

FC-14E · QUICK INSTALLATION GUIDE

3. CONNECTIONS



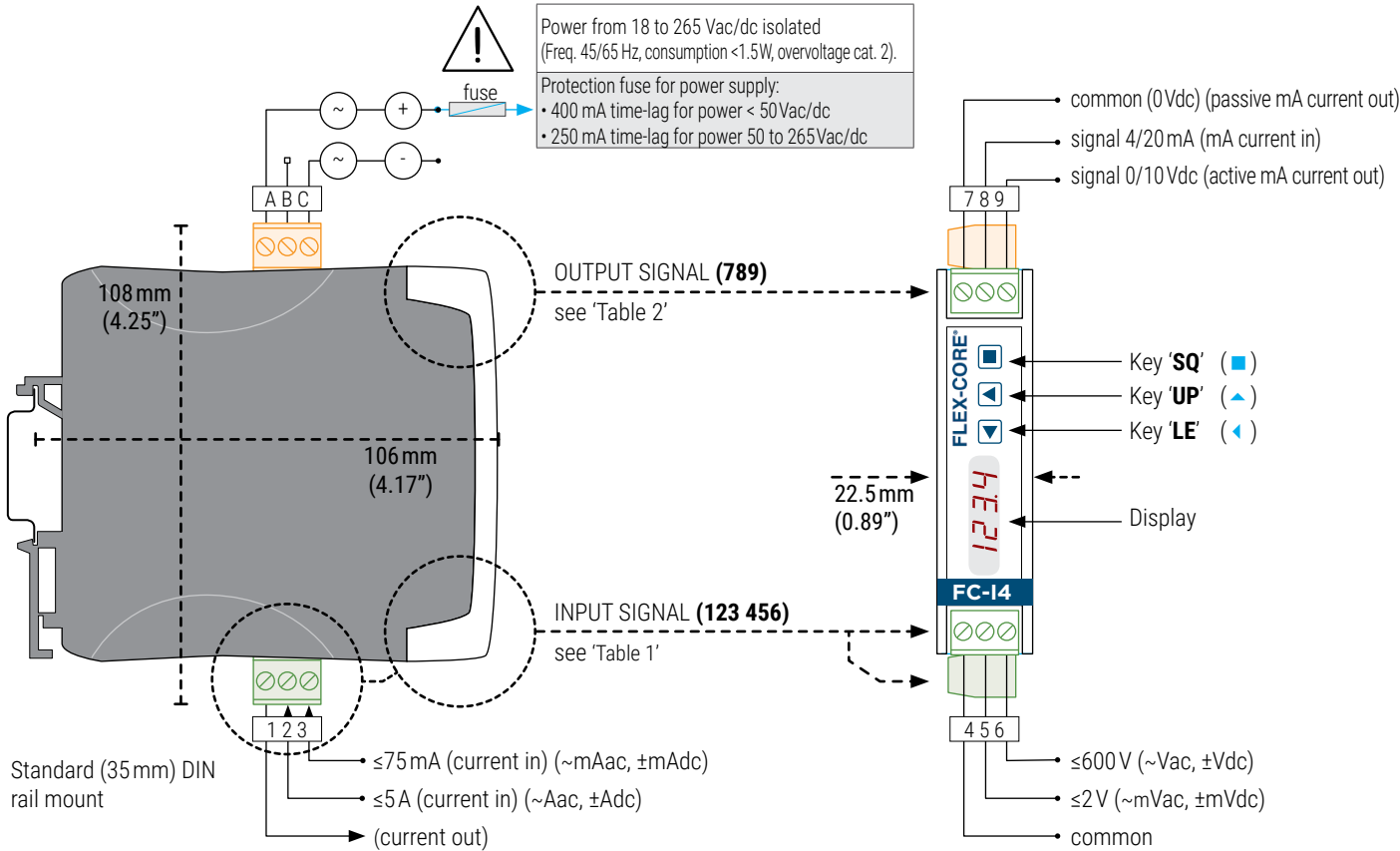
1. INSTALLATION AND START-UP

1. Install the instrument at the DIN rail
2. Connect the power supply (see section 3)
 - (see section 5) for an explanation on 'normal mode' of operation
3. Access the 'configuration menu' (see section 6) and at the 'function code' parameter (see section 5), introduce one of the 'predefined configuration codes' (see section 4)
4. If a custom configuration is needed, download the user's manual for a full explanation on how to customize input and output signal ranges (see section 6)
 - customize the input signal range
 - customize the output signal range
5. Connect the output signal (see section 3)
 - to validate remote devices (PLC, SCADA, HMI, ...), access the 'force' menu (press and maintain the 'UP' (▲) key for 1 second) and use the 'force' functions to manually set the output to different values
6. Connect the input signal (see section 3)
 - for a list of display errors see (see section 7)
7. Other functions you may consider to configure:
 - the 'Messages' function, to access information on the input and output values
 - the 'SOS' mode, to set the output fixed to a value (if input signal is missing)
 - the 'Label', to define a name for the instrument
 - the 'Password' function, to block access to the 'configuration menu'

