 183
- According to application choose the corresponding Flash program file:

Terminal	utilization as					
	Control terminal 'CT'		Parallel control terminal 'CA'		Control terminal and main CPU combined 'CI'	
B3Q660 B3Q670 B3Q680 B3Q685	CTX00xxx	international 1)	CAX00xxx	international	CIX00xxx	international
B3Q565	CTYT1xxx CTYTExxx CTYTLxxx CTYT5xxx	China simplified 1) China traditional Korea standard Thailand	CAYT1xxx CAYTExxx CAYTLxxx CAYT5xxx	China simplified China traditional Korea standard Thailand	CIYT1xxx CIYTExxx CIYTLxxx CIYT5xxx	China simplified China traditional Korea standard Thailand

1) Default at factory programmed

The Flash program files are available from OSS.

43.4   Functions

Interfaces
- C-Bus –> Plug-in terminals 'K5'
- I-Bus –> Connector 'ST1'
- 2 x RS232 –> Connector 'ST2'
- Parallel indicator panel B3R051/K3R071/072 –> Connector'ST4'
- Emergency operation circuit –> Plug-in terminals 'K6'

Control inputs
- external key switch (see Operation enabled)
- monitoring of autonomous power supply
- monitoring of Plexiglas door (open / closed)

Operation enabled
- this is normally done via password at the keyboard
- An integrated key switch, (photoelectric) is available as an option which can also be used to lock the Plexiglas door (if used).
- operation can also be enabled by an external key switch

43.5   Mechanical design

– front panel with foil and integrated keyboard
– inscription with insertable inscription strips
– electronics shielded by metal cover
– key switch (option) to lock the Plexiglas door (can also be used to enable operation)
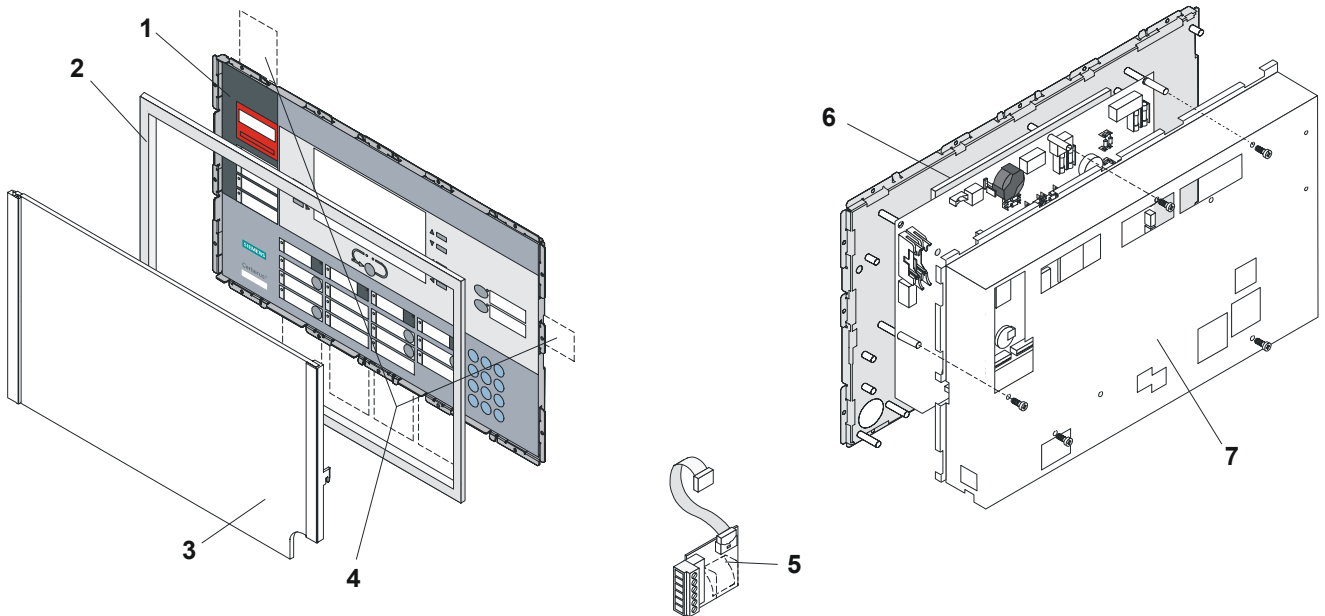
Legend:
1   Foil
2   Cover frame
3   Plexiglas door H26T030 (Option)
4   Insertable inscription strips
5   Adapter Z3I530, flat cable –> terminals: Connection **outside** housing to the parallel indicator panel B3R051 etc.
6   Display
7   Protective cover

➔ Mounting –> see document 1393

43.6 Important components
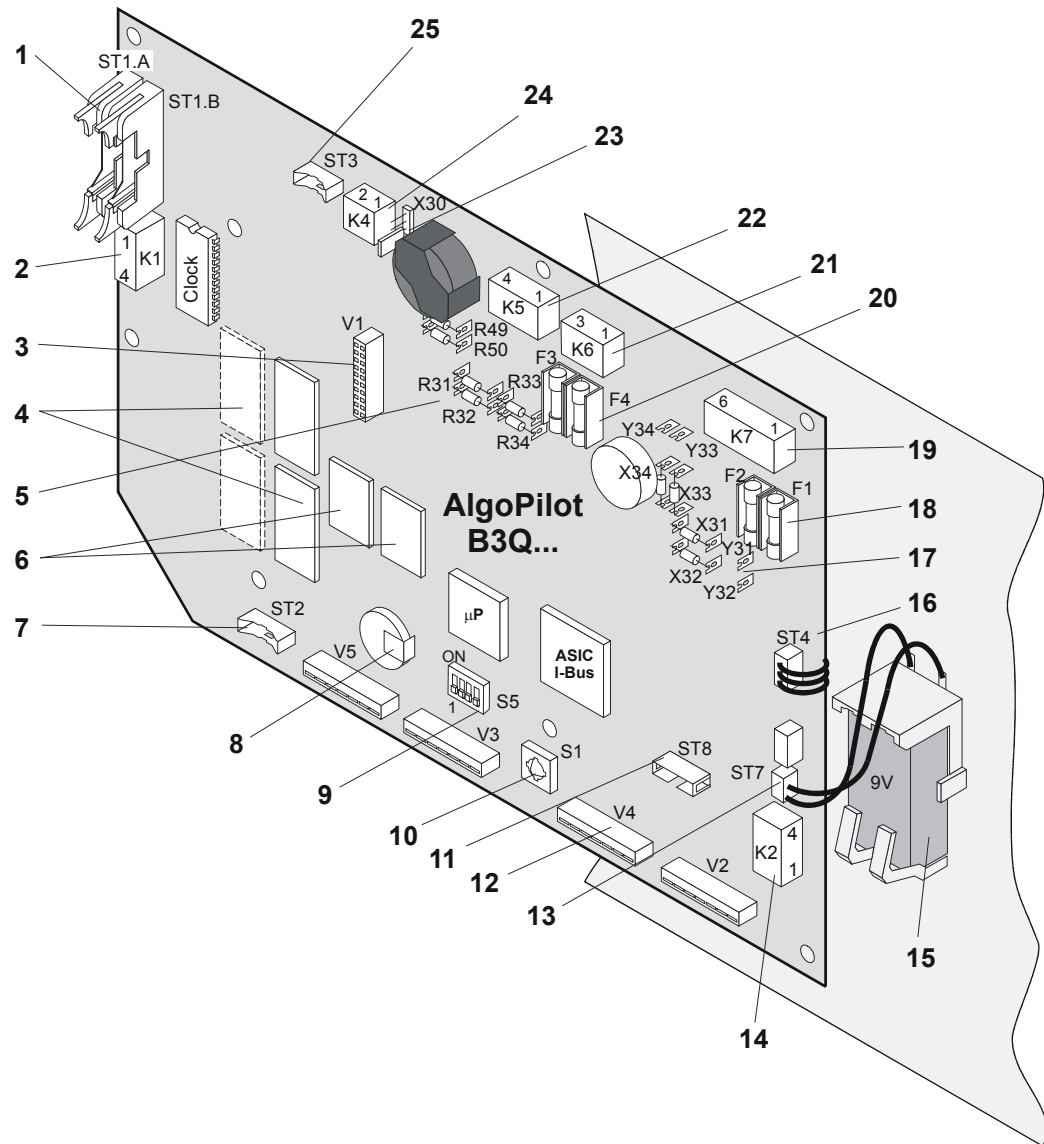
Legend:

1   Double flat cable header 'ST1': (26-pin): I-Bus

2   Plug-in terminals 'K1': (orange 4-in) Supply for the modules 'I-Bus'

3   Connector 'V1': LCD

4   SRAM: User data and Standard text

      B3Q6..:   1MBx8Bit

      B3Q565:   2MBx8Bit

5   Resistors to modify the C-Bus impedance:

Position	Impedance value 110 Ω, e.g. for G51 0.6Ø	Impedance value 50 Ω, e.g. for MICC
R49 / 50	402 Ω	182 Ω
R31 / 32 / 33 / 34	110 Ω	49,9 Ω

Impedance adaptation only required if C-Bus line is > 100 m. For other impedance values than 110 Ω or 50 Ω –> see document 1594.

6   Flash-ROM 2MBx8Bit: Software

7   Connector 'ST2': RS232 (2 x HCMOS-Pegel), connection to E3I020, is also used as interface to maintenance PC

8   Rechargeable Lithium battery 3 V / 70 mAh: RAM buffering for clock, user data etc.
     - data storage time: at 2MB minimum 2 weeks, at 40 °C min. 4 weeks
     - maintenance not required

9   Switch 'S5': 'Service functions'
'S5–1...4' are set to "off" at the factory

S5-1	on	Maintenance mode: Blocks all control outputs
	off	Normal operation
S5-2	off	Event memory, normal mode
	on	Event memory, freeze current contents
S5-3	off	unused
S5-4 *	off	Flash programming disabled
	on	Flash programming enabled (function for production und service engineer only)

*) Carry out a CPU reset (switch 'S1') after each switch over of 'S5-4'.

10   Key 'S1': Reset
11   Connector 'ST8': FBA-CH unused
12   Connector 'V2'.....'V5': Foil-covered keys (front panel)
13   Connector 'ST7': 9 V Lithium battery ((trouble signal if 24 V fails)
14   Plug-in terminals 'K2': (black 4-pin) Inputs 'Monitoring power supply'
15   9 V Lithium battery: Option '3rd voltage source' (cable required V2G050 for 9 V battery)
16   Connector 'ST4': Illumination for LCD

17   Jumpers "X/Y31…X/Y34": Programming of terminals 'K7'

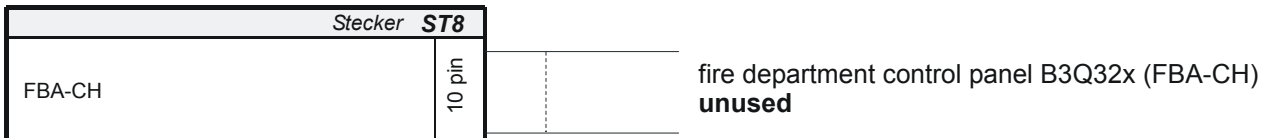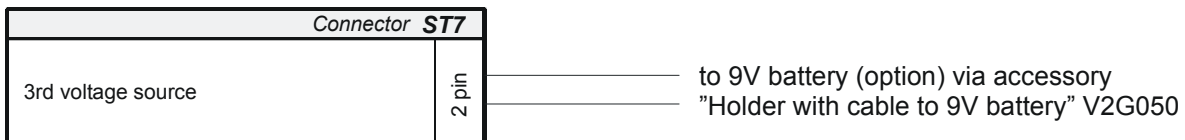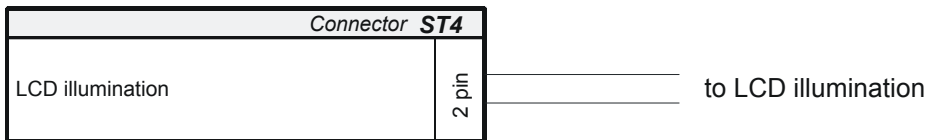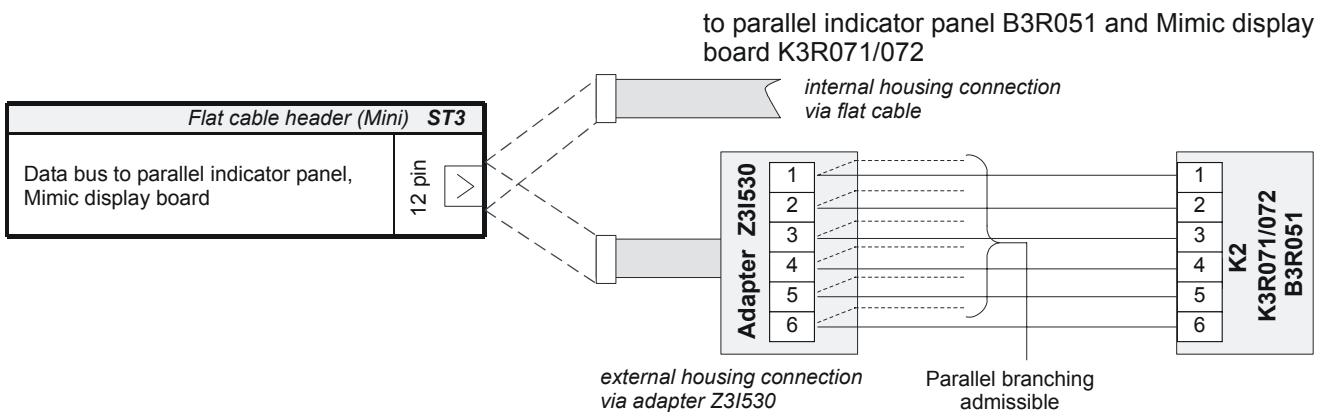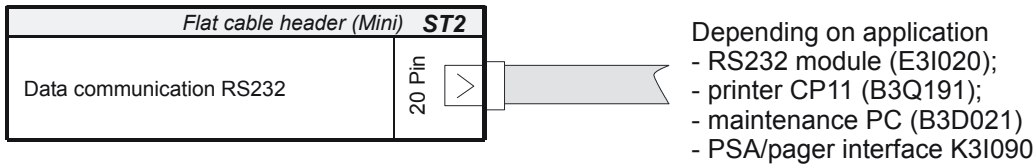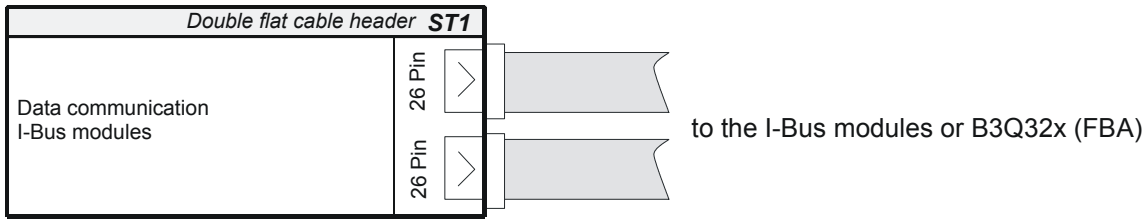| Use of AlgoPilot B3Q...	0 Ω resistors
"CT" + Supply from control unit (Input)	**X31 + X32 + X33 + X34**
"CT" + autonomous supply (Output)	Y31 + Y32 + Y33 + Y34
"CI" + autonomous supply (Output)	Y31 + Y32 + Y33 + Y34

18   Fuses 'F1' , ' F2'   0.8 A/T: Supply input / supply output with high breaking capacity (sand-filled)
19   Plug-in terminals 'K7': (orange 6-pin): '24 V supply voltage' (18...45 VDC)
20   Fuses 'F3', 'F4'   0.5 A/T: Input/output emergency operation circuit (Fuses with high breaking capacity, sand-filled)
21   Plug-in terminals 'K6': (orange 5-pin): 'Emergency operation circuit'
22   Plug-in terminals 'K5': (grey 4-pin) "C-Bus"

23   Jumper 'X30': Ground fault monitoring 'C-Bus'
     J1   =   not monitored
     J2   =   monitored
     'removed' =   the other monitors (factory setting)
     ➜ for application details –> see chapter 6

24   Plug-in terminals 'K4': (orange 2-pin): "External operation enabling"
25   Connector 'ST3': Parallel indicator panel B3R051, Mimic display board K3R071/72

43.7   Connections
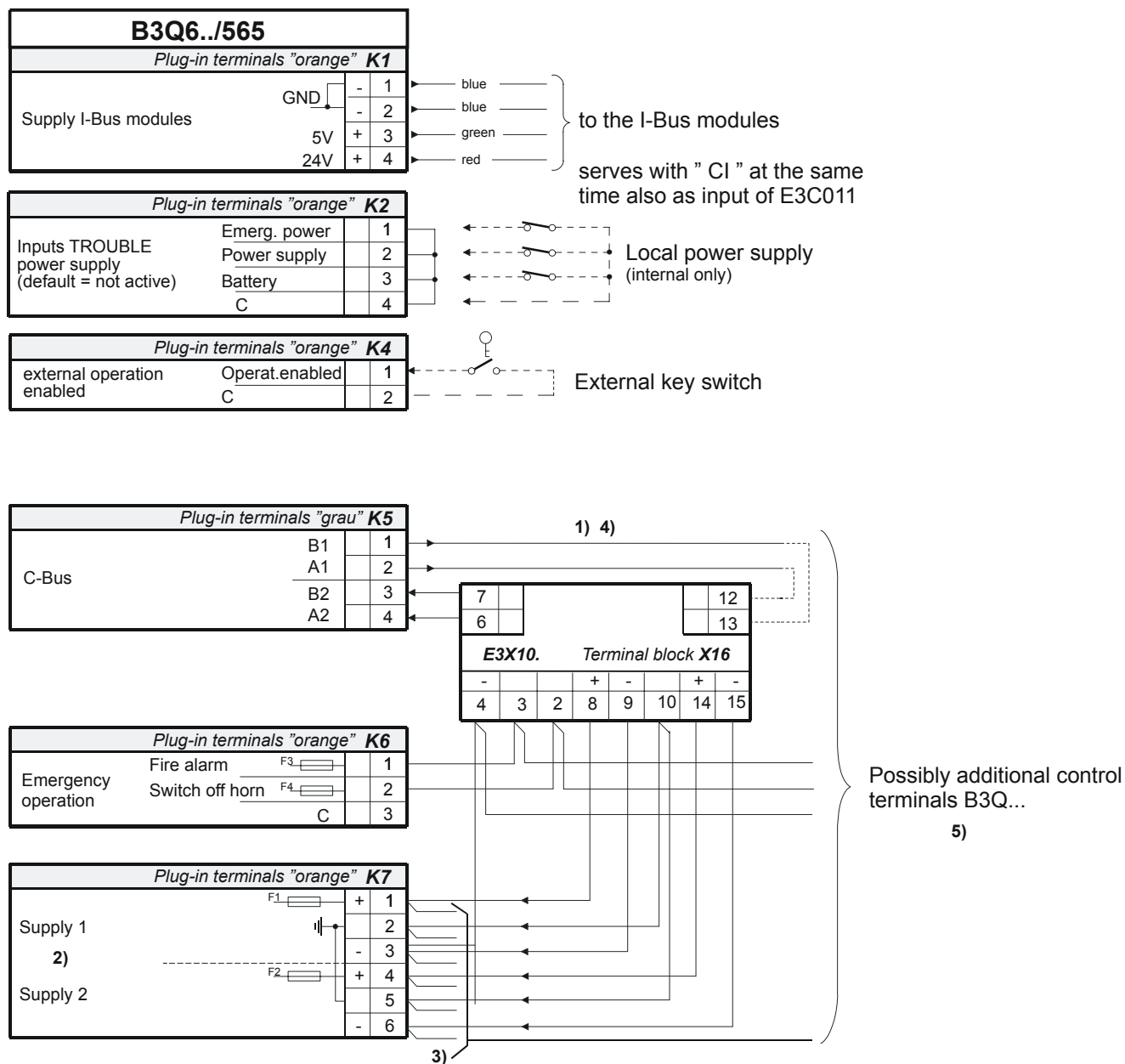
1) C C-Bus must **always** be wired as a loop line (even with built-in control terminal AlgoPilot B3Q...)
2) Configuration as in-/or output see jumpers X31, X32, X33, X34, Y31, Y32, Y33, Y34 on page 183
3) For application as "CI", external control terminals ("CT") are connected on K7
4) Cabling C-Bus: max. 1000 m per loop with Ø 0.6 mm wire
            max. 1400 m per loop with Ø 0.8 mm wire
            ((always including return line) for cable type (impedance adaptation) see page 182
5) "Cabling principle AlgoPilot B3Q..." –> see page 23

43.8   Connectors

Double flat cable header	**ST1**
Data communication I-Bus modules	26 Pin
	26 Pin

to the I-Bus modules or B3Q32x (FBA)

Flat cable header (Mini)	**ST2**
Data communication RS232	20 Pin

Depending on application
- RS232 module (E3I020);
- printer CP11 (B3Q191);
- maintenance PC (B3D021)
- PSA/pager interface K3I090

to parallel indicator panel B3R051 and Mimic display board K3R071/072

Flat cable header (Mini)	**ST3**
Data bus to parallel indicator panel, Mimic display board	12 pin

internal housing connection via flat cable

external housing connection via adapter Z3I530

Parallel branching admissible

Adapter Z3I530

K2 K3R071/072 B3R051

Connector	**ST4**
LCD illumination	2 pin

to LCD illumination

Connector	**ST7**
3rd voltage source	2 pin

to 9V battery (option) via accessory
"Holder with cable to 9V battery" V2G050

Stecker	**ST8**
FBA-CH	10 pin

fire department control panel B3Q32x (FBA-CH)
unused

44   B3Q320 Fire department control terminal "CH" (super-

seded by B3Q321)

44.1   Overview
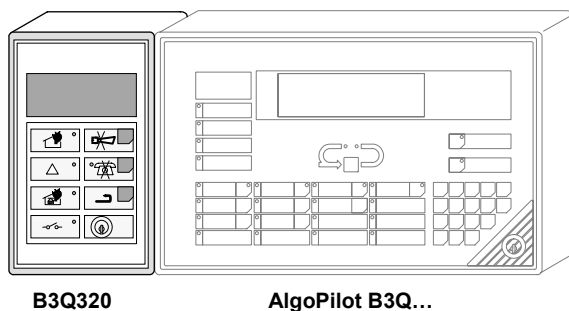
B3Q320   **AlgoPilot B3Q…**

- Standard fire department display and control terminal
- Options to the control terminal AlgoPilot B3Q...
- Only for the Swiss market, according to VKF requirements
- Must be located **immediately next to AlgoPilot B3Q...** (communication via I-Bus)
- Operating access only via key switch
- Integrated emergency operation

44.2   Application

Essential in Switzerland with all control terminals AlgoPilot B3Q..., which are used by the public fire department

44.3   Key data

|	
Operating voltage (from I-Bus supply AlgoPilot B3Q...)	18...45 VDC
Quiescent current at 24 V	17 mA
Maximum current at 24 V	50 mA for lamp test

44.4   Wiring principle
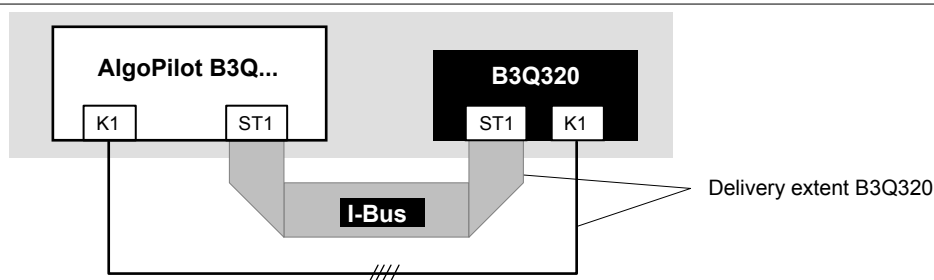
44.5   Special functions

Emergency operation
The B3Q320 has an integrated emergency operation circuit.
If an alarm occurs during a system malfunction, the alarm indicator lights up on the B3Q320. Audible alarm devices can still be switched off via B3Q320.

44.6   Important components
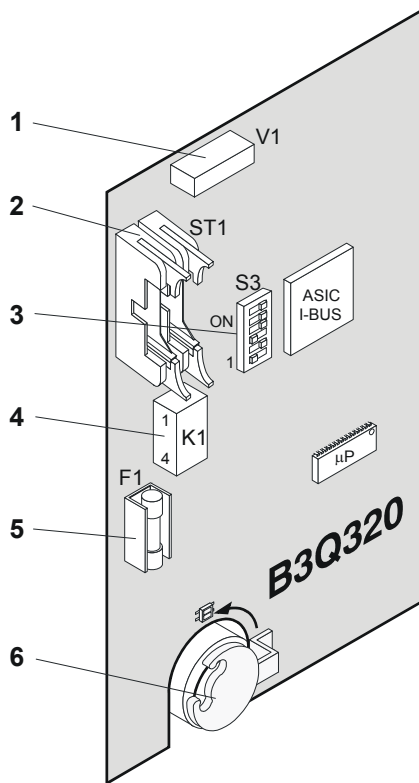
Legend:

26   Connector "V1": Foil-covered keyboard (front terminal)

27   Double flat cable header "ST1" (26-pin): I-Bus

28   Programming switch "S3": To set the I-Bus address

B3Q320 is an I-Bus user and must have an individual I-Bus address (Number). This is set on programming switch "S3".

