

MODEL · I4E

ELECTRICAL AC & DC SIGNALS



Signal converter for electrical signals, isolated, for DIN rail mount.

Isolated signal converter for electrical signals. Configurable to measure AC/DC voltages (from 50mVac/dc up to 600 Vac/dc), AC/DC currents (from 5mAac/dc up to 5Aac/dc) and frequency signals (up to 100Hz). DC voltages and currents accepted both unipolar and bipolar. Output signal configurable for 4/20mA (active and passive) and 0/10Vdc. Universal power supply from 18 to 265Vac/dc. 3 way isolation between input, output and power circuits. Plug-in screw terminal connections.

Predefined configuration codes for fast and easy configuration. Advanced configuration to customize input and output signals ranges. Configuration through front push-button keypad and front display. Configurable information messages (input signal value, output signal value, configured label, signal percentage and process value). Manual 'force' functions to generate low and high output signals, to validate remote instrumentation during installation. 'Password' function to block non-authorized access to configuration menu. 'SOS' mode to help on critical maintenance and repairs without affecting the manufacturing process.

Designed for industrial use, with potential integration into a wide range of applications, reduced cost, excellent quality and optional customization.

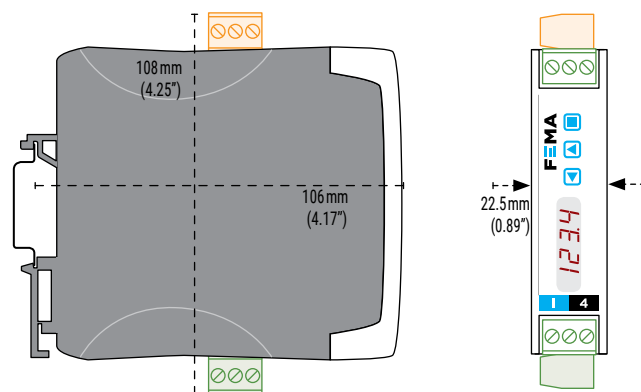
1. TECHNICAL SPECIFICATIONS

Input signal ranges Vac	
ranges	from 0/50 mVac up to 0/600 Vac
type of measure	True RMS
connections accepted	phase-to-neutral phase-to-phase
category of measure	CAT-II up to 300 Vac
Input signal ranges Vdc	
unipolar ranges	from 0/50 mVac up to 0/600 Vac
bipolar ranges	from ±50mVdc up to ±600Vdc
Input signal ranges Aac	
ranges	from 0/5 mAac up to 0/5 Aac
type of measure	True RMS
connections accepted	phase-to-neutral phase-to-phase
Input signal ranges Adc	
unipolar ranges	from 0/5 mAac up to 0/5 Adc
bipolar ranges	from ±5mAac up to ±5Adc
Frequency AC	
ranges	up to 100Hz
measured from	measured from existing Vac and Aac signal ranges
Accuracy at 25 °C	
see section 7 for each type of signal	
Thermal stability	
150ppm/°	
Step response	
AC signals	<350mSec. typ. (0% to 99% signal)
DC signals	<90mSec. typ. (0% to 99% signal) 'no filter' <175mSec. typ. (0% to 99% signal) '50Hz filter' or '60Hz filter' <350mSec. typ. (0% to 99% signal) '50 and 60Hz filter'
Output signal ranges	
active current output	4/20mA active, max. <22mA, min. 0mA, load < 400 Ohm
passive current output	4/20mA passive, max. 30Vdc on terminals
voltage output	0/10Vdc, max. <11 Vdc, min. -0.1 Vdc (typ.), load > 1 KOhm
Configuration system	
key pad + display	accessible at the front of the instrument
configuration	'configuration menu' and predefined 'codes'
scalable units	scalable input ranges scalable output ranges scalable process display
Power supply	
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	3000 Veff (60 seconds)
power - input	3000 Veff (60 seconds)
power - output	3000 Veff (60 seconds)
IP protection	
IP30	

2. HOW TO ORDER

MODEL	CUSTOMIZATION
I4E	XXXX (customized execution)

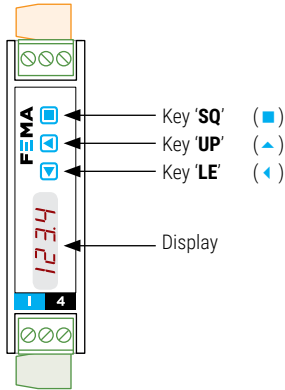
3. DIMENSIONS



Impact protection	IK06
Temperature	
operation	from 0 to +50 °C
storage	from -20 to +70 °C
'warm-up' time	15 minutes
Mechanical	
size	106x108x22.5mm
mounting	standard DIN rail (35x7.5mm)
connections	plug-in screw terminals (pitch 5.08mm)
housing material	polyamide V0
weight	<150 grams
packaging	120x115x30mm, cardboard

4. CONFIGURATION SYSTEM

The instrument is fully configurable from the 3 push button keypad and the 4 red digit led display at the front of the instrument.



