Ovation™ Power Supply System(5X00785G09)

Features

- Redundant power configurations, each with separate external wide-range AC or DC feeds
- Separate main and auxiliary supplies in both the primary and secondary configurations
- Dual wide-range input capabilities
- Diode auctioneered power feeds
- High-efficiency power supplies
- Modular fanless systems
- Redundant power feeds to each controller chassis and to the I/O modules
- Continuous system monitoring

Overview

Emerson has developed a DIN-rail mounted power supply incorporating four modular fanless powering systems to provide reliable and stable power to the Ovation™ controller and I/O modules.

The Ovation controller powering system uses redundant configurations, each with separate, external wide-range AC and/or DC input feeds. Dual diode auctioneered 24 VDC outputs are used to power each controller chassis and associated I/O modules, as well as loops and contact wetting to the I/O modules. If required a 48 VDC auxiliary power for loops and contact wetting can also be provided.

Two separate output schemes are available:

- 24 VDC / 10 A / 240 W main and 24 VDC / 10 A / 240 W auxiliary power
- 24 VDC / 20 A / 480 W main and 24 VDC / 20 A / 480 W auxiliary power

Benefits

Benefits of the Ovation power supply scheme include:

- Separate main and auxiliary power supplies allow easy replacement
- Elimination of cooling fans greatly reduces failure risks
- Diode auctioneered power feeds assure continuous power availability
- New design increases efficiency, reduces heat generation and enhances equipment life expectancy
- Dual input (AC and DC) capability reduces spare parts
- Hot-swappable power supplies enable on-line replacement
- Quick installation of the power supplies minimizes downtime and production loss
- Power factor correction reduces power consumption

10-Amp Power Scheme

The 10-amp powering scheme includes:

- Redundant power supply configurations (primary and secondary) that contain separate 10-amp main and auxiliary power supplies and support a wide range of input voltages (85-264 VAC @ 43-67 Hz or 90-375 VDC) with an output power of 240 W.
- A power distribution module that distributes diode auctioneered outputs to both the controller and I/O busses.

The 10-amp scheme consists of a back-plate with pre-mounted DIN-rails to which the power distribution module, circuit breakers and four 10-amp power supplies are attached. Life expectancy of the 10-amp power supply is 8-years @ 40°C.

20-Amp Power Scheme

The 20-amp powering scheme includes:

- Redundant supply configurations (primary and secondary) that contain separate 20 A main and auxiliary power supplies that support a wide range of input voltages (85-264 VAC @ 43-67 Hz or 90-375 VDC) with an output power of 480 W.
- An auctioneering diode to ensure continuous power availability
- A power distribution terminal strip

The 20-amp scheme consists of a back-plate with pre-mounted DIN-rails, to which the power distribution terminals strip, auctioneering diode, circuit breakers and four 20-amp power supplies are attached.

The 20-amp power scheme increases the power available to the Ovation controller and I/Os to 480 W. Life expectancy of the 20-amp power supply is 15-years @ 40°C and 10-amp loading.

Powering Module Characteristics

10 A, 24 VDC Powering Module Characteristics (1X01046)	
AC and DC Inputs	
Nominal AC Input Voltage	100 - 240 VAC
AC Input Voltage Range	85 to 264 VAC
DC Input Voltage Range	90 to 375 VDC
Frequency	43 to 67 Hz
Nominal Current	3.2 – 1.0 A
Efficiency	> 90% typ. (24 W)
Inrush Current (max)	Typ. < 30 A
Power Factor Correction	Active power factor correction to better than 0.92
Voltage Phase Type	Single phase (AC voltage)
DC Outputs	
Nominal Voltage	24 V (23.5 ~ 28.5 VDC adjustable)
Tolerance	< ±2% overall
Initial Voltage Setting	24.5 V ± 1%
Output Ripple	< 50 mVpp (20 MHz, 50 Ω)
Overvoltage Protection	> 30.5 but < 33 VDC, auto recovery

10 A, 24 VDC Powering Module Characteristics (1X01046)	
Power Back Immunity	< 35 V
Nominal Output Current Rating	10 A (240 W)
Peak Current	1.5 x nominal current for 4 sec min while holding voltage > 20 VDC
Short Circuit Current	1.5 x nominal current at near zero volts at short circuit condition
Hold-up Time Tolerance	> 20 ms (full load, 100 VAC input @ ambient temperature = +25°C (+77°F) > +2.0% overall
Voltage Fall Time	< 150 ms from 95% to 10% rated voltage @ full load and Tamb
Time and Temperature Drift	< 1.0%
EMC and Certifications	
EMC Emissions	▪ EN61000-6-2: 2001 ▪ EN61000-6-3: 2001 ▪ EN55011 Class B, radiated emissions ▪ EN55022 Radiated conducted including Annex. A ▪ EN61000-3-2: 2001
EMC Immunity	▪ EN61000-6-1; 2001 ▪ EN61000-6-2: 2001 ▪ EN61000-4-2: Level 4, electrostatic discharge ▪ EN61000-4-3: Level 3, radiated immunity ▪ EN61000-4-4: Level 4 input and level 3 output, fast transient immunity ▪ EN61000-4-5: Isolation class 4, surge immunity ▪ EN61000-4-6: Level 3, conducted RF immunity ▪ EN61000-4-11: Voltage dips, variations ▪ SEMI F47 Sag immunity ▪ EN61000-4-8, EN61000-4-34 ▪ IEC 61000-4-34: Voltage dip immunity standard
Certifications	▪ CE Mark ▪ UL ▪ IECEx ▪ RoHS Compliant
Environment	
▪ Storage: -40°C to +85°C (-40°F to +185°F) ▪ Operation: -25°C to +60°C (-13°F to +140°F) to full power, with linear derating to half power from +60°C to + 70°C (+140°F to +158°F, - convection cooling, no forced air required. Operation up to 50% load permissible with sideways or front side up mounting orientation. ▪ Derate: 240 W by 12 W per °C to 120 W from +60°C to +70°C	
Safety	
General Protection/Safety	▪ Protected against continuous short-circuit, continuous overload and/or open circuit. ▪ Protection Class 1 (IEC536), degree of protection IP20 (IEC60529) ▪ Safe low voltage: SELV (acc. IEC60950-1)
Status Indicators	Visual: 3 status LEDs (input, output, alarm)