Function / I-Bus address		Programming switch S3					
No.		S3-1	S3-2	S3-3	S3-4	S3-5	S3-6
0	Module out of commission (unused)	off	off	off	off	off	off
1	I-Bus user number 1	**on**	off	off	off	off	off
2	2	off	**on**	off	off	off	off
3	3	**on**	**on**	off	off	off	off
4	4	off	off	**on**	off	off	off
5	5	**on**	off	**on**	off	off	off
6	6	off	**on**	**on**	off	off	off
7	7	**on**	**on**	**on**	off	off	off
8	8	off	off	off	**on**	off	off

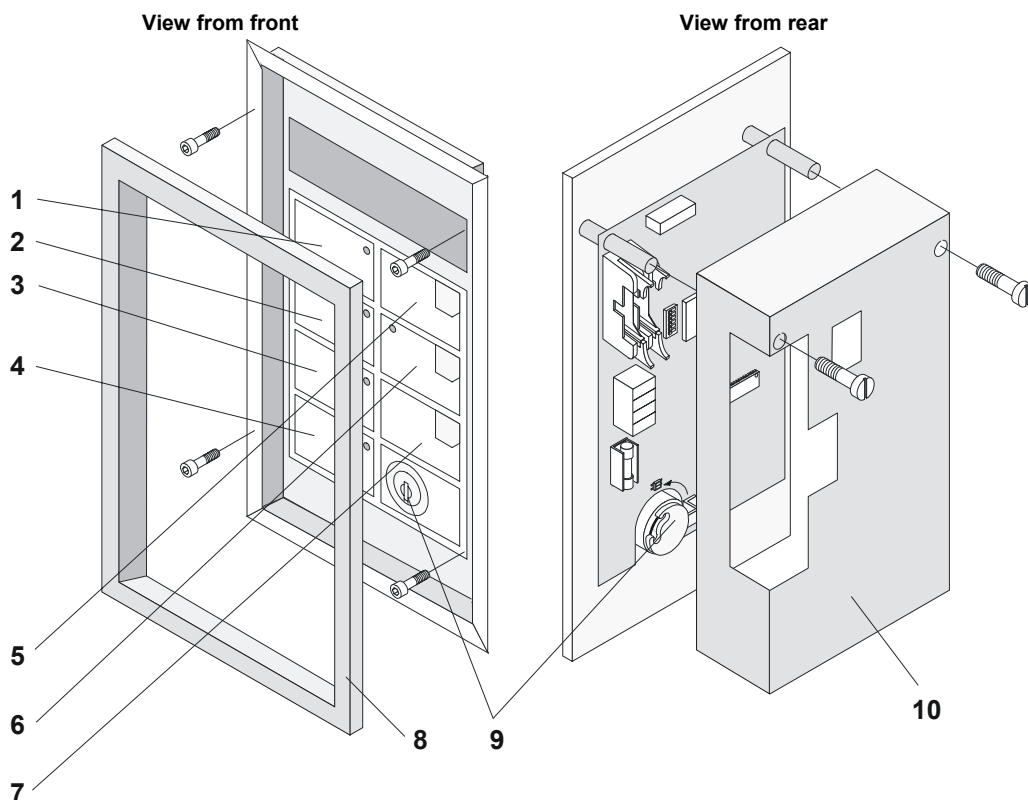"S3-1...6" is set to I-Bus address number 5 at the factory

29   Plug-in terminals "K1": Power supply from AlgoPilot B3Q... (5 V / 24 V)

30   Fuse 'F1'   0.1 A/T: Module supply

31   Key switch with photo switch operation enabled

44.7 Mechanical design

– front terminal with foil and integrated keyboard
– symbols printed on foil direct (language neutral)

View from front   **View from rear**

Legend:

1   Display field "Alarm"

2   Display field "System trouble"

3   Display field "Extinguishing actuated"

4   Display field "Normal operating mode" (no part of system switched off)

5   Key "Switch off audible alarm devices"

6   Display field "Remote alarm activated", Key "Switch off remote transmission"

7   Key "Reset system"

8   Cover frame
9   Key switch KABA 8 / 100 (key horizontal = operation enabled)
10 Protective cover
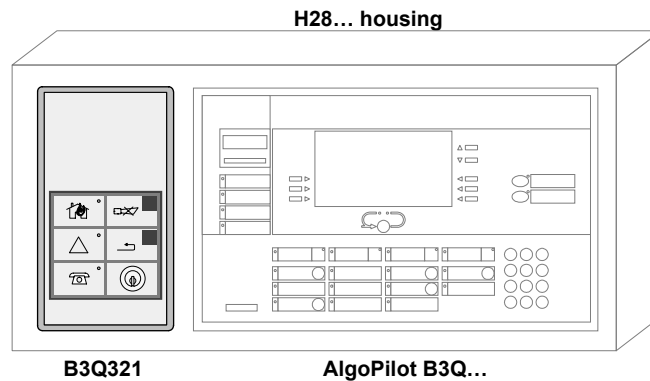
44.8 Connections
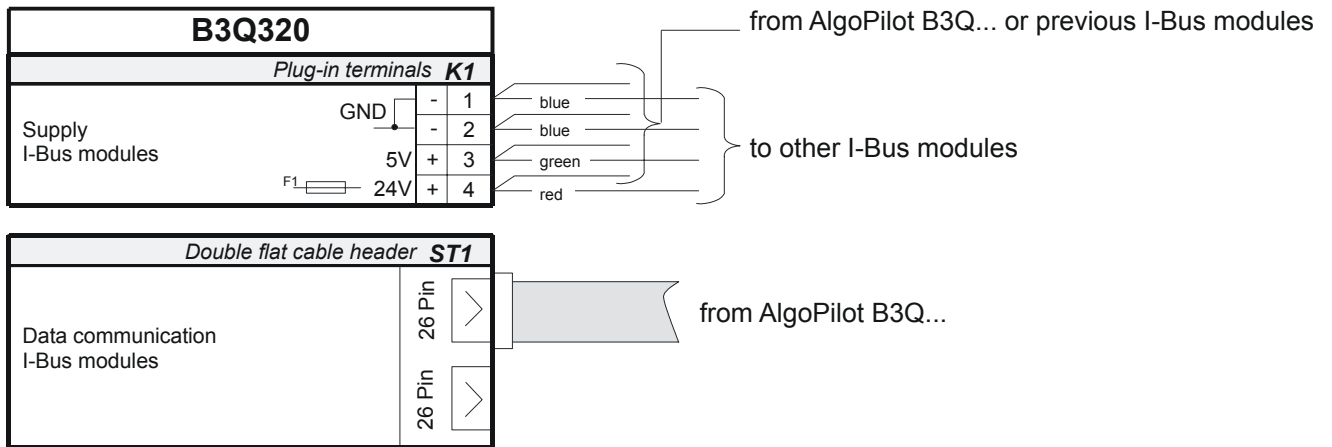
45 B3Q321 Fire department control terminal "CH"

(supersedes B3Q320)

45.1 Overview

H28... housing

B3Q321   **AlgoPilot B3Q...**

- Standard fire department display and control terminal
- Options to the control terminal AlgoPilot B3Q...
- Only for the Swiss market, according to VKF requirements at 01.01.2003
- Must be located **immediately next to AlgoPilot B3Q...** (communication via I-Bus)
- Operating access only via key switch
- Integrated emergency operation
- For EMV reasons not CE-conform in plastic housing H23G230. The installation types in steel housings are not concerned.
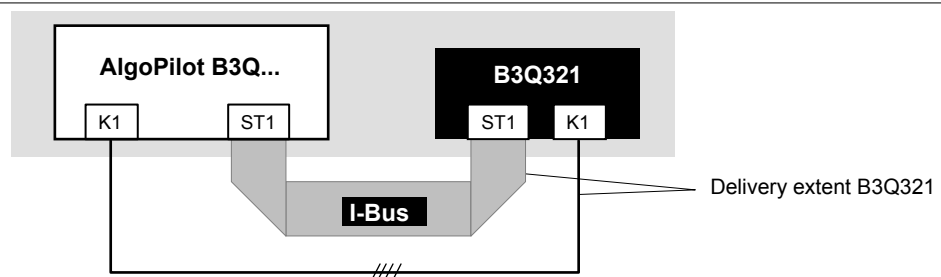
45.2 Application

Essential in Switzerland with all control terminals AlgoPilot B3Q..., which are used by the public fire department

45.3 Key data

Operating voltage (from I-Bus supply AlgoPilot B3Q...)	18...45 VDC
Quiescent current at 24 V	17 mA
Maximum current at 24 V	50 mA for lamp test

45.4 Wiring principle

AlgoPilot B3Q...

K1   ST1

B3Q321

ST1   K1

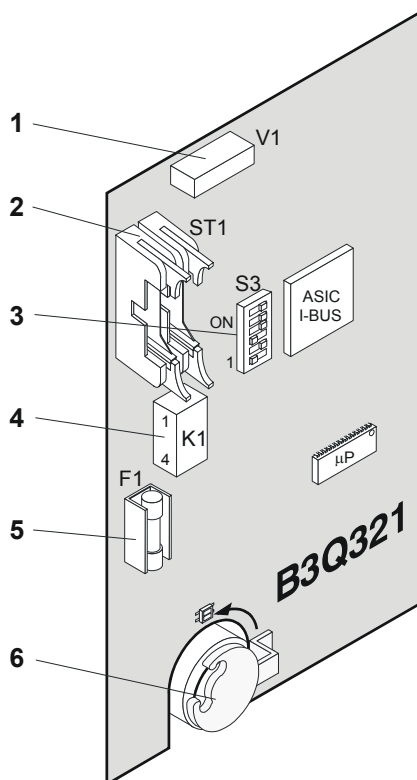**I-Bus**

Delivery extent B3Q321

45.5 Special functions

Emergency operation
The B3Q321 has an integrated emergency operation circuit.
If an alarm occurs during a system malfunction, the alarm indicator lights up on the B3Q321. Audible alarm devices can still be switched off via B3Q321.

45.6   Important components

Legend:

1   Connector "V1": Foil-covered keyboard (front terminal)
2   Double flat cable header "ST1" (26-pin): I-Bus

3   Programming switch "S3": To set the I-Bus address
B3Q321 is an I-Bus user and must have an individual I-Bus address (Number). This is set on programming switch "S3".

Function / I-Bus address		Programming switch S3					
No.		S3-1	S3-2	S3-3	S3-4	S3-5	S3-6
0	Module out of commission (unused)	off	off	off	off	off	off
1	I-Bus user number 1	**on**	off	off	off	off	off
2	2	off	**on**	off	off	off	off
3	3	**on**	**on**	off	off	off	off
4	4	off	off	**on**	off	off	off
5	5	**on**	off	**on**	off	off	off
6	6	off	**on**	**on**	off	off	off
7	7	**on**	**on**	**on**	off	off	off
8	8	off	off	off	**on**	off	off

"S3-1...6" is set to I-Bus address number 5 at the factory

4   Plug-in terminals "K1": Power supply from AlgoPilot B3Q... (5 V / 24 V)
5   Fuse 'F1'   0.1 A/T: Module supply
6   Key switch with photo switch operation enabled

45.7 Mechanical design

– front terminal with foil and integrated keyboard
– symbols printed on foil direct (language neutral)

View from front   **View from rear**
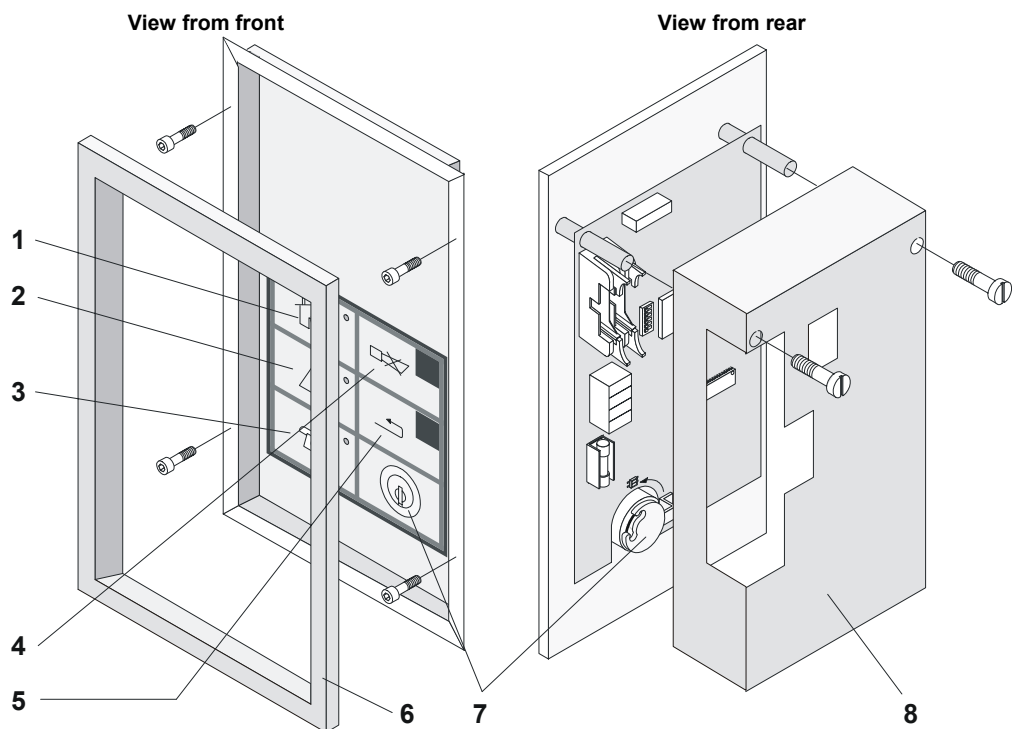
Legend:

1   Display field "Alarm"

2   Display field "System trouble"

3   Display field "Normal operating mode" (no part of system switched off)

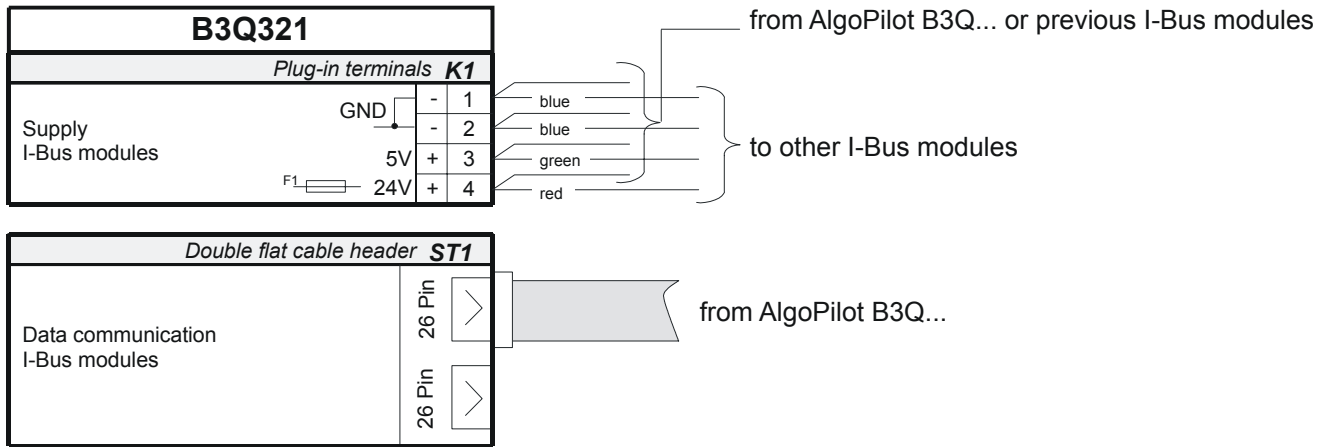4   Key "Switch off audible alarm devices"

5   Key "Reset system"

6   Cover frame

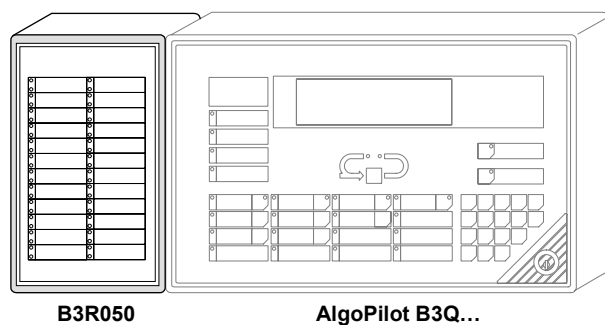7   Key switch KABA 8 / 100 (key horizontal = operation enabled)

8   Protective cover

45.8   Connections

B3Q321
Plug-in terminals **K1**

GND	-	1	blue
	-	2	blue
5V	+	3	green
F1 — 24V	+	4	red

Supply
I-Bus modules

from AlgoPilot B3Q... or previous I-Bus modules

to other I-Bus modules

Double flat cable header **ST1**

Data communication
I-Bus modules

26 Pin

26 Pin

from AlgoPilot B3Q...

46 B3R050 Parallel indicator terminal (superseded by B3R051)

46.1 Overview

B3R050   **AlgoPilot B3Q...**

- Option to control terminal AlgoPilot B3Q...
- Allows additional display fields
- Unit with 2x 12 display fields each with a red and yellow LED
- Individual allocation of individual display fields
- Max. 8 B3R050 per operation AlgoPilot B3Q... possible (=max. 192 display fields)
- Communication is via a special serial bus
- Line and device **not** monitored
- ”Lamp test” is contained in the menu function of AlgoPilot B3Q...

46.2 Application

Installation
The parallel indicator terminal B3R050 fits in the following housings:
– plastic housing ”small” H23G220 (1x B3R050)
– housing H28G200   with door H28T120 for 4x B3R050
   with door H28T130 for 1x B3R050 (and plan compartment)

Positioning
Immediately next to or in the immediate vicinity of the control terminals AlgoPilot B3Q...
- **May not be installed separate from control terminal AlgoPilot B3Q..**.
- **Cannot** be ’mixed’ with B3R051/K3R070/K3R071/K3R072

46.3 Key data

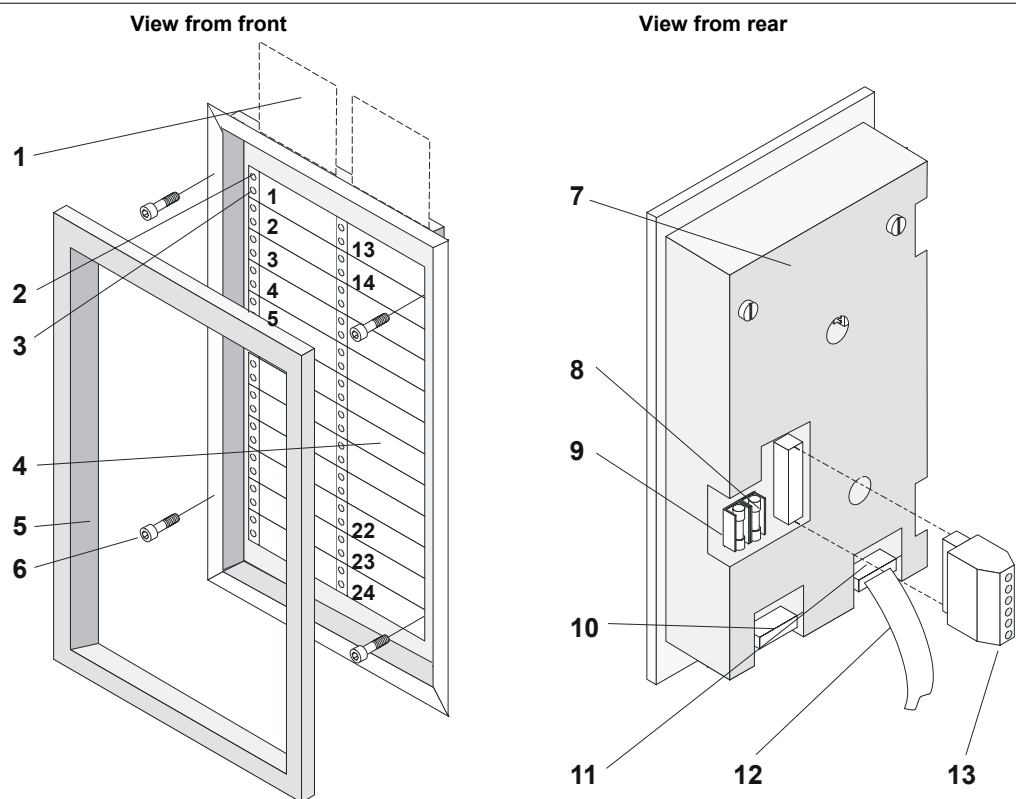| Operating voltage		9..45 VDC
Current consumption	at 24 V	quiescent 40 mA
		max. 140 mA
	at 9 V	quiescent 80 mA
		max. 330 mA
	at 45 V	quiescent 30 mA
		max. 90 mA

46.4   Wiring principle
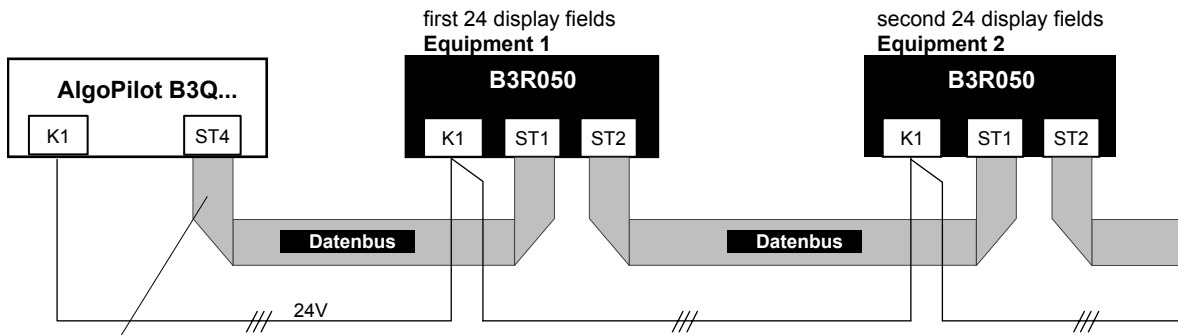
Note: The equipment address is determined by the wiring sequence (communication)

46.5   Mechanical design

Legend:

1   Blank inscription strips for insertion can be labeled by typewriter
2   Red LED: Programming depending on application
3   Yellow LED: Programming depending on application
4   Display field 1...24
5   Cover frame
6   4 Mounting screws
7   Protective cover
8   Fuse "F2" 0.4 A/T: Supply input 9...45 VDC (2nd separate supply input)
9   Fuse "F1" 0.4 A/T: Supply input 9...45 VDC
10   Connector "ST2": Serial data bus to other B3R050 (output [OUT])
11   Connector "ST1": Serial data bus to B3Q... (input [IN])
12   Flat cable (miniature) 12-pin
13   Plug-in terminals "K1": Power supply

195

46.6   Connections
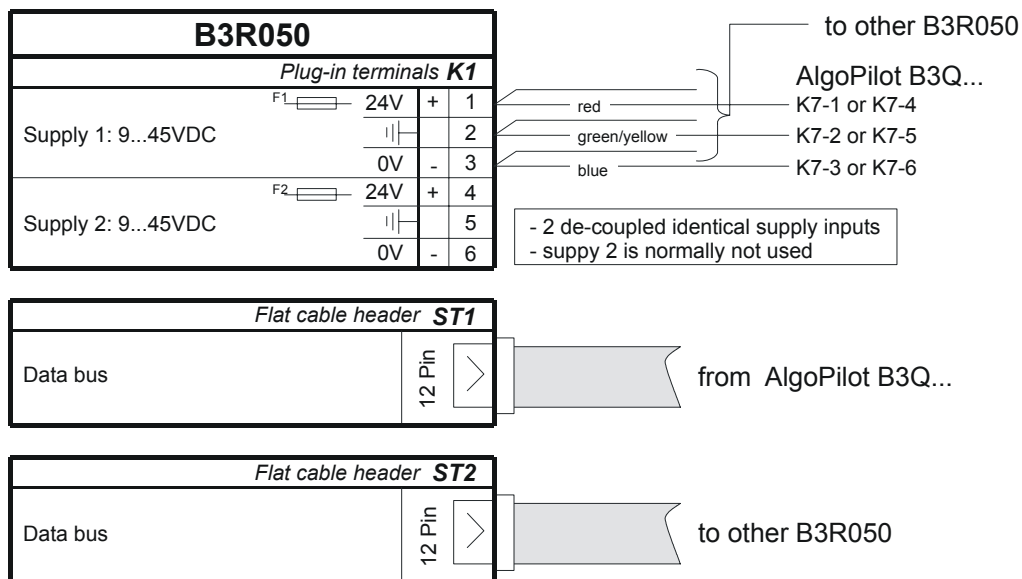
47 **B3R051 Parallel indicator terminal** (supersedes B3R050)

47.1 Overview

B3R051   **AlgoPilot B3Q…**
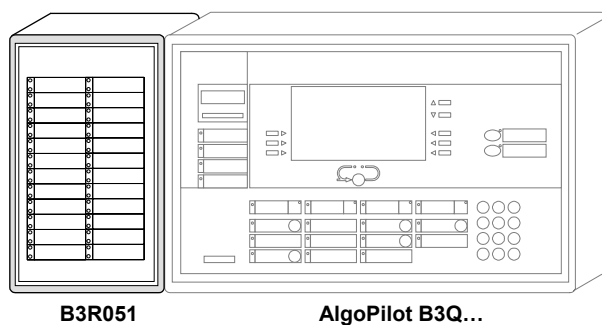
➜ Templates for inscription strips see document 006516

- Option to control terminal AlgoPilot B3Q... or to LON/Mimic Display converter K3I050
- Allows additional display fields
- Unit with 2 x 12 display fields each with a red and yellow LED
- Individual allocation of individual display fields
- Max. 24 units, however max. 8 addresses
- Communication is via a special serial bus
- Line and device **not** monitored
- "Lamp test" is contained in the menu function of AlgoPilot B3Q...

47.2 Application

Installation
The parallel indicator terminal B3R051 fits in the following housings:
– plastic housing "small" H23G220 (1x B3R051)
– housing H28G200   with door H28T120 for 4x B3R051
                    with door H28T130 for 1x B3R051 (and plan compartment)

Positioning
Immediately next to or in the immediate vicinity of the control terminals AlgoPilot B3Q... or up to 1000m away in a separate housing

47.3 Key data

Operating voltage		9..45 VDC
Current consumption	at 24 V	quiescent 40 mA
		max. 140 mA
	at 9 V	quiescent 80 mA
		max. 330 mA
	at 45 V	quiescent 30 mA
		max. 90 mA

47.4 Wiring principle

Control terminal and parallel indicator terminal in immediate vicinity

K3I050 or B3Q…   first 24 display fields **Equipment 1**   second 24 display fields **Equipment 2**

F12A100: 0.4 m / F12A470: 1.5 m   24 V supply
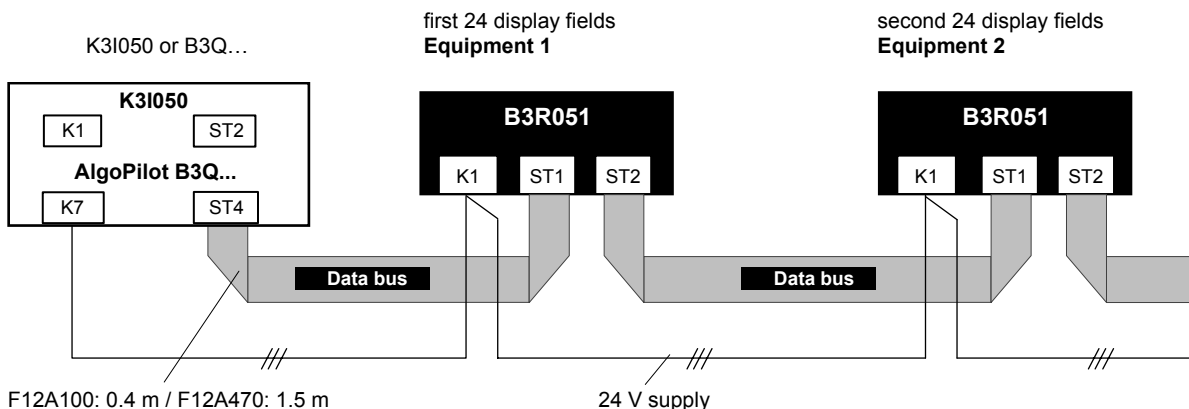
Parallel indicator terminal separate from control terminal

K3I050 or B3Q…   Parallel derivation permissible   first 24 display fields **Equipment 1**   second 24 display fields **Equipment 2**

Adapter Z3I350   24 V supply

max. 1000m
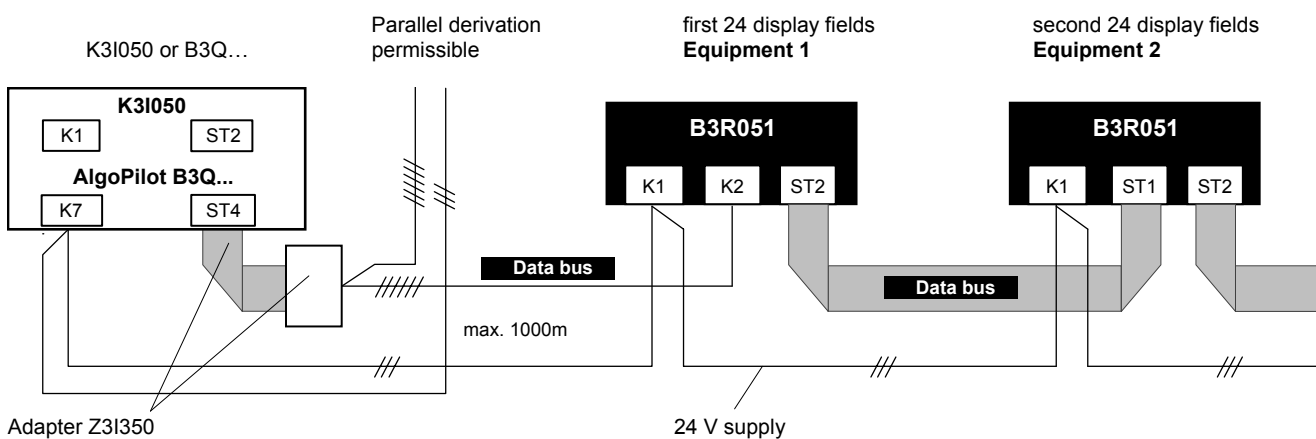
Note:

– Max. 24 units B3R051 or K3R071/072 (also mixed) possible with max. 8 different addresses
– Remove resistor array except on **one** unit –> see page 200

