

MODEL · I3P

PROCESS & TEMPERATURES



Signal converter isolated, multisignal, for DIN rail mount.

Configurable to measure process (mA and Vdc, provides excitation voltage), thermocouples (J, K, N, E, T, R and S), Pt100 probes (2 and 3 wires), Pt500, Pt1000, Ni100, Ni1000, NTC, potentiometers and resistances.

Configurable output for 4/20mA and 0/10Vdc. Universal power supply from 18 to 265Vac/dc. 3 way isolation between input, output and power circuits. Easy and fast configuration through configuration codes. Plug-in screw terminal connections.

Functions to generate low and high output signals, to validate remote instrumentation. 'Password' function to block access to configuration. Designed for industrial environment, for a wide range of applications, reduced cost, excellent quality and optional customization. Recommended for OEM applications.

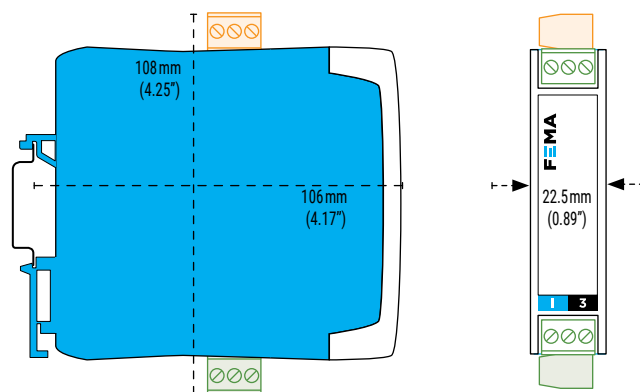
1. TECHNICAL SPECIFICATIONS

Input signal ranges	
process	4/20 mA, 0/10 Vdc (active and passive) excitation voltage +15Vdc @30 mA
thermocouples	J, K, N, E, T, R and S (automatic compensation of the thermocouple cold junction)
'Pt' and 'Ni' probes	Pt100 (2 and 3 wires, automatic compensation up to 30 Ohm) Pt500, Pt1000, Ni100, Ni1000 (2 wires)
'NTC' probes	(see section 7)
resistances	ranges for 100K, 50K, 25K, 10K, 5K and 2.5K Ohms
potentiometers	from 500 Ohm up to 20K Ohm potentiometers
Accuracy at 25 °C	(see Table 3)
Thermal stability	150 ppm/°
Step response	<400 mSec. (0% to 99% signal)
Output signal ranges	
active mA signal	4/20 mA active, max. 22 mA, min. 1.5 mA, load < 400 Ohm
passive mA signal	4/20 mA passive, max. 30 Vdc on terminals
Vdc signal	0/10 Vdc, max. 11 Vdc, min. -1 Vdc, load > 1 K Ohm
Configuration	
keypad	2 keys
display	2 digits, 7 segments, 5 mm height, red color
Power	
voltage range	18 to 265 Vac/dc isolated (20 to 240 Vac/dc ±10%)
AC frequency	45 to 65 Hz
consumption	<1.5 W
power wires	1 mm ² to 2.5 mm ² (AWG17 to AWG14)
overvoltage category	2
Isolation	
input - output	2300 Veff (60 seconds)
power - input	2300 Veff (60 seconds)
power - output	2300 Veff (60 seconds)
IP protection	IP30
Impact protection	IK06
Temperature	
operation	from 0 to +50 °C
storage	from -20 to +70 °C
'warm-up' time	15 minutes
Mechanical	
size	106 x 108 x 22.5 mm
mounting	standard DIN rail (35x7.5 mm)
connections	plug-in screw terminals (pitch 5.08 mm)
housing material	polyamide V0
weight	<150 grams
packaging	120x115x30 mm, cardboard

2. HOW TO ORDER

MODEL	CUSTOMIZATION
I3P	.XXXX (customized execution)

3. DIMENSIONS



4. FUNCTIONS INCLUDED

Function **'Force Low'** . . . temporarily forces the signal output to the minimum of the selected range (4 mA or 0 Vdc). Tool to validate the function of the remote elements connected to the output.

