

Series ISC

Isolated Signal Converters



Model ISC-P for process signals

Isolated signal converters for process signals in mA and Vdc, active or passive, coming from two or three wire transducers. Output configurable for mA or Vdc. The instrument provides the excitation voltage to power the transducer if needed. Instrument to be mounted on standard DIN rail. Power options in AC and DC. Strong three way isolation between input, output and power circuits.

Signal Converter ISC-P

Isolated Signal Converter for process signals

Isolated signal converters for process signals in mA and Vdc, coming from 2 or 3 wire transducers. The instrument provides +15Vdc excitation voltage to power-up the transducer if needed (max. 22mA).

Output signal configurable in 0/10Vdc, 4/20mA and other ranges. Instrument readjustable through jumpers and span and offset potentiometers accessible at the rear of the front cover.

Power option in AC and DC. Instrument to be mounted on standard DIN rail. Connections with plug-in screw terminals. For industrial applications.

High isolation levels between the input, output and power circuits, the instruments can be used as isolators between circuits together with the signal converter functionality.

The isolation provided prevents the propagation of transient peaks and energy discharges between circuits, thus protecting the remote acquisition systems. It also minimizes loop grounds, which if acquired with the signal, are very difficult to isolate.

Order Reference

Model	Power	Input	Output
ISC - P	0	4/20mA	4/20mA
	-0 (230 Vac 50/60 Hz) -1 (115 Vac 50/60 Hz) -6 (24 Vdc isolated)	-4/20mA -0/10Vdc -0/20mA -0/50mA -0/1Vdc -...	-4/20mA -0/10Vdc -...

Precautions on installation



Risk of electrical shock. Instrument terminals can be connected to dangerous voltage.



Instrument protected with double isolation. No earth connection required.



Instrument is in conformity with CE rules and regulations. See "CE Declaration of Conformity" further in this document.

This instrument has been designed and verified according to the 61010-1 CE security regulation, and is designed for applications on industrial environments. See the "CE Declaration of Conformity" further in this document for information on the category of measure and the degree of pollution levels that apply.

Installation of this instrument must be performed by qualified personnel only. This manual contains the appropriate information for the installation. Using the instrument in ways not specified by the manufacturer may lead to a reduction on the specified protection level. Disconnect the instrument from power before starting any maintenance and / or installation action.

The instrument does not have a general switch and will start operation as soon as power is connected. The instrument does not have protection fuse, the fuse must be added during installation.

The instrument is designed to be panel mounted. An appropriate ventilation of the instrument must be assured. Do not expose the instrument to excess of humidity. Maintain clean by using a humid rag and do NOT use abrasive products such as alcohols, solvents, etc.

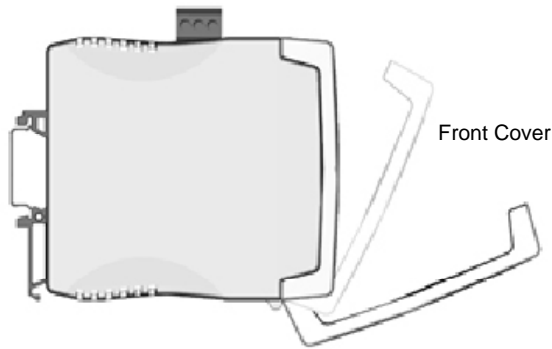
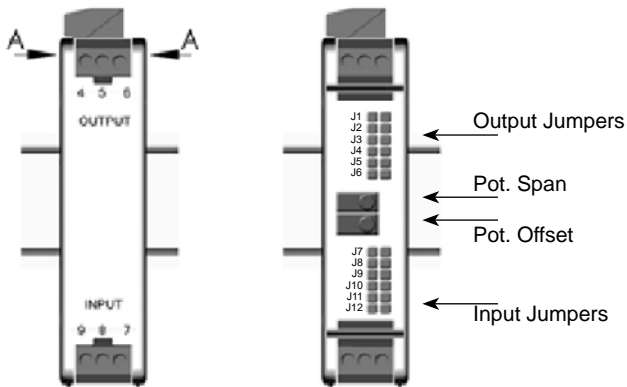
General recommendations for electrical installations apply, and for proper functionality we recommend : if possible, install the instrument far from electrical noise or magnetic field generators such as power relays, electrical motors, speed variators, ... If possible, do not install along the same conduits power cables (power, motor controllers, electrovalves, ...) together with signal and/or control cables.

Before proceeding to the power connection, verify that the voltage level available matches the power levels indicated in the label on the instrument.