47.5   Mechanical design
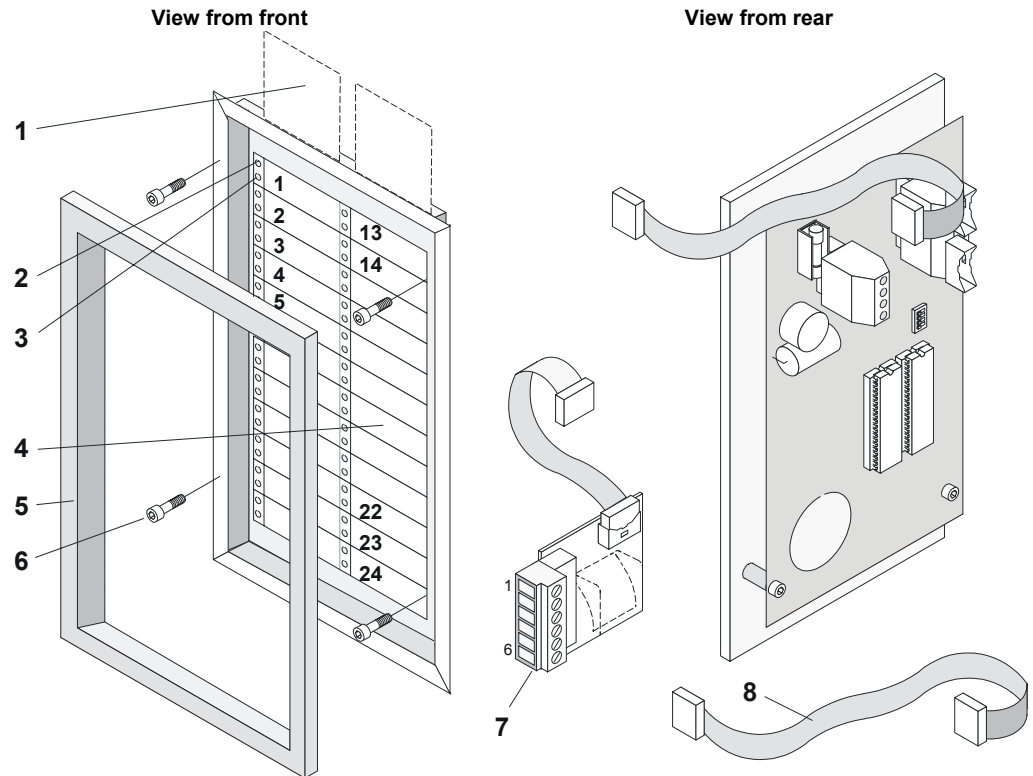
View from front   View from rear

Legend:

1   Blank inscription strips for insertion can be labeled by typewriter
2   Red LED: Programming depending on application
3   Yellow LED: Programming depending on application
4   Display field 1...24
5   Cover frame
6   4 Mounting screws
7   Adapter Z3I530, flat cable –> terminals: Connection of data bus **outside** housing
8   Flat cable F12A100 / F12A470: Connection of data bus **inside** housing

47.6   Important components

Legend:

1   Connector "ST1" / "ST2": Connection of data bus via flat cable

2   Fuse 'F1'   0.4 A/T: Supply input 9...45 VDC

3   Programming switch "S1": Equipment address setting

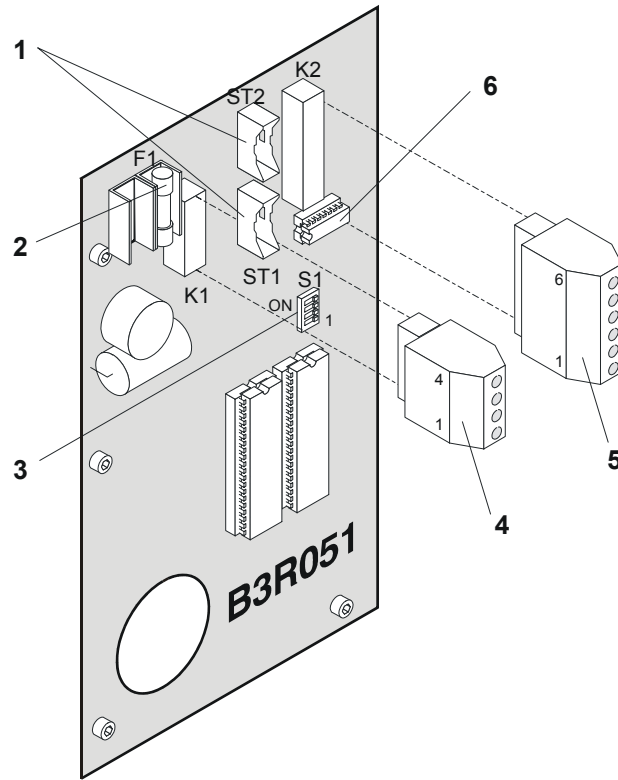| Nr.	Function	Programming switch S1			
		S1-1	S1-2	S1-3	S1-4
0	Test procedure: In this setting all LEDs are activated alternating between even and uneven numbers.	off	off	off	off
1	Equipment address 1	**on**	off	off	off
2	2	off	**on**	off	off
3	3	**on**	**on**	off	off
4	4	off	off	**on**	off
5	5	**on**	off	**on**	off
6	6	off	**on**	**on**	off
7	7	**on**	**on**	**on**	off
8	8	off	off	off	**on**

"S1-1...4" are set to "off" at the factory

4   Plug-in terminals "K1", 4-pin: Power supply

5   Plug-in terminals "K2", 6-pin: Connection of data bus instead of flat cable

6   Resistor array (assembled ex work / must be assembled only for **one** device)

47.7   Connections

B3R051

Plug-in terminals **K1**		
F1 24V	+	1
Supply 9...45VDC	⊣⊢	2
0V	-	3
unused		4

to other B3R051

AlgoPilot B3Q...

if B3R051 separate | if B3R051 in the vicinity

K7-1	K7-4	K1-4
K7-2	K7-5	K7-5
K7-3	K7-6	K1-1

oder

K3I050

| K1-3 |
| K1-4 |
| K1-2 |

or

Plug-in terminals **K2**	
	1
(Clock)	2
	3
Data bus (via terminals) (Data)	4
	5
(Load)	6

parallel derivation permissible

max. 1000m

Adapter Z3I350

| 1 |
| 2 |
| 3 |
| 4 |
| 5 |
| 6 |

B3Q... "ST4"

K3I050 "ST2"

Flat cable header **ST1**	
Data bus (via flat cable)	12 Pin

from AlgoPilot B3Q..., ST4
or
from K3I050, ST2

Flat cable header **ST2**	
Data bus (via flat cable)	12 Pin

to other B3R051/K3R071/072

➔ Remove eventually resistor array (–> see page 200). Must be assembled for **one** device!

48   K3R070 Mimic Display board (superseded by K3R071)

48.1   Overview

- Option to control console AlgoPilot B3Q...
- Enables the activation of LEDs for Mimic display panels
- Unit with 48 short-circuit proof outputs on connectors
- Individual allocation of the individual outputs
- Max. 8 pcs. K3R070 per control console B3Q... possible
- Communication is via a special series bus (not monitored)
- The lamp test is integrated in menu function AlgoPilot B3Q...

Positioning

In the vicinity of the control consoles AlgoPilot B3Q... or up to 1000 m away.

Installation

The Mimic Display board is built into the Mimic Display panel housing.

– connection to Mimic Display LED by means of 2-wire cable with connector, available as cable set Z3I520 containing 12 pieces

Connection line

– Data bus: via flat cable or 6-wire cable
– Supply 24 V: via 3-wire cable

Synoptic display panel housing   max. 1000 m
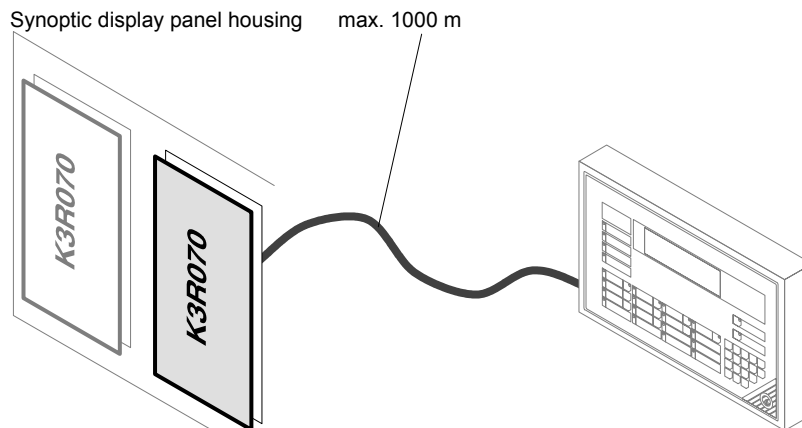
48.2   Key data

Operating voltage		9..45 VDC
Current consumption	at 24 V	quiescent 40 mA max. 140 mA
	at 9 V	quiescent 80 mA max. 330 mA
	at 45 V	quiescent 30 mA max. 90 mA

48.3   Wiring principle
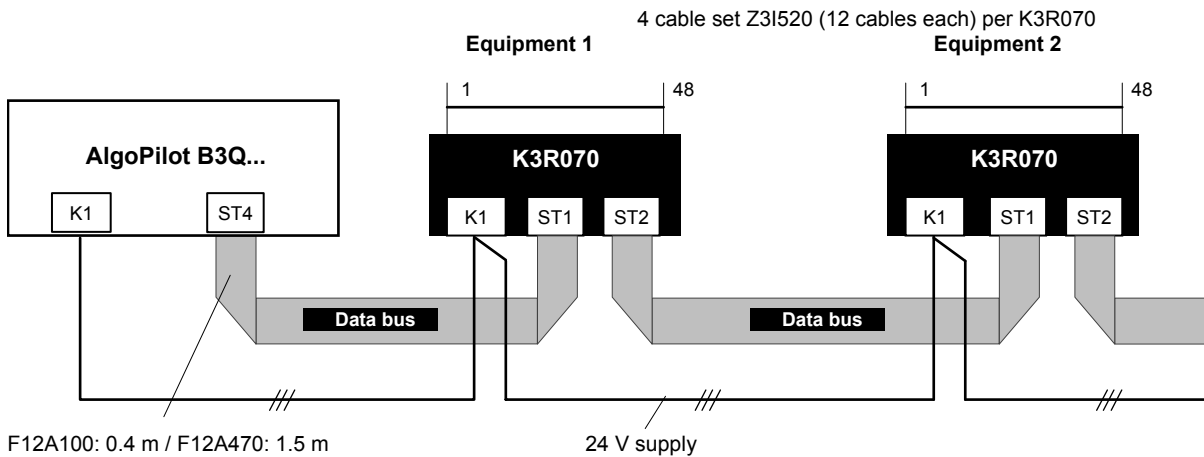
Control console and Mimic Display board in the immediate vicinity

4 cable set Z3I520 (12 cables each) per K3R070

Equipment 1   **Equipment 2**

| | 1   48 | | 1   48 |

| **AlgoPilot B3Q...** | | **K3R070** | | **K3R070** |
| K1   ST4 | | K1   ST1   ST2 | | K1   ST1   ST2 |

Data bus   **Data bus**

F12A100: 0.4 m / F12A470: 1.5 m   24 V supply

Mimic Display board separate from the control console

Parallel derivation
permissible   4 cable set Z3I520 (12 cables each) per K3R070

Equipment 1   **Equipment 2**

| 1   48 | | 1   48 |

| **AlgoPilot B3Q...** | | **K3R070** | | **K3R070** |
| K7   ST4 | | K1   K2   ST2 | | K1   ST1   ST2 |

Data bus   **Data bus**

Adapter Z3I350   max. 1000 m   24 V supply
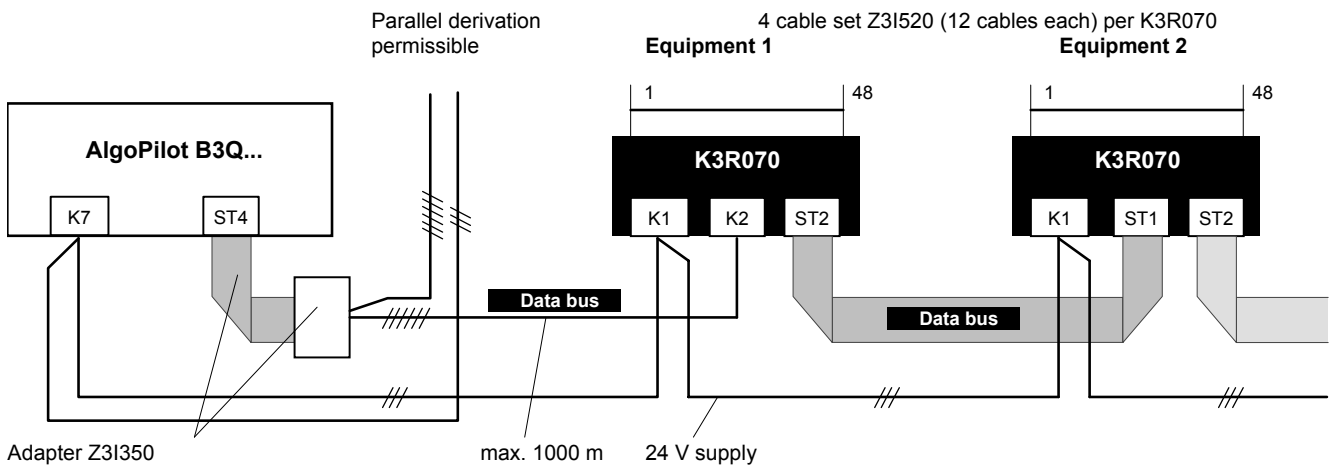
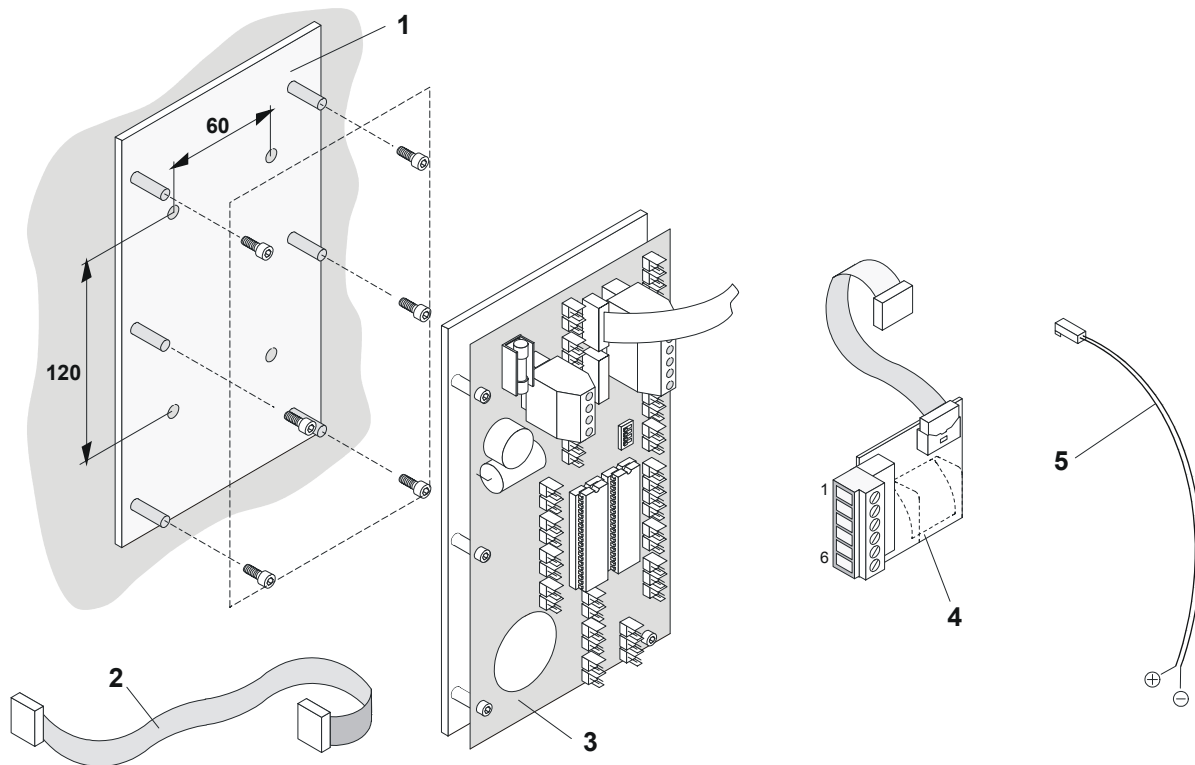**Note:**
– Max. 24 units B3R051 or K3R070 (also mixed) possible with max. 8 different addresses
– Remove resistor array except on **one** unit (–> see page 205)

48.4 Mechanical design
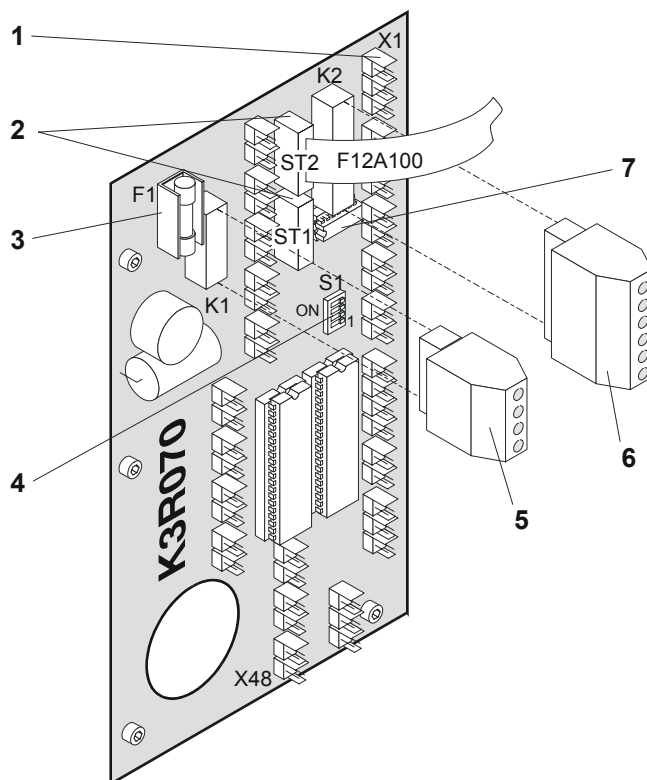

Legend:

1 Mounting plate with mounting holes and spacer bolts
2 Flat cable F12A100 (length 0.4 m) / F12A470 (length 1.5 m): connection of data bus **inside** housing
3 K3R070 Electronics board
4 Adapter Z3I530 Flat cable –> terminals: connection of data bus **outside** housing
5 Cable set Z3I520: 12 pcs. 2-wire cables with connector, length 0.5 m (minus = black, plus = red)
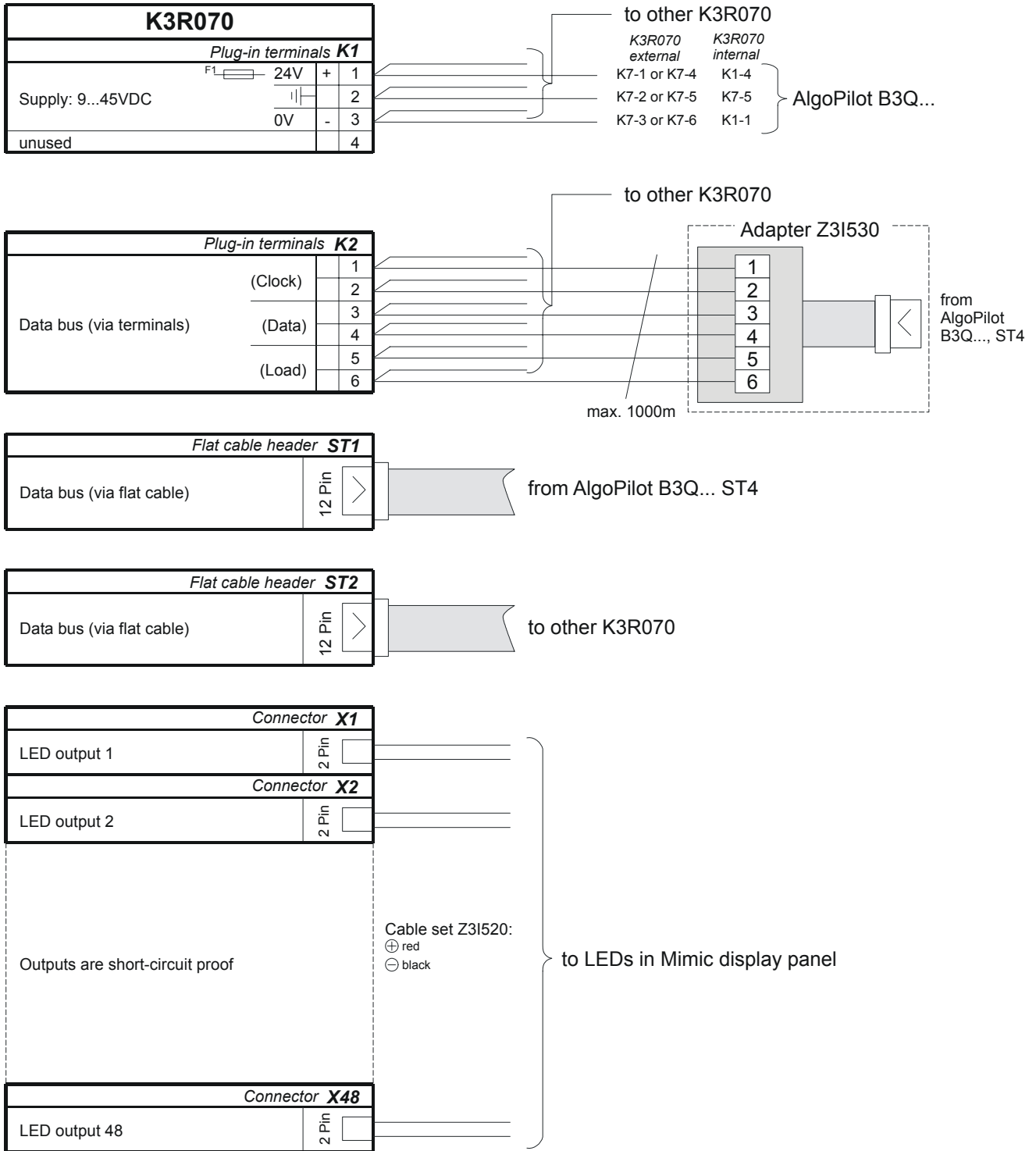
48.5 Important components

Legend:

1   48 plug-in connectors, 2-pin: 2-wire cable (cable set Z3I520 = 12 cables) to LEDs in Mimic display
2   Connector "ST1" / "ST2": Connection of data bus via flat cable
3   Fuse 'F1' 0.4 A/T: Supply input 9...45 VDC

4   Programming switch "S1": Equipment address setting

No.	Function	Programming switch S1			
		S1-1	S1-2	S1-3	S1-4
0	Test procedure: In this setting all inputs are briefly activated in sequence.	off	off	off	off
1	Equipment address 1	on	off	off	off
2	2	off	on	off	off
3	3	on	on	off	off
4	4	off	off	on	off
5	5	on	off	on	off
6	6	off	on	on	off
7	7	on	on	on	off
8	8	off	off	off	on

"S1-1...4" are set to "off" at the factory

5   Plug-in terminals "K1", 4 pin: Power supply 9...45 VDC
6   Plug-in terminals "K2", 6 pin: Connection of data bus instead of flat cable
7   Resistor array (assembled ex work / must be assembled only for **one** device)

48.6   Connections

K3R070			
Plug-in terminals **K1**			
Supply: 9...45VDC	F1 ▭ 24V	+	1
	⊣⊢		2
	0V	-	3
unused			4

to other K3R070

K3R070 external	K3R070 internal	
K7-1 or K7-4	K1-4	⎱
K7-2 or K7-5	K7-5	⎰ AlgoPilot B3Q...
K7-3 or K7-6	K1-1	

to other K3R070

Plug-in terminals **K2**	
Data bus (via terminals)	(Clock) 1
	2
	(Data) 3
	4
	(Load) 5
	6

Adapter Z3I530

	1
	2
	3
	4
	5
	6

from AlgoPilot B3Q..., ST4

max. 1000m

Flat cable header **ST1**	
Data bus (via flat cable)	12 Pin >

from AlgoPilot B3Q... ST4

Flat cable header **ST2**	
Data bus (via flat cable)	12 Pin >

to other K3R070

Connector **X1**	
LED output 1	2 Pin

Connector **X2**	
LED output 2	2 Pin

Cable set Z3I520:
⊕ red
⊖ black

Outputs are short-circuit proof

to LEDs in Mimic display panel

Connector **X48**	
LED output 48	2 Pin

49   **K3R071 Mimic Display board** (superseded by K3R072)

49.1   Overview

- Option to control console AlgoPilot B3Q... or to LON/Mimic Display converter K3I050
- Enables the activation of LEDs for Mimic display panels
- 48 short-circuit proof outputs on connectors for LED activation
- 2 control outputs for local 'Buzzer' and 'LED' operation
- 2 inputs for 'Switch-off buzzer' and 'Lamp test'
- The lamp test is integrated in menu function AlgoPilot
- Individual allocation of the individual outputs
- Max. 24 units, however max. 8 addresses
- Communication is via a special serial bus
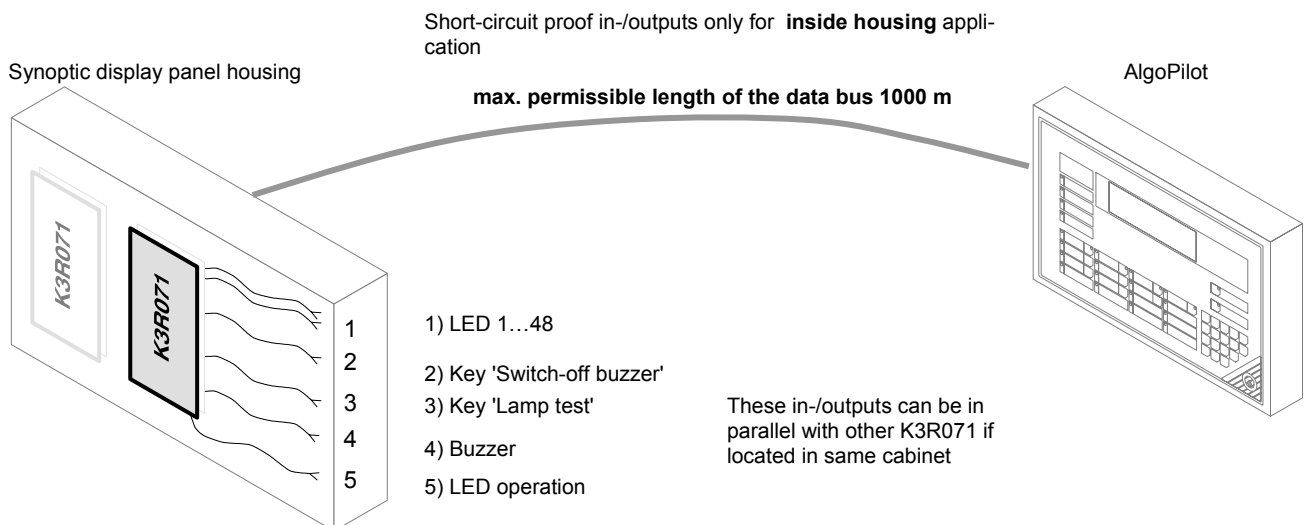- Line and device **not** monitored

49.2   Application

The Mimic Display board is built into the Mimic Display panel housing.

