Railbus isolator

8922-RB-IS

- *provides galvanic isolation between Railbus sections*
- *prevents fault-voltage invasions*
- *protects IS field wiring modules*

MODULE SPECIFICATION

See also System Specification

MECHANICAL

Dimensions (approx.) .....110 (w) x 160 (h) x 42 (d) mm
Weight .....345 g (typ.)

HAZARDOUS AREA APPROVALS

Location of module .....
.....Class 1, Div 2, Group A, B, C, D hazardous location or
.....Zone 2, IIC T4 hazardous area
'Safe area' Railbus ..... U_m = 250 V
Isolated Railbus ..... U_n = 18 V

POWER SUPPLIES

'Safe area' Railbus supply current* .50 mA (max.) @ 12 V
IS Railbus supply current* .....60 mA (max.) @ 12 V
Power dissipation within module.....1.2 W (max.)

** Note: DC power for the Railbus Isolator is required from both sides of the galvanic interface.*

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Power supplies

General

Good power supply management is at the heart of the MTL8000 system.

AC and DC power supply units are available to suit the available resources.

All units are designed to endure the harsh environmental conditions that are frequently found in process plants and, naturally, they meet rigorous EMC and electrical safety standards. Power supply connections are minimised and simplified to ensure that power provision requires the minimum of wiring effort

8000 series power supplies are designed to support redundancy when required. Most have "health" signal outputs for early warning of problems.

DC system power supply

The 8910-PS-DC DC input power supply provides a regulated 12 V @ 4.9 A output from a DC input voltage range of 18.5 up to 36V. This input voltage range accommodates the typical 24 V DC supplies available on process plants worldwide.

This power supply is designed to mount directly on 8711-CA-NS or 8712-CA-NS node services carriers or on a 8717-CA-PS power supply carrier. On the node services carriers mentioned here, two positions are provided. This enables a second power supply to be mounted, under conditions where the user wants to provide additional power, or where a redundant power supply is required to provide maximum system availability.

DC IS module supply

Power Supply module 8920-PS-DC mounts on its own carrier (8724-CA-PS) and accepts a locally available 24V dc (nominal) supply and converts it to 12V dc for powering MTL8000 I/O modules that have intrinsically safe field wiring.

Its 5A output is capable of powering between six and twenty I/O modules, depending on the module types and their mix.

A number of 8920-PS-DC modules may be used together, within an MTL8000 node, in a load-sharing arrangement. Where power supply redundancy is required an additional supply module may be added in an "n+1" arrangement. Failure of any power supply is signalled to the Bus Interface Module.

AC power supplies

The 8913-PS-AC and 8914-PS-AC supplies produce DC output power from a wide range of AC inputs. Both can be mounted in a Zone 2 or Division2 hazardous area which means that they can be used for a broad range of applications including supplying power to 8000 series modules.

System power

The 8913-PS-AC is a dual output supply capable of producing 12 V and 24 V DC outputs of approximately 5 A.

For 8000 series products, the 12 V output can be used to supply system power to the node and also provide 24 V to power field devices via the field power bussing facilities on the 8000 series carriers.

Field power

The 8914-PS-AC has a single 24 V DC output with a 10 A capacity. This is ideal for powering a wide range of field devices. With 8000 series products, it is normally distributed via the field power bus (see below).

Load sharing

A load sharing diode is built in to the 12V output of the 8913-PS-AC power supply and the 24V output of the 8914-PS-AC. This enables one or more of the same power supply type to be connected in parallel to share the load requirements.

Power health signalling

The 8913-PS-AC and the 8914-PS-AC supplies provide power health signals that can be routed to the BIM to warn of possible imminent power failure.

The 8913 provides the power health signal from its 12 V DC output.

Bussed field power (2/2 modules/carriers only)

In addition to the system power supply, an MTL8000 node may need to be supplied with additional field power.

Conventional systems require field power supplies to be wired in at the field terminals or via additional patching connectors. This adds complication to the field wiring and can be a source of confusion during maintenance work.

The MTL8000 system overcomes this complication with a system for bussing power on the carriers. Each carrier can bus an external power supply to modules so that they can energise the field wiring.

In the case of the 4-20mA Analog Input and Output modules, the bussed field power is also used to energise the field interface circuits.

The connection for the bussed field power is located at the top of the carrier and uses a two-part removable connector. Individual bussed field power supplies connect to two modules. If an adjacent pair of modules require the same power supply voltage the connector can be wire-linked to provide it, otherwise a different supply voltage (AC or DC) can be connected.