2. MATERIAL INCLUDED

The instrument is provided with the following elements :

- 1 x instrument **FC-I4E**
- 4 x plug-in screw terminals, connected to the instrument
- 1 x Quick installation guide

Table 1 | **INPUT** signal connections

INPUT signal	Input terminal					
	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	-mAdc (out)		+mAdc (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 terminal			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	

4. PREDEFINED CONFIGURATION CODES

Table 3 | **Predefined configuration codes**

Input signal range	Output 4/20 mA codes	Output 0/10 Vdc codes
0/600 Vac	010	110
0/450 Vac	011	111
0/300 Vac	012	112
0/150 Vac	013	113
0/100 Vac	014	114
0/60 Vac	015	115
0/30 Vac	016	116
0/15 Vac	017	117
0/10 Vac	018	118
0/2 Vac	019	119
0/1 Vac	020	120
0/500 mVac	021	121
0/300 mVac	022	122
0/200 mVac	023	123
0/150 mVac	024	124
0/100 mVac	025	125
0/75 mVac	026	126
0/60 mVac	027	127
0/50 mVac	028	128
Reserved	029 to 031	129 to 131
0/600 Vdc	032	132
0/450 Vdc	033	133
0/300 Vdc	034	134
0/150 Vdc	035	135
0/100 Vdc	036	136
0/60 Vdc	037	137
0/30 Vdc	038	138
0/15 Vdc	039	139
0/10 Vdc	040	140
0/2 Vdc	041	141
0/1 Vdc	042	142
0/500 mVdc	043	143
0/300 mVdc	044	144
0/200 mVdc	045	145
0/150 mVdc	046	146
0/100 mVdc	047	147
0/75 mVdc	048	148

Table 3 | **Predefined configuration codes**

Input signal range	Output 4/20 mA codes	Output 0/10 Vdc codes
0/60 mVdc	049	149
0/50 mVdc	050	150
Reserved	051 to 054	151 to 154
0/5 Aac	055	155
0/4 Aac	056	156
0/3 Aac	057	157
0/2 Aac	058	158
0/1 Aac	059	159
0/500 mAac	060	160
0/300 mAac	061	161
0/75 mAac	062	162
0/50 mAac	063	163
0/20 mAac	064	164
0/10 mAac	065	165
0/5 mAac	066	166
Reserved	067 to 071	167 to 171
0/5 Adc	072	172
0/4 Adc	073	173
0/3 Adc	074	174
0/2 Adc	075	175
0/1 Adc	076	176
0/500 mAdc	077	177
0/300 mAdc	078	178
0/75 mAdc	079	179
0/50 mAdc	080	180
0/20 mAdc	081	181
0/10 mAdc	082	182
0/5 mAdc	083	183
Reserved	084 to 088	184 to 188
0/100 Hz(Vac)	089	189
45/55 Hz(Vac)	090	190
55/65 Hz(Vac)	091	191
0/100 Hz(Aac)	092	192
45/55 Hz(Aac)	093	193
55/65 Hz(Aac)	094	194
Reserved	091 to 099	191 to 199
(End of list)	'---	
(Custom selection)	'uSer'	

Notes

- Code **uSEr** indicates that a user custom configuration is active, and it does not match any of the listed codes. The code **uSEr** is non-selectable, for information only.

• Code '---' identifies the end of the list, it follows code '199' and the list continues with code '010'. Select '---' to exit the list without applying changes.

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5. HOW TO OPERATE

AT POWER-UP When the power supply is connected:

- the 'display' shows the firmware code '**A6.xx**'.
- the 'display' shows the configured 'units' and 'input range' (for example: '**Vac**' and '**600V**').
- the instrument is now in '*normal mode*' of operation and the 'display' shows the 'information' configured at the '**disp**' parameter.