Function **'Force High'** . . . temporarily forces the signal output to the maximum of the selected range (20 mA or 10 Vdc). Tool to validate the function of the remote elements connected to the output.

Function **'Password'** . . . prevents access from unauthorized operators to **'configuration mode'** and **'tools'** menu.

5. CONNECTIONS: INPUT & OUTPUT

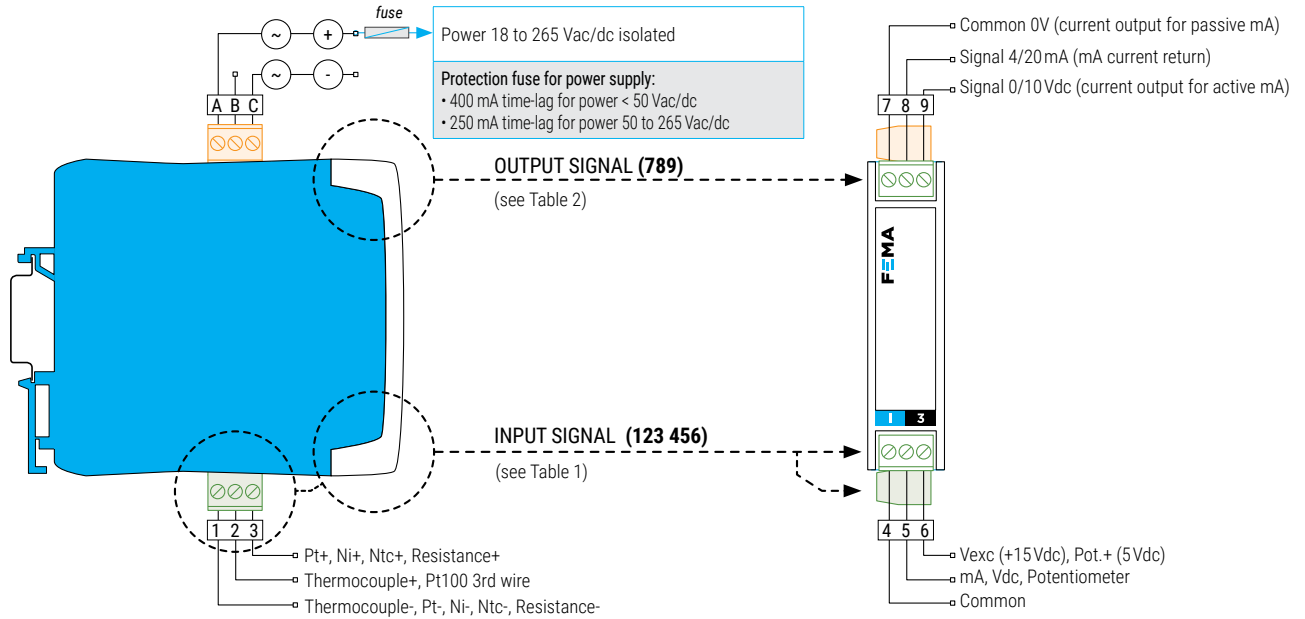


Table 1 | INPUT signal connections

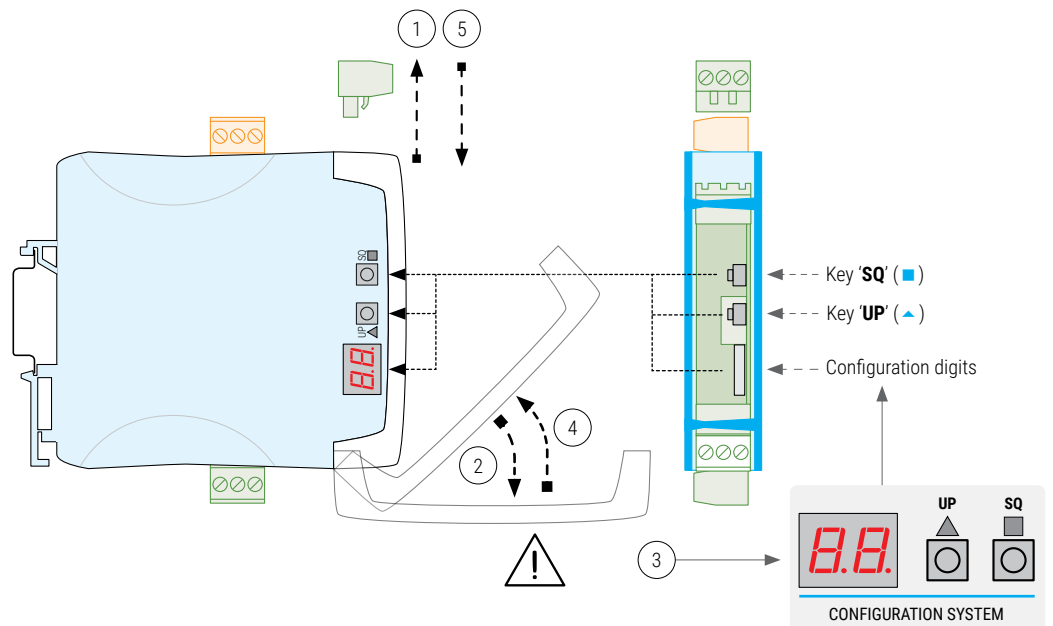
Input signal	Input terminals					
	1	2	3	4	5	6
4/20 mA passive					mA-	Vexc
4/20 mA active				mA-	mA+	
0/10 Vdc				common	+Vdc	
0/10 Vdc with Vexc				common	+Vdc	Vexc
Potentiometer				Pot.-	Potent.	Pot.+
Resistance	Res-		Res+			
NTC	NTC-		NTC+			
Thermocouple	tc-	tc+				
Pt100 (3 wires)	Pt-	Pt- (3 rd wire)	Pt+			
Pt100 (2 wires)	Pt- (shortcircuit 1 and 2)		Pt+			
Pt1000, Pt500	Pt-		Pt+			
Ni100, Ni1000	Ni-		Ni+			

Table 2 | OUTPUT signal connections

Output signal	Output terminals			Connections
	7	8	9	
4/20 mA active		mA- (in)	mA+ (out)	
4/20 mA passive	mA+ (out)	mA- (in)		
0/10 Vdc	common		+Vdc	

6. Configuration system

1. Remove the output signal terminal
2. Open the front cover
3. Configure the instrument
4. Close the front cover
5. Place the output signal terminal



7. CONFIGURATION CODES - INPUT AND OUTPUT SIGNAL RANGES

To activate one of the input signal ranges (see Table 3) access the 'configuration system' (see section 6). To access the 'configuration menu' press the 'SQ' (▲) key, press the 'UP' (▲) key to select the desired code, and validate with the 'SQ' (■) key.

To configure the output signal range to 4/20 mA and 0/10 Vdc, press both keys 'UP' (▲) and 'SQ' (■). The actual output signal configuration is identified with the active decimal point (decimal point to the right for 4/20 mA, decimal point to the left for 0/10 Vdc).

For detailed description, see the User's Manual (see section 8).