System power supply

8910-PS-DC

- *power for 2/2 (general purpose) node*
- *12 V DC output*
- *18.5 - 36V DC input*
- *4.9 A capacity*
- *supports redundancy with second supply*

MODULE SPECIFICATION

HAZARDOUS AREA APPROVALS

Location of node .....Safe area or .....Class 1, Div 2, Groups A, B, C, D T4 hazardous location or .....Zone 2 , IIC T4 hazardous area

Applicable standards:

- Factory Mutual Research Co., Class No. 3611 for Class I, Division 2, Groups A, B, C, D hazardous locations

ELECTRICAL

EMC compliance ..... To EN 50081-2 and EN 50082-2 .....generic emission/immunity standards

Electrical safety . EN 61010-1:1993 and Amendment A2:1995

OUTPUT

Output voltage.....12 V dc ± 5%

Output current .....4.9 A

Input-output isolation.....50 V ac rms, 720 V dc .....(Continuous working to EN 61010-1, Pollution Degree 2, ...Installation Category 2)

Hold-up (on i/p supply failure) .....7 ms .....(– 40°C, full load and 22V input)

Thermal protection .....Protected against output s/c

Supply health indicator .....LED (fed from final output)

Power-fail signal to BIM (o/p threshold) .....≤ 8.5 ± 2 V

INPUT

Input voltage.....18.5–36 V dc

Efficiency (at full load)

20 V input at 3.6 A 82.5%

24 V input at 3.1 A 80.0%

36 V input at 2.1 A 80.0%

Input connection .....Two-part, screw terminal .....each connection duplicated, 2.5 mm2 max. cable cross-section

Input protection .....Fuse + supply reversal diode

Power-fail signal to BIM (i/p threshold)..... ≤19.9 ± 0.5 V

ENVIRONMENTAL

Operating temperature (no forced ventilation)

(60% of full load) .....– 40°C to + 70°C

Optimum orientation (full load) .....– 40°C to + 55°C

Worst case orientation (full load).....– 40°C to + 50°C

Storage.....– 40°C to + 85°C

Relative Humidity.....5 to 95% RH (non-condensing)

Vibration.....2 g @ 10-100 Hz to BS EN 60068-2-6 .....and BS 2011- part 2.1

Shock.....10 g, 11 ms pulse width, to BS EN 60068-2-27

MTBF @ 50°C external ambient .....80,000 hrs

Ingress Protection .....IP20 to IEC 529/BS EN 60529 (tested on power supply carrier with all supply connectors in place)

Corrosive atmospheres

To withstand gaseous corrosion level G3 as defined by ISA Standard SP71.04:1995, when protected by a suitable field enclosure.

MECHANICAL

Dimensions (approx.).....42 (w) x 110 (h) x 160 (d) mm

Carrier mounting .....types 8711-CA-NS or 8712-CA-NS

Weight.....775 g

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IS module power supply

8920-PS-DC

- *power for 2/1 (IS) modules*
- *12 V DC output*
- *24 V DC (nominal) input*
- *5 A capacity*
- *supports load sharing for redundancy*

MODULE SPECIFICATION

HAZARDOUS AREA APPROVALS

Location of power supply .....Safe area or .....Class 1, Div 2, Group A, B, C, D hazardous location .....Zone 2, IIC T4 hazardous area

Output .....Galvanically isolated .....Voltage clamped; Un = 18 V

Applicable standards:

- Factory Mutual Research Co., Class No. 3611 for Class I, Division 2, Groups A, B, C, D hazardous locations
- Factory Mutual Research Co., Class No. 3610 for Class I, II, III, Division 1, Groups A - G hazardous locations (IS circuits)
- EN 50020:1994 Electrical apparatus for potentially explosive atmospheres, intrinsic safety "i"
- EC Directive 94/9/EC (ATEX)

ELECTRICAL

EMC compliance ..... To EN 50081-2 and EN 50082-2 .....generic emission/immunity standards .....EN 61000-3-2:1995 EN 61000-3-3:1995

Electrical safety . EN 61010-1:1993 and Amendment A2:1995 .....and EN 61131-2:1994

OUTPUT

Output voltage.....12 V dc ± 5%

Output current .....5 A

Input/Output isolation 250 V ac rms(tested at 1500 V ac rms)

INPUT

Input voltage.....18.5–36 V dc

Efficiency (at full load)

18.5 V input at 4.1 A 76%

24 V input at 3.3 A.....78%

36 V input at 2.1 A 76.5%

Input connection .....2-part screw terminal, each duplicated

Cable size .....2.5 mm2 (max.)

