

POWER CONTROL UNIT



- Distributes supply voltage to the power rail
- Optional connection of backup supply
- Approved for installation in Ex zone 2 / Div. 2
- Optional redundant supply for the power rail
- Must be installed on power rail, PR type 9400



Application and advanced features:

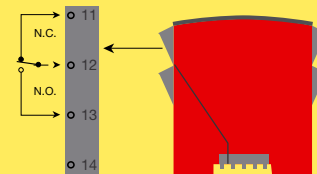
- The power control unit detects errors from any of the devices mounted on the power rail and transmits a collective alarm to the control system via the internal status relay.
- Optional connection of two power supplies - a primary supply and a backup supply.
- Redundant supply for the power rail can be obtained by mounting two 9410 devices connected to 2 separate power supplies (e.g. PR 9420).

Technical characteristics:

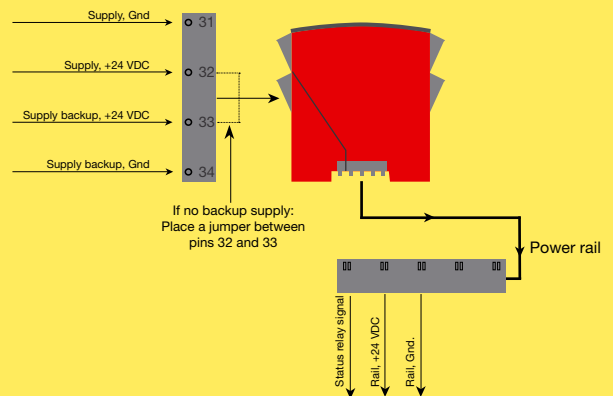
- The status relay will be energised when the following three conditions are met:
 1. Supply voltage is present on pins 31 and 32.
 2. Backup supply voltage is present on pins 34 and 33. (If the backup supply is not in use, a jumper must be placed between pins 32 and 33 - the jumper is delivered with the device).
 3. There are no error messages from the devices connected to the power rail.
- When a collective alarm is activated via the power rail, the status relay in the 9410 will be de-energised (pins 11, 12 and 13).
- Two green front LEDs indicate connection of supply and backup.
- A red LED indicates error status.

Applications

Device status relay from power rail



Power connections

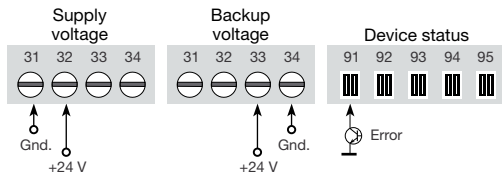


Zone 2 / FM Cl. 1, div. 2 or safe area

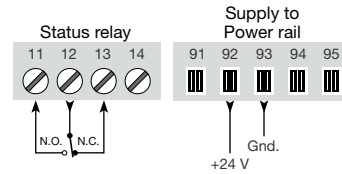
Order codes:

9410 = Power control unit

9400 = Power rail

CONNECTIONS:**Inputs:**

If no backup supply: place a jumper between pins 32 and 33

Outputs:**Electrical specifications:**

Specifications range..... -20°C to +60°C
 Storage temperature..... -20°C to +85°C

Common specifications:

Max. consumption..... 96 W
 Efficiency..... > 97.9%
 Max. internal consumption..... 2 W
 Wire size (min. / max.)..... 0.13...2.08 mm² / AWG
 26...14 stranded wire
 Screw terminal torque..... 0.5 Nm
 Relative humidity..... < 95% RH (non-cond.)
 Dimensions (HxBxD)..... 109 x 23.5 x 104 mm
 Protection degree..... IP20
 Weight..... 140 g

Input:

Supply voltage,
 double / reinforced isolation..... 21.6...26.4 VDC
 Backup supply..... 21.6...26.4 VDC
 Trig levels for voltage surveillance..... Error < 21 VDC

Output:

Output voltage @ 4 A..... Input voltage - 0.5 VDC
 Output power, max..... 96 W
 Output current, max. 4 A
 Output ripple..... Same as input ripple

Status relay in safe area:

Max. voltage..... 250 / 30 VDC
 Max. current..... 2 AAC / 2 ADC
 Max. AC power..... 500 VA / 60 W

Ex / I.S. approvals:

IECEX certificate..... KEM 08.0025 X
 ATEX certificate..... KEMA 07ATEX0152 X
 FM certificate..... 3034431 / 3034431C

Marine approval:

Det Norske Veritas, Ships & Offshore.. Pending

GOST R approval:

VNIIM, Cert No. Pending

Observed authority requirements: Standard:

EMC 2004/108/EC..... EN 61326-1
 LVD 2006/95/EC..... EN 61010-1
 ATEX 94/9/EC..... EN 60079-0, EN 60079-15
 IECEX..... IEC 60079-0, IEC 60079-15
 FM..... 3600, 3611, 3810
 UL, Standard for Safety..... UL 61010-1