FROM 'NORMAL MODE' OF OPERATION

- key '**SQ**' (■) gives access to the 'configuration menu' (see section 8).
- key '**UP**' (▲) gives access to the 'force' menu (see section 1).
- key '**LE**' (◀) activates the 'messages' function.

'ECO' FUNCTION ('DISPLAY' POWERED OFF)

The 'Eco' function (enabled by default) powers off the display under the following conditions:

- the instrument is in '*normal mode*' of operation.
- there is no interaction from the operator for 60 seconds.

HOW TO ENTER THE 'CONFIGURATION MENU'

With the instrument in '*normal mode*' of operation, press the '**SQ**' (■) key and maintain for 1 second. The horizontal leds light from bottom to top. When the upper led lights, the instrument enters into the 'configuration menu'.

The first menu entry displayed is '**Function code**' (**codeE**). You can introduce one of the 'predefined configuration codes' (see section 6) for a fast configuration, or download the user's manual (see section 3) for a full explanation on the functions available.

If the '**SQ**' (■) key is released before entering into the 'configuration menu', the horizontal leds light downwards from top to bottom, and the instrument returns to '*normal mode*' of operation.

HOW TO OPERATE INSIDE THE 'CONFIGURATION MENU'

Inside the 'configuration menu', use the front keypad to move through menu entries, parameters, and select configuration values:

- Key 'SQ'** (■) functions as the 'ENTER' key. It selects the menu entry currently displayed. At numerical value entries, it validates the number displayed.
- Key 'UP'** (▲) moves vertically through the different menu entries. At numerical value entries, it modifies the selected digit by increasing its value to 0, 1, 2, 3, 4, 5, 6, 7, 8, 9.
- Key 'LE'** (◀) functions as the 'ESCAPE' key. It leaves the selected menu entry, and eventually, will leave the 'configuration menu'. When leaving the 'configuration menu', the changed parameters are activated. At numerical value entries, the '**LE**' (◀) key allows to select the active digit. To modify a numeric value press the '**UP**' (▲) key to increase the value '+1'. Press the '**SQ**' (■) key to validate the value.

'ROLLBACK' FUNCTION

If there is no interaction from the operator for 30 seconds, the instrument exits the 'configuration menu' discarding changes, and returns to '*normal mode*' of operation.

WHEN EXITING THE 'CONFIGURATION MENU'

When exiting the 'configuration menu' without changes (either by 'rollback' activation or because there are no changes in the configuration), the horizontal leds light down from top to bottom, and the instrument returns to '*normal mode*' of operation.

When exiting the 'configuration menu' with changes, the display leds light a round shape while the new configuration is stored. When the round shape is finished, a start-up is applied. After start-up, the new configuration is active and the instrument is in '*normal mode*' of operation.

