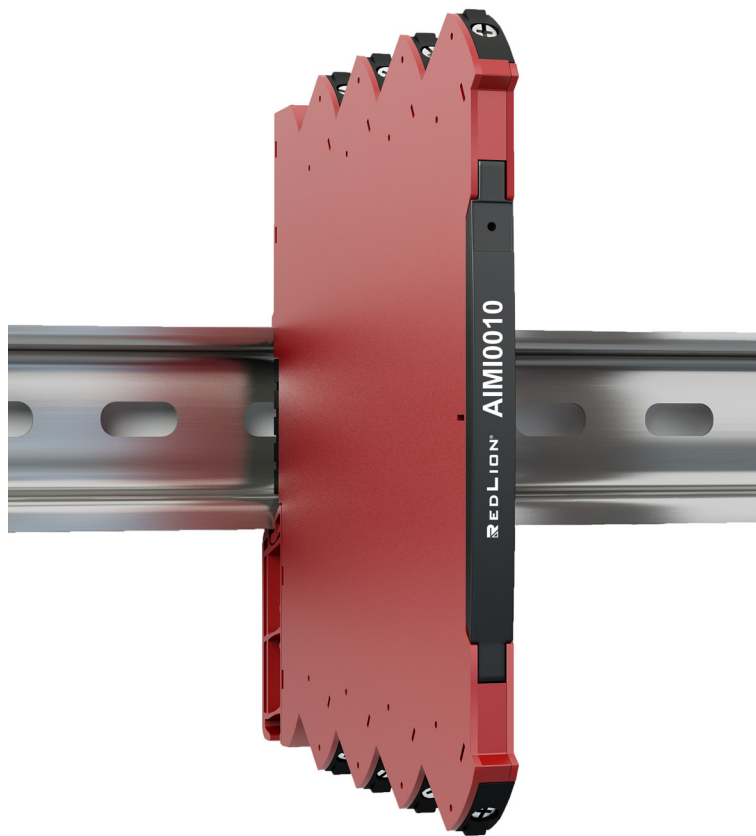


Product manual

AIMI

Loop-powered isolator



Drawing No. LP1100 Rev A
From serial no.: 221046149
Revision Date July 2023

AIMI

Loop-powered isolator

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Warnings



GENERAL

To avoid the risk of electric shock and fire, the safety instructions of this product manual must be observed, and the guidelines followed. The specifications must not be exceeded, and the device must only be applied as described in the following.

Prior to the commissioning of the device, this product manual must be examined carefully.

Only qualified personnel (technicians) should install this device. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

To avoid explosion and serious injury: Modules having mechanical failures must be returned to Red Lion for repair or replacement.

Repair of the device and replacement of circuit breakers must be done by Red Lion Controls only.



**HAZARDOUS
VOLTAGE**

Until the device is fixed, do not connect hazardous voltages to the device.

In applications where hazardous voltage is connected to in-/outputs of the device, sufficient spacing or isolation from wires, terminals, and enclosure - to surroundings (incl. neighboring devices), must be ensured to maintain protection against electric shock.



CAUTION

Potential electrostatic charging hazard. To avoid the risk of explosion due to electrostatic charging of the enclosure, do not handle the units unless the area is known to be safe, or appropriate safety measures are taken to avoid electrostatic discharge.

Symbol identification



Triangle with an exclamation mark: Warning /demand. Potentially lethal situations. Read the manual before installation and commissioning of the device in order to avoid incidents that could lead to personal injury or mechanical damage.



The CE mark proves the compliance of the device with the essential requirements of the EU-directives.



The UKCA mark proves the compliance of the device with the essential requirements of the UK regulations.



Ex devices have been approved acc. to the ATEX directive for use in connection with installations in explosive areas. See installation instructions.

Safety instructions

Receipt and unpacking

Unpack the device without damaging it and check whether the device type corresponds to the one ordered. The packing should always follow the device until this has been permanently mounted.

Environment

Avoid direct sun light, dust, high temperatures, mechanical vibrations and shock, and rain and heavy moisture. If necessary, heating in excess of the stated limits for ambient temperatures should be avoided by way of ventilation.

The device must be installed in pollution degree 2 or better.

The device is designed to be safe at least under an altitude up to 2000 m.

The device is designed for indoor use.