- Connection to Mimic Display LED by means of 2-wire cable with connector, available as cable set Z3I520 containing 12 pieces
- Line length data bus AlgoPilot –> K3R071 max. 1000 m

Connection line

- Data bus: via flat cable or 6-wire cable
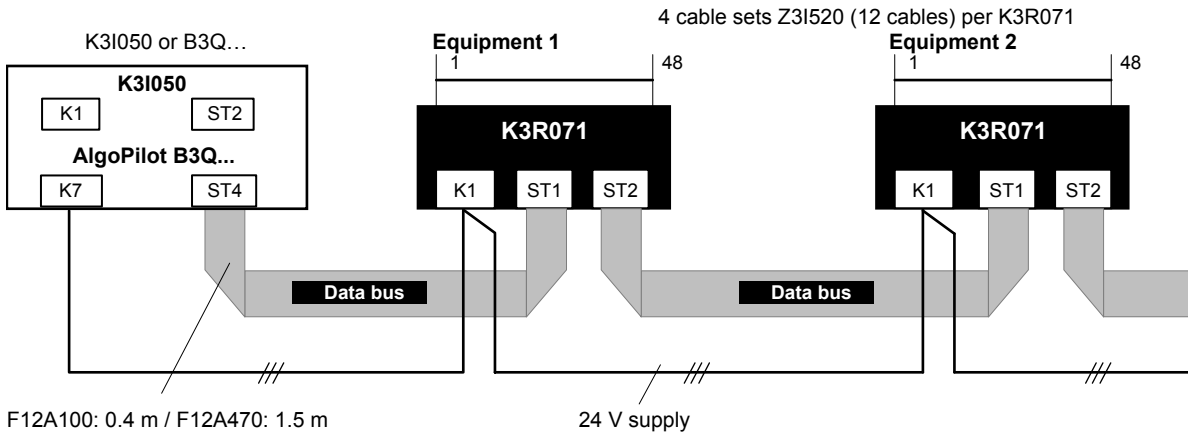- Supply 24 V: via 3-wire cable
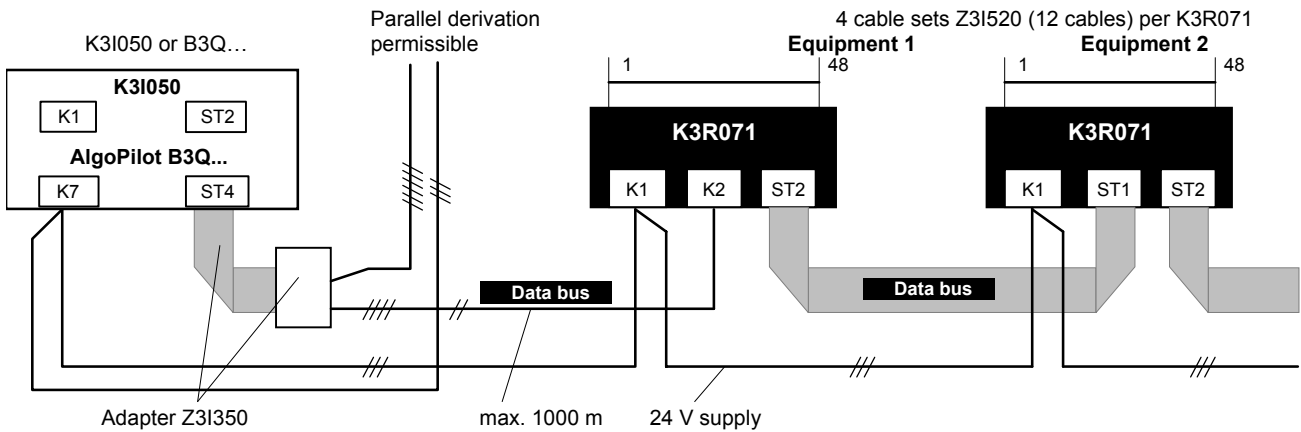
Short-circuit proof in-/outputs only for **inside housing** application

Synoptic display panel housing

max. permissible length of the data bus 1000 m

AlgoPilot

1) LED 1…48

2) Key 'Switch-off buzzer'

3) Key 'Lamp test'

4) Buzzer

5) LED operation

These in-/outputs can be in parallel with other K3R071 if located in same cabinet

49.3   Key data

Operating voltage		9..45 VDC
Current consumption	at 24 V	quiescent 40 mA
		max. 140 mA
	at 9 V	quiescent 80 mA
		max. 330 mA
	at 45 V	quiescent 30 mA
		max. 90 mA

49.4   Wiring principle

### Control console and Mimic Display board in the immediate vicinity

4 cable sets Z3I520 (12 cables) per K3R071

K3I050 or B3Q…

Equipment 1

Equipment 2

| K3I050 |
| K1   ST2 |
| **AlgoPilot B3Q...** |
| K7   ST4 |

Equipment 1   1 — 48

K3R071

K1   ST1   ST2

Equipment 2   1 — 48

K3R071

K1   ST1   ST2

Data bus   Data bus

F12A100: 0.4 m / F12A470: 1.5 m

24 V supply

Mimic Display board separate from the control console

Parallel derivation
permissible

K3I050 or B3Q…

4 cable sets Z3I520 (12 cables) per K3R071

| K3I050 |
| K1   ST2 |
| **AlgoPilot B3Q...** |
| K7   ST4 |

Equipment 1   1 — 48

K3R071

K1   K2   ST2

Equipment 2   1 — 48

K3R071

K1   ST1   ST2

Data bus   Data bus

Adapter Z3I350

max. 1000 m   24 V supply

Note:

– Max. 24 units B3R051 or K3R071 (also mixed) possible with max. 8 different addresses
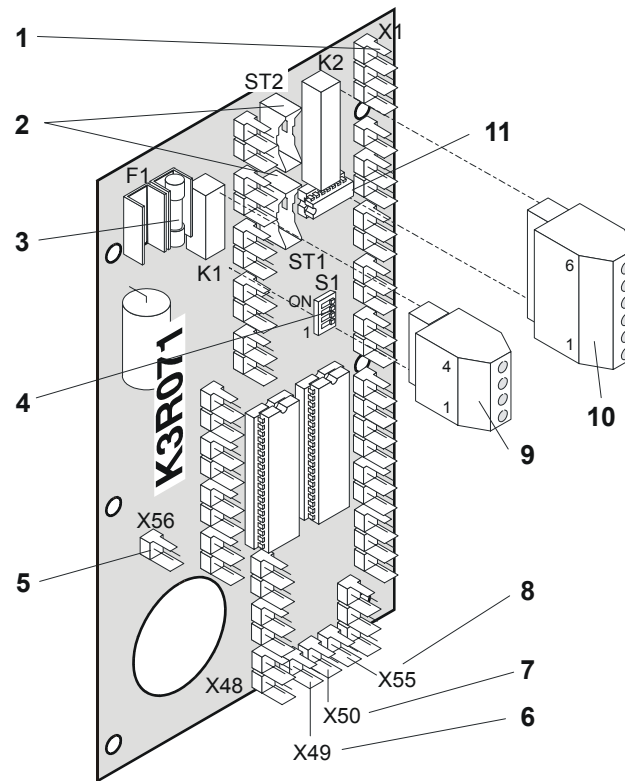– remove resistor array except on **one** unit (–> see page 210)

49.5 Mechanical design
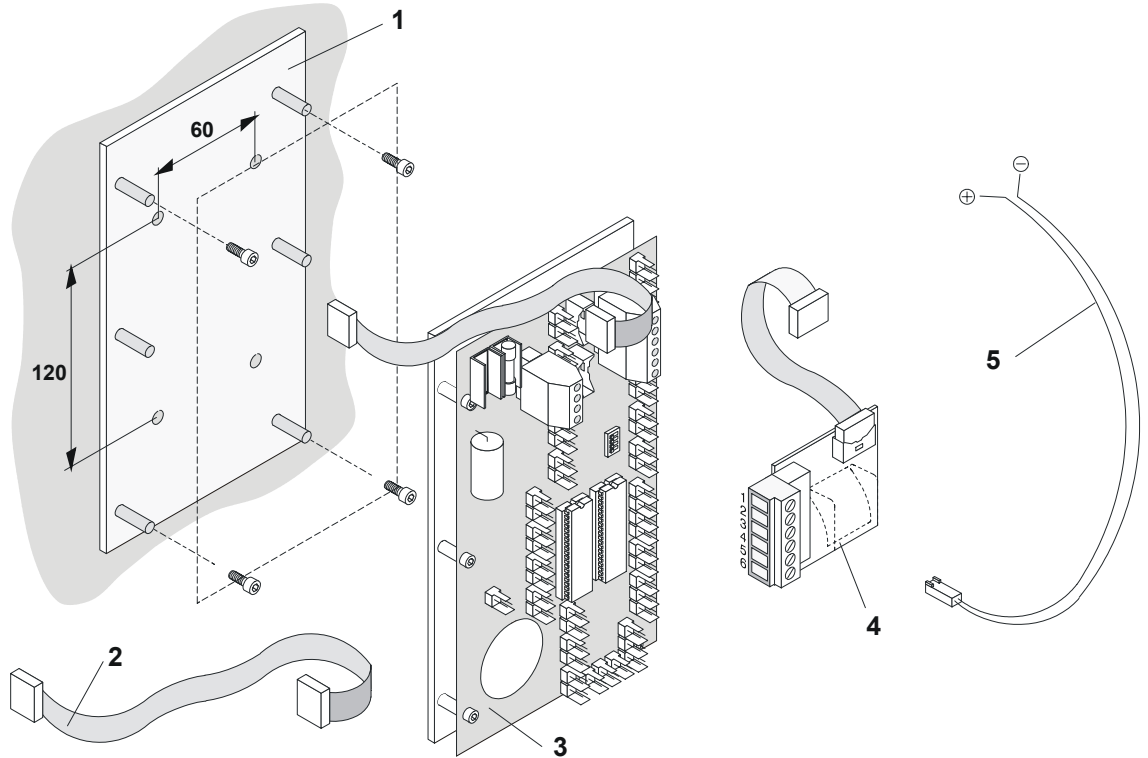
Legend:

1   Mounting plate with mounting holes and spacer bolts
2   Flat cable F12A100 (length 0.4 m) / F12A470 (length 1.5 m): connection of data bus **inside** housing
3   K3R071 Electronics board
4   Adapter Z3I530 Flat cable –> terminals: connection of data bus **outside** housing
5   Cable set Z3I520: 12 pcs. 2-wire cables with connector, length 0.5 m (minus = black, plus = red)
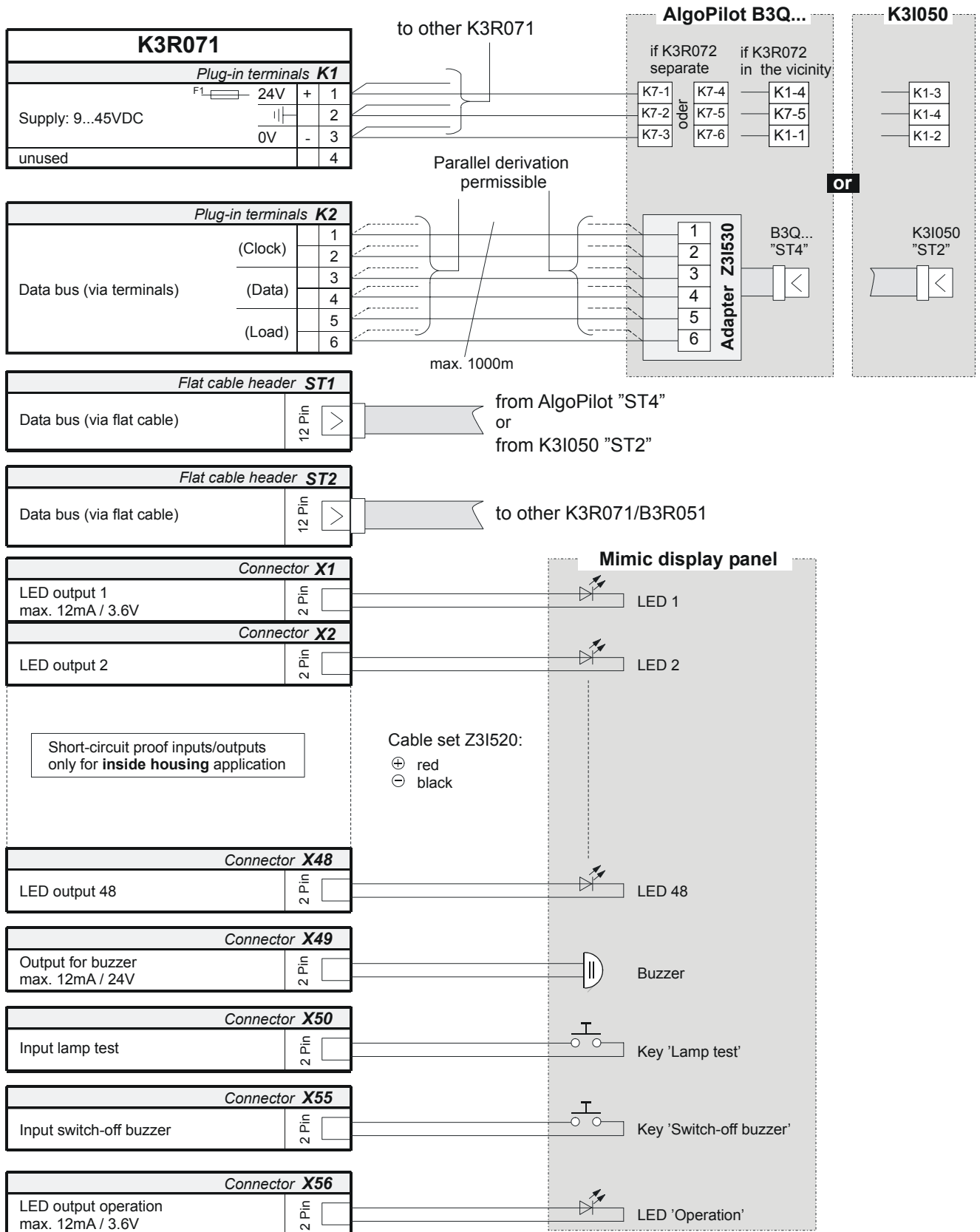
49.6   Important components

Legend:

1   48 plug-in connectors, 2-pin: 2-wire cable (cable set Z3I520 = 12 cables) to
     LEDs in Mimic display
2   Connector "ST1" / "ST2": Connection of data bus via flat cable
3   Fuse 'F1'   0.4 A/T: Supply input 9...45 VDC

4   Programming switch "S1": Equipment address setting

No.	Function	Programming switch S1			
		S1-1	S1-2	S1-3	S1-4
0	Test procedure: In this setting all outputs are activated alternating between even and uneven numbers.	off	off	off	off
1	Equipment address 1	**on**	off	off	off
2	2	off	**on**	off	off
3	3	**on**	**on**	off	off
4	4	off	off	**on**	off
5	5	**on**	off	**on**	off
6	6	off	**on**	**on**	off
7	7	**on**	**on**	**on**	off
8	8	off	off	off	**on**

"S1-1...4" are set to "off" at the factory

5   Plug-in connector "X56": Output for LED 'Operation'
6   Plug-in connector "X49": Output for 'Buzzer'
7   Plug-in connector "X50": Input for key 'Lamp test'
8   Plug-in connector "X55": Input for key 'Switch-off buzzer'
9   Plug-in terminals "K1", 4 pin: Power supply 9...45V DC
10   Plug-in terminals "K2", 6 pin: Connection of data bus instead of flat cable
11   Resistor array (assembled ex work / must be assembled only for **one** device)

49.7   Connection

K3R071

Plug-in terminals **K1**			
F1	24V	+	1
Supply: 9...45VDC			2
	0V	–	3
unused			4

to other K3R071

AlgoPilot B3Q...

if K3R072 separate		if K3R072 in the vicinity	
K7-1	oder	K7-4	K1-4
K7-2		K7-5	K7-5
K7-3		K7-6	K1-1

K3I050

K1-3	
K1-4	
K1-2	

or

Plug-in terminals **K2**		
	(Clock)	1
		2
Data bus (via terminals)	(Data)	3
		4
	(Load)	5
		6

Parallel derivation permissible

max. 1000m

Adapter **Z3I530**

1
2
3
4
5
6

B3Q... "ST4"

K3I050 "ST2"

Flat cable header **ST1**	
Data bus (via flat cable)	12 Pin

from AlgoPilot "ST4"
or
from K3I050 "ST2"

Flat cable header **ST2**	
Data bus (via flat cable)	12 Pin

to other K3R071/B3R051

Mimic display panel

Connector **X1**	
LED output 1 max. 12mA / 3.6V	2 Pin

LED 1

Connector **X2**	
LED output 2	2 Pin

LED 2

Short-circuit proof inputs/outputs only for **inside housing** application

Cable set Z3I520:
⊕ red
⊖ black

Connector **X48**	
LED output 48	2 Pin

LED 48

Connector **X49**	
Output for buzzer max. 12mA / 24V	2 Pin

Buzzer

Connector **X50**	
Input lamp test	2 Pin

Key 'Lamp test'

Connector **X55**	
Input switch-off buzzer	2 Pin

Key 'Switch-off buzzer'

Connector **X56**	
LED output operation max. 12mA / 3.6V	2 Pin

LED 'Operation'

➔ Remove eventually resistor array (–> see page 210). Must be assembled for **one** device!

50   K3R072 Mimic Display board (supersedes K3R071)

50.1   Overview

- Option to control console AlgoPilot B3Q..., or to LON/Mimic Display converter K3I050
- 2x24 outputs for LED activation for Mimic Display panels, or not monitored relay contacts (K3G060)
- 2 control outputs for local 'Buzzer' and 'LED operation'
- 2 inputs for 'Switch-off buzzer' und 'Lamp test'
- The lamp test is integrated in menu function AlgoPilot
- Individual allocation of the individual outputs
- Max. 24 units, however max. 8 addresses
- Communication is via a special serial bus
- Line and device not monitored

50.2   Application

The Mimic Display board is built into the mimic panel housing.
- Connection to LED via flat cable F50F410 (50-wire, 24 red LEDs, cable length 1 m, must be ordered separately)
- The relay card K3G060 can be connected instead of LEDs
- Line length data bus AlgoPilot –> K3R072 max. 1000 m

Connection line
- Data bus: via flat cable or 6-wire cable
- Supply 24 V: via 3-wire cable

Short-circuit proof in-/outputs only for **inside** housing application

Synoptic display panel housing

max. permissible length of the data bus 1000 m

AlgoPilot

1) LED 1…24 –> wires 49+50 for 'LED operation'

2) LED 25…48 –> wires 49+50 unused

3) Key 'Switch-off buzzer'
4) Key 'Lamp test'
5) Buzzer

These in-/outputs can be in parallel with other K3R072 if located in same cabinet

6) Use Z3I520
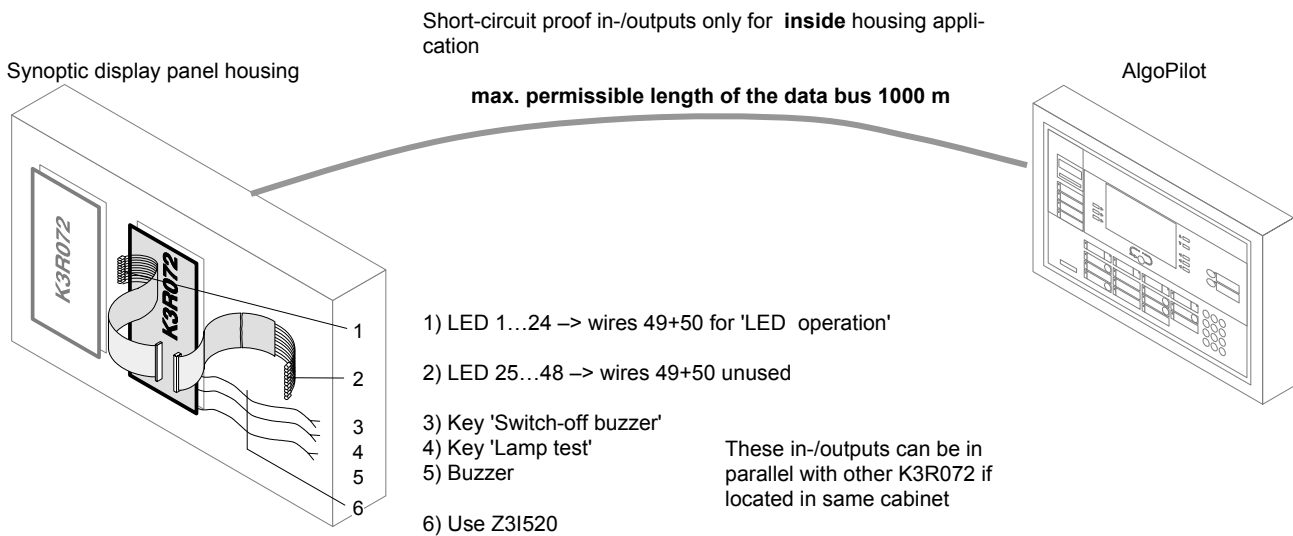
50.3   Key data

Operating voltage		9..45 VDC
Current consumption	at 24 V	quiescent 40 mA max. 140 mA
	at 9 V	quiescent 80 mA max. 330 mA
	at 45 V	quiescent 30 mA max. 90 mA

50.4 Prinzip Verkabelung

**Control console and Mimic Display board in the immediate vicinity**

LED flat cable F50F410

K3I050 or B3Q… | Equipment 1 | Equipment 2

K3I050
K1 | ST2

ST11 | ST12 | ST11 | ST12

AlgoPilot B3Q...
K7 | ST4 | **K3R072** K1 ST1 ST2 | **K3R072** K1 ST1 ST2

Data bus | Data bus

F12A100: 0.4 m / F12A470: 1.5 m | 24 V supply

Mimic Display board separate from the control console

Parallel derivation permissible | LED flat cable F50F410

K3I050 or B3Q… | Equipment 1 | Equipment 2

K3I050
K1 | ST2

ST11 | ST12 | ST11 | ST12

AlgoPilot B3Q...
K7 | ST4 | **K3R072** K1 K2 ST2 | **K3R072** K1 ST1 ST2

Data bus | Data bus

Adapter Z3I350 | max. 1000 m | 24 V supply
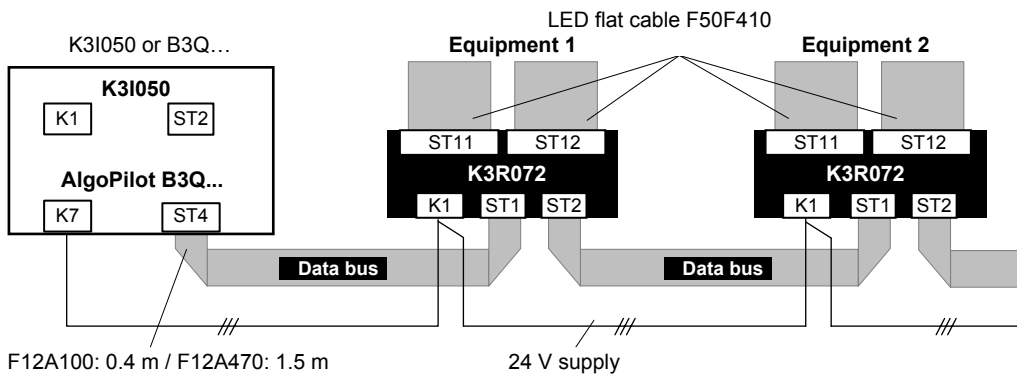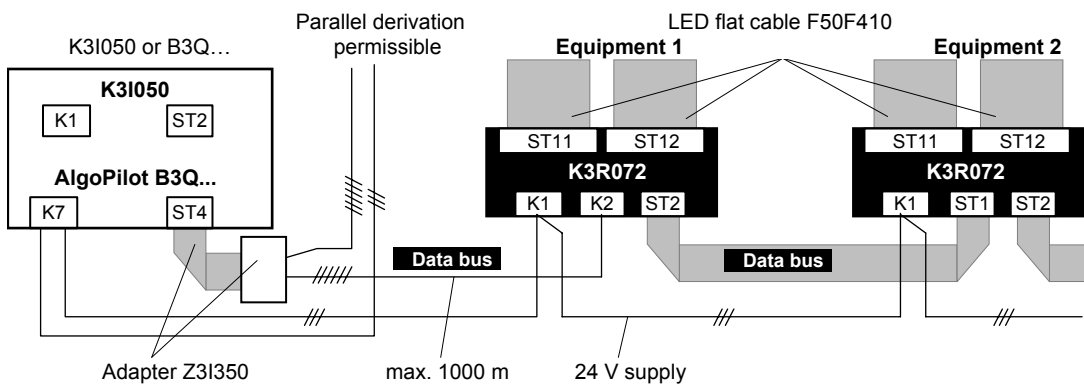
Note:
– Max. 24 units B3R051 or K3R072 (also mixed) possible with max. 8 different addresses
– Remove resistor array except on **one** unit (–> see page 215)

50.5   Mechanical design
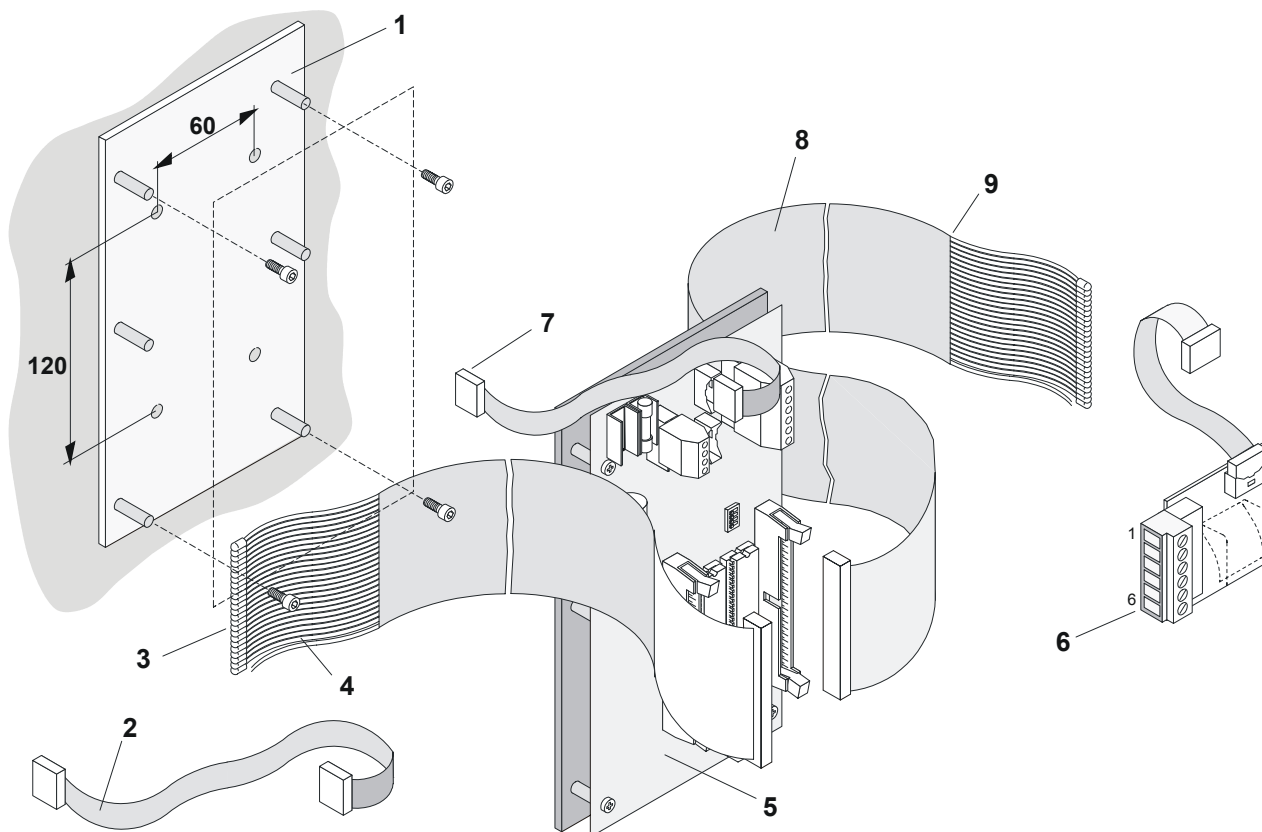
Legend:
1   Mounting plate with mounting holes and spacer bolts
2   Flat cable F12A100 (length 0,4m) / F12A470 (length 1,5m): connection of da-
     ta bus **inside** housing
3   24 LEDs
4   for operation-LED: wire 49 = minus, wire 50 = plus
5   K3R072 Electronics board
6   Adapter Z3I530 Flat cable -> terminals: connection of data bus **outside** hous-
     ing
7   Flat cable F12A100/F12A470
8   Flat cable F50F410: 50-wires with 24 red LEDs, length 1.0 m
9   the wires can be separated

50.6   Important components

Legend:

1   Connector "ST1" / "ST2": Connection of data bus via flat cable
2   Fuse 'F1' 0.4 A/T   Supply input 9...45 VDC
3   Programming switch "S1": Equipment address setting

No.	Function	Programming switch S1			
		S1-1	S1-2	S1-3	S1-4
0	Test procedure: In this setting all outputs are activated alternating between even and uneven numbers.	off	off	off	off
1	Equipment address 1	**on**	off	off	off
2	2	off	**on**	off	off
3	3	**on**	**on**	off	off
4	4	off	off	**on**	off
5	5	**on**	off	**on**	off
6	6	off	**on**	**on**	off
7	7	**on**	**on**	**on**	off
8	8	off	off	off	**on**