In case of fire, disconnect the instrument from the power line, fire alarm according to local rules, disconnect the air conditioning, attack fire with carbonic snow, never with water.

Instrument View

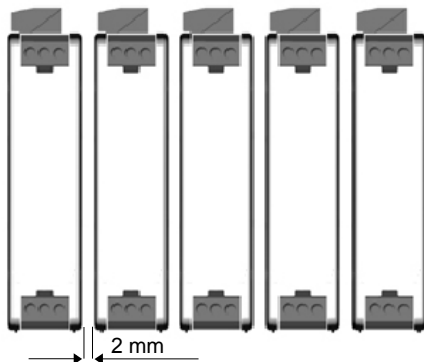
To access the jumpers for input and output range selection, and the span and offset adjust potentiometers, open the front cover by pressing on the A-A points indicated below.



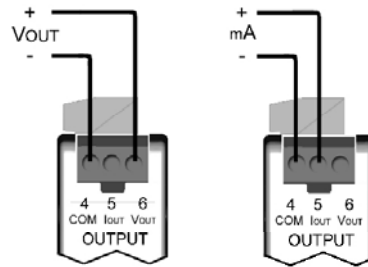
IMPORTANT - Opening the front cover may grant access to areas with dangerous voltages. Operation must be performed by qualified personnel only.

Mounting

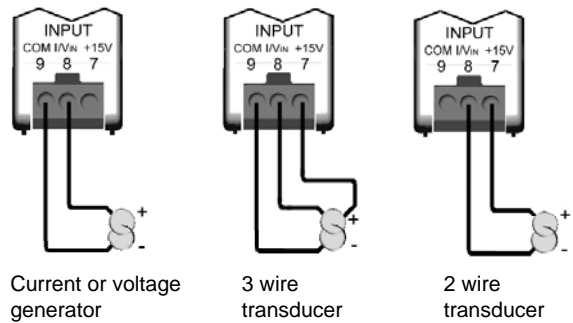
Install the instrument in vertical position, as indicated below. To help dissipate the heat, a free space of 2mm must be left available on both sides of the instrument.



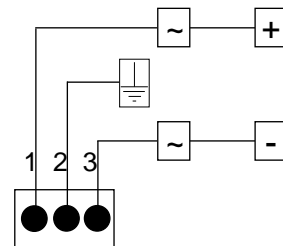
Output Connections



Input Connections



Power Connections



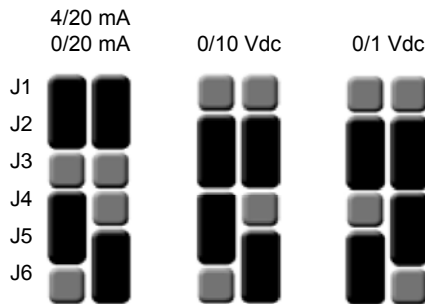
Earth connection - Although a terminal is offered for earth connection, the connection is optional. The instrument does not need this connection for correct functioning nor for compliance with the security regulations.

Fuse - To comply with security regulation 61010-1, add to the power line a protection fuse acting as disconnection element, easily accessible to the operator and identified as a protection device.

230 Vac	70mA time lag
115 Vac	100mA time lag
24 Vdc	250mA time lag

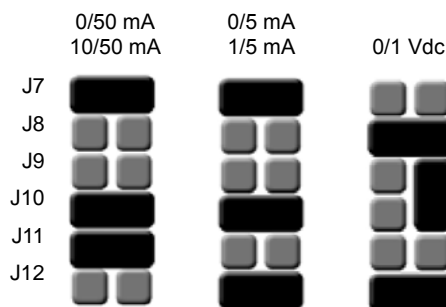
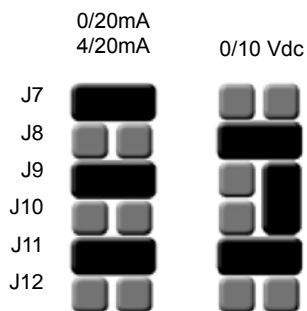
Output range selection Jumpers

Place the jumpers in the appropriate position to select the desired output signal range.



Input range selection Jumpers

Place the jumpers in the appropriate position to select the desired input signal range.