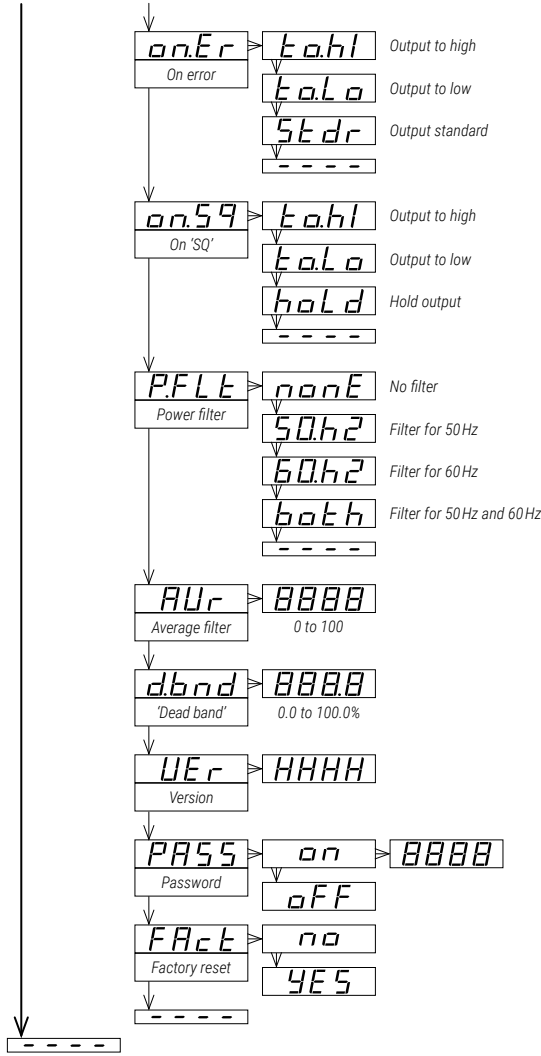
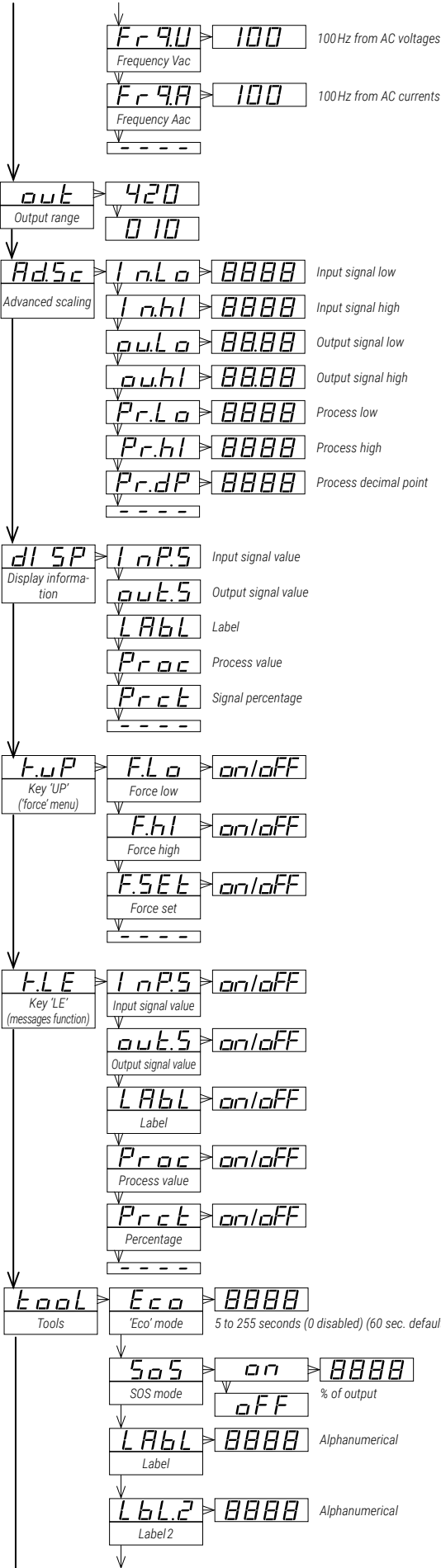
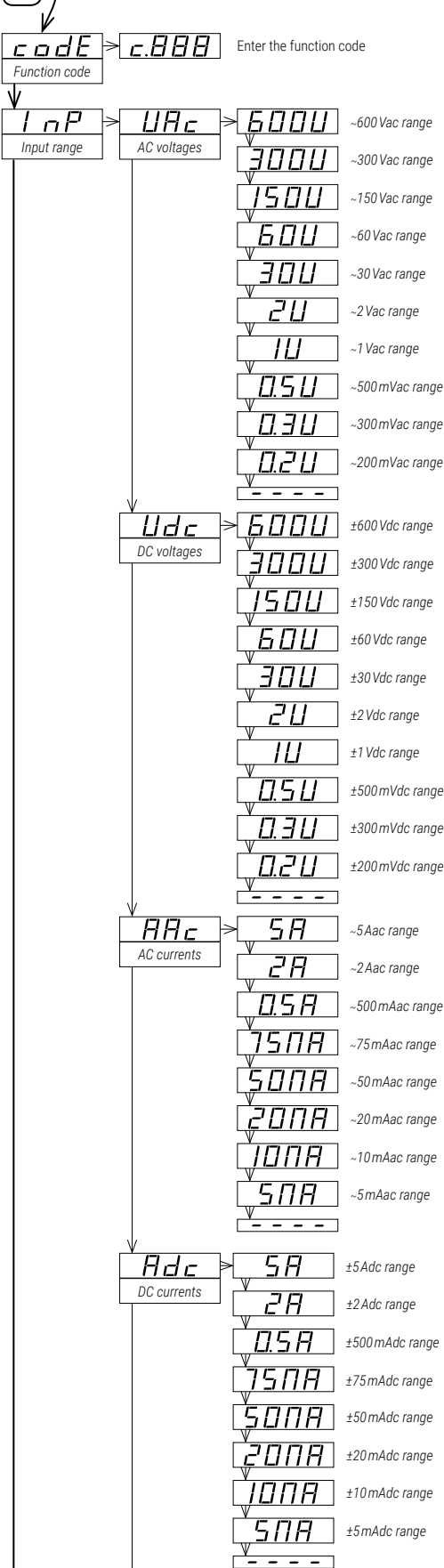


When inside the 'configuration menu', the output signal remains overranged at maximum signal. Other configurations available at the '**On error**' parameter

When the operator exits the 'configuration menu', the output signal is underranged to minimum value for <5seconds, while the instrument restarts.