"S1-1...4" are set to "off" at the factory

4   Connector "ST11" 50-pin: for 50-wire flat cable F50F410 with 24 red LEDs for mimic display and 2 wires 49/50 for 'LED operation' or for flat cable of relay card K3G060
5   Use Z3I520
6   Plug-in connector "X49": Output for 'Buzzer'
7   Plug-in connector "X50": Input for key 'Lamp test'
8   Plug-in connector "X55": Input for key 'Switch-off buzzer'
9   Connector "ST12" 50-pin: for 50-wire flat cable F50F410 with 24 red LEDs for mimic display and 2 wires 49/50 unused or for flat cable of relay card K3G060
10 Plug-in terminals "K1", 4-pin: Power supply 9...45 VDC
11 Plug-in terminals "K2", 6-pin: Connection of data bus instead of flat cable
12 Resistor array (assembled ex work / must be assembled only for **one** device)

# 50.7   Connections
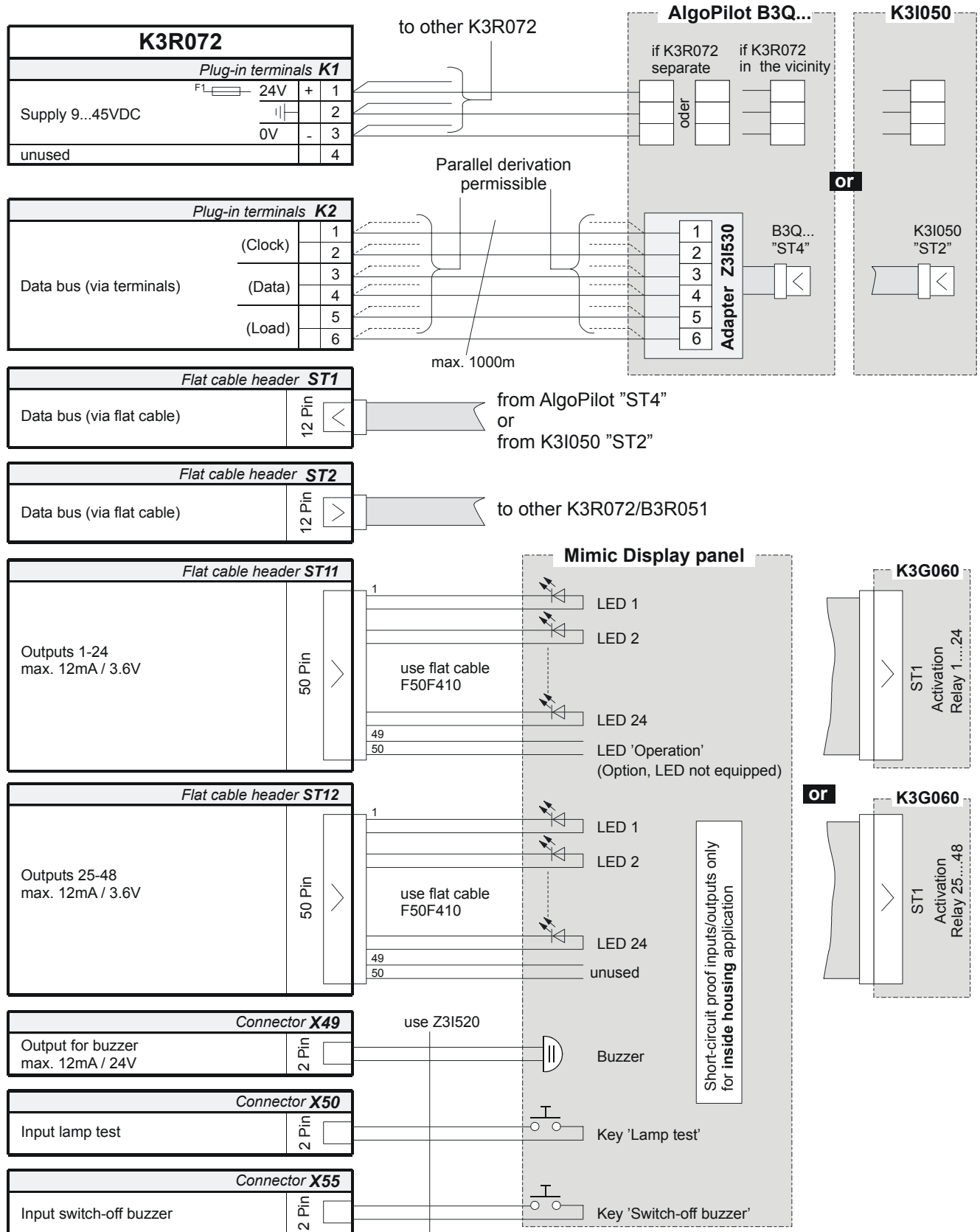
51 K3G060 Relay card

51.1 Overview

- Option to Mimic Display board K3R072
- 2 K3G060 can be connected to each K3R072
- Card **not** monitored
- 24 volt-free relay-make contacts
- Contacts not monitored
- Contacts can be individually connected via jumper to externally supplied V+ or V– potential
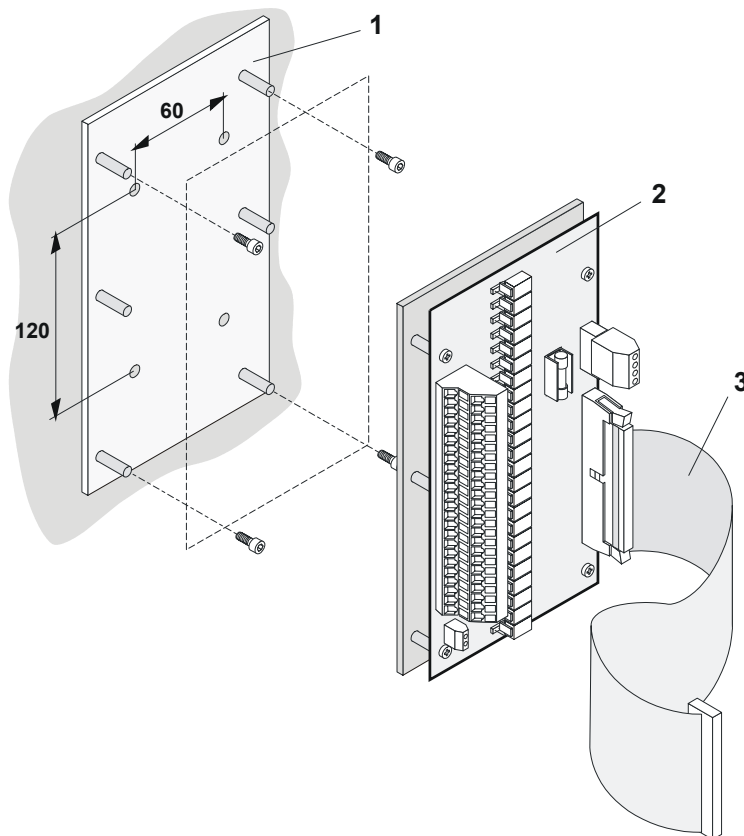
51.2 Key data

Operating voltage		9...45 VDC
Quiescent current at	24 V	6 mA
	45 V	6 mA
all relays de-energized	9 V	7 mA
Max. current	24 V	90 mA
	45 V	50 mA
all relays energized	9 V	270 mA
Relay		24 x 1 NO contact
Contact load		30 VDC / 1 A

Housing supplied by customer

24 Relay outputs

24 Relay outputs
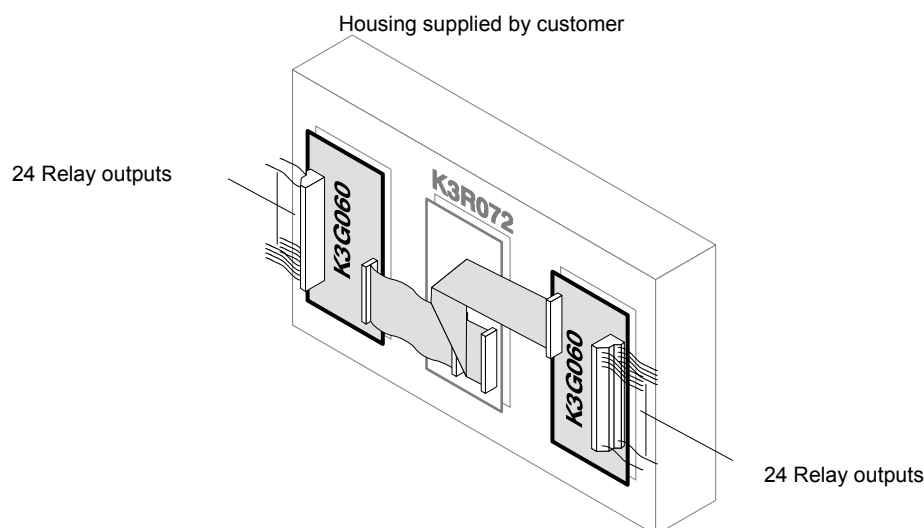
51.3 Wiring principle
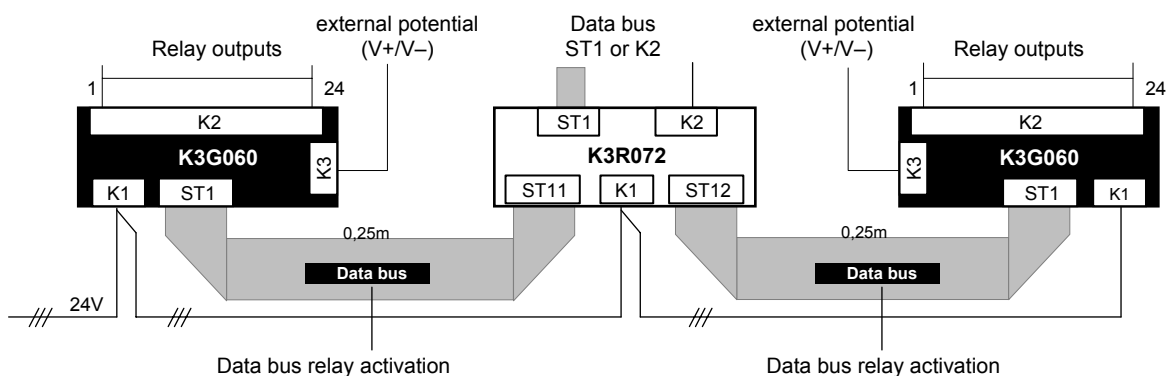
51.4 Mechanical design

Legend:

1   Mounting plate with mounting holes and spacer bolts
2   Electronics board K3G060 with mounting plate
3   Flat cable 50-pin (length 0.25 m) supplied with relay board

51.5   Important components
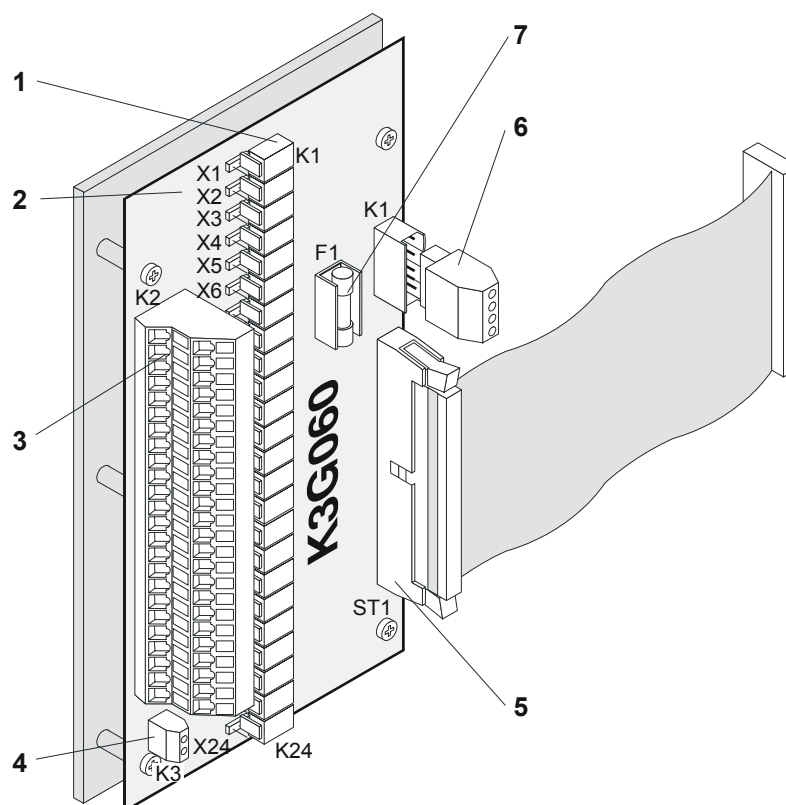
Legend:

1   Relay "K1... K24"
2   Programming connectors "X1... X24": Possibility to connect the potential V+
     or V– onto relay contacts. Programmable connector open: Contact is volt-free
     (no connection to V+ or V–) (position set at factory)
3   Terminal block "K2": Relay output channels 1.... 24
4   Possibility to connect V+ / V- potential
5   Connector 50-pin "ST1" with flat cable (length 0.25 m)
6   Plug-in terminals "K1" 4-pin: Supply 9...45 VDC
7   Fuse 'F1' 0.4 A/T: Supply 9…45 VDC

51.6   Connections
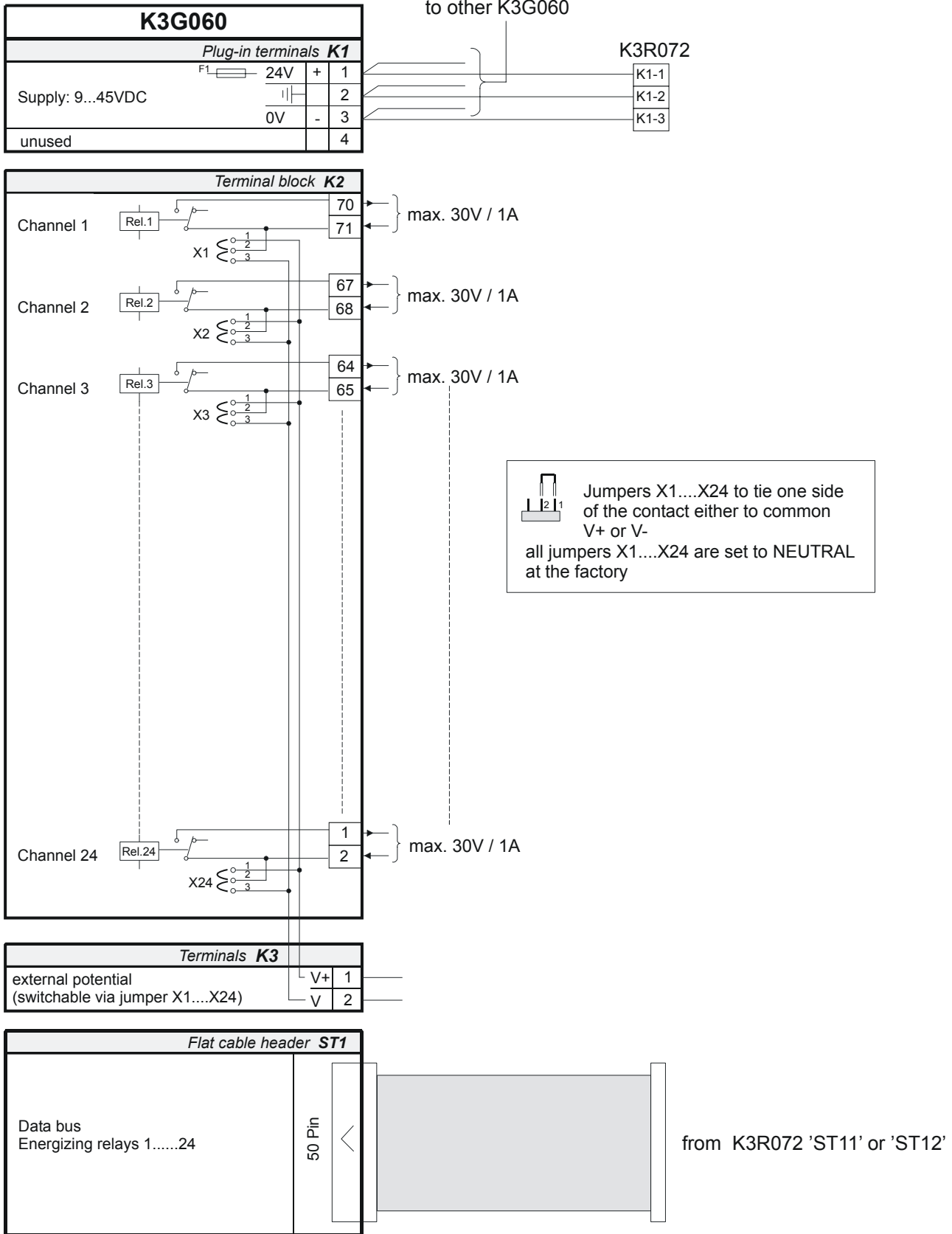
52 K3I050 LON/Mimic Display converter

52.1 Overview

- convert LON-Bus to Data bus for Mimic Display drivers K3R071/072 or parallel indicator panels B3R051
- LON-Bus device
- Max. 32 units
- Connectable via flat cable or adapter Z3I530 up to 24 units K3R071/072 or B3R051, however max. 8 addresses only
- Inputs for key 'buzzer off' and key 'lamp test'
- Outputs for buzzer and LED 'system on'
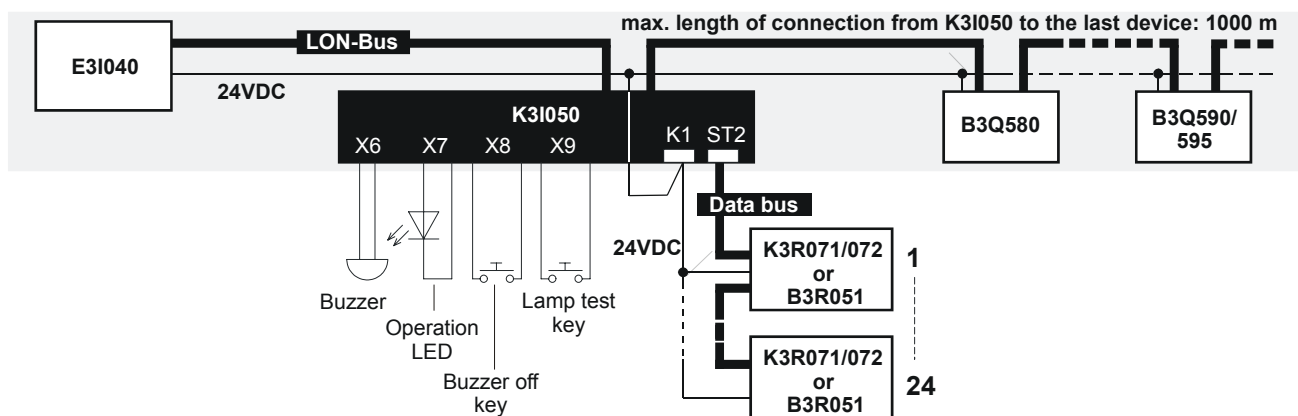- Board format 100 mm x 200 mm
- Equipped with mounting plate

52.2 Application

– Required to run K3R071/072 and B3R051 via LON-Bus

52.3 Key data

Operating voltage		9..45 VDC
Current consumption	at 24 V	quiescent 15 mA max. 30 mA
	at 9 V	quiescent 30 mA max. 50 mA
	at 45 V	quiescent 15 mA max. 30 mA
ratings	output buzzer	max. 50 mA / 22 VDC
	output LED state ON	3.3 VDC / 10 mA

52.4 Wiring principle

→ K3R071/072, B3R051 used via K3I050: In the event of a communication break (LON-Bus or I-Bus) the K3I050 sets all LED outputs to the state 'inactive' and activates the output 'buzzer'
- Output 'buzzer'
  – active: a) steady if any LED output within the K3R071/072, B3R051 is initiated
         b) intermittent in case of a communication break
  – remains active until input 'buzzer OFF' is activated or the cause for a) or b) no longer exists
- Input 'lamp test'
  – Activates all LED outputs within the K3R071/072, B3R051 for approx. 2 sec.

52.5 Mechanical design
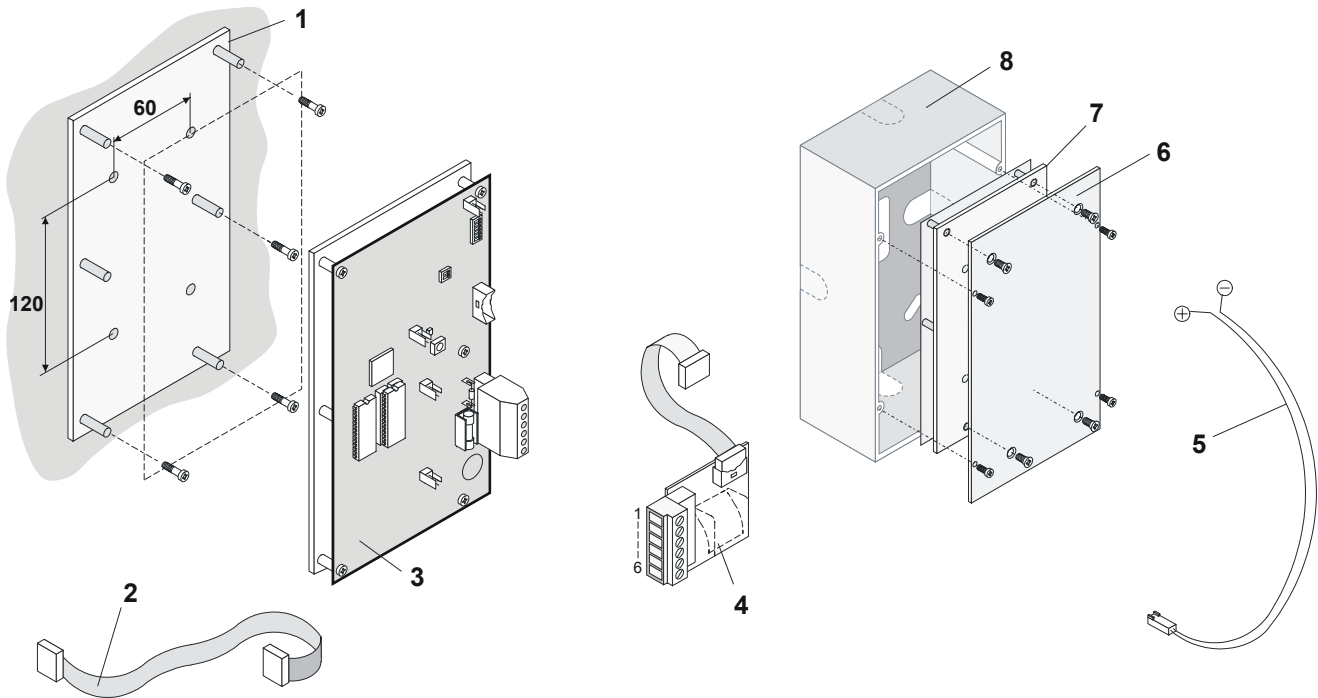
Legend:

1 Mounting plate with mounting holes and spacer bolts
2 Flat cable F12A100 (length 0,4m) / F12A470 (length 1,5m): connection of data bus **inside** housing
3 K3I050 Electronics board with mounting plate
4 Adapter Z3I530 Flat cable –> terminals: connection of data bus outside housing
5 Cable set Z3I520: 12 pcs. 2-wire cables with connector, length 0.5 m (Minus = black, Plus = red)
6 Support plate Z3B230: for the mounting of K3I050 in plastic housing H23G230
7 K3I050 Electronics board
8 Plastic housing H23G230

52.6 Important components
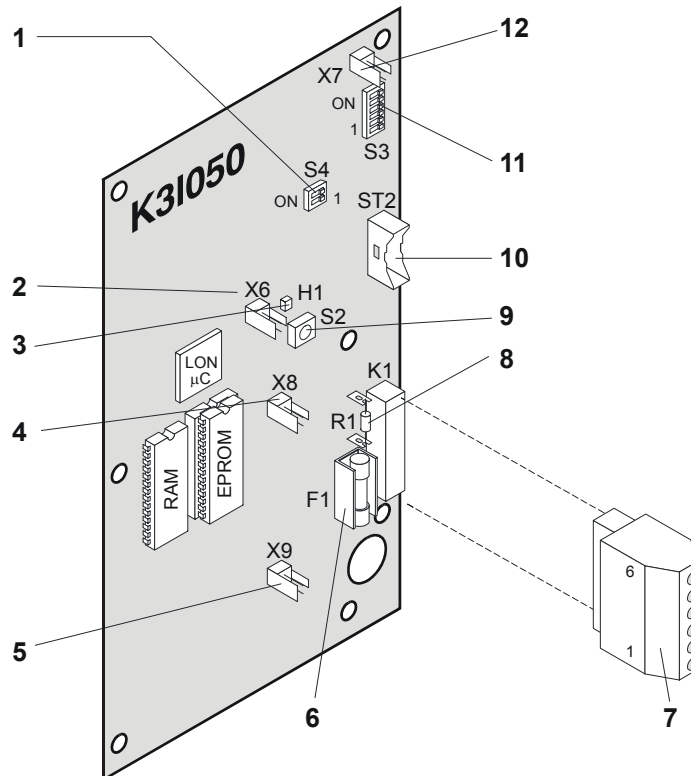
Legend:

1   Programming switch "S4":

  S4-1   =   off –> device 1...8 addressed flashing mode not supported
  S4-1   =   on –> only device 5....8 addressed flashing mode supported (if programmed)
  S4-2   =   unused

2   Plug-in connector "X6": Buzzer output
3   LED "H1": Fault indicator (lights up or flashes in case of fault 'LON-chip')
4   Plug-in connector "X8": Buzzer off key input
5   Plug-in connector "X9": Lamp test key input
6   Fuse "F1" 1.0 A/T: for supply input 9…45 VDC
7   Plug-in terminals "K1"; 6-pin: Module supply and LON-Bus
8   Resistor "R1" 100 Ω: EOL (LON-Bus) to be removed, if K3I050 is not the last device on the LON-Bus in stub line –> see also page 115
9   Key "S2": Service key (not used)
10   Flat cable header "ST2": Data bus to modules K3R071/072 (B3R051)

11 Programming switch "S3": "LON-Bus address" setting

Each element (module) connected to the LON-Bus must have an individual address (number). This is set on programming switch "S3".
Maximum 32 LON-Bus devices.