Readjustment procedure

To change the input/output relation of the instrument, select the appropriate jumper positions for input and output, and recalibrate the instrument as described below :

- 1- Open the front cover
- 2- Select the appropriate output range jumpers
(Section "Output range selection Jumpers" in page 4)
- 3- Select the appropriate input range jumpers
(Section "Input range selection Jumpers" in page 4)
- 4- Connect a signal generator to the input terminals
(Section "Input Connections" in page 3)
- 5- Connect a multimeter to the output terminals
(Terminals 4 and 5 for mA or terminals 4 and 6 for Vdc)

(Values in brackets are examples for an input/output adjustment of 4/20mA=0/10Vdc)
- 6- Generate the lower input signal (4mA)
Operate the Offset potentiometer, until the output is at the low output value desired (0Vdc)
- 7- Generate the higher input signal (20mA)
Operate the Span potentiometer, until the output is at the high output value desired (10Vdc)
- 8- Repeat steps 6 and 7, until the desired accuracy is reached
- 9.- Close the front cover



IMPORTANT - Opening the front cover may grant access to areas with dangerous voltages. Operation must be performed by qualified personnel only.

Technical Data

Input signals	mA, Vdc
Selectable input ranges	4/20mA, 0/20mA, 0/50mA, 10/50mA, 1/5mA, 0/5mA 0/10Vdc, 0/1Vdc
Connection Type	2 or 3 wires active or passive signals the instrument provides the excitation voltage if needed
Input impedance	50 Ohms in 4/20mA and 0/20mA 20 Ohms in other mA ranges 5 MOhms in 0/10Vdc 1 MOhm in 0/1Vdc
Maximum inputs	max. 70mA in mA ranges max. 150Vdc in 0/10Vdc max. 15Vdc in 0/1Vdc

Excitation voltage +15Vdc ±10% (max. 22mA)

Output signals	Vdc or mA
Selectable output ranges	4/20mA, 0/20mA 0/10Vdc, 0/1Vdc
Type	active
Maximum output	22mA in current ranges 11Vdc in voltage ranges
Minimum output	-1.5mA in current ranges -1Vdc in voltage ranges
Minimum load in Vdc	>1 KOhm
Maximum load in mA	<400 Ohms

Power	
in AC	230Vac 50/60 Hz 115Vac 50/60 Hz
in DC	24Vdc ±10% isolated
Consumption	<3.8VA

Configuration input and output range selection jumpers, and span and offset potentiometers, accessible at the rear of the front cover

Accuracy	0.2% F.S. at 25°C
Linearity	0.1% F.S.
Thermal stability	150ppm/°C typ.(max. 200ppm/°C)

Response time	<70mSec. (90% of signal)
Bandwidth	20Hz (-3dB)

Isolation	3 way isolation
Input - Output	3500Veff (60 sec.), optical
Power - Input	3500Veff (60 sec.), galvanic
Power AC - Output	3500Veff (60 sec.), galvanic
Power DC - Output	1000Veff (60 sec.), galvanic

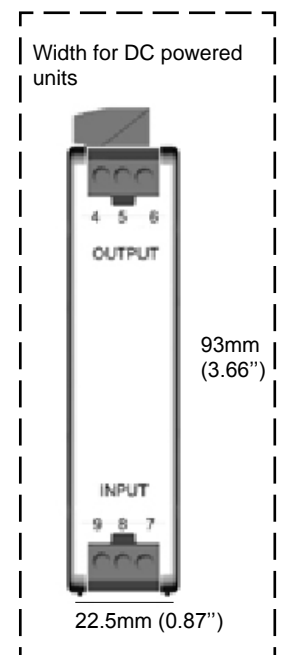
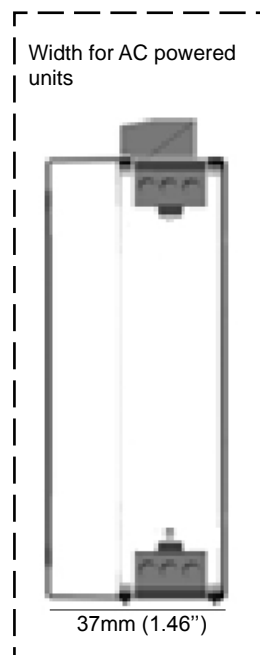
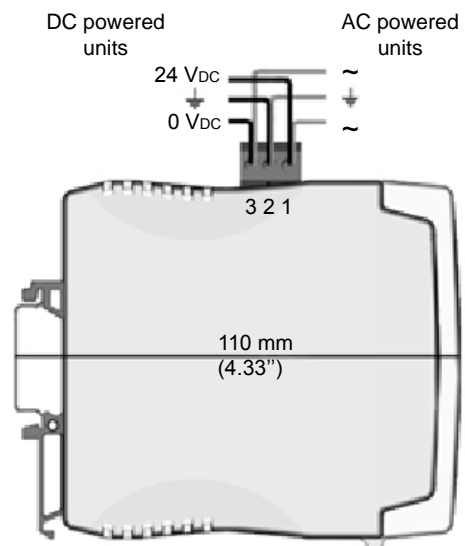
Technical Data (cont.)