ENVIRONMENTAL

Operating temperature (no forced ventilation)

(60% of full load) .....– 40°C to + 70°C

Optimum orientation(full load) .....– 40°C to + 55°C

Worst case orientation .....– 40°C to + 50°C

Storage.....– 40°C to + 85°C

Relative Humidity.....5 to 95% RH (non-condensing)

Vibration.....2 g @ 10-100 Hz to BS EN 60068-2-6 .....and BS 2011- part 2.1

Shock .....10 g, 11 ms pulse width, to BS EN60068-2-27

MTBF @ 50°C external ambient .....80,000 hrs

Ingress Protection .....IP20 to IEC 529/BS EN 60529 (tested on power supply carrier with all supply connectors in place)

Corrosive atmospheres: To withstand gaseous corrosion level G3 as defined by ISA Standard SP71.04:1995, when protected by a suitable field enclosure.

MECHANICAL

Dimensions (approx.).....84 (w) x 110 (h) x 160 (d) mm

Carrier mounting .....type 8724-CA-PS

Weight.....1290 g

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System Power - dual voltage

8913-PS-AC

- *system & field power for MTL8000 Process I/O*
- *12 V dc @ 5 A for system power*
- *24 V dc @ 5 A for auxilliary power*
- *input voltage 85–264 V ac or 90–264 V dc*
- *Zone 2 / Div 2 mounting*
- *supports parallel connection for redundancy†*

MODULE SPECIFICATION

See also System Specification

Location of power supply.....safe area or
.....Zone 2, IIC T4 hazardous area or
.....Class 1, Div 2, Groups A, B, C, D T4 hazardous location

ELECTRICAL

EMC compliance.....To EN 61000-2,3,4,5,6,11
.....EN 55011/22, EN 55014
Electrical safety.....To EN 60950

INPUT

Input voltage (AC) .....85–264 V ac
Input frequency (AC).....47–65 Hz
Input voltage (DC) .....90–264 V dc
Efficiency.....up to 87 %
Connections (Fig. 2).....2-part pluggable connector
Input protection.....slow-blow fuse and VDR*

OUTPUTS

Output 1 .....24.7 V dc ± 10%
Output 2 .....11.95 V dc ± 5%
Output 1 current (see Fig. 1) .....5 A (nom.)
Output 2 current.....5 A
Connections (Fig. 3).....2-part pluggable connector
Input-output isolation .....2800 V dc
Hold-up time (at full rated load).....15 ms (typ.)
Thermal protection.....reduced output power
Supply health indicator.....LED

POWER-FAIL SIGNALLING - Output 2 only

Threshold to trigger "power-fail" signal .....11.33 V (max.)
.....10.30 (min.)

Power-fail signal output (open collector)

Power supply "OK".....Low impedance to –ve of o/p 2
Power supply "failure" .....High impedance to –ve of o/p 2

(Up to 8 power fail signals can be monitored by the 8510-NS-MO module when it is fitted on the 8718-CA-NS carrier.)

† internal load-sharing diode on 12V output only
* voltage dependent resistor

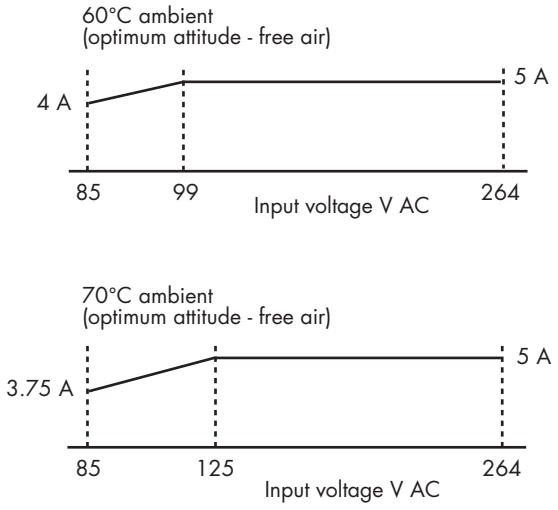
ENVIRONMENTAL

Operating ambient temperature.....–40° to +70°C
Maximum operating case temperature.....+80°C
Storage temperature.....–40° to +100°C
Relative humidity.....93 %, 40°C for 56 days

MECHANICAL

Dimensions (see Fig 4).....103 (w) x 138 (h) x 113.6 (d) mm
Mounting methods .....35 mm x 7.5 mm T-section DIN rail
(see also Accessories overleaf)
Weight.....750 g