9000 EMC specifications - immunity :

Port	Phenomenon	Test standard	IEC 61326		NAMUR NE21 : 2007		IEC 61326-3-1		PR standard specifications	
			Test value	Criterion	Test value	Criterion	Test value for safety functions	Criterion	Test value	Criterion
Enclosure	ESD input terminals	IEC 61000-4-2	4 kV Contact	B	6 kV Contact	B	6 kV Contact	FS	6 kV Contact	B
	ESD	IEC 61000-4-2	4 kV/8 kV Contact/Air	B	6 kV / 8 kV Contact / Air	A	6 kV / 8 kV Contact / Air	FS	6 kV / 8 kV Contact / Air	A 1%
	HF field	IEC 61000-4-3	10 V/m, 80...1000 MHz 3 V/m, 1.4...2 GHz 1 V/m, 2...2.7 GHz	A	10 V/m, 80...1000 MHz 3...10 V/m, 1.4...2 GHz	A	20 V/m, 80...1000 MHz 10 V/m, 1.4...2 GHz 3 V/m, 2...2.7 GHz	FS	20 V/m, 80...1000 MHz 10 V/m, 1.4...2 GHz 3 V/m, 2...2.7 GHz	A 0.5%
	Magnetic field	IEC 61000-4-8	30 A/m	A	100 A/m	A	30 A/m	FS	30 A/m	A 0.5%
	Burst	IEC 61000-4-4	2 kV	B	2 kV	A	4 kV	FS	4 kV	A 1.0%
	Surge	IEC 61000-4-5	1 kV / 2 kV, Diff. / Comm. 0 Ω/10 Ω	B	0.5 kV / 1 kV, Diff. / Comm. 0 Ω/10 Ω	A	1 kV / 2 kV, Diff. / Comm. 0 Ω/10 Ω	FS	1 kV / 2 kV, Diff. / Comm. 0 Ω / 10 Ω	A 1.0%
	Conducted RF	IEC 61000-4-6	3 V, 150 kHz...80 MHz	A	10 V, 10 kHz...80 MHz Covers RF + LF	A	10 V, 150 kHz...80 MHz	FS	10 V, 150 kHz...80 MHz	A 0.5%
	Interruptions	IEC 61000-4-29	60% for 10 ms 100% for 20 ms	B	100% for 20 ms	B	60% for 10 ms 100% for 20 ms	FS	60% for 10 ms 100% for 20 ms	B
I/O signal	Conducted LF	IEC 61000-4-16	Not required		Not required		1.5...15 kHz, 1...10 V 15...150 kHz, 10 V 50/60 Hz, 100 V	FS	15 Hz...150 kHz, 10 V 50 Hz, 300 Ω, 230 V	A 0.5%
	Burst	IEC 61000-4-4	2 kV	B	2 kV	A	15...150 kHz, 10 V	FS	2 kV	A 1.0%
	Surge input	IEC 61000-4-5	1 kV / 2 kV, Diff. / Comm. 40 Ω	B	0.5 kV / 1 kV, Diff. / Comm. 40 Ω	B	50/60 Hz, 100 V	FS	1 kV / 2 kV Diff. / Comm. 40 Ω	B
	Surge output	IEC 61000-4-5	1 kV / 2 kV, Diff. / Comm. 40 Ω	B	0.5 kV / 1 kV, Diff. / Comm. 40 Ω	B	2 kV Comm. 40 Ω	FS	1 kV / 2 kV Diff. / Comm. 40 Ω	A 1.0%
	Conducted RF	IEC 61000-4-6	3 V	A	10 V, 10 kHz...150 kHz	A	10 V, 150 kHz...80 MHz	FS	10 V 150 kHz...100 MHz	A 0.5%
	Conducted LF	IEC 61000-4-16	Not required		Not required		1.5...15 kHz, 1...10 V 15...150 kHz, 10 V 50/60 Hz, 100 V	FS	15 Hz...150 kHz, 10 V 50 Hz, 300 Ω, 230 V	A 0.5%

9000 EMC specifications - immunity:

	Essential operation (functional safety)	Continuous unmonitored operation	Continuous monitored operation	Non-continuous operation
ESD IEC 61000-4-2	A	B	B	C
EM IEC 61000-4-3	A	A	A	B
Burst IEC61000-4-4	A	B	B	B
Surge IEC 61000-4-5	A	B	B	C
Conducted RF IEC 61000-4-6	A	A	A	C
Voltage interrupts IEC 61000-4-11	A	B	C	C

Note For type testing, it is highly recommended that performance criteria A be chosen for all phenomena and all tests. However, performance criteria B and/or C may be accepted provided that both the specification and the test report highlight such deviation(s) for the relevant combination(s) of function and test.

Specified function	Normal test level	Increased test level
Normal function	Normal specification (performance criteria A; B; C)	May fail
Safety function	Performance criteria - A, or - B + observed deviation + recovery time to be documented in the data sheet, or - C + observed behaviour documented in the data sheet	Performance criteria FS (i.e. no effect outside the specification, or defined state)

A: During testing, normal performance within the specification limits.

B: During testing, temporary degradation, or loss of function or performance which is self recovering.

C: During testing, temporary degradation, or loss of function or performance which requires operator intervention or system reset occurs.

9000 EMC specifications - emission:

Class B equipment		Standard CISPR 22	
Disturbance	Test method	Frequency range	Limits
Radiated	Quasi-peak	30 to 230 MHz	30 dB ($\mu\text{V}/\text{m}$)
		230 to 1000 MHz	37 dB ($\mu\text{V}/\text{m}$)
Conducted	Quasi-peak	0.15...0.50 MHz	40 to 30 dB (μA)
	Average		30 to 20 dB (μA)
	Quasi-peak	0.50 to 30 MHz	30 dB (μA)
	Average		20 dB (μA)