

Position Indicator Interface Typ REG-FI 'B3'

Function

The REG-FI position indicator interface converts a standard 0/4-20 mA output current of a tap-changer into a BCD code. The tap position is indicated on the built-in display.

A power supply unit delivers the supply voltages for the display, the measuring transducer and the relays.

The entering current is connected with a couple of lines to the measurement input. A current I_d change (I_{Δ}) generates the next step message.

A binary output transmits the information to the voltage control system REGSys.

For further use the BCD code is provided by 6 relay contacts and 6 current outputs.

- The tap position can be read on a large LED display
- Up to 38 uniform current tap-change positions are converted into a BCD code
- The cable between the tap-changer and the REG-FI can be up to 100 m (maximum)
- Relay contacts with AC 250V 2A, DC 220V 150W
- Large auxiliary voltage range of the power supply

Technical specifications

Regulations and standards

IEC1010, IEC801-1 to 6, VDE0110, VDE0160
Interference immunity EN50082-2
Emitted interference EN50081-2, EN55011

Mechanical data

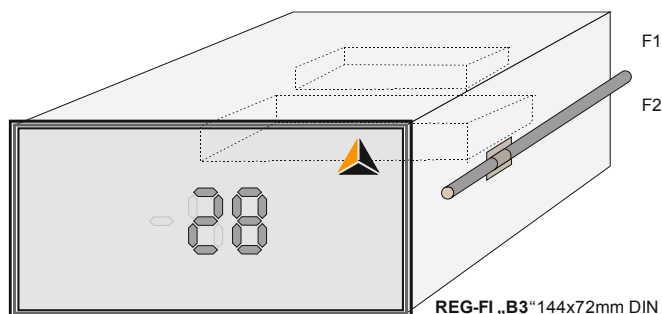
Construction Panel mounted housing DIN43700
144x72x210 mm (WxHxD)
material UV94V-1
Connector 2 pieces; 'F1': 10pol; 'F2': 16pol
Degree of protection IP40
Weight inclusive 2 connectors < 1.2 kg
Mounting within cutout 138x69 mm, 2 clips

Input

DC current 0/4 mA ... 20 mA
Current tap change I_d 0.25 ... 2.5 mA same current stage
Tap-change positions ≤ 38
Input resistance R_E < 25 mV / I_d
Tolerance of current tap-change pos. I_d < 2 % of specified value
Superimposed alternating current at input < 0.1 mA (50 Hz sinus)

Output

Binary output BCD 1 ... BCD 20/sign- to the BCD input (50V) of the REG-D; reference BCD GND
Voltage at 10kOhm ON (1) ≥ 10 V DC
OFF (0) ≤ 5 V DC
Voltage output U+ 15 V DC ± 10 %; reference GND; Internal resistance 1.2 k Ω
Relays with one N/O contact for output:
BCD Codes 1..20/sign- contact closed (1) / open (0)
Potential isolation auxiliary voltage and relays contacts from each other and all other circuits
Contact load AC 250 V 2 A, DC 220 V 150 W
Number of switching operations < 10⁵
Voltage output U+ 15 V DC ± 10 %; reference GND; Internal resistance 1 k Ω



Code table

Input: Current tap change	decimal	Output Display, relays output BCD code					
		20	10	8	4	2	1
0 / 4mA	1	0	0	0	0	0	1
1 x I_d	2	0	0	0	0	1	0
2 x I_d	3	0	0	0	0	1	1
...							
28 x I_d	29	1	0	1	0	0	1
29 x I_d	30	1	1	0	0	0	0
Error signal	39	1	1	1	0	0	1

Response characteristics

The requested conversion - current into BCD message of REG-FI - **must be specified with the order**. This will be fixed internally and cannot be changed afterwards: Output code at start, input current 0 mA respectively 4 mA and output code at full scale at 20 mA.

The negative measurement input (I_d -) is connected to the internal earth GND I of REG-FI. If the current transducer **is not** isolated from earth, this will result in a ground loop. To prevent this, open the external wire bridge at socket connector F2, pin 14-15.

Safety

Safety class / overvoltage category I/II
Contamination level 2
Test voltage AC 2.3 kV
Measurement input, BCD-output to auxiliary voltage to relay contacts
Auxiliary voltage to relay contacts

Power supply

Galvanically isolated Feature H1 AC 100 ... 240 V / DC 100 ... 353V
isolated Feature H2 AC 20 ... 60 V / DC 20 ... 72V
Power consumption < 6 VA / 6 W H1; 1 A/T H2; 2 A/T

Temperature Operation 0 ... +55 °C
Storage, transport -25 ... +75 °C

Pinout

Socket connector F1 10-pole		Socket connector F2 16-pole	
		11	
		12	I_d +
		13	I_d -
1	L (+)	14	GND I
2	N (-)	15	I_d - bridge
3	PE	18	U+
4	Relay reference	20	GND BCD
5	Rel. 20 or sign-	21	BCD 20 or sign-
6	Relay BCD10	22	BCD 10
7	Relay BCD 8	23	BCD 8
8	Relay BCD 4	24	BCD 4
9	Relay BCD 2	25	BCD 2
10	Relay BCD 1	26	BCD 1

Features		Code		
Position indicator interface REG-FI	Panel mount 144 x 72	REG-FI B3		
Auxiliary voltage galvanically isolated	AC 100..240 V / DC 100...353 V AC 20... 60 V / DC 20 ... 72 V	H1 H2		
Input current Id 0 .. 20 mA	BCD code: 1 ... 28 / 26 / 18 tap-positions out of range: code 39	E1;E2;E3		
Input current Id 4 .. 20 mA	BCD code: 1 ... 13 / 17 / 19 tap-positions Line breakage, < 4 mA: code 39	E8;E5;E9		
Output	BCD-Code 1 ... 38 tap-positions out of range: code 39	Y1		
Deviating current tap-change / code table (max. 6 outputs)		E99	Y99	

Other signals can also be assigned to the tap-change positions. Please include the requested code table with the order.