Mounting

Only technicians who are familiar with the technical terms, warnings, and instructions in the manual and who are able to follow these should connect the device. Should there be any doubt as to the correct handling of the device, please contact your local distributor or, alternatively,

Red Lion Controls
redlion.net

Mounting and connection of the device should comply with national legislation for mounting of electric materials, e.g. wire cross section, protective fuse, and location.

Descriptions of input / output and supply connections are shown in the block diagram and side label.

The device is provided with field wiring terminals and shall be supplied from a Power Supply having double / reinforced insulation. A power switch should be easily accessible and close to the device. The power switch shall be marked as the disconnecting unit for the device.

AIMI must be mounted on a DIN rail according to EN 60715.

Year of manufacture can be taken from the first two digits in the serial number.

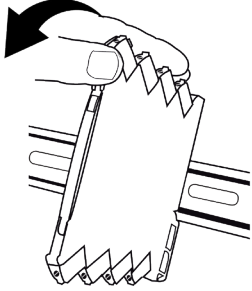
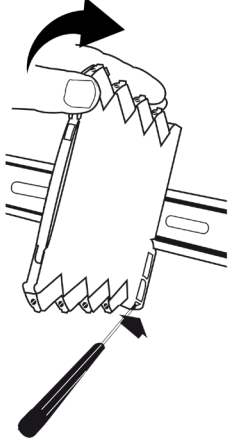
Cleaning

When disconnected, the device may be cleaned with a cloth moistened with distilled water.

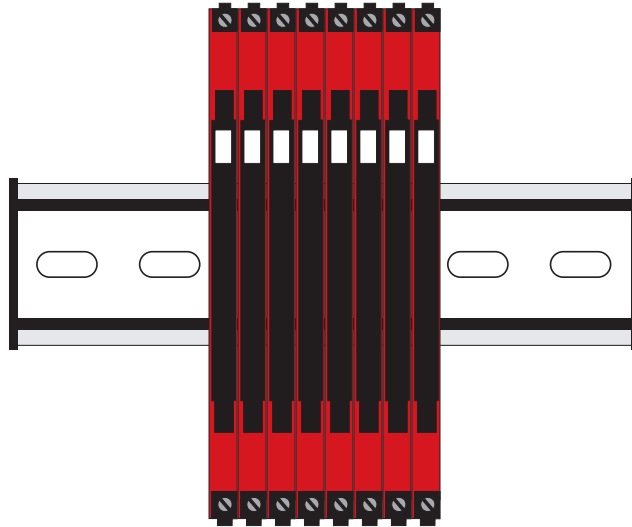
Liability

To the extent the instructions in this manual are not strictly observed, the customer cannot advance a demand against Red Lion Controls that would otherwise exist according to the concluded sales agreement.

Mounting / demounting of AIMI

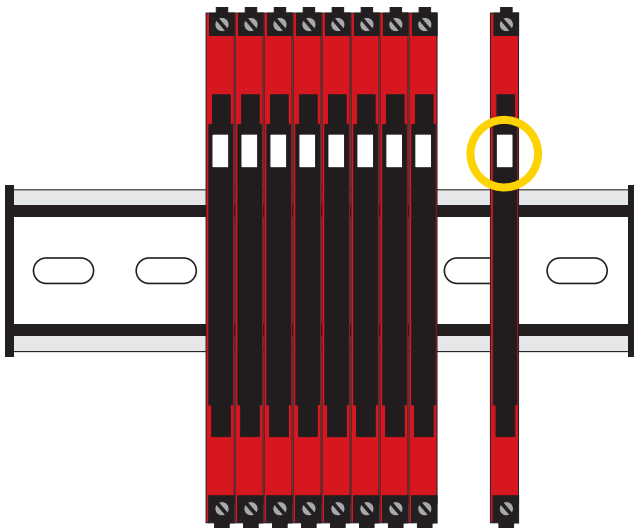
Mounting on DIN rail (Fig.1)	Demounting from DIN rail (Fig.2)
<p data-bbox="268 225 571 257">Click the device onto the rail</p>	<p data-bbox="807 225 1390 353">First, remember to demount the connectors with hazardous voltages. Detach the device from the rail by moving the bottom lock down.</p>
	

Installation on DIN rail



Marking

The front cover of the AIMI has been designed with an area for affixation of a click-on marker. The area assigned to the marker measures 5 x 7.5 mm. Markers from Weidmüller's MultiCard System, type MF 5/7.5, are suitable.