Figure 1 - Output current de-rating (24 V output only)



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System Power - dual voltage

8913-PS-AC continued

TERMINAL ASSIGNMENTS

Input connector screw terminals

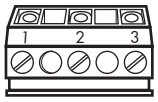


Figure 2 - AC input power

Terminal	Des.	Description
1	⏚	Protective earth
2	N ~	Input neutral
3	L ~	Input live

Output connector screw terminals

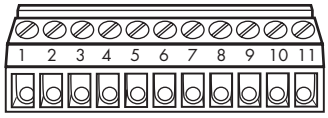


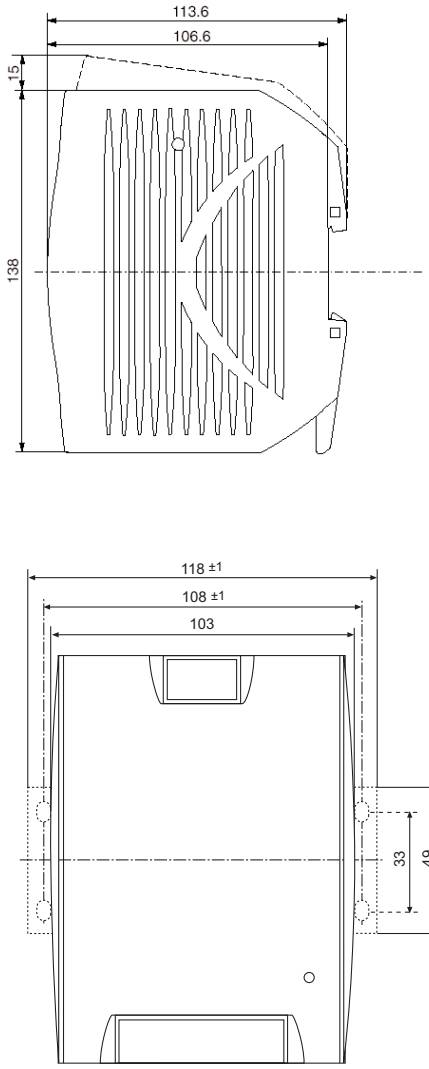
Figure 3 - DC output power

Terminal	Des.	Description	
1	⏚	Protective earth	
2	+	Output 1 + ve	24 V DC
3	+	Output 1 + ve	
4	–	Output 1 – ve	
5	–	Output 1 – ve	
6	+	Output 2 + ve	12 V DC
7	+	Output 2 + ve	
8	–	Output 2 – ve	
9	–	Output 2 – ve	
10	Aux.	Power fail signal	
11	⏚	Protective earth	

ACCESSORIES

Heavy duty DIN rail mounting kit† 8413-FK-DN
Surface panel mounting kit.....8414-FK-SU
† For larger amplitude vibration environments

Figure 4 - Outline and fixing dimensions



APPROVALS

Authority	Standards	Certificate No.
FM	No. 3600/3611	3011821
TÜV	EN50021	TÜV01ATEX1774X
CSA	2258 02	1368864

Applicable standards:

- Factory Mutual Research Class No. 3600/3611 for Class I, Division 2, Groups A, B, C, D hazardous locations
- ATEX Directive 94/9/EC Category 3 - ⟨Ex⟩ II 3 G
- CENELEC standard EN50021:1999 EEx n A II T4
- CSA International - Class 2258 02

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Field power

8914-PS-AC

- *power for wide range of Zone 2/Div 2 mounted equipment*
- *field power for MTL8000 Process I/O*
- *24 V dc @ 10 A for field power*
- *input voltage 85–264 V ac or 90–264 V dc*
- *Zone 2 / Div 2 mounting*
- *supports parallel connection for redundancy*

MODULE SPECIFICATION

See also System Specification

HAZARDOUS AREA APPROVALS

Location of power supply .....safe area or .....Zone 2, IIC T4 hazardous area or .....Class 1, Div 2, Groups A, B, C, D T4 hazardous location

Applicable standards:

- Factory Mutual Research Co., Class No. 3611 for Class I, Division 2, Groups A, B, C, D hazardous locations
- ATEX Category 3 for Zone 2

ELECTRICAL

EMC compliance .....To EN 61000-2,3,4,5,6,11 .....EN 55011/22, EN 55014

Electrical safety .....To EN 60950

INPUT

Input voltage (AC) .....85–264 V ac

Input frequency (AC) .....47–65 Hz

Input voltage (DC) .....90–264 V dc

Efficiency .....up to 87 %

Connections (Fig. 2) .....2-part pluggable connector

Input protection .....slow-blow fuse and VDR*

OUTPUT

Output .....24 V dc ± 10%

Output current (see also Fig.1) .....10 A (nom.)

