

MODEL · I3LP-101

LOOP POWERED SINGLE ISOLATOR



Single loop powered isolator, for 4/20mA signals, for DIN rail mount.

I3LP-101 is a single channel loop powered isolator for process signals. Accepts a 4/20mA input signal and generates a 4/20mA output signal, replica of the input, while providing a high isolation between input and output. Powered from the input loop. No configuration needed. No power needed. Connect and ready to work directly out of the box.

Circuit isolation prevents ground loops and transient propagation, protecting remote equipment and signal integrity.

Plug-in screw terminals for fast and easy installation. Standard DIN rail mount. Designed for industrial use, with potential integration into a wide range of applications, reduced cost, excellent quality and available customization.

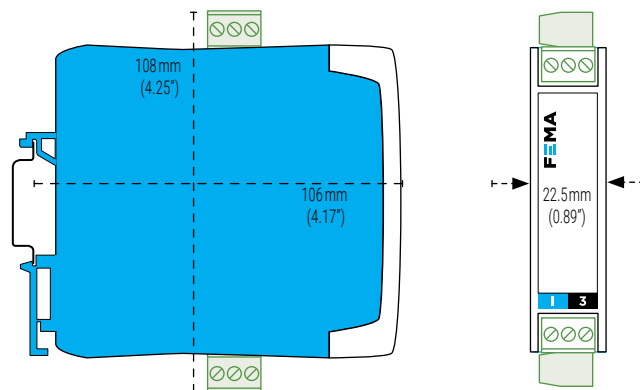
1. TECHNICAL SPECIFICATIONS

Input signals	
signal	4 to 20 mA
max. oversignal	50 mA
voltage drop on terminals	6.5Vdc /at 20 mA, load 50 Ohm) (see Table 4)
input impedance	$Z_i = Z_o + (2.73 \cdot I^2 - 98.8 \cdot I + 1159) \pm 10\%$ (see Table 5) (<i>I</i> expressed in mA, <i>Z</i> expressed in Ohm)
Accuracy at 25 °C	
	class <0.20% (load 0 Ohm) (see Table 6)
Thermal drift	
	<25 ppm/°C (F.S.)
Step response	
	<10mSec. (0% to 99% signal) (load 0 Ohm) (see Table 7)
Output signals	
signals	4 to 20 mA
scaling	relation 1:1 between input and output
maximum load at output	from 0 up to 100 Ohm, for each instrument
protection	short-circuit protected open loop protected
Configuration	
	no configuration needed
Power	
	loop powered from the input loop
Isolation	
input - output	2000 Vac, 50 Hz, (tested for 60 seconds)
Environmental	
IP protection	IP30
impact protection	IK06
operation temperature	from 0 to +50 °C
storage temperature	from -20 to +70 °C
'warm-up' time	5 minutes
humidity	0 to 95% non condensing
altitude	up to 2000 meters
Mechanical	
size	106 x 108 x 22.5 mm
mounting	standard DIN rail (35 x 7.5 mm)
connections	plug-in screw terminals (pitch 5.08 mm)
housing material	polyamide V0
weight	<150 grams
packaging	120 x 115 x 30 mm, cardboard