6. CONFIGURATION MENU

Press '**SQ**' (■) for 1 second to access the 'configuration menu'.



7. ERROR CODES

Table 4 | Error codes

'Er.01'	Password error. The password code entered is not correct.
'Er.02'	Input hardware overrange. The input signal is higher than the maximum signal that can be measured.
'Er.03'	Input hardware underrange. The input signal is lower than the minimum signal that can be measured.
'Er.04'	Output hardware overrange. The output signal should be higher than the maximum output signal that can be generated.
'Er.05'	Output hardware underrange. The output signal should be lower than the minimum output signal that can be generated.
'Er.06'	Display overrange. The display value should be higher than the maximum value that can be displayed.
'Er.07'	Display underrange. The display value should be lower than the minimum value that can be displayed.
'Er.08'	Scaled input slope not valid. The values for 'Input signal low' and 'Input signal high' can not be the same. Enter a different value to validate the parameter.
'Er.09'	Scaled output slope not valid. The values for 'Output signal low' and 'Output signal high' can not be the same. Enter a different value to validate the parameter.
'Er.10'	Scaled process display slope not valid. The values for 'Process low' and 'Process high' can not be the same. Enter a different value to validate the parameter.

Error codes are shown flashing on display. Error codes are not visible inside the 'configuration menu' or inside the 'force' menu. The error code remains active on display until the problem that caused the error is solved. In case of multiple error codes, solve the first problem to see the next active error code.

8. FACTORY CONFIGURATION

Function code (codeE)	10	[c.010]
Input range (InP)	0/600 Vac	
Output range (out)	4/20 mA	
Advanced scaling (Ad.Sc)		
Input signal low (In.Lo)	0	[Vac]
Input signal high (In.hi)	600	[Vac]
Output signal low (ou.Lo)	4.00	[mA]
Output signal high (ou.hi)	20.00	[mA]
Process low (Pr.Lo)	0	
Process high (Pr.hi)	600	
Process decimal point (Pr.dP)	xxx	
Display information (dISP)	Input signal value (InPS)	
Key ' UP ' ('force' menu) (K.uP)		
Force low (F.Lo)	on	
Force high (F.hi)	on	
Force set (FSEt)	on	
Key ' LE ' ('messages' function) (K.LE)		
Input signal value (InPS)	off	
Output signal value (out.S)	on	
Label (LaBL)	off	
Process value (Proc)	off	
Percentage (Prct)	off	
Tools (tool)		
'Eco' mode (Eco)	60	[seconds]
SOS mode (SoS)	off	
Label (LaBL)	LaBL	
Label2 (LbL.2)	----	(disabled)
On error (on.Er)	to.hi	(output to max. value)
On 'SQ' (on.Sq)	to.hi	(output to max. value)
Power filter (P.FLt)	both	(50 and 60Hz filter)
Average filter (AVr)	0	(disabled)
Dead band (d.bnd)	0.0	(disabled)
Password (PASS)	off	(disabled)

RESET TO DEFAULT FACTORY PARAMETERS

To return to default factory parameters, enter into 'configuration menu', go to 'Tools' (**tool**) / 'Factory reset' (**FAct**) and select '**yes**'

- the leds light a round shape while the new configuration is applied
- the start up message appears ('**Vac 600**')
- the actual signal input value is displayed
- the instrument is in '*normal mode*' of operation

9. REGULATIONS

This instrument conforms to the actual CE regulations. Applicable regulations are :

Security regulations EN-61010-1 ('Fixed' equipment, 'Permanently connected'. 'Double' isolation. Overvoltage category 2).

Electromagnetic compatibility regulations EN-61326-1

This instrument does not provide a general mains switch and will start operation as soon as power is connected. The instrument does not provide protection fuse, and the fuse must be added during installation. Instrument designed to be DIN rail mounted, inside a cabinet, protected from direct impacts.



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



Instrument protected with double isolation. No earth connection required.



Instrument conforms to CE and UKCA rules and regulations.



According to directive 2012/19/EU, electronic equipment must be recycled in a selective and controlled way at the end of its useful life.

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