Connections (Fig. 3) .....2-part pluggable connector

Input-output isolation .....2800 V DC

Hold-up time (at full rated load) .....15 ms (typ.)

Thermal protection .....reduced output power

Supply health indicator .....LED

POWER-FAIL SIGNALING

Threshold to trigger "power-fail" signal .....23.3 V (max.) .....22.0 V (min.)

Power-fail signal output (open collector)

Power supply "OK" .....Low impedance to ground

Power supply "failure" .....High impedance to ground

(Up to 8 power fail signals can be monitored by the 8510-NS-MO module when it is fitted on the 8718-CA-NS carrier.)

*voltage dependent resistor

ENVIRONMENTAL

Operating ambient temperature .....–40° to +70°C

Maximum operating case temperature .....+80°C

Storage temperature .....–40° to +100°C

Relative humidity .....93 %, 40°C for 56 days

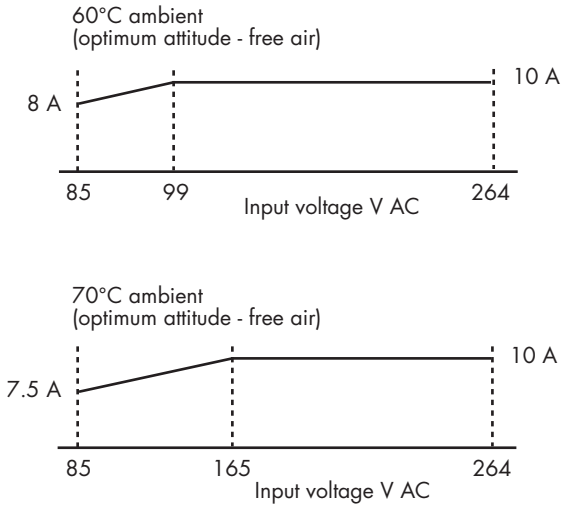
MECHANICAL

Dimensions (see Fig 4) .....103 (w) x 138 (h) x 113.6 (d) mm

Mounting methods .....35 mm x 7.5 mm T-section DIN rail (see also Accessories overleaf)

Weight .....750 g

Figure 1 - Output current de-rating



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TERMINAL ASSIGNMENTS

Input connector screw terminals

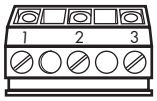


Figure 2 - AC input power

Terminal	Des.	Description
1	⏚	Protective earth
2	N ≂	Input neutral
3	L ≂	Input live

Output connector screw terminals

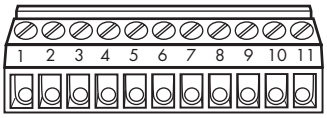


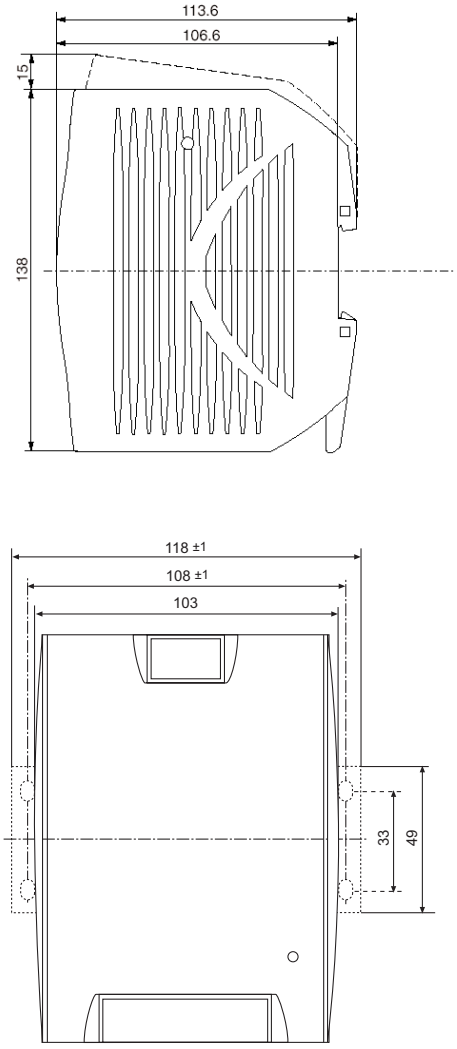
Figure 3 - DC output power

Terminal	Des.	Description
1	⏚	Protective earth
2	+	Output + ve
3	+	Output + ve
4	–	Output – ve
5	–	Output – ve
6	+	Output + ve
7	+	Output + ve
8	–	Output – ve
9	–	Output – ve
10	Aux.	Power fail signal
11	⏚	Protective earth