AIMI

Loop-powered isolator

- Single channel input loop-powered isolator
- Signal 1:1 functional range 0...23 mA
- Low input voltage drop and fast response time
- Excellent accuracy and high load stability
- Slimline 6.1 mm housing

Application

- 1:1 input loop powered isolator of current signals in the range 0(4)...20 mA.
- AIMI is an easy mounting DIN rail unit.
- A very competitive choice in terms of both price and technology for galvanic isolation of current signals.
- Provides surge suppression and protects control systems from transients and noise.
- AIMI eliminates ground loops and can be used for measuring floating signals.
- The device can be mounted in Safe area or in Zone 2 and Cl. 1 Div 2. area.

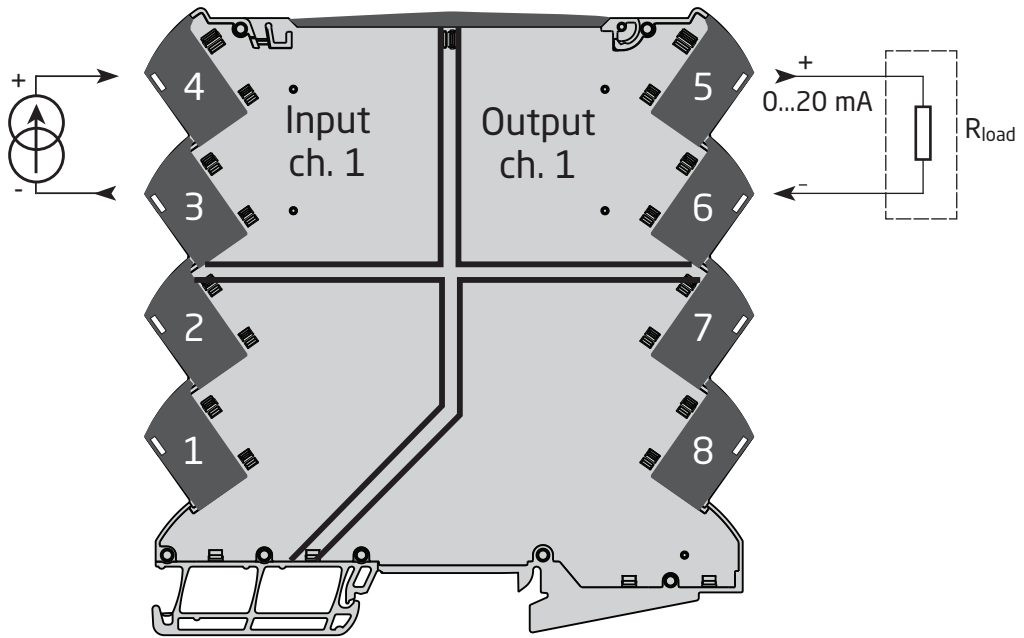
Technical characteristics

- AIMI is powered by the analogue input current signal loop.
- Low input voltage drop, typ 1.35V + Vout.
- Excellent conversion accuracy, better than 0.1% in the range 0...20.5 mA.
- Inputs and outputs are floating and galvanically separated.
- The output is voltage limited to 17.5 VDC.
- High galvanic isolation of 2.5 kVAC.
- Fast response time < 5 ms.
- Excellent signal/noise ratio > 60 dB.

Mounting / installation

- DIN rail mounting with up to 330 channels per metre.
- Extended operating temperature range from -25...+70°C.

Connections



*Safe Area or
Zone 2 & Cl. 1, Div. 2, gr. A-D*

Ordering information

Description	Part Number
Loop Powered Isolator	AIMI0010

Technical data

Environmental conditions:

Operating temperature	-25°C to +70°C
Storage temperature	-40°C to +85°C
Calibration temperature.	20...28°C
Relative humidity	< 95% RH (non-cond.)
Protection degree	IP20
Installation in pollution degree 2 & overvoltage category II.	