No.	Function / LON-Bus address		Programming switch S3					
		S3-1	S3-2	S3-3	S3-4	S3-5	S3-6
0	Module out of commission (not used)	off	off	off	off	off	off
1	LON-Bus device number 1	on	off	off	off	off	off
2	2	off	on	off	off	off	off
3	3	on	on	off	off	off	off
4	4	off	off	on	off	off	off
5	5	on	off	on	off	off	off
6	6	off	on	on	off	off	off
7	7	on	on	on	off	off	off
8	8	off	off	off	on	off	off
9	9	on	off	off	on	off	off
10	10	off	on	off	on	off	off
11	11	on	on	off	on	off	off
12	12	off	off	on	on	off	off
13	13	on	off	on	on	off	off
14	14	off	on	on	on	off	off
15	15	on	on	on	on	off	off
16	16	off	off	off	off	on	off
17	17	on	off	off	off	on	off
18	18	off	on	off	off	on	off
19	19	on	on	off	off	on	off
20	20	off	off	on	off	on	off
21	21	on	off	on	off	on	off
22	22	off	on	on	off	on	off
23	23	on	on	on	off	on	off
24	24	off	off	off	on	on	off
25	25	on	off	off	on	on	off
26	26	off	on	off	on	on	off
27	27	on	on	off	on	on	off
28	28	off	off	on	on	on	off
29	29	on	off	on	on	on	off
30	30	off	on	on	on	on	off
31	31	on	on	on	on	on	off
32	32	off	off	off	off	off	on

"S3-1...6" are set to "off" at the factory
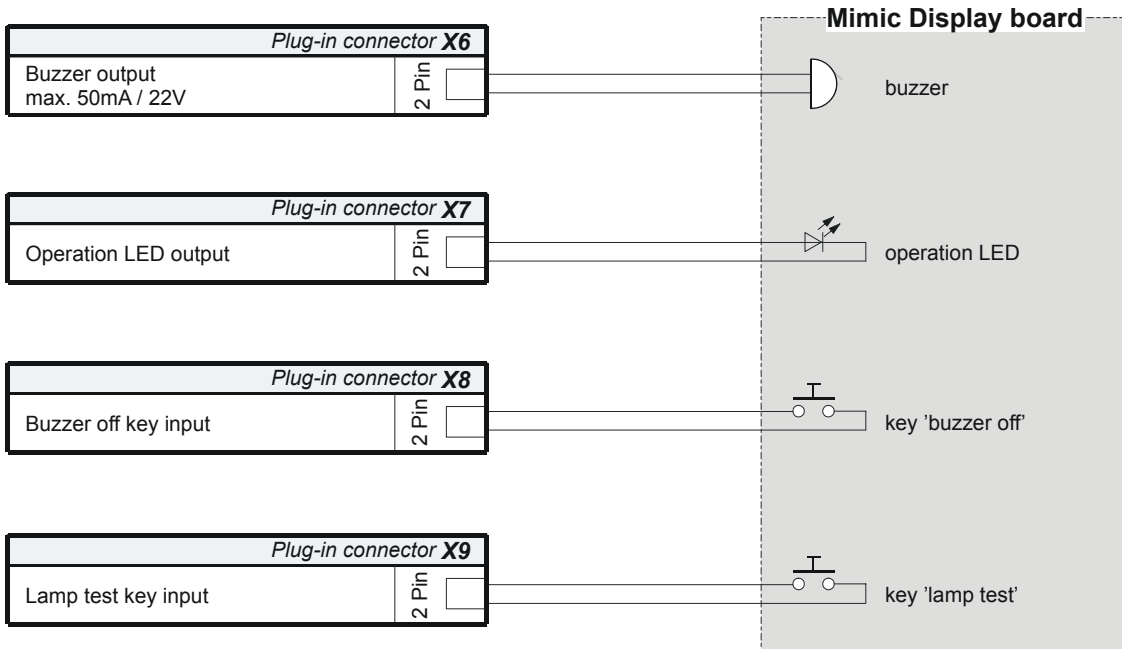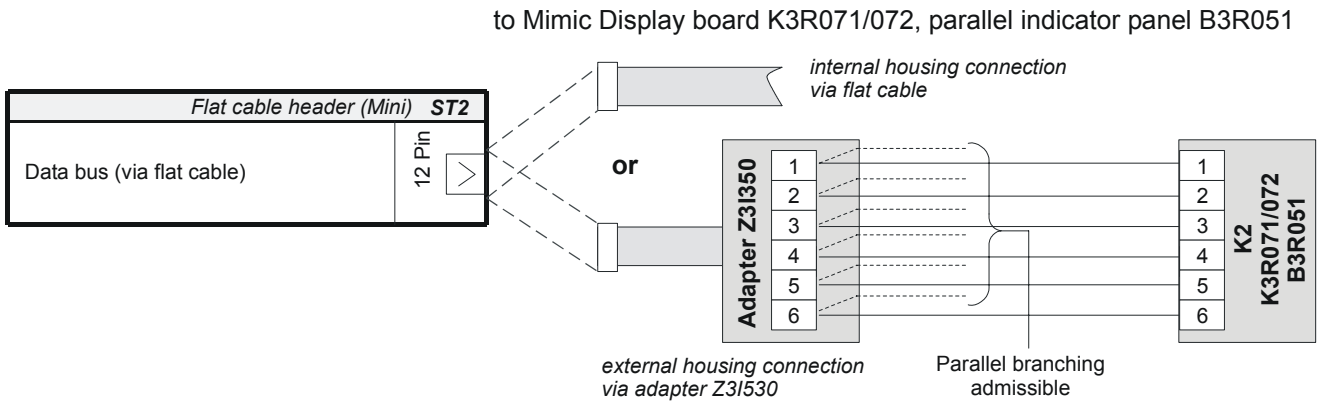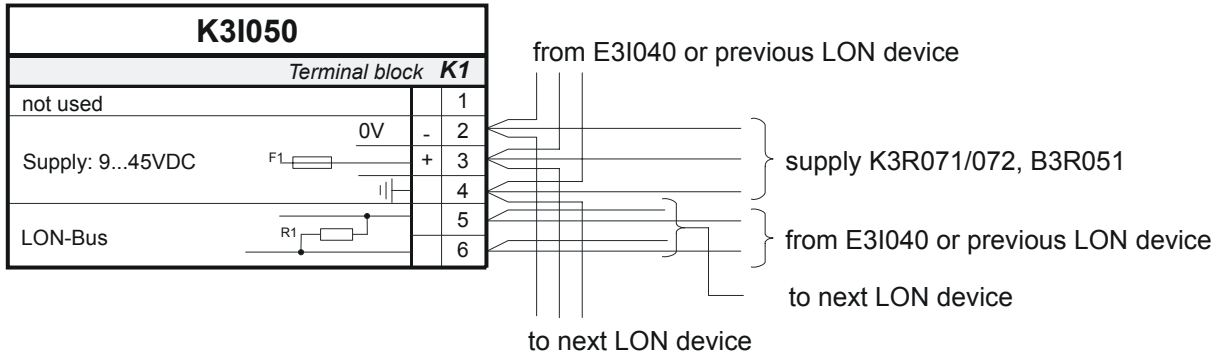
12 Plug-in connector "X7": Operation LED

flashing   = parameter download in process
steady   = normal operation
(inactive on communication break)

52.7   Connections

K3I050			
	Terminal block	**K1**	
not used			1
	0V	-	2
Supply: 9...45VDC	F1	+	3
			4
LON-Bus	R1		5
			6

from E3I040 or previous LON device

supply K3R071/072, B3R051

from E3I040 or previous LON device

to next LON device

to next LON device

to Mimic Display board K3R071/072, parallel indicator panel B3R051

Flat cable header (Mini)	**ST2**
Data bus (via flat cable)	12 Pin

or

internal housing connection via flat cable

Adapter Z3I350	
	1
	2
	3
	4
	5
	6

K2 K3R071/072 B3R051	
1	
2	
3	
4	
5	
6	

external housing connection via adapter Z3I530

Parallel branching admissible

Plug-in connector	**X6**
Buzzer output max. 50mA / 22V	2 Pin

Mimic Display board

buzzer

Plug-in connector	**X7**
Operation LED output	2 Pin

operation LED

Plug-in connector	**X8**
Buzzer off key input	2 Pin

key 'buzzer off'

Plug-in connector	**X9**
Lamp test key input	2 Pin

key 'lamp test'

53 K3I110 LON I/O p.c.b.

53.1 Overview

- In-/output card with 16 programmable control in-/outputs
- LON-Bus device
- Max. 32 devices
- Selectable ground fault monitoring, detected via master module E3X10. (for application details –> see chapter 6)
- Card format 100 mm x 200 mm
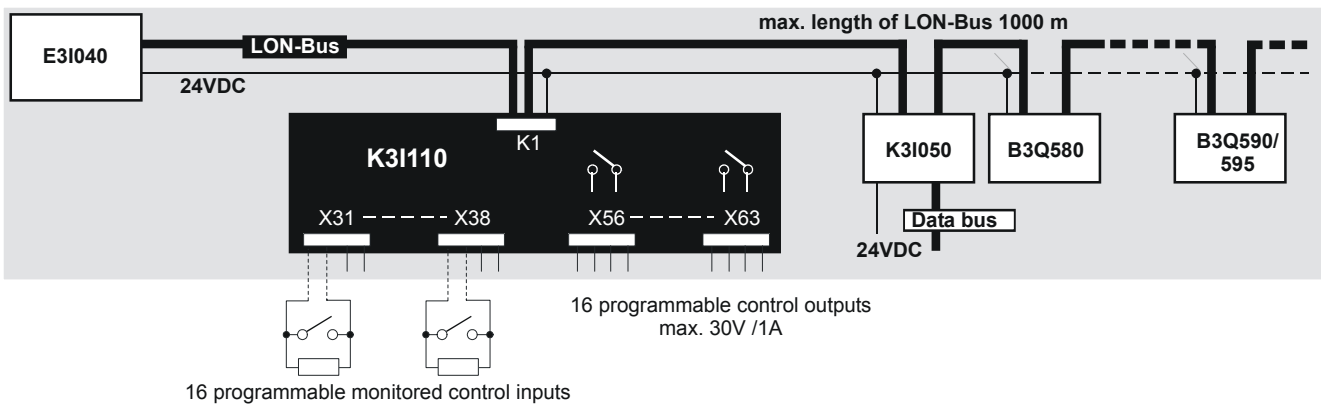- Equipped with mounting plate

53.2 Application

– The card communicate (LON-Bus) via converter module E3I040 (LON-/I-Bus) with the control unit.
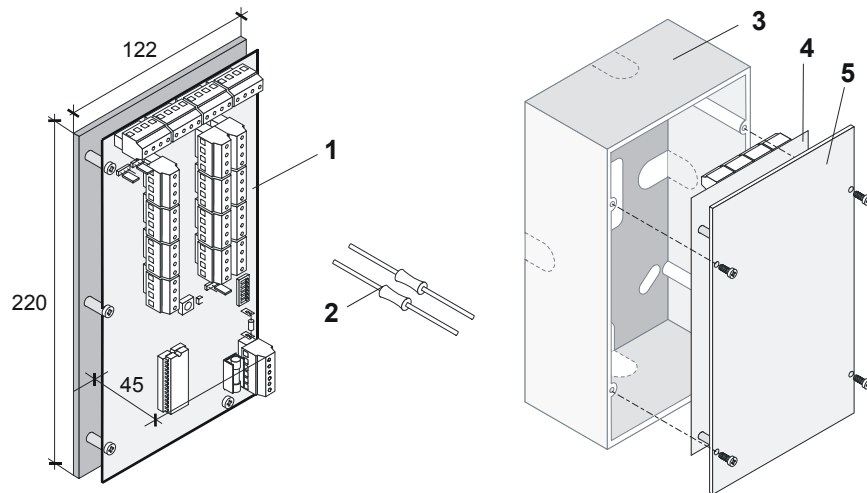
53.3 Key data

Output contacts, NO		Outputs are galvanically isolated, not supervised on open circuit, short circuit or ground fault
Ratings relay contacts		Max. 1 A / 30 VDC
Inputs		supervised on open circuit, short circuit, deviation and ground fault
Operating voltage		9..45 VDC
Current consumption	24 V	min. 24 mA / max. 184 mA *
	9 V	min. 53 mA / max. 218 mA *
	45 V	min. 19 mA / max. 171 mA *
		per activated relay (at 24 V) 10mA (without LED 9.2 mA)
		per input with closed contact max. 0.5 mA

* All relay activated incl. service LED

53.4 Wiring principle

16 programmable monitored control inputs

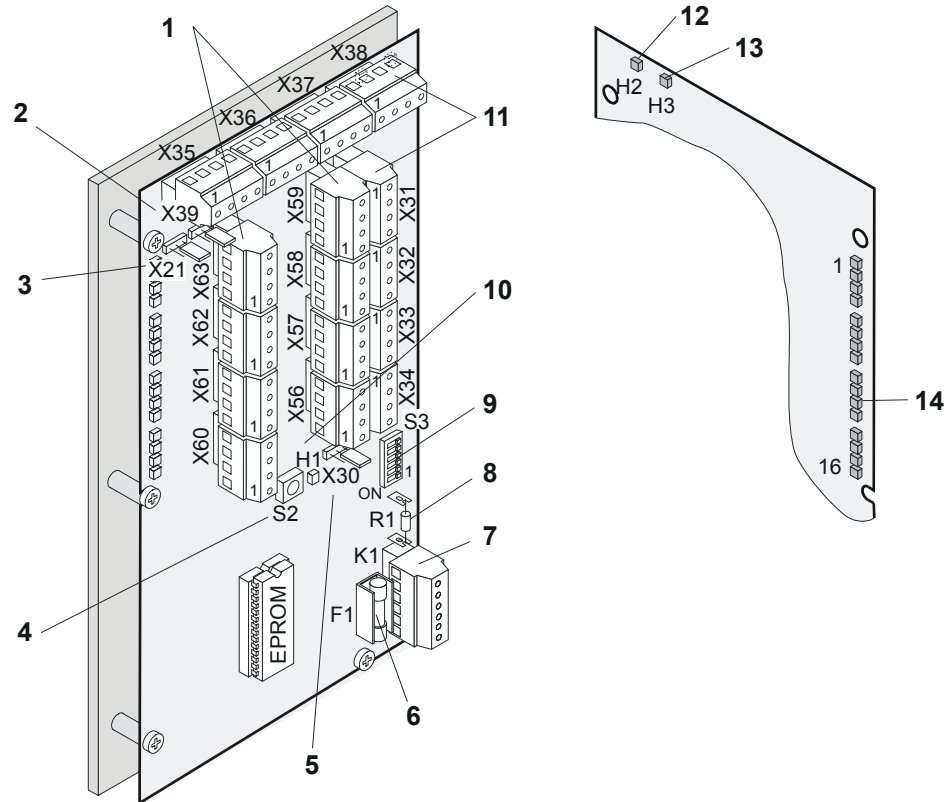16 programmable control outputs
max. 30V /1A

53.5 Mechanical design

Legend:

1   K3I110 Electronics board with mounting plate
2   16 resistors 4k75, 16 resistors 1k87
3   Plastic housing H23G230
4   K3I110 Electronics board
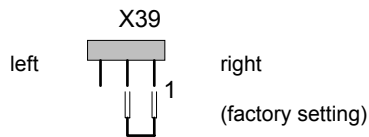5   Mounting plate

53.6   Important components
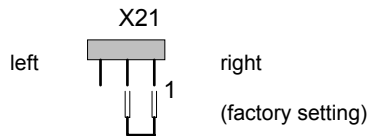

Legend:

1   Plug-in terminals 'X56'-'X63': Control output 1-16

2   Jumper 'X39':

left   = all relay enabled
right   = all relay disabled (for testing only)
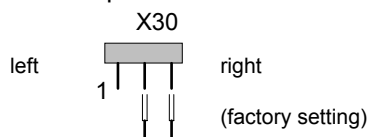
3   Jumper 'X21': Service-LEDs (1...16) activated

left   = LEDs '1...16' enabled
right   = LEDs '1...16' disabled

4   Key 'S2': Service press 2 seconds to initiate lamp test (LED and relay), each
     relay and/or LED (H1...H16) is activated one after the other

5   Jumper 'X30': Earth fault monitoring of 'input lines'

left   = monitored
right   = not monitored

6   Fuse 'F1' 1.0 A/T: Supply input 9…45 VDC
7   Plug-in terminals 'K1'; 6-pin: Module supply and LON-Bus
8   Resistor 'R1' 100 Ω: EOL (LON-Bus) at application stub line: to be remove resistor, if K3I110 is not the last device on the LON-Bus –> see page 115

9   Programming switch 'S3': "LON-Bus address" setting

Each element (module) connected to the LON-Bus must have an individual address (number). This is set on programming switch "S3".
Maximum 32 LON-Bus devices.

No.	Function / LON-Bus address		S3-1	S3-2	S3-3	S3-4	S3-5	S3-6
			Programming switch S3					
0	Module out of commission (not used)		off	off	off	off	off	off
1	LON-Bus device number	1	**on**	off	off	off	off	off
2		2	off	**on**	off	off	off	off
3		3	**on**	**on**	off	off	off	off
4		4	off	off	**on**	off	off	off
5		5	**on**	off	**on**	off	off	off
6		6	off	**on**	**on**	off	off	off
7		7	**on**	**on**	**on**	off	off	off
8		8	off	off	off	**on**	off	off
9		9	**on**	off	off	**on**	off	off
10		10	off	**on**	off	**on**	off	off
11		11	**on**	**on**	off	**on**	off	off
12		12	off	off	**on**	**on**	off	off
13		13	**on**	off	**on**	**on**	off	off
14		14	off	**on**	**on**	**on**	off	off
15		15	**on**	**on**	**on**	**on**	off	off
16		16	off	off	off	off	**on**	off
17		17	**on**	off	off	off	**on**	off
18		18	off	**on**	off	off	**on**	off
19		19	**on**	**on**	off	off	**on**	off
20		20	off	off	**on**	off	**on**	off
21		21	**on**	off	**on**	off	**on**	off
22		22	off	**on**	**on**	off	**on**	off
23		23	**on**	**on**	**on**	off	**on**	off
24		24	off	off	off	**on**	**on**	off
25		25	**on**	off	off	**on**	**on**	off
26		26	off	**on**	off	**on**	**on**	off
27		27	**on**	**on**	off	**on**	**on**	off
28		28	off	off	**on**	**on**	**on**	off
29		29	**on**	off	**on**	**on**	**on**	off
30		30	off	**on**	**on**	**on**	**on**	off
31		31	**on**	**on**	**on**	**on**	**on**	off
32		32	off	off	off	off	off	**on**

"S3-1...6" are set to "off" at the factory

10   LED 'H1': lit or flashing upon 'fault' LON-communication
11   Plug-in terminals 'X31'-'X38': Monitored control input 1-16

12   LED 'H2' yellow: Fault indicator

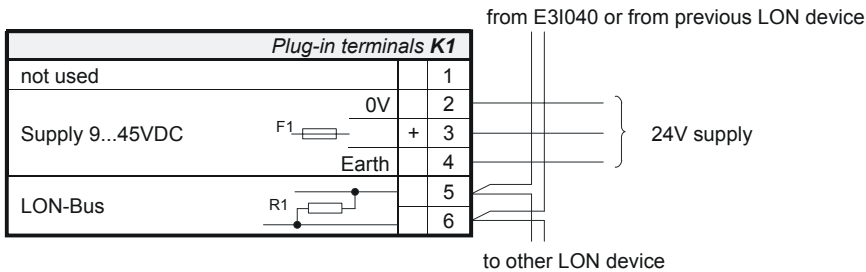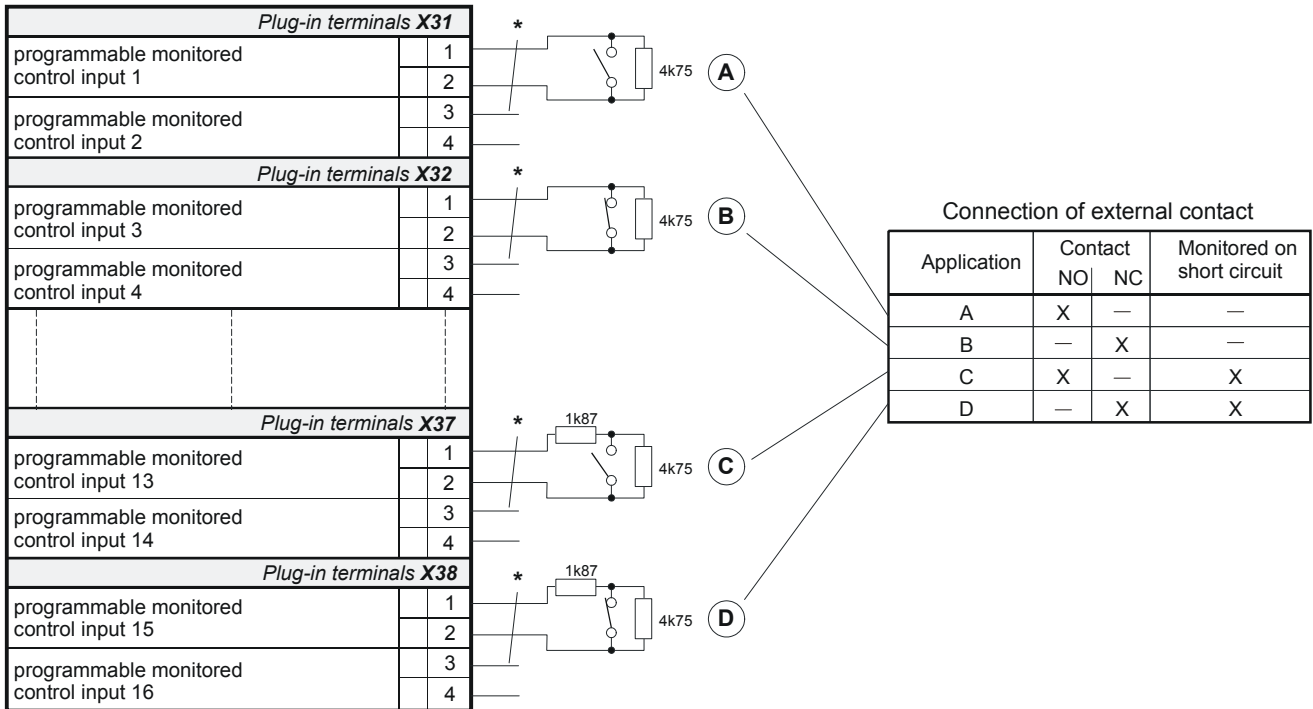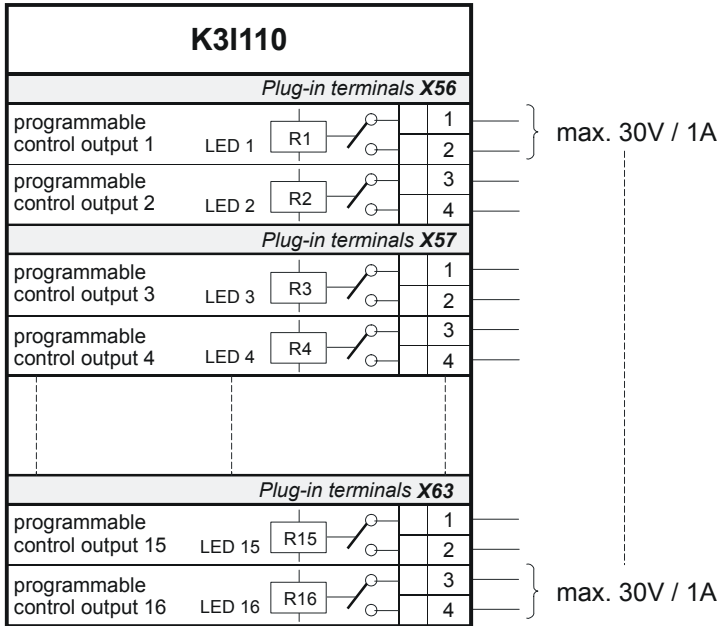|		
on	=	no communication with control unit
flashing slow	=	no communication after power up
flashing fast	=	no communication after reset

13   LED 'H3' green: Operation indicator

on	=	communication with control unit is ok
flashing slow	=	no use parameter received
flashing fast	=	data lost from control unit

LED 'H2' and 'H3' off: no power

14   Service-LEDs '1'....'16': Relay active –> LED lights (the LEDs can be deactivated via jumper 'X21')

53.7 Connections

K3I110

Plug-in terminals *X56*		
programmable control output 1	LED 1 R1	1 / 2
programmable control output 2	LED 2 R2	3 / 4

max. 30V / 1A

Plug-in terminals *X57*		
programmable control output 3	LED 3 R3	1 / 2
programmable control output 4	LED 4 R4	3 / 4

Plug-in terminals *X63*		
programmable control output 15	LED 15 R15	1 / 2
programmable control output 16	LED 16 R16	3 / 4

max. 30V / 1A

Plug-in terminals *X31*		
programmable monitored control input 1		1 / 2
programmable monitored control input 2		3 / 4

* 4k75 (A)

Plug-in terminals *X32*		
programmable monitored control input 3		1 / 2
programmable monitored control input 4		3 / 4

* 4k75 (B)

Plug-in terminals *X37*		
programmable monitored control input 13		1 / 2
programmable monitored control input 14		3 / 4

* 1k87 4k75 (C)

Plug-in terminals *X38*		
programmable monitored control input 15		1 / 2
programmable monitored control input 16		3 / 4

* 1k87 4k75 (D)

Connection of external contact

Application	Contact		Monitored on short circuit
	NO	NC	
A	X	—	—
B	—	X	—
C	X	—	X
D	—	X	X

from E3I040 or from previous LON device

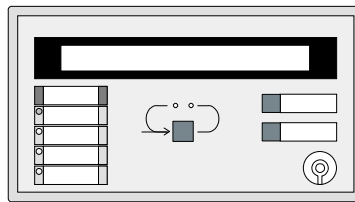| Plug-in terminals *K1*		
not used		1
Supply 9...45VDC	0V F1 +	2 / 3
	Earth	4
LON-Bus	R1	5 / 6

24V supply

to other LON device

* Set the protective circuit according to the tool settings (Default no supervision)

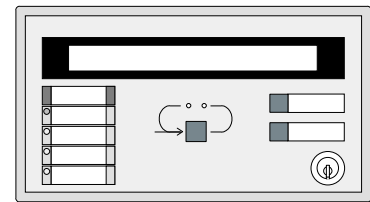# 54   B3Q580 Text display terminal and B3Q590/B3Q595 Text control terminal

54.1   Overview
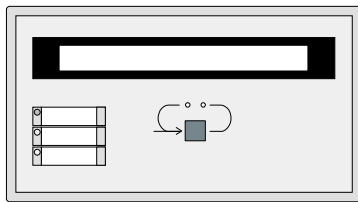
| B3Q580 | B3Q590
(with Nordic lock) | B3Q595
(as B3Q590 but with KABA lock) |

➜ Templates for inscription strips –> see document 006516

- Small display and operating units (219 x 125 x 76 mm)
- LON-Bus device
- Max. 32 units
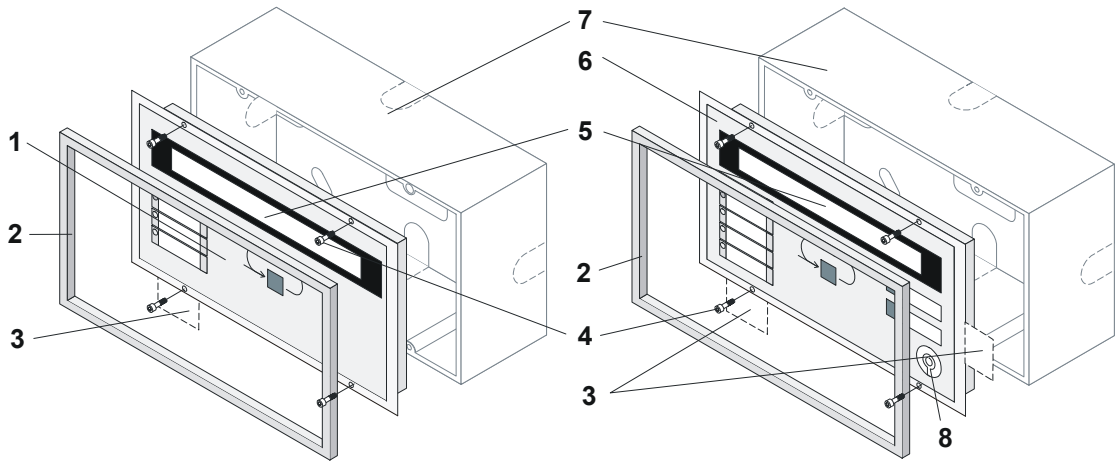- recessed mounting available –> see document 1393

54.2   Application

B3Q580:	Typical floor indication panel
B3Q590 / B3Q595:	Secondary operating panel

54.3   Key data

Function	B3Q580 Text display terminal	B3Q590 / B3Q595 Text control terminal
LCD 2x40 characters yellow backlight	✓	✓
Alarm event indication on LCD	**EP5:** all ZONES from 1...4 selectable SECTIONS from 1 local AREA **≥EP7F:** all ZONES from 1...16 selectable SECTIONS from 1 selectable AREA –> for details see AlgoWorks Online-Help	**EP5:** all ZONES per station (not selectable) **≥EP7F:** all ZONES visible on the connected station –> for details see AlgoWorks Online-Help
Fault/Warning event indication on LCD	selectable (yes/no via AlgoWorks)	selectable (yes/no via AlgoWorks)
Selectable indicating mode	14 (selectable via AlgoWorks)	14 (selectable via AlgoWorks)
Buzzer, can be silenced	✓	✓
3 programmable LEDs	–	✓ yellow, exchangeable (1 green LED enclosed)
Function key 'message scrolling'	✓ (also serves to silence buzzer + lamp test)	✓ (also serves to silence buzzer + lamp test)
Function keys 'Acknowledge'/'Reset'	–	✓
Key switch for operating access	–	✓ B3Q590 = Nordic lock ✓ B3Q595 = KABA lock
For installation in housing H23G230	✓	✓
Slide-in inscription strips	✓ (various sets available) see document 008725	✓ (various sets available) see document 008725
Operating voltage	9... 45 VDC	9... 45 VDC
Supply voltage: Current consumption at: 24 V quiescent (LCD backlight off) 24 V max. 45 V quiescent (LCD backlight off) 45 V max. 9 V quiescent (LCD backlight off) 9 V max.	 20 mA 180 mA 18 mA 90 mA 50 mA 480 mA	 18 mA 185 mA 16 mA 90 mA 35 mA 500 mA