ACCESSORIES

Heavy duty DIN rail mounting kit† 8413-FK-DN
Surface panel mounting kit 8414-FK-SU
† For larger amplitude vibration environments

Figure 4 - Outline and fixing dimensions



APPROVALS

Authority	Standards	Certificate No.
FM	No. 3600/3611	3011821
TÜV	EN50021	TÜV01ATEX1774X
CSA	2258 02	1368864

Applicable standards:

- Factory Mutual Research Class No. 3600/3611 for Class I, Division 2, Groups A, B, C, D hazardous locations
- ATEX Directive 94/9/EC Category 3 - ⟨Ex⟩ II 3 G
- CENELEC standard EN50021:1999 EEx n A II T4
- CSA International - Class 2258 02

Node Services Power Supply Monitor for MTL8521 Controllers

8410-NS-PS

- *power supply status monitoring*
- *signals supply failure(s)*
- *monitors all 2/2 and 2/1 power supplies*
- *Zone 2/Div 2 mounting*
- *mounts on 8750-CA-NS carrier*

The Power Supply Monitor can monitor the health of supplies powering an MTL8000 node and signal the controller/EBIM in the event of one, or more, of them failing. The module can receive power supply status signals from up to six external supplies and can also monitor the status of 8920-PS-DC supplies which power the intrinsically safe (2/1) I/O modules.

Where power supply redundancy is employed, the module enables failed power supplies to be identified and replaced without interference to the process. The module itself may be removed and replaced in a Zone 2/ Div 2 hazardous area without gas clearance.

MODULE SPECIFICATION

See also System Specification

HAZARDOUS AREA APPROVALS

Location of monitor module.....Safe area or .....Zone 2, IIC T4 hazardous area .....or Class 1, Div 2, Groups A, B, C, D T4 hazardous location

Applicable standards:

- Factory Mutual Research Co., Class No. 3611 for Class I, Division 2, Groups A, B, C, D hazardous locations
- CSA Std C22.2 No. 213 for Class I, Division 2, Groups A, B, C, D hazardous locations
- ATEX Category 3 (for Zone 2 installation) to EN50021:1999 protection type 'n'

INPUTS (VIA CARRIER)

Number of inputs

From external 2/2 power supplies.....6
Via Railbus from 8920-PS-DC power supplies.....1
Power supplies "OK".....low impedance to ground
Power supply "failure".....high impedance to ground

ELECTRICAL

Railbus (12V) current.....5 mA (typ.)
.....10 mA (max.)

LED INDICATOR

PWR (i.e. Railbus supply present)

ENVIRONMENTAL

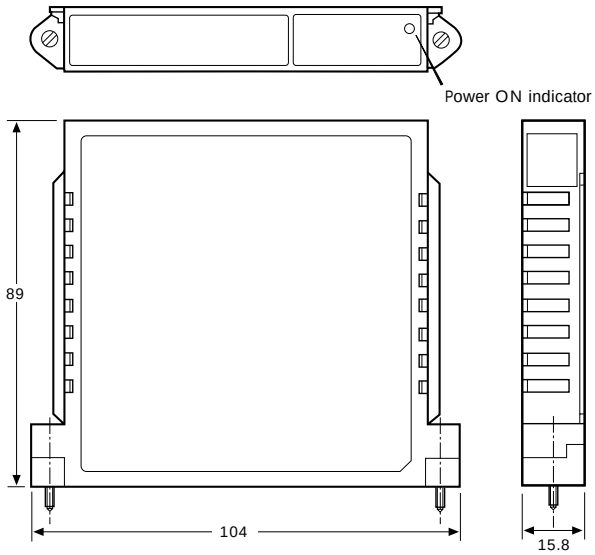
Ambient temp

Operating, ...– 40°C to + 70°C
Storage.....– 40°C to + 85°C
Relative Humidity.....5 to 95% RH (non-condensing)
Vibration and Shock.....See System specification

MECHANICAL

Mounting method.....(captive x2) screw fixing
Weight (approx.).....75 g

DIMENSIONS (MM)



MOST MTL OPEN SYSTEM TECHNOLOGIES

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