Mechanical specifications:

Dimensions (HxWxD)	113 x 6.1 x 115 mm
Weight approx.	70 g
DIN rail type.	DIN EN 60715 - 35 mm
Wire size.	0.13...2.5 mm ² / AWG 26...12 stranded wire
Screw terminal torque.	0.5 Nm
Vibration.	IEC 60068-2-6
2...25 Hz.	±1,6 mm
25...100 Hz	±4 g

Common electrical specifications:

Max. required power.	30 mW per channel
Isolation voltage, test.	2.5 kVAC
Isolation voltage working.	300 VAC (reinforced) / 250 VAC (Zone 2, Div. 2)
Signal dynamics, input / output	Analog signal chain
Signal / noise ratio	> 60 dB
Response time (0...90%, 100...10%)	< 5 ms
Cut-off frequency (3 dB)	100 Hz

Input and output specifications:

Signal range, input to output	0...20.5 mA
Signal conversion	1:1
Measurement range	0...23 mA
Start up current, typ.	10 uA
Current input overload, max	50 mA
Input to output voltage drop, typ	1.35 V + (0.015 x Vout) (Vout = Iout x Routput load)
Input voltage drop	(Unit voltage drop) + Vout
Output load, max.	600 Ω
Output load stability.	< 0.01% of span / 100 Ω
Voltage limit	17.5 V

Accuracy values		
Input type	Absolute accuracy	Temperature coefficient
mA	$\leq \pm 10 \mu\text{A} + 0.05\%$ of max. value of selected span	$\leq \pm 2 \mu\text{A} / ^\circ\text{C}$

EMC - immunity influence.	< $\pm 0.5\%$ of span
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of span = 0...20 mA

Observed authority requirements:

EMC. 2014/30/EU & UK SI 2016/1091
 LVD. 2014/35/EU & UK SI 2016/1101
 RoHS. 2011/65/EU & UK SI 2012/3032
 ATEX. Zone 2

Approvals:

c UL us, UL 61010-1. E179259

I.S. / Ex approvals:

ATEX. Zone 2
 IECEx. DEK 19.0002X
 UKEX. DEKRA 21UKEX0055X

Installation instructions

UL installation

Use 60/75°C copper conductors only.

Wire size AWG 26-12

UL file number E179259

The device is an Open Type Listed Process Control Equipment. To prevent injury resulting from accessibility to live parts the equipment must be installed in an enclosure. The power Supply unit must comply with NEC Class 2, as described by the National Electrical Code® (ANSI / NFPA 70).

IECEX, ATEX and UKEX installation in Zone 2

IECEX DEK 19.0002X Ex ec IIC T4 Gc

DEKRA 19ATEX0002X II 3 G Ex ec IIC T4 Gc

For safe installation, the following must be observed. The device shall only be installed by qualified personnel who are familiar with the national and international laws, directives and standards that apply to this area.

The devices shall be installed in a suitable enclosure providing a degree of protection of at least IP54 according to EN IEC 60079-0, taking into account the environmental conditions under which the equipment will be used.

When the temperature under rated conditions exceeds 70°C at the cable or conduit entry point, or 80°C at the branching point of the conductors, the temperature specification of the selected cable shall be in compliance with the actual measured temperature.

To prevent ignition of the explosive atmospheres, disconnect power before servicing and do not separate connectors when energized and an explosive gas mixture is present.

In class I, Division 2 or Zone 2 installations, the subject equipment shall be mounted within a tool-secured enclosure which is capable of accepting one or more of Class I, Division 2 wiring methods specified in the National Electrical Code (ANSI/NFPA 70) or in Canada in the Canadian Electrical Code (C22.1).

The AIMI Isolators and Converters must be connected to limited output NEC Class 2 circuits, as outlined in the National Electrical Code® (ANSI / NFPA 70), only. If the devices are connected to a redundant power supply (two separate power supplies), both must meet this requirement.

Where installed in outdoor or potentially wet locations the enclosure shall at a minimum meet the requirements of IP54.

Warning: Substitution of components may impair suitability for zone 2 / division 2.

Warning: To prevent ignition of the explosive atmospheres, disconnect power before servicing and do not separate connectors when energised and an explosive gas mixture is present.

Red Lion Controls Technical Support

If for any reason you have trouble operating, connecting, or simply have questions concerning your new product, contact Red Lion's technical support.

Support: support.redlion.net

Inside US: +1 (877) 432-9908

Website: www.redlion.net

Outside US: +1 (717) 767-6511

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