10 A, 24 VDC Powering Module Characteristics (1X01046)	
Protection Features	
Fusing (input)	Internally fused
Outputs	▪ Outputs are capable of providing high currents for short periods of time for inductive load startup or switching. ▪ Fusing may be required for wire/loads if 2x nominal O/P current rating cannot be tolerated. Continuous current overload allows for reliable fuse tripping.
Degree of Protection	IP20 (EN60529)
Casing	Fully enclosed metal housing with fine ventilation grid to keep out small parts

20 A, 24 VDC Powering Module Characteristics (1X01047)	
AC and DC Inputs	
Nominal AC Input Voltage	100 - 240 VAC
AC Input Voltage Range	85 to 264 VAC
DC Input Voltage Range	90 to 375 VDC
Frequency	43 to 67 Hz
Nominal Current	6 – 3 A
Efficiency	> 92% (38 W)
Inrush Current (max)	< 40 A
Power Factor Correction	Active power factor correction to better than 0.92
Voltage Phase Type	Single phase (AC voltage)
DC Outputs	
Nominal Voltage	24 V (23.5 ~ 28.5 VDC adjustable)
Tolerance	< ±2% overall
Initial Voltage Setting	24.5 V ± 1%
Output Ripple	< 100 mVpp (20 MHz, 50 Ω)
Overvoltage Protection	> 30.5 but < 33 VDC, auto recovery
Power Back Immunity	< 35 V
Nominal Output Current Rating	20 A (480 W)
Peak Current	1.5 x nominal current for 4 sec min while holding voltage > 20 VDC
Short Circuit Current	1.5 x nominal current at near zero volts at short circuit condition
Hold-up Time Tolerance	> 20 ms (full load, 100 VAC input @ ambient temperature (T_{amb}) = +25°C (+77°F) > +2.0% overall
Voltage Fall Time	< 150 ms from 95% to 10% rated voltage @ full load and T_{amb}
Time and Temperature Drift	< +1.0%

20 A, 24 VDC Powering Module Characteristics (1X01047)	
EMC and Certifications	
EMC Emissions	▪ EN61000-6-2: 2001 ▪ EN61000-6-3: 2001 ▪ EN55011 Class B, radiated emissions ▪ EN61000-3-2: 2001
EMC Immunity	▪ EN61000-6-1; 2001 ▪ EN61000-6-2: 2001 ▪ EN61000-4-2: Level 4, electrostatic discharge ▪ EN61000-4-3: Level 3, radiated immunity ▪ EN61000-4-4: Level 4 input and level 3 output, fast transient immunity ▪ EN61000-4-5: Isolation class 4, surge immunity ▪ EN61000-4-6: Level 3, conducted RF immunity ▪ EN61000-4-11: Voltage dips, variations ▪ IEC 61000-4-34: Voltage dip immunity standard
Certifications	▪ CE Mark ▪ UL ▪ IECEx ▪ RoHS Compliant
Environment	
▪ Operation: -25°C to +60°C (-13°F to +140°F) to full power, with linear derating to half power from +60°C to + 70°C (+140°F to +158°F, - convection cooling, no forced air required. Operation up to 50% load permissible with sideways or front side up mounting orientation. ▪ Derate: 480 W by 24 W per °C to 240 W from +60°C to +70°C	
Safety	
General Protection/Safety	▪ Protected against continuous short-circuit, continuous overload and/or open circuit. ▪ Protection Class 1 (IEC536), degree of protection IP20 (IEC60529) ▪ Safe low voltage: SELV (acc. IEC60950-1)
Status Indicators	Visual: 3 status LEDs (input, output, alarm)
Protection Features	
Fusing (input)	Internally fused
Outputs	▪ Outputs are capable of providing high currents for short periods of time for inductive load startup or switching. ▪ Fusing may be required for wire/loads if 2x nominal O/P current rating cannot be tolerated. Continuous current overload allows for reliable fuse tripping.
Degree of Protection	IP20 (EN60529)