5. FUNCTIONS INCLUDED

- 'Force'** functions temporarily forces the signal output to the minimum (**'Force Low'**), to the maximum (**'Force High'**) or to a selectable value (**'Force Set'**), to validate the function of the remote elements connected to the output during installation.
- 'Label'** function configure an alphanumerical label to be shown on display, and easily identify each unit.
- 'SOS'** mode manually set the output to a fixed value, to apply critical maintenance or repairs to the input signal section without affecting the manufacturing process.
- 'Messages'** configure information to display at your request at front key 'LE' (◀). See real time values for input signal, output signal, input percentage, process value or configured label.
- 'On error'** function configure the output response in case of error at the input.
- 'Password'** function prevents access from unauthorized operators to 'configuration mode' and 'tools' menu.

6. CONNECTIONS: INPUT & OUTPUT

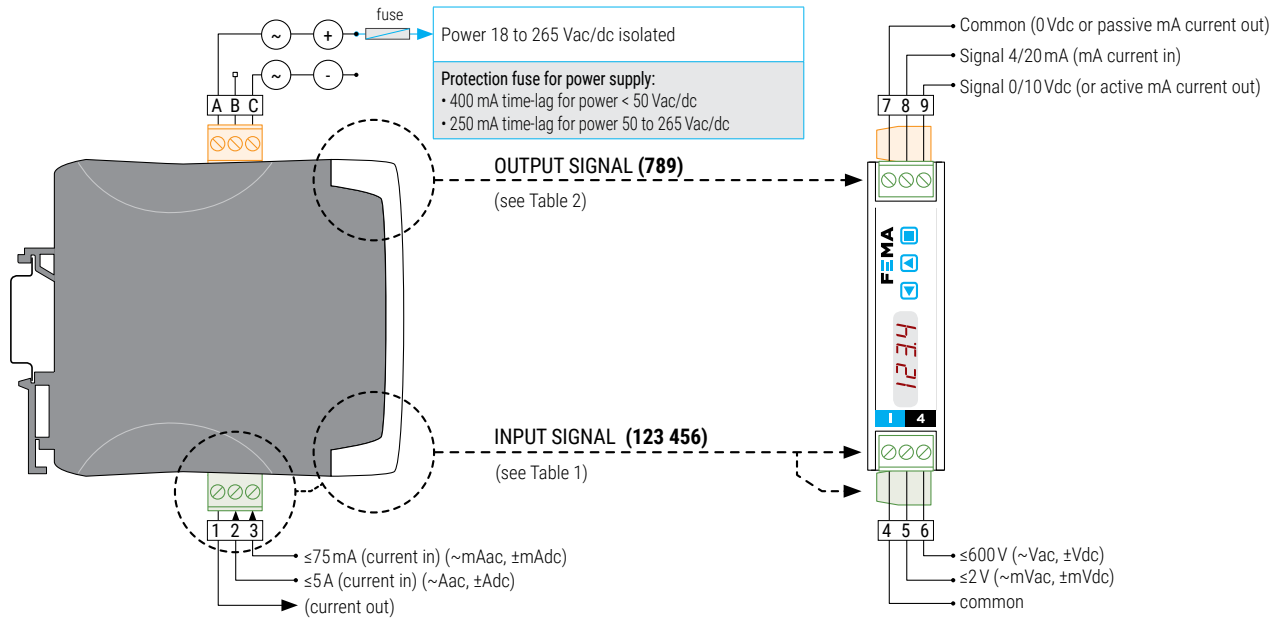


Table 1 | INPUT signal connections

Input signal	Input terminals					
	1	2	3	4	5	6
≤600 Vac				~Vac		~Vac
≤600 Vdc				comm.		±Vdc
≤2 Vac				~mVac	~mVac	
≤2 Vdc				comm.	±mVdc	
≤5 Aac	~Aac	~Aac				
≤5 Adc	+Adc (out)	-Adc (in)				
≤75 mAac	~mAac		~mAac			
≤75 mAdc	+mAac (out)		-mAac (in)			
Frequency	Connect to the Aac, mAac, Vac or mVac terminals, according to the signal measured (AC voltage or AC current)					

Table 2 | OUTPUT signal connections

Output signal	Output terminals			Connections
	7	8	9	
4/20 mA active output		mA- (in)	mA+ (out)	
4/20 mA passive output* (*external loop power needed).	mA+ (out)	mA- (in)		
0/10 Vdc	common		+Vdc	

7. PREDEFINED CONFIGURATION CODES

List of available ranges, with associated predefined configuration codes, and technical specifications for each range.

Intermediate ranges, and bipolar DC voltage and DC current ranges are available through the configuration menu.

For additional information see the User's Manual (see section 8).