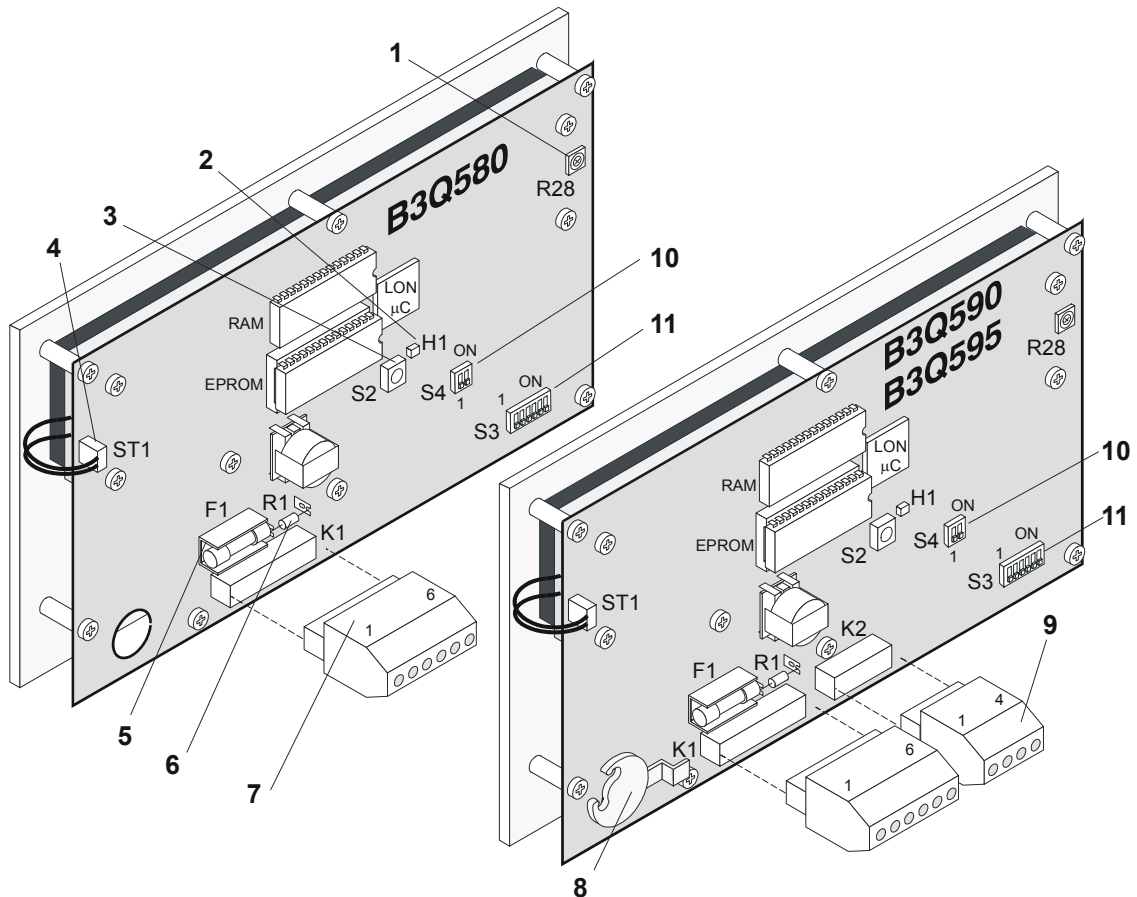## 54.4   Mechanical design

Legend:
1   Floor indication panel B3Q580
2   Cover frame
3   Slide-in inscription strips
4   4 Mounting screws
5   Display
6   Secondary operating panel B3Q590/595 (yellow LEDS in exchange by green LEDS)
7   Plastic housing H23G230
8   Nordic lock or KABA lock

54.5   Important components

Legend:

1 Potentiometer "R28": LCD contrast adjustment

2 Test-LED "H1": inactive –> Normal operation

lights up or flashes –> EPROM defective or missing

3 Service key "S2": no function

4 Plug-in connector "ST1": backlight

5 Fuse "F1": 1 A/T for supply input 9…45 VDC

6 Resistor "R1" 100 Ω: EOL (LON-Bus) to be removed, if B3Q580 or B3Q590/B3Q595 is not the last device on the LON-Bus in stub line –> see page 115

7 Plug-in terminals "K1": Module supply and LON-Bus

8 for operating access: B3Q590: Nordic fire brigade key switch

B3Q595: KABA fire brigade key switch

9 Plug-in terminals "K2": Programming inputs for indication fields (LEDs)

10 Programming switch "S4": S4-1= IB mode (on: buzzer off)

S4-2= unused

11 Programming switch "S3": "LON-Bus address" setting

Each element (module) connected to the LON-Bus must have an individual address (number). This is set on programming switch "S3".
Maximum 32 LON-Bus devices.

No.	Function / LON-Bus address		S3-1	S3-2	S3-3	S3-4	S3-5	S3-6
			Programming switch S3					
0	Module out of commission (not used)		off	off	off	off	off	off
1	LON-Bus device number	1	on	off	off	off	off	off
2		2	off	on	off	off	off	off
3		3	on	on	off	off	off	off
4		4	off	off	on	off	off	off
5		5	on	off	on	off	off	off
6		6	off	on	on	off	off	off
7		7	on	on	on	off	off	off
8		8	off	off	off	on	off	off
9		9	on	off	off	on	off	off
10		10	off	on	off	on	off	off
11		11	on	on	off	on	off	off
12		12	off	off	on	on	off	off
13		13	on	off	on	on	off	off
14		14	off	on	on	on	off	off
15		15	on	on	on	on	off	off
16		16	off	off	off	off	on	off
17		17	on	off	off	off	on	off
18		18	off	on	off	off	on	off
19		19	on	on	off	off	on	off
20		20	off	off	on	off	on	off
21		21	on	off	on	off	on	off
22		22	off	on	on	off	on	off
23		23	on	on	on	off	on	off
24		24	off	off	off	on	on	off
25		25	on	off	off	on	on	off
26		26	off	on	off	on	on	off
27		27	on	on	off	on	on	off
28		28	off	off	on	on	on	off
29		29	on	off	on	on	on	off
30		30	off	on	on	on	on	off
31		31	on	on	on	on	on	off
32		32	off	off	off	off	off	on

"S3-1...6" are set to "off" at the factory

54.6   Message presentation

The AlgoPilot provides 3 text lines within the LCD per alarm message. B3Q580 and B3Q590/B3Q595 only have a two–line display. The messages at the B3Q580/590/595 must therefore be reduced to a format of only 2 text lines, in order to meet different requirements. There are **14 display modes** available (mode 0....13 selectable via AlgoWorks). The modes in the detail may slightly deviate depending on EP, see Online-Help of the corresponding AlgoWorks.

Mode	Display B3Q580/590/595	Plan ref. no. on alarm	CSX no.	fault messages
0	`nn%<---------- standard text ---------->`			
1	`   <--- last line of customer text --->`			●
2	`nn%<---- standard text -----> <-tx1->xxx`	●		
3	`   <--- last line of customer text --->`	●		●
4	`nn%<---------- standard text ---------->`		●	
5	`   AAAA xx   SSSS xxx   ZZZZ xxx   EEEE xx`		●	●
6	`nn%<---- standard text -----> <-tx1->xxx`	●	●	
7	`   AAAA xx   SSSS xxx   ZZZZ xxx   EEEE xx`	●	●	●
8	`nn%<-------- customer text 1 ---------->`			
9	`   <-------- customer text 2 ---------->`			●
10	`nn%<---- customer text 1 ---> <-tx1->xxx`	●		
11	`   <--------- customer text 2 --------->`	●		●
12	`nn%<-------- customer text 1 ---------->` `   <-------- customer text 2 ---------->`	Special function: – Key acckn. + reset disabled while remote transmission is active (RT) – buzzer silenced when RT becomes active		
13 A	`nn%<---- customer text 1 ---> <-tx1->xxx` `   <--------- customer text 2 --------->`	Special function: – different display mode		
13 B	`nn%<-------- customer text 1 ---------->` `   <-------- customer text 2 ---------->`	A = on alarm B = on fault		

54.7   Country specific configuration data

Supported character set
- ASCII (...127) + 8 individual characters defined per country
- supports most European languages, Hebrew and Cyrillic are explicitly excluded

Local configuration
- all national configuration data is locally available (EPROM in B3Q580/590/595)
- the required parameters are selected by 'country code' which is received with each 'system startup' and after each local 'power down'

Parameters
- 8 defined national characters
- national standard texts for 'local mode' during communication break
- format for date and time display

```
     12345678901234567890123456789012345678990
A: *** powering up ***
B: *** resetting ***
C: waiting for initialization
```

Switzerland German:
```
     12345678901234567890123456789012345678990
1: Normalbetrieb
2: Daten verloren
3: Verbindung unterbrochen seit
4: GR.NR.
5: Ber. Abs. Obj. Elem
6: Feuerwehraufgebot in
Datumsformat:   31.12.2000
Zeitformat:     23:59
Sonderzeichen:  Ä ä Ö ö Ü ü ß ø § \ °
```

Switzerland Italian:
```
     12345678901234567890123456789012345678990
1: Funzionamento normale
2: Perdita dati
3: Comunicazione interrotta per
4: NR.GR.
5: Area Sez. Zona Elem
6: Interv. Pompieri in
Datumsformat:   31.12.2000
Zeitformat:     23:59
Sonderzeichen:  à ç é è ì ò ù \ °
```

Norway:
```
     12345678901234567890123456789012345678990
1: Normal drift
2: data gått tapt
3: Kommunikasjonen opprettes om
4: Kort n.
5: Omr. Sek. Sone El.
6: Alarmoverføring aktiv om
Datumsformat:   31.12.2000
Zeitformat:     23:59
Sonderzeichen:  ∅ ø Æ æ Å å \ ° ~
```

Denmark:
```
     12345678901234567890123456789012345678990
1: Normal drift
2: data tabt
3: Forbindelse afbrudt i
4: Plan:
5: Area Sect Zone Elem
6: Signaloverføring om
Datumsformat:   31.12.2000
Zeitformat:     23:59
Sonderzeichen:    ø Æ æ Å å \   ~
```

Netherlands:
```
     12345678901234567890123456789012345678990
1: Normaal bedrijf
2: data verloren
3: Verbinding verbroken voor
4: Plan:
5: Geb. Zone Groep Elem
6: Doormelding over
Datumsformat:   31.12.2000
Zeitformat:     23:59
Sonderzeichen:  £ \ ~
```

Belgium French / Luxembourg:
```
     12345678901234567890123456789012345678990
1: En fonction normale
2: perte donnés
3: Communication interrompue
4: Plan:
5: Site Sect Zone Elem
6: Télétransmission dans
Datumsformat:   31.12.2000
Zeitformat:     23:59
Sonderzeichen:  à â ç é è ê î ù \ °
```

Switzerland French:
```
     12345678901234567890123456789012345678990
1: En service
2: Données pérdues
3: Communicat.interrompue depuis
4: Gr.No.
5: Site Sect Zone Elém
6: Transmission dans
Datumsformat:   31.12.2000
Zeitformat:     23:59
Sonderzeichen:  à â ç é è ê î ù \ °
```

Sweden:
```
     12345678901234567890123456789012345678990
1: Normal drift
2: Data förlorad
3: Förbindelse avbruten i
4: OR :
5: Omr: Sek: Zon: El:
6: Larmöverföring om
Datumsformat:   31.12.2000
Zeitformat:     23:59
Sonderzeichen:  Ä ä Ö ö Ü ü Å å é ¤ \
```

Finland:
```
     12345678901234567890123456789012345678990
1: Normaali käyttö
2: data hävinnyt
3: Yhteys katkennut
4: Sivu:
5: Alue Taso Ryh. Os.
6: Pelastuslaitos kutsutaan
Datumsformat:   31.12.2000
Zeitformat:     23:59
Sonderzeichen:  Ä ä Ö ö Ü ü Å å é ¤ \
```

Germany:
```
     12345678901234567890123456789012345678990
1: Normalbetrieb
2: Daten verloren
3: Verbindung unterbrochen seit
4: Plan:
5: Ber. Abs. Obj. Elem
6: Ansteuerung ÜE in
Datumsformat:   31.12.2000
Zeitformat:     23:59
Sonderzeichen:  Ä ä Ö ö Ü ü ß ø § \
```

France:
```
     12345678901234567890123456789012345678990
1: Système en veille
2: Perte données
3: Connexion interrompue depuis
4: Plan:
5: Site Sect Zone Elém
6: Transmission alarme dans
Datumsformat:   31.12.2000
Zeitformat:     23:59
Sonderzeichen:  à â ç é è ê î ù \
```

Belgium Flemish:
```
     12345678901234567890123456789012345678990
1: Normale werking
2: data verloren
3: Communicatie verbroken
4: Plan:
5: Area Sect Zone Elem
6: Teletransmissie binnen
Datumsformat:   31.12.2000
Zeitformat:     23:59
Sonderzeichen:  à ä é è ë ï ö ü °
```

Spain:
```
    12345678901234567890123456789012345678890
1: En servicio
2: Pérdida d.datos
3: Conexión interrumpida durante
4: Plano:
5: Area Secc Zona Elem
6: Transmi. a distancia en
Datumsformat:   31.12.2000
Zeitformat:     23:59
Sonderzeichen:  Ñ ñ é ó ú ¡ ¿ \ ~
```

Portugal:
```
    12345678901234567890123456789012345678890
1: Operação normal
2: dados perdidos
3: Ligação interrompida por
4: Plano
5: Área Secç Zona Elem
6: Transmissão distância em
Datumsformat:   31.12.2000
Zeitformat:     23:59
Sonderzeichen:  Á ã â ç Õ õ \ ˜
```

Hungary:
```
    12345678901234567890123456789012345678890
1: normál üzem
2: adatvesztés
3: kapcsolatszakadás
4: rajz:
5: Terü Szek Zóna Elem
6: távjelzés indul
Datumsformat:   31.12.2000
Zeitformat:     23:59
Sonderzeichen:  á é í û ü õ ó ö \ ~
```

Slovakia:
```
    12345678901234567890123456789012345678890
1: Normálna prevádzka
2: Dáta stratené
3: Spojenie prerušené o
4: Plán:
5: obl. úsek zóna elem
6: Dialkový prenos o
Datumsformat:   31.12.2000
Zeitformat:     23:59
Sonderzeichen:  á ä é í ó š ú ý \
```

English international:
```
    12345678901234567890123456789012345678890
1: Normal operation
2: data lost
3: Connection interrupted for
4: Plan:
5: Area Sect Zone Elem
6: remote transmission in
Datumsformat:   31.12.2000
Zeitformat:     23:59
Sonderzeichen:  £ \ ~
```

England:
```
    12345678901234567890123456789012345678890
1: Normal operation
2: data lost
3: Connection interrupted for
4: Zone:
5: Area Sect Zone Elem
6: General alarm in
Datumsformat:   31.12.2000
Zeitformat:     23:59
Sonderzeichen:  £ \ ~
```

Catalan:
```
    12345678901234567890123456789012345678890
1: En servei
2: perdua de dades
3: Connexió aturada per
4: Planol:
5: Area Secc Zona Elem
6: transmissio remote activ.
Datumsformat:   31.12.2000
Zeitformat:     23:59
Sonderzeichen:  Ñ ñ é ó ú Ç ç \ °
```

Italy:
```
    12345678901234567890123456789012345678890
1: Funzionamento normale
2: dato perso
3: Collegamento interrotto per
4: Disegn.
5: Area Sez. Zona Elem
6: Teletrasmissione in
Datumsformat:   31.12.2000
Zeitformat:     23:59
Sonderzeichen:  à ç é è ì ò ù \ °
```

Czech Republic:
```
    12345678901234567890123456789012345678890
1: NORMALNI PROVOZ
2: STRATA DAT
3: SPOJENI JE PRERUSENO JIZ
4: PLAN:
5: AREA SEKC ZONA ELEM
6: DALKOVY PRENOS ZA
Datumsformat:   31.12.2000
Zeitformat:     23:59
Sonderzeichen:  è ì ò ∅ ø š ý ž \ °
```

Poland:
```
    12345678901234567890123456789012345678890
1: DZIALANIE NORMALNE
2: BRAK DANYCH
3: BRAK POLACZENIA PRZEZ
4: PLAN
5: OBSZ SEKC STRE ELEM
6: ZDALNA TRANSMISJA PO
Datumsformat:   31.12.2000
Zeitformat:     23:59
Sonderzeichen:  ¹ æ ê ñ ó œ þ ¿ \
```
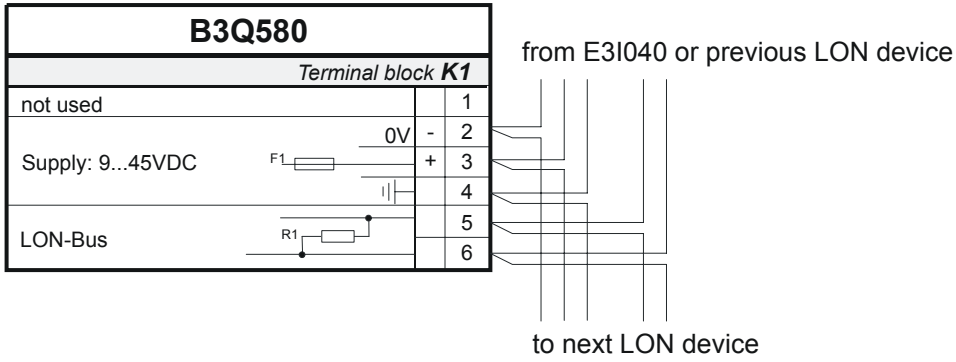
USA:
```
    12345678901234567890123456789012345678890
1: Normal operation
2: data lost
3: Connection interrupted for
4: Plan:
5: Area Sect Zone Elem
6: remote transmission in
Datumsformat:   31.12.2000
Zeitformat:     23:59
Sonderzeichen:  £ \ ~
```
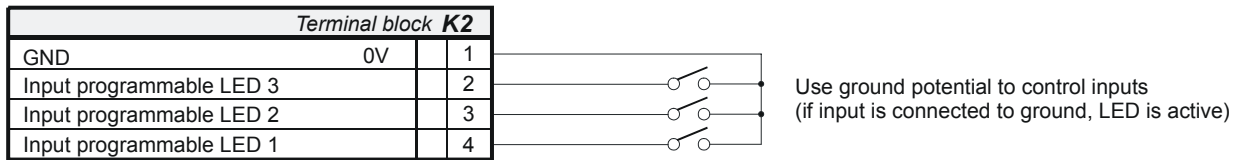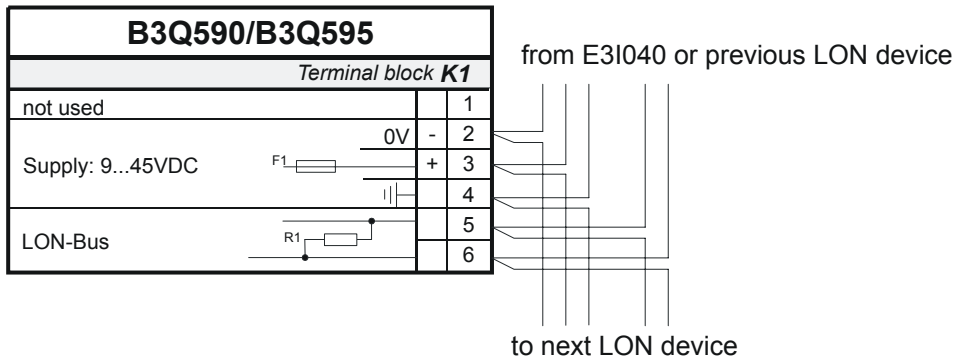
Iceland: in capital letters !
```
    12345678901234567890123456789012345678890
1: EÐLILEG STAÐA
2: GÖGN GLÖTUÐ
3: SAMBAND ROFIÐ Í
4: PLAN:
5: HEIL HLUT SVÆÐ EINI
6: FJARSENDING VIRK EFTIR
Datumsformat:   31.12.2000
Zeitformat:     23:59
Sonderzeichen:  Á Æ Ð É Í Ó Ö Ú Ý Þ \
```
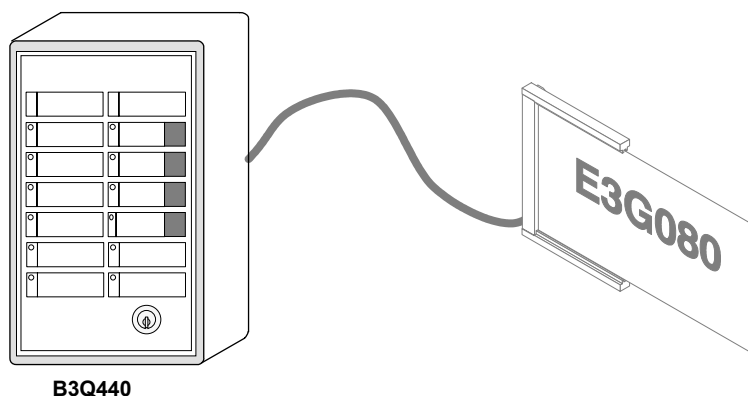
54.8   Connections B3Q580

B3Q580		
Terminal block K1		
not used		1
0V −		2
Supply: 9...45VDC F1 +		3
		4
LON-Bus R1		5
		6

from E3I040 or previous LON device

to next LON device

54.9   Connections B3Q590/B3Q595

B3Q590/B3Q595		
Terminal block K1		
not used		1
0V −		2
Supply: 9...45VDC F1 +		3
		4
LON-Bus R1		5
		6

from E3I040 or previous LON device

to next LON device

Terminal block K2		
GND 0V		1
Input programmable LED 3		2
Input programmable LED 2		3
Input programmable LED 1		4

Use ground potential to control inputs
(if input is connected to ground, LED is active)

55   B3Q440 Operating unit "Extinguishing"

55.1   Overview

B3Q440

➜ operation and designation of indicators, see document 005590, 005113
➜ Templates for inscription strips see document 006516

● Operating unit for the control module E3G080
● 12 indicators
● 4 Function keys

55.2   Application

– located at the main entrance to the room protected by the extinguishing system
– one B3Q440 operating unit is required for each extinguishing SECTION
– Max. four B3Q440 operating units are possible with identical functions
– Can be installed in housings H23G220, H28..., H38..., H47...

55.3   Key data

| Operating voltage	18...45 VDC
Line E3G080 - B3Q440	– Length max. 600 m – 2 "Data" wires + 2 "Supply" wires + earth – twisted – parallel branching possible
Quiescent current at 24 V (battery operation)	25 mA ('power on' LED lights up)
Maximum current at 29.6 V (mains operation)	55 mA upon lamp test

238

55.4   Mechanical design

View from front   **View from rear**
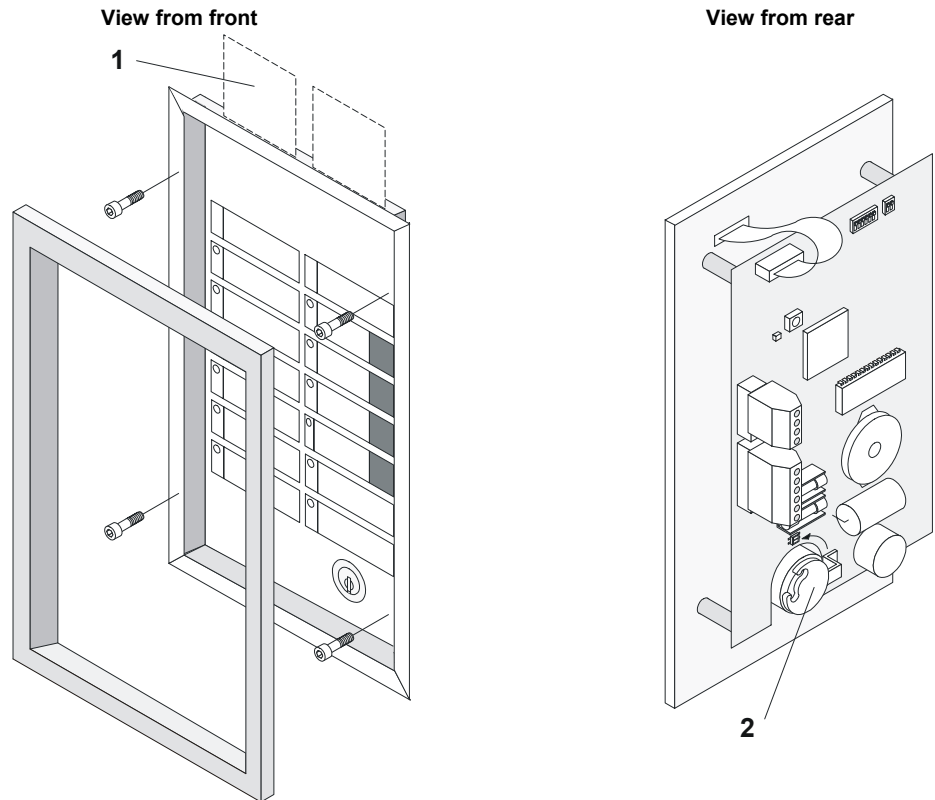
Legend:
1   Inscription strips for insertion
2   Key switch KABA 8 / 100 (key horizontal = operation enabled)

55.5   Important components
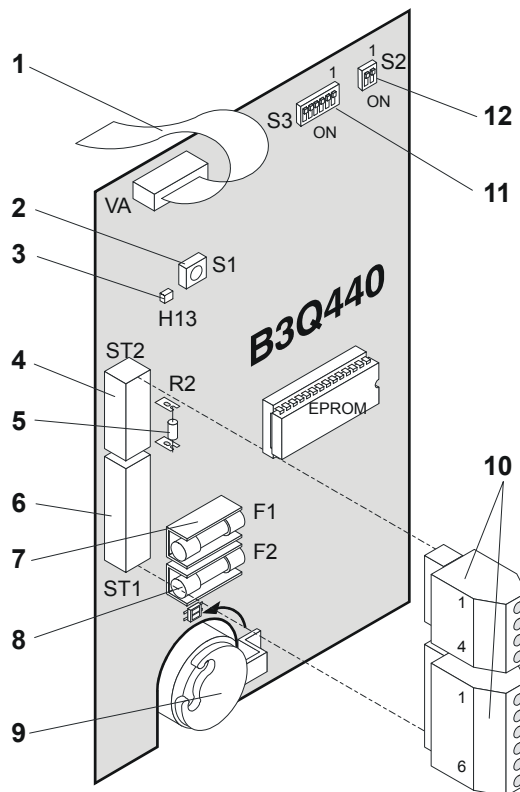
Legend:
1   Connector "VA": Foil-covered keyboard (front terminal)
2   Key "S1": no function
3   Test-LED H13: inactive –>Normal operation, on or flashing –> EPROM missing or defective
4   Plug-in terminals "ST2" (4-pin): Data line (LON)
5   Resistor R2: Line termination for the communication circuit to E3G080, –> see page 157
6   Plug-in terminals "ST1" (6-pin): Supply line
7   Fuse "F1"   0.8 A/T: Supply input 1
8   Fuse "F2"   0.8 A/T: Supply input 2
9   Key switch with photo switch operation enabled
10 Plug-in terminals "ST1/ST2": Data line and supply

11   Programming switch "S3": Equipment address

No.	Function		Programming switch S3					
			S3-1	S3-2	S3-3	S3-4	S3-5	S3-6
1	Equipment address	1	off	off	off	off	off	off
2		2	**on**	off	off	off	off	off
3		3	off	**on**	off	off	off	off
4		4	**on**	**on**	off	off	off	off

"S3-1...6" is set to "off" at the factory

12   Programming switch "S2": Key click, buzzer

Function	Programming switch S2	
	S2-1	S2-2
Key click "active"	**on**	
Key click "inactive"	off	
Buzzer "active"		**on**
Buzzer "inactive"		off 1)