2. HOW TO ORDER

I3LP-101	Single signal isolator (1 input, 1 output)
-----------------	--

3. DIMENSIONS



4. CONNECTIONS: INPUT & OUTPUT

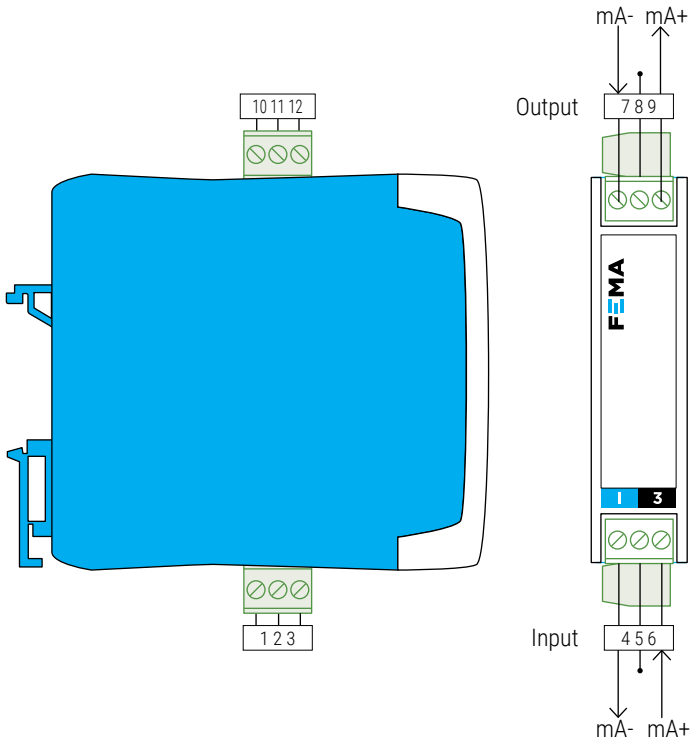


Table 1 | I3LP-101 CONNECTIONS

	Input			Output		
	4	5	6	7	8	9
	mA- (out)	n.c.	mA+ (in)	mA- (in)	n.c.	mA+ (out)

! Terminals 1,2,3 and 10,11,12 are not used.

Table 2 | I3LP-101 CONNECTIONS

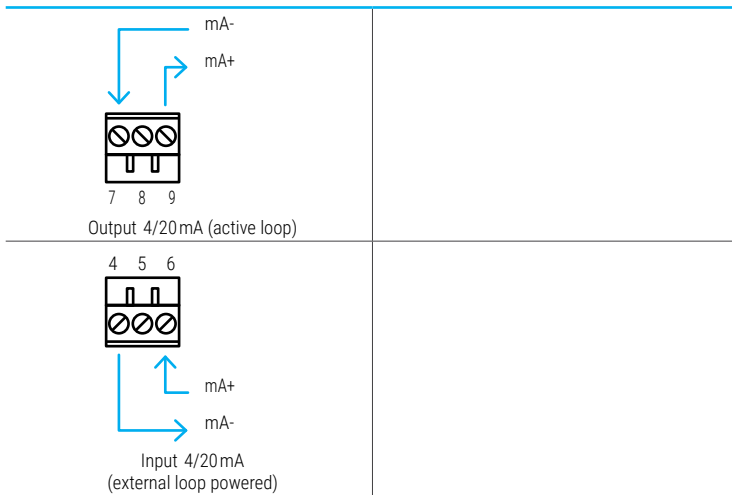
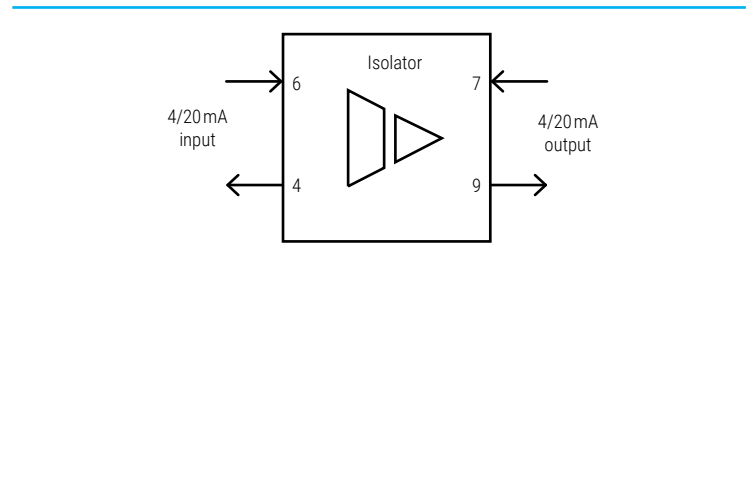


Table 3 | I3LP-101 SCHEMATIC



5. ADDITIONAL TECHNICAL INFORMATION

INPUT - OUTPUT RELATION

The instruments accepts one 4/20mA input signal loop and provides one 4/20mA output. The output is a replica of the input.

ACTIVE AND PASSIVE LOOPS

The instrument is powered from the input signal loop, therefore, the input signal loop must be 'active', and powered from an external power supply.

The output signal loop is 'active', therefore, no external power supply must be used to power the output loop. Connecting an external power supply to the output loop may damage the instrument. The output loop is powered from the input loop.



Do not connect an external power supply to the output signal loop.

EXTENDED RANGE SIGNALS

The instrument will follow the input signal down to 0.5mA, although the output may be out of accuracy specifications.

The instrument will follow the input signal up to 50mA, although the output may be out of accuracy specifications.