Table 4 | Technical specifications and configuration codes for AC voltage signals

Input range	Code for 4/20 mA output	Code for 0/10 Vdc output	Accuracy (% FS)	Max. oversignal	Zin
0/600 Vac	010	110	<0.30 %	800 Vac	13 MOhm
0/450 Vac	011	111	<0.30 %		
0/300 Vac	012	112	<0.30 %		
0/150 Vac	013	113	<0.30 %		
0/100 Vac	014	114	<0.30 %		
0/60 Vac	015	115	<0.30 %		
0/30 Vac	016	116	<0.30 %		
0/15 Vac	017	117	<0.30 %		
0/10 Vac	018	118	<0.30 %		
0/2 Vac	019	119	<0.30 %		
0/1 Vac	020	120	<0.30 %	50 Vac	81 KOhm
0/500 mVac	021	121	<0.30 %		
0/300 mVac	022	122	<0.30 %		
0/200 mVac	023	123	<0.30 %		
0/150 mVac	024	124	<0.30 %		
0/100 mVac	025	125	<0.30 %		
0/75 mVac	026	126	<0.30 %		
0/60 mVac	027	127	<0.30 %		
0/50 mVac	028	128	<0.30 %		

Table 6 | Configuration codes for AC current signals

Input range	Code for 4/20 mA output	Code for 0/10 Vdc output	Accuracy (% FS)	Max. oversignal	Zin
0/5 Aac	055	155	<0.30 %	7 Aac (max. 7 sec.)	20 mOhm
0/4 Aac	056	156	<0.30 %		
0/3 Aac	057	157	<0.30 %		
0/2 Aac	058	158	<0.30 %		
0/1 Aac	059	159	<0.30 %		
0/500 mAac	060	160	<0.30 %	150 mAac	3.33 Ohm
0/300 mAac	061	161	<0.30 %		
0/75 mAac	062	162	<0.30 %		
0/50 mAac	063	163	<0.30 %		
0/20 mAac	064	164	<0.30 %		
0/10 mAac	065	165	<0.30 %		
0/5 mAac	066	166	<0.30 %		

Table 3 | Configuration codes for AC frequency

Input range	Code for 4/20 mA output	Code for 0/10 Vdc output	Accuracy (% FS)
0/100 Hz (Vac)	089	189	<0.20 %
45/55 Hz (Vac)	090	190	<0.20 %
55/65 Hz (Vac)	091	191	<0.20 %
0/100 Hz (Aac)	092	192	<0.20 %
45/55 Hz (Aac)	093	193	<0.20 %
55/65 Hz (Aac)	094	194	<0.20 %

Table 5 | Configuration codes for DC voltage signals

Input range	Code for 4/20 mA output	Code for 0/10 Vdc output	Accuracy (% FS)	Max. oversignal	Zin
0/600 Vdc	032	132	<0.20 %	800 Vdc	13 MOhm
0/450 Vdc	033	133	<0.20 %		
0/300 Vdc	034	134	<0.20 %		
0/150 Vdc	035	135	<0.20 %		
0/100 Vdc	036	136	<0.20 %		
0/60 Vdc	037	137	<0.20 %		
0/30 Vdc	038	138	<0.20 %		
0/15 Vdc	039	139	<0.20 %		
0/10 Vdc	040	140	<0.20 %		
0/2 Vdc	041	141	<0.20 %		
0/1 Vdc	042	142	<0.20 %	50 Vdc	81 KOhm
0/500 mVdc	043	143	<0.20 %		
0/300 mVdc	044	144	<0.20 %		
0/200 mVdc	045	145	<0.20 %		
0/150 mVdc	046	146	<0.20 %		
0/100 mVdc	047	147	<0.20 %		
0/75 mVdc	048	148	<0.20 %		
0/60 mVdc	049	149	<0.20 %		
0/50 mVdc	050	150	<0.20 %		

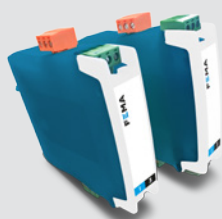
Table 7 | Configuration codes for DC current signals

Input range	Code for 4/20 mA output	Code for 0/10 Vdc output	Accuracy (% FS)	Max. oversignal	Zin
0/5 Adc	072	172	<0.20 %	7 Adc (max. 7 sec.)	20 mOhm
0/4 Adc	073	173	<0.20 %		
0/3 Adc	074	174	<0.20 %		
0/2 Adc	075	175	<0.20 %		
0/1 Adc	076	176	<0.20 %		
0/500 mAdc	077	177	<0.20 %	150 mAdc	3.33 Ohm
0/300 mAdc	078	178	<0.20 %		
0/75 mAdc	079	179	<0.20 %		
0/50 mAdc	080	180	<0.20 %		
0/20 mAdc	081	181	<0.20 %		
0/10 mAdc	082	182	<0.20 %		
0/5 mAdc	083	183	<0.20 %		

8. ADDITIONAL DOCUMENTATION

User's manual	www.fema.es/docs/5082_I4E_manual_en.pdf
Datasheet	www.fema.es/docs/5089_I4E_datasheet_en.pdf
Quick installation guide	www.fema.es/docs/5091_I4E_installation_en.pdf
Web	www.fema.es/docs/Series_I4

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 menu (front keypad)
 isolation 3 ways



SERIES I5

FIELD BUS

output signal Modbus RTU, CANbus, ...
 configuration by menu (front keypad)
 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	