1) Key click not affected

55.6   Connection

– 2 de-coupled supply inputs (only for dual supply)
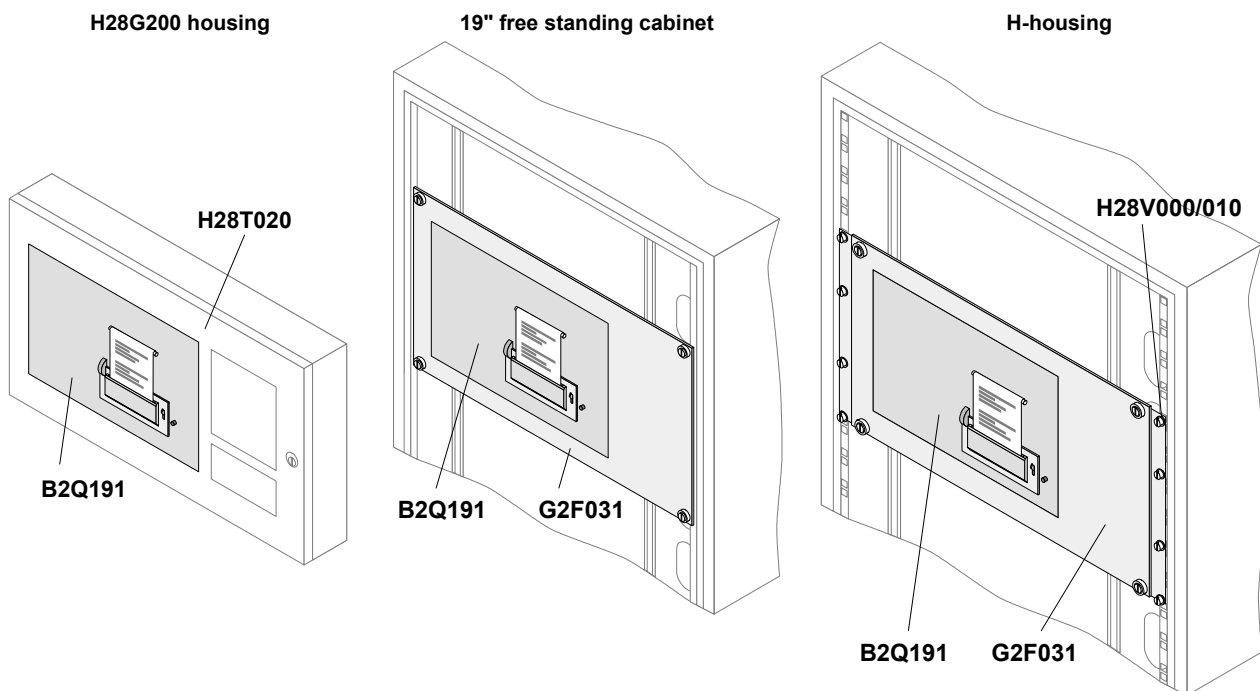– with reversed polarity protection
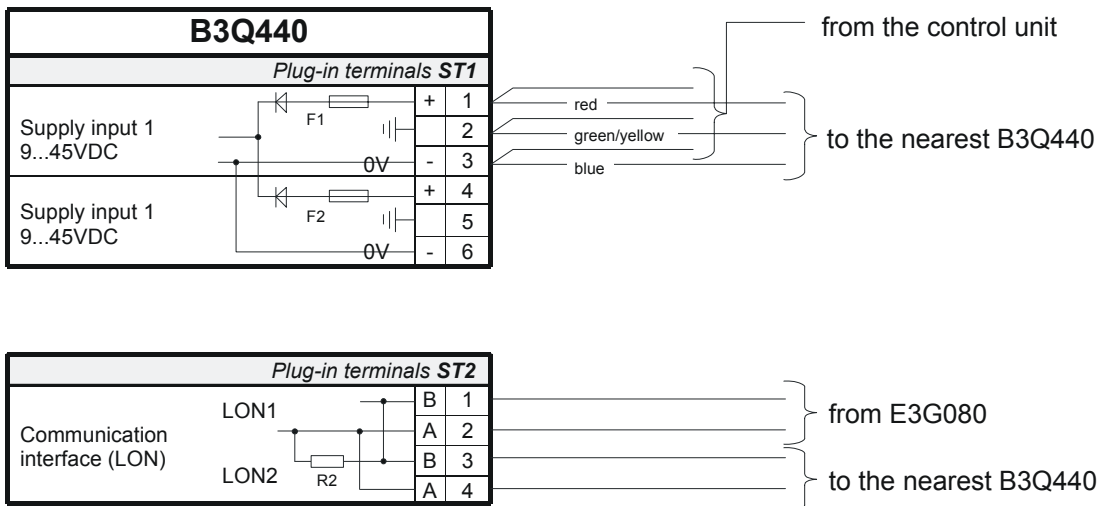
56 B2Q191 Logging printer

56.1 Overview

- Tape printer for event logging
- Integrated automatic paper take up reel
- For 24V$_{DC}$ supply voltage
- 40 characters per line
- Thermo matrix printer
- Interface and printer monitored
- Supports ISO and EPSON character set
- Various interfaces available
  - HCMOS level for connection (inside housing) up to 1 m
  - RS232 / V28 connection up to 1 km
  - TTL level for connection to 3rd party modem
- Baud rate can be selected

56.2 Application

- Installation in H28G200 with door H28T020
- Installation in 19" free-standing cabinet with G2F031
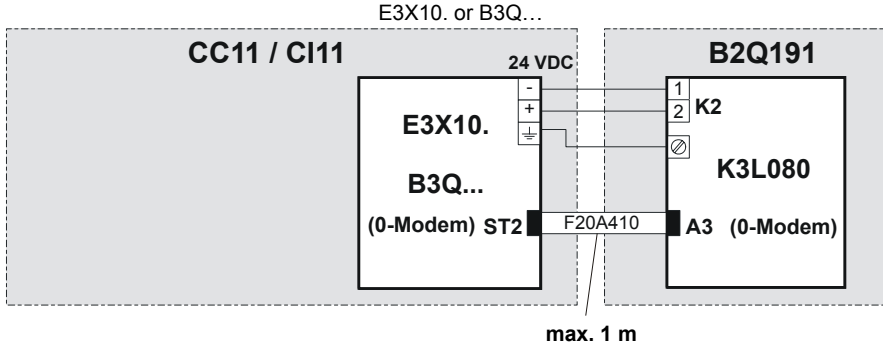- Installation in H housing with brace or hinge H28V000/010 to adapt to 19"

H28G200 housing   **19" free standing cabinet**   **H-housing**

56.3   Key data

Power supply	
Supply voltage	9...36 VDC
Current consumption at 9 V	typical 73 mA (quiescent) / max. 2.5 A (print)
24 V	typical 33 mA / max. 1 A
36 V	typical 27 mA / max. 0.6 A
Overload protection	fuse 2 A/T
Protection against reversed polarity	yes
Interfaces	
Ribbon header «A1»	0-modem /signal level TTL, electrically isolated
Ribbon header «A2»	V28/FSK/PSK modem connection
Ribbon header (mini) «A3»	0-modem connection / signal level TTL, electrically isolated
Terminal block «K3»	V28 modem connection / signal level RS232, electrically isolated
Monitoring	
Interface	yes
Paper end	yes
Motor blocked (printer)	yes
Printer	
Type	Thermo printer
Characters per line	40
Printing speed	Max. 1.5 lines / sec.
Service life	approx. 500'000 lines
Paper	
Type	Thermo paper
Width	80 mm
Length of roll	40 m (equal to approx. 11'000 lines)
Permissible make	JUJU «TP 50KS-A»
	HONSHU «PS 65 B1»
	MITSUBISHI «F-200 U7X»
Character set	
Character layout	
Normal	5 x 7 point matrix
Wide fount	10 x 7 point matrix
Character set	EPSON (S1-4 closed)
	ISO (S1-4 open)
Environmental specifications (DIN40040)	
Ambient temperature	
in operation	0 °C ...+40 °C
in storage	–40 °C ...+60 °C
Mechanical stress	For use in vibration-free systems
	(10...55 Hz, 2 g, 20 m/sec^2)
Storage temperature for thermo paper	–10 °C...+30 °C
Humidity	Max. 95 % / annual mean 75 %

56.4   Wiring principle

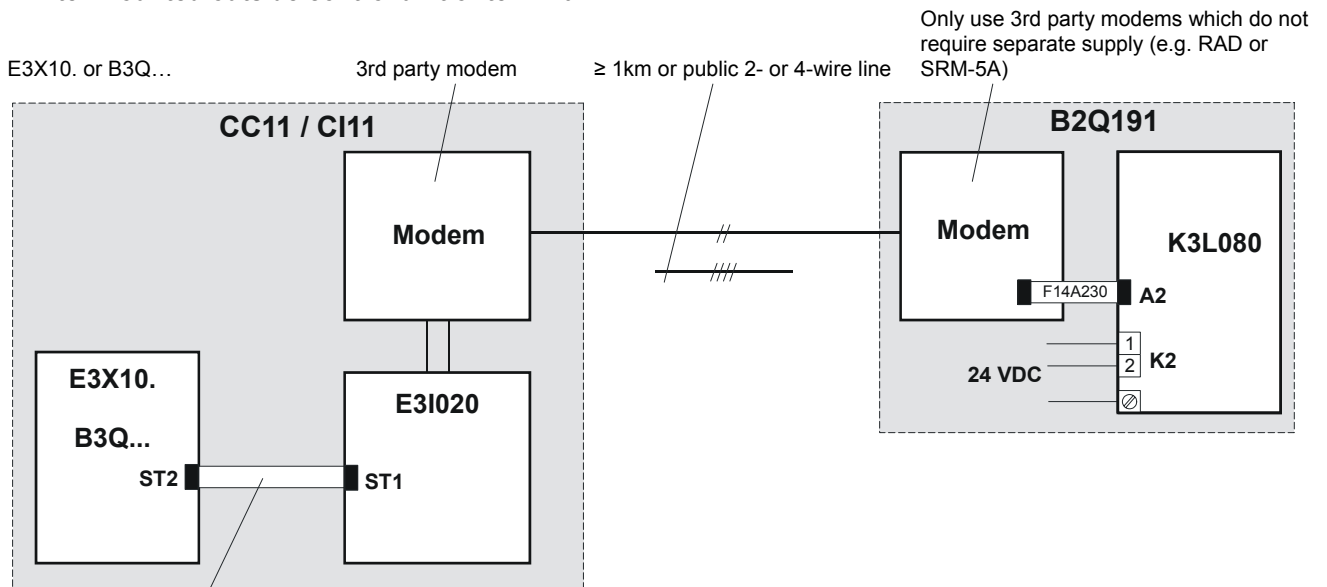**Printer mounted immediately next to or in control unit or terminal housing**
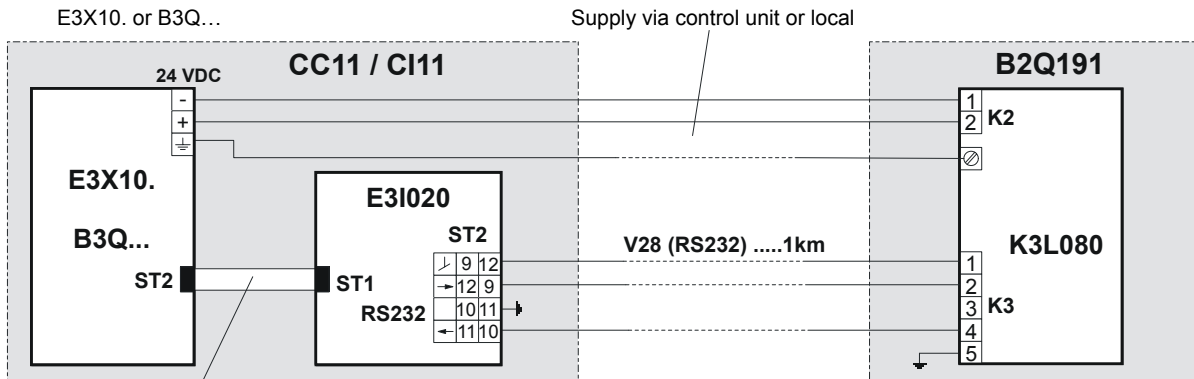
E3X10. or B3Q…

max. 1 m

Printer mounted outside control unit or terminal

E3X10. or B3Q…   Supply via control unit or local

in H38.... for CI11xx   –>   use flat cable 'Micro' F20A140 (L = 0.650 m)
in H47.... for CC11xx   –>   use flat cable 'Micro' F20A020 (L = 0.165 m)
in H47.... for CI11xx   –>   use flat cable 'Micro' F20A140 (L = 0.650 m)

Printer mounted outside control unit or terminal

Only use 3rd party modems which do not
require separate supply (e.g. RAD or
SRM-5A)

E3X10. or B3Q…   3rd party modem   ≥ 1km or public 2- or 4-wire line

in H38.... for CI11xx   –>   use flat cable 'Micro' F20A140 (L = 0.650 m)
in H47.... for CC11xx   –>   use flat cable 'Micro' F20A020 (L = 0.165 m)
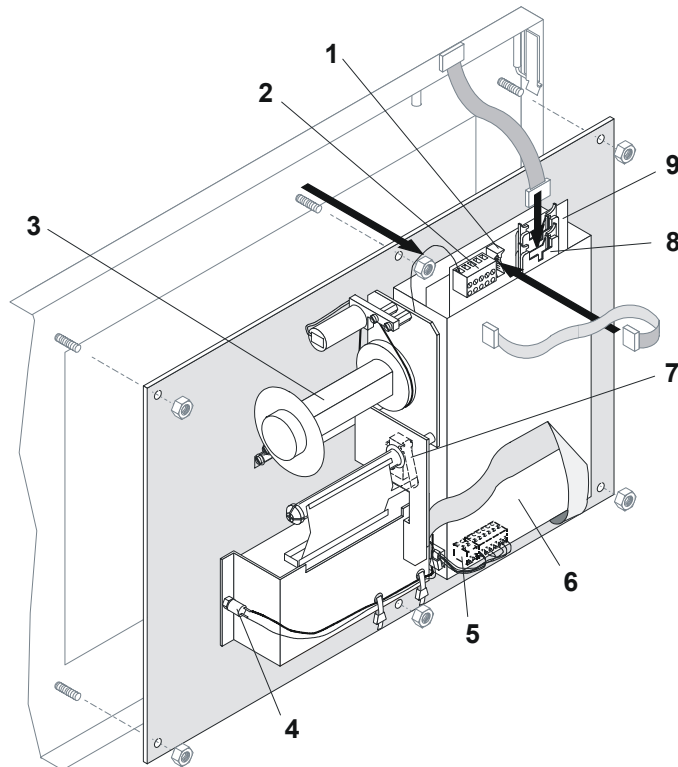in H47.... for CI11xx   –>   use flat cable 'Micro' F20A140 (L = 0.650 m)

56.5 Important components

➔ Printer B2Q191 fully assembled and pre-wired (view from rear)

Legend:

1 Connection 0-modem (HCMOS level) for ribbon cable «Micro» F20A410 (20-wire, 1 m) for internal housing connection, for details –> see page 243
2 Connection RS232 / V28 –> see page 247
3 Paper take-up reel –> changing paper see page 248

4 Acknowledge key on front
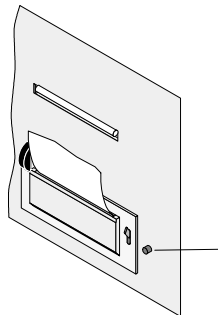
– Activates the take-up motor for approx. 20 sec.
– Must be pressed after 'Paper fault' and after paper roll has been changed (only then does the fault signal 'Paper end' disappear)

5 Connection supply 24 VDC
6 Locating frame for printer control card K3L080 and if necessary modem card

7   Paper monitoring contact –> Paper end
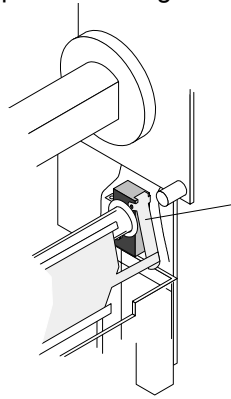
If the paper monitoring contact is activated, the control unit indicates a fault 'Paper end'. The printer can then still print out approx. 200 lines. Thereafter the printing process is discontinued. When a new paper roll is inserted (paper contact inactive) and the 'Acknowledge' key is pressed, the fault signal is cancelled.

8   Connection TTL port for modem card (FSK/PSK) (14-wire, 1m) for details –>
     see page 242
9   Printer control card K3L080 for details –> see chapter 56.6

Blocking of motor
– When the motor is blocked the control unit signals the fault 'Motor blocked'
  (according to the type of control unit).

56.6   Printer control K3L080 (pre-assembled)

● Included with the B2Q191
● Mounted in printer card locating frame
● Contains the software for printer control
● Card format 100 mm x 185 mm
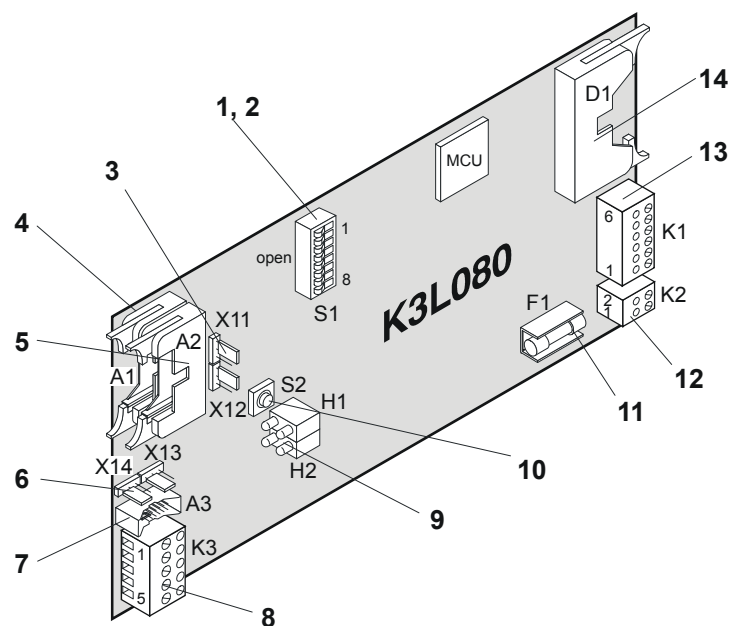
Legend:
1   Programming switch «S1»: Choice –> baud rate, communication parameters
     and character set
  ➔ Set 'Printer type 1' in AlgoWorks
     Default value printer communication parameter AlgoWorks:
       – 8 data bits / no parity / 1 stop bit
       – baud rate 9600

Set baud rate 9600, default value in the CS1140 (AlgoWorks)

Function		Programming switch S1							
		S1-1	S1-2	S1-3	S1-4	S1-5	S1-6	S1-7	S1-8
Baud rate	300	closed	closed	closed					
	1200	**open**	closed	closed					
	2400	closed	**open**	closed					
	9600	**open**	**open**	closed					
Baud rate	19200	closed	closed	**open**					

2   Programming switch "S1": Setting –> character set

Setting character set **'ISO Latin 1'**

– ISO Latin 1 supports the languages: English, German, Italian, Spanish, Portuguese, Danish, Finnish, Swedish, Norwegian, Dutch and Flemish
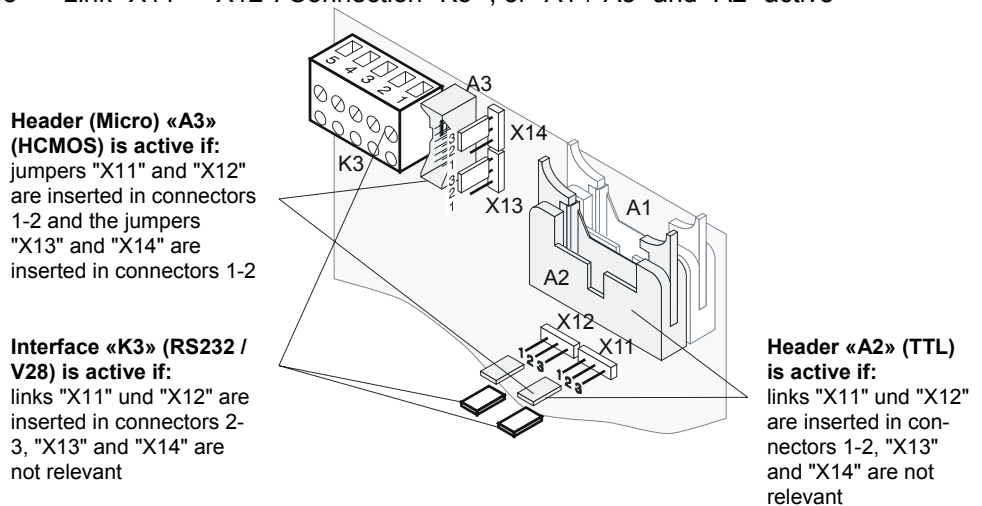
Function		Programming switch S1							
		S1-1	S1-2	S1-3	S1-4	S1-5	S1-6	S1-7	S1-8
Character set	ISO Latin 1								
	ISO Latin 2								
	ISO Latin 3 *								
	ISO Latin 4 *								
	ISO Latin 5								
	ISO Greek								
	ISO Arabic								
	ISO Hebrew								
Character set	ISO Cyrillic								

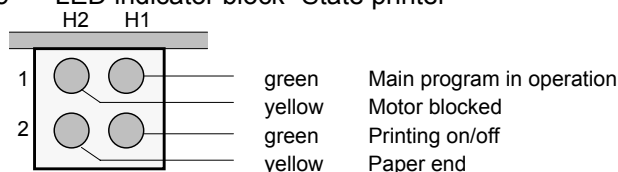* ISO Latin 3 and ISO Latin 4 are not supported by the control unit

Character set ISO –> generates the following (permanent) communication parameters:

– 1 start bit
– 8 data bits
– no parity
– 1 stop bit

3   Link "X11 + "X12": Connection "K3" , or "A1"/"A3" and "A2" active

Header (Micro) «A3» (HCMOS) is active if:
jumpers "X11" and "X12" are inserted in connectors 1-2 and the jumpers "X13" and "X14" are inserted in connectors 1-2

Interface «K3» (RS232 / V28) is active if:
links "X11" und "X12" are inserted in connectors 2-3, "X13" and "X14" are not relevant

Header «A2» (TTL) is active if:
links "X11" und "X12" are inserted in connectors 1-2, "X13" and "X14" are not relevant

4   Ribbon header "A1" (14-pin): 0-modem connection –> no function for CS1140

5   Ribbon header "A2" (14-pin): TTL port for modem card K1D... or 3rd party modem (V28,FSK,PSK)

6   Link "X13 + "X14": Connection "A3" port 2 or "A3", port 3 active

7   Ribbon header "A3" (20-pin, micro): 0-modem connection for **internal** housing connection to AlgoPilot

8   Plug-in terminals "K3": Connection RS232 / V28

9   LED indicator block "State printer"

green	Main program in operation
yellow	Motor blocked
green	Printing on/off
yellow	Paper end

10   Key "S2": Reset printer unit
11   Fuse "F1"   2 A/T: Supply module
12   Plug-in terminals "K2": Supply module 24 VDC
13   Plug-in terminals "K1": Connection front panel key, relay contact (take-up mo-
      tor) and paper end switch (pre-wired ex-works)
14   Ribbon header "D1": to printer

56.7 Connections

K3L080			
Plug-in terminals **K1**			
Supply	GND	-	1
Output	+5V	+	2
Key on front panel			3
Take-up motor			4
(relay contact)			5
Paper end switch			6

black — black
Acknowledge
blue — black
red
red — M
white

4   1
Paper end

internal wiring

Plug-in terminals **K2**			
Supply	0V	-	1
Input	9...36VDC F1	+	2

24VDC Supply from control unit or terminal

Application in control unit

E3I020

Application in terminal

E3I020

RS232	*Plug-in terminals* **K3**	
	GND	1
	(Receiver) RXD	2
	GND	3
	(Transmitter) TXD	4
	Module ground	5

12 ——— 9
9 ——— 12
10 ——— 11

1)

yellow/green

internal wiring

yellow/green

Ribbon header **D1**	
Data communication to printer	20 Pin >

Printer

1) Ground wire to be removed from 'K3-5' and connected to chassis ground if printer is connected via flat cable A3

Ribbon header **A1**	
Connection 0-modem (TTL) direct connection	14 Pin >

no function for CS1140

Ribbon header **A2**	
Connection for modems (TTL) V28/ FSK / PSK	14 Pin >

to K1D... or 3rd party modem

Ribbon header (mini) **A3**	
Connection 0-modem (TTL) Data port 2 and port 3	20 Pin >

direct data communication to E3X10.,B3Q.. connector "ST2"

56.8 Changing paper

The printer is normally ready to operate, i.e. switched on. To change the paper, first switch off the printer via the menu (terminal).
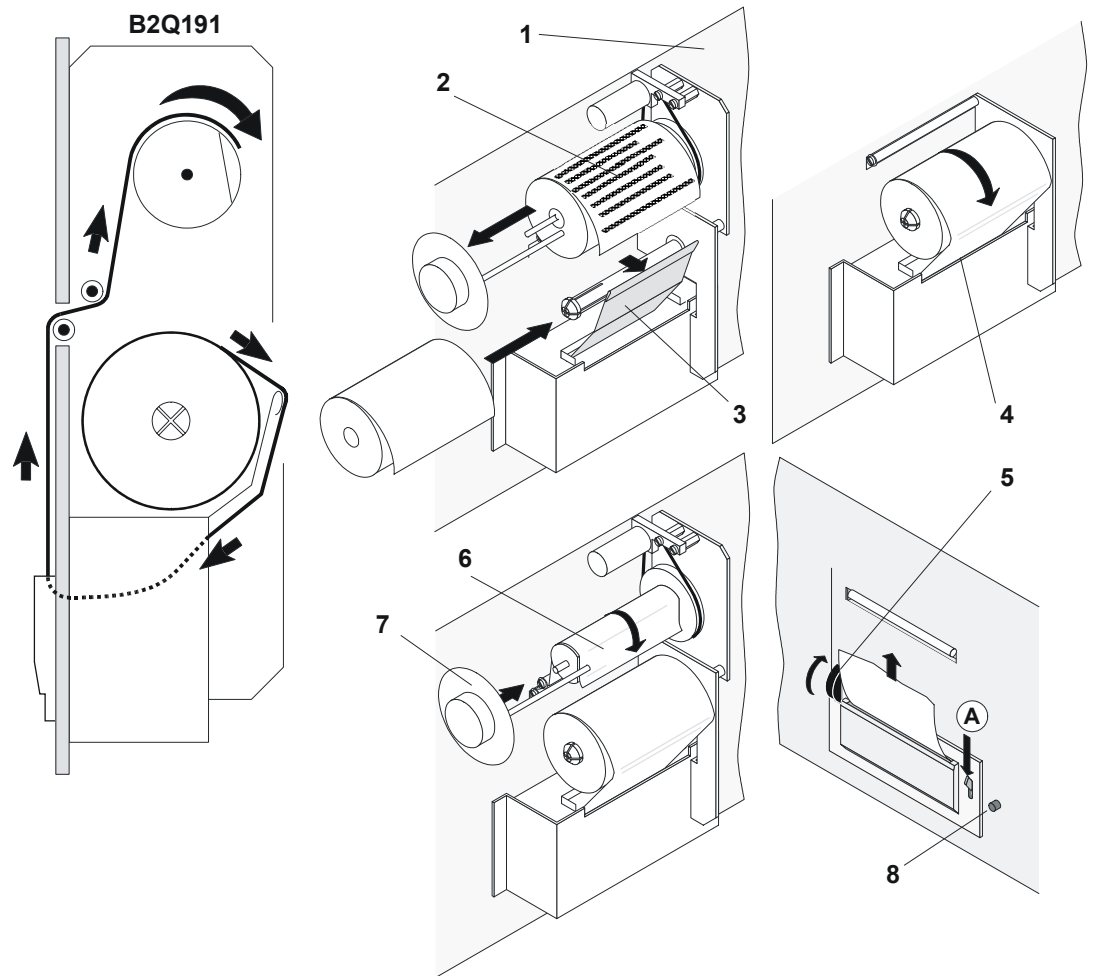
Legend:
1. Swing out printer (1)
2. Remove printer paper roll (2)
3. Lift flap (3) and insert new paper roll over the roll holder
4. Press the end of the paper (4) lightly against the flap and feed it into the slot of the printer. Press lever **A** down to insert the paper.
5. Take up the paper slack using the knurled knob (5)
6. Wind the end of the paper (6) around the take-up reel and fix with paper gripper (7).
7. Press 'Take up paper' key (5). The paper take up motor is switched on for approx. 20 sec.

Printing pressure
If the printing pressure is inadequate contact the SIEMENS service department.

Spare paper rolls
Part no. 379977 (= 4 rolls) or
   – JUJU TP 50KS-A
   – HONSHU PS 65 B1
   – MITSUBISHI F-200 U7X