MAXIMUM OVERSIGNAL AND PROTECTIONS

'Maximum oversignal' is the maximum signal accepted by the instrument. Higher signal values may damage the instrument. Lower signal values are non destructive but may be out of accuracy specifications.

PROTECTION AGAINST INVERTED CONNECTIONS

The instrument is not damaged when the input signal connection is inverted. The output signal loop will be open (0 mA) and the input signal loop will remain closed (current flows).

VOLTAGE DROP ON TERMINALS

The input voltage drop is lower than 5.7Vdc at 20mA, for output loads below 50 Ohm. See 'Table 4' for calculated examples of the input impedance.

INPUT IMPEDANCE

The input impedance can be calculated with the following equation (where 'I' is the current on the loop expressed in 'mA', Z_{in} is the input impedance seen on input terminals, and Z_L is the load connected to the output loop expressed in Ohm). See 'Table 5' for calculated examples of the input impedance.

$$Z_{in} = Z_L + (2.73 \cdot I^2 - 98.8 \cdot I + 1159) \pm 10\%$$

ACCURACY

The typical accuracy for each instrument is class <0.20%, for an output load of 0 Ohm and class <0.35% for an output load of 50 Ohm. Higher loads can be connected as long as the element powering the input signal loop can provide enough energy to power the system. When connecting higher loads, the error will increase. See 'Table 6' for accuracy data on different current values and output impedances.

OPEN OUTPUT LOOP PROTECTION

When the output loop opens, the current at the input loop continues flowing and the voltage on input terminals will increase up to 10Vdc.

SHORT-CIRCUIT OUTPUT LOOP PROTECTION

The instruments is not damaged when the output circuit loop is short-circuited.

ISOLATION

All circuits are isolated between them and tested for 2000Veff (@50Hz) between circuits, for 60seconds. In particular :

- the isolation between input and output circuits is tested by applying 2000Veff (@50 Hz) between input and output circuits, for 60 seconds.

Table 4 | VOLTAGE DROP ON INPUT TERMINALS

V _{in}	mA signal		
	4mA	12mA	20mA
Load			
00hm	3.3Vdc	4.4Vdc	5.5Vdc
50Ohm	3.5Vdc	5.0Vdc	6.5Vdc

Table 5 | INPUT IMPEDANCE TYPICAL (Z_{in}) VALUES (±10%)

Z _{in}	mA signal		
	4mA	12mA	20mA
Load			
00hm	8070hm	3660hm	2750hm
50Ohm	8570hm	4160hm	3250hm

Table 6 | TYPICAL ACCURACY

	Load		
	Load (00hm)	Load (50 Ohm)	Load (100 Ohm)
Class	<0.2%	<0.35%	<0.50%

Table 7 | STEP RESPONSE TIMES

	Load		
	Load (00hm)	Load (50 Ohm)	Load (100 Ohm)
Response time	<10 mSec.	<15 mSec.	<25 mSec.

6. ADDITIONAL DOCUMENTATION

User's manual	www.fema.es/docs/5808_I3LP101_manual_sp.pdf
Datasheet	www.fema.es/docs/5814_I3LP101_datasheet_sp.pdf
Quick installation guide	www.fema.es/docs/5817_I3LP101_installation_en.pdf
Web	www.fema.es/Series_I3

7. OTHER SIGNAL CONVERTERS ... AND MORE



SERIES I3

Section **OEM**

output signal 4/20 mA, 0/10 Vdc
 configuration by codes (inside)
 isolation 3 ways



SERIES I4

FULLY CONFIGURABLE

output signal 4/20 mA, 0/10 Vdc, ...
 configuration by menu (front)
 isolation 3 ways



SERIES I5

FIELD BUS

output signal Modbus RTU, CANbus, ...
 configuration by menu (front)
 isolation 3 ways



SERIES B

LARGE FORMAT DISPLAYS

digit 60 and 100 mm
 reading 25 and 50 meters
 mounting wall, panel, hanging
 housing metallic IP65

50 YEARS 1969-2019	Q ISO 9001 Certified Quality	CE EN-61010-1 Security	CE EN-61326-1 Electromagnetic C.	5 YEARS Extended Warranty
---------------------------------	---	-------------------------------------	---	--

Process	Temperature	Counter	Weight	Flow	Time
Frequency	Temperature	Speed	Vac	Aac	Integrators
Potentiometer	Temperature	Period	Ade	Vdc	Resistances
Digital	Digital	Digital	Digital	Custom	