Example 28xId taps with offset (sign-), BCD code -12 ... -1 / -0 / 1 / ... 15; out of range: -19 feature: „Y2“

Example 28xId taps with offset (sign-), BCD code -9 ... -1 / -0 / 1 / ... 18; out of range: -19 feature: „Y3“

Example 15xId taps, BCD code 1 ... 15; out of range: 39 feature: „Y7“

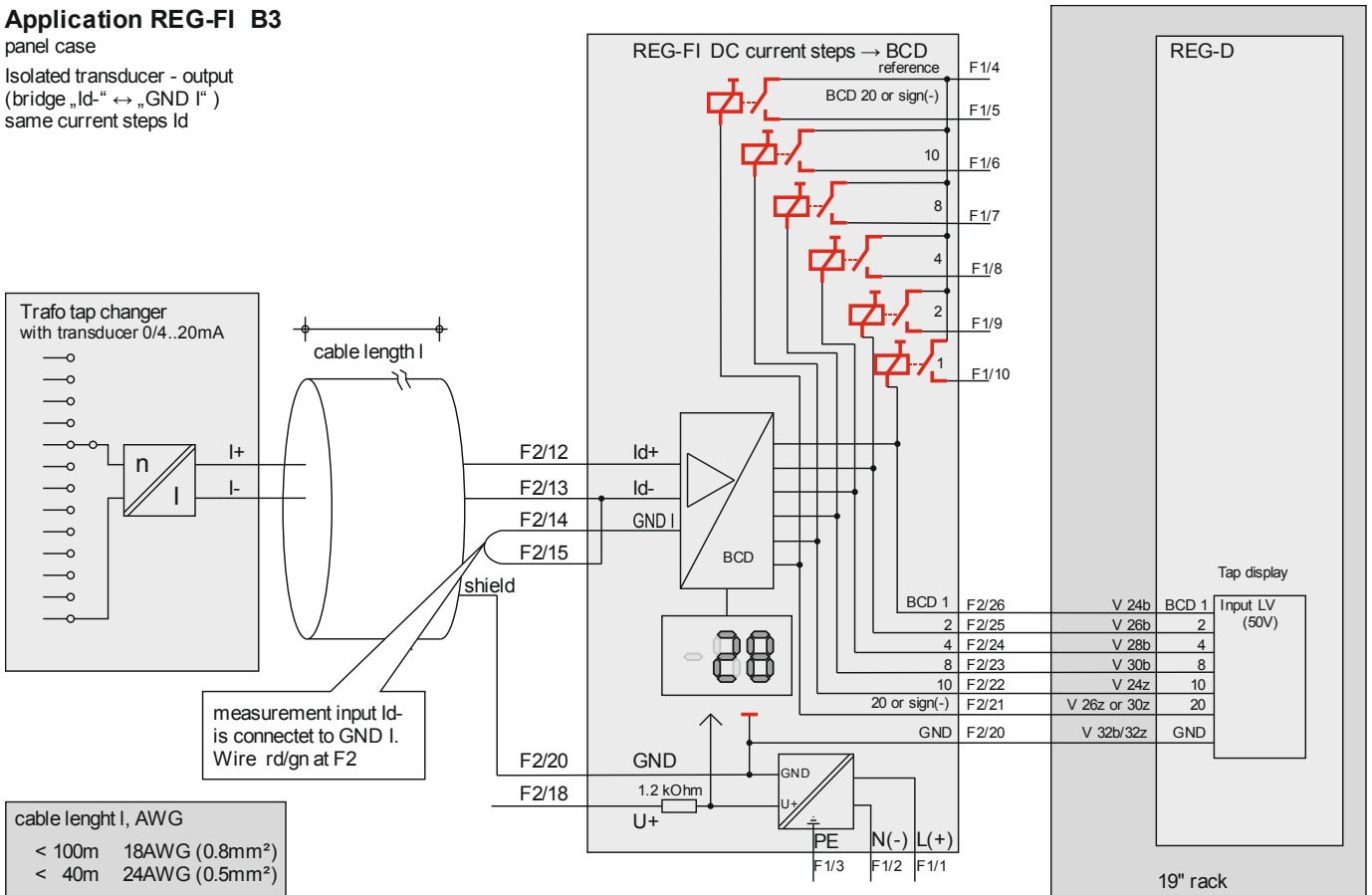
The device is available for standard current transducers 0 ... 20 mA or 4 ... 20 mA. It is also available without display as a 19" plug-in module 8T 3H (feature B1) or wall mount case (feature B2).

Alternative assemblies for binary output codes, AWZ, Gray-code or tap-change resistances are available in different implementations, with or without display.

Application REG-FI B3

panel case

Isolated transducer - output
(bridge „Id-“ ↔ „GND I“)
same current steps Id



In the case of a large distance between the REG-FI and the current transducer, the maximum cable length depends more on the interference influences of parallel cables than on the maximum output voltage of the transducer. A superimposed AC ripple higher than 0.1 mA AC is not allowed at the REG-FI input. As each application has different earthing and voltage conditions, the only general statement that can be made is that longer lines are possible for the case that the parallel cables are shielded and have a larger distance to the REG-FI cable.