OUTPUT 0/10 Vdc
(left decimal point)



OUTPUT 4/20 mA
(right decimal point)

Table 3 | Input signal - Configuration codes

Code	Input signal range	Technical specs. (* max. voltage drop on terminals)
00 a 09	[no function assigned]	---
10	4/20 mA	Process error <0.30% FS (max. 25 mA; $V_{term} < 1.2 Vdc$ *)
11	0/10 Vdc	
12	0/100 %	Potentiometer total error <1.0% FS
13	0/100 KOhm	Resistance total error <0.7% FS
14	0/50 KOhm	
15	0/25 KOhm	
16	0/10 KOhm	
17	0/5 KOhm	
18	0/2.5 KOhm	
19	0/1200 °C	Thermocouple J (cold junction error included) total error <0.5% FS
20	0/1000 °C	
21	0/800 °C	
22	0/600 °C	
23	0/450 °C	
24	0/300 °C	
25	0/150 °C	Thermocouple K (cold junction error included) total error <0.5% FS
26	0/1350 °C	
27	0/1000 °C	
28	0/800 °C	
29	0/600 °C	
30	0/450 °C	
31	0/300 °C	Thermocouple N (cold junction error included) total error <0.5% FS
32	0/150 °C	
33	0/1300 °C	
34	0/1000 °C	
35	0/800 °C	
36	0/600 °C	
37	0/450 °C	total error <1.5% FS
38	0/300 °C	
39	0/150 °C	
40	[no function assigned]	---
41	0/900 °C	Thermocouple E (cold junction error included) total error <0.5% FS
42	0/600 °C	
43	0/450 °C	

Table 3 | Input signal - Configuration codes

Code	Input signal range	Technical specs. (* max. voltage drop on terminals)
44	0/300 °C	Thermocouple E (cold junction error included) total error <0.7% FS
45	0/150 °C	
46	0/400 °C	Thermocouple T (cold junction error included) total error <1.0% FS
47	0/300 °C	
48	0/200 °C	
49	0/100 °C	total error <2.0% FS
50	0/1750 °C	
51	0/1500 °C	
52	0/1200 °C	Thermocouple R (cold junction error included) total error <1.0% FS
53	0/900 °C	
54	0/1750 °C	Thermocouple S (cold junction error included) total error <1.0% FS
55	0/1500 °C	
56	0/1200 °C	
57	0/900 °C	total error <1.5% FS
58	[no function assigned]	
59	0/700 °C	
60	0/600 °C	Pt100 total error <0.5% FS
61	0/500 °C	
62	0/400 °C	
63	0/300 °C	
64	0/200 °C	
65	0/100 °C	
66	-50/+50 °C	
67	-100/+100 °C	
68	-200/+200 °C	
69	0/630 °C	
70	0/300 °C	Pt500 total error <0.7% FS
71	-150/150 °C	
72	0/630 °C	Pt1000 total error <1.0% FS
73	0/300 °C	
74	-150/150 °C	
75	-60/180 °C	Ni100 total error <0.7% FS
76	[no function assigned]	
77	-60/180 °C	Ni1000 total error <0.7% FS
78 a 79	[no function assigned]	---
80	-50/50 °C	NTC ($R_{25}=10K$ and $\beta=3500$) total error <0.7% FS
81	0/90 °C	NTC ($R_{25}=10K$ and $\beta=3500$) total error <1.0% FS
82	-50/50 °C	NTC (44006) total error <0.7% FS
83	0/90 °C	NTC (44006) total error <1.3% FS
84 a 94	[no function assigned]	---
95	Function 'password'	---
96	Pt100 'Alpha' (01=0.0385, 02=0.0390)	---
97	Factory default configuration	---
98	Firmware version	---
98 a 99	[no function assigned]	---
---	Exit the menu and discard changes	---

8. ADDITIONAL DOCUMENTATION

User's manual	www.fema.es/docs/4788_I3P_manual_en.pdf
Datasheet	www.fema.es/docs/4790_I3P_datasheet_en.pdf
Quick installation guide	www.fema.es/docs/4792_I3P_installation_en.pdf
Web	www.fema.es/docs/Serie_I3

9. OTHER SIGNAL CONVERTERS ... AND MORE



SERIES I3 SERIES 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
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Process	Temperature	Counter	Weight	Flow	Time
Frequency	Temperature	Speed	Vac	Aac	Integrators
Potentiometer	Temperature	Period	Ade	Vdc	Resistances
Digital	Digital	Digital	Digital	Custom	