Mechanical	
Mounting	standard DIN rail (35 x 7,5mm)
Connections	plug-in screw terminals
Weight	120 grams (DC power) 200 grams (AC power)
Housing material	Polyamide PA6 UL94 V-2 blue
Size	DC models 22.5 x 93 x 110 mm AC models 37.0 x 93 x 110 mm

Protection IP30

Operating Temp.	0 to 60°C
Storage Temp.	-20 to +70°C
Warm-up	15 minutes

Mechanical Dimensions (mm)



Calculations for input/output availability

The formula indicated below inform if a specific input-output adjustment is possible. The starting data needed are :

IL (Input Low)	in mA or Vdc minimum input signal value
IH (Input High)	in mA or Vdc maximum input signal value
IR (Input Range)	20mA, 50mA, 5mA, 10Vdc ó 1Vdc maximum of selected input range
OL (Output Low)	in mA or Vdc minimum output signal value
OH (Output High)	in mA or Vdc maximum output signal value
OR (Output Range)	20mA, 10Vdc or 1Vdc maximum of selected output range

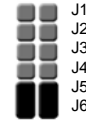
Span calculations

SPAN > 2
SPAN < 2
SPAN < 0.5

SPAN < 0.05

SPAN = (IR)/(IH-IL)x(OH-OL)/(OR)

Adjust is not available
Adjust is available
Adjust is available, but select J5 and J6 as shown in Configuration A
Adjust is critical, try selecting J5 and J6 as shown in Configuration B



Configuration A



Configuration B

Offset calculations

-0.5<OFFSET <0.5

OFFSET=(OL)/(OR)-SPAN(IL)/(IR)

Adjust is available

Warranty

All instruments are warranted against all manufacturing defects for a period of 24 MONTHS from the shipment date. This warranty does not apply in case of misuse, accident or manipulation by non-authorized personnel. In case of malfunction get in contact with your local provider to arrange for repair. Within the warranty period and after examination by the manufacturer, the unit will be repaired or substituted when found to be defective. The scope of this warranty is limited to the repair cost of the instrument, not being the manufacturer eligible for responsibility on additional damages or costs. .

CE Declaration of conformity

Manufacturer FEMA ELECTRÓNICA, S.A.
Pol. Ind. Santiga - Altimira 14
E08210 - Barberà del Vallès - BARCELONA
ESPAÑA - SPAIN
www.fema.es - info@fema.es

Security EN61010-1
Equipment "Fixed", "Permanently connected"
Degree of pollution 1 and 2 (without condensation)
Isolation Double
Category CAT-II

Series - ISC
Models P, PT100, TJ, TK, TE, TT, TR, TS, VAC, VDC, IAC, IDC, POT, RES, HZ, LC

Immunity: EN 50082-2, IEC 1000-4-2, EN 61000-4-2, IEC 801-2, ENV 50140, EN 61000-4-4, IEC 801-4 (level 3), ENV 50204 (level 3)

The manufacturer declares that the instruments indicated comply with the directives and rules indicated below.

Emission EN 50081-2, EN 55011, EN 55014, EN 55022,

European directive for low voltage D73/23/CEE amended by D93/68/CEE.

UNE 21352-76: CEI 359-71 Operating quality expressions for electronic equipment. UNE 20652-80: CEI 284-68 Behavior rules inherent to the handling of electronic equipment and other similar technics.

European directive for product safety D92/59/CEE
Electrotechnical regulation for low voltage (RBT) ITC 21, ITC 29, ITC 35.

Barberà del Vallès, 2002
Daniel Juncà - Quality Manager

European directive for electromagnetic compatibility D89/336/CEE amended by D93/68 CEE

THIS SECTION BLANK

other products



Panel Meters
Standard 96x48 mm



Panel Meters
Small 72x36 mm



Panel Meters
Miniature 48x24 mm



Large Displays
60 & 100 mm digit



Signal Converters
& Isolators



Panel Meters
Standard 96x48 mm

www.fema.es

ELECTRONIC INSTRUMENTATION FOR INDUSTRY

FEMA ELECTRÓNICA, S.A.
Pol. Ind. Santiga - Altimira 14
E08210 Barberà del Vallès - BARCELONA
ESPAÑA - SPAIN

Tel. (+34) 93.729.6004 - www.fema.es
Fax (+34) 93.729.6003 - info@fema.es