

Position Indicator Interface Typ REG-FA 'B2'

Function

The REG-FA position interface converts the position of a AWZ transformer tap changer row into a BCD code for RegSys system.

An external auxiliary voltage feeds the AWZ tap changer row. It must be connected to the 'AWZ U +' and 'AWZ GND' connections of the REG-FA.

Switching contacts give the signals A1, A2, A3 or A10, A20, A30 to the REG-FA and are converted into the BCD code by a code converter.

A binary output transmits the information to the voltage control system REGSys. For further use the BCD code is provided by 6 relay contacts.

- Up to 39 combinations are converted into a BCD code
- The cable between the tap changer row and the REG-FA can be up to 100 m (maximum)
- Interference suppression through opto-isolation of the inputs
- 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 Wall mountable Aluminum case
205x130x67 mm (LxWxH)
Connector 2 pieces; 'F1': 10pol; 'F2': 16pol
Degree of protection IP40
Weight inclusive 2 connectors < 1.2 kg
Mounting 4-hole assembly,
center on 130x120 mm

Input

Voltage AWZ U+ at A1..30, reference AWZ GND
Output on (Feature E12) DC 12 ..100V, Re ~18kΩ
(Feature E3) DC 35 ..150V, Re ~50kΩ

Switch closed (R-switch+cable <1kΩ)
to AWZ GND: U1 < 10% from AWZ U+
to AWZ U+ U1 > 90% from AWZ U+

Switch open (x) (R-switch+cable >1MΩ)
Superimposed alternating voltage at input < 2 V

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

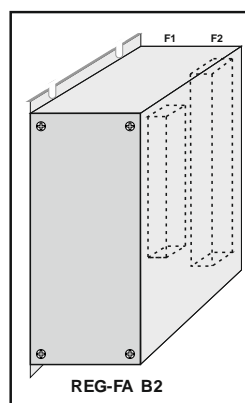
Voltage output U+ 15 V DC ± 10 %; reference GND;
Internal resistance 1.2 kΩ

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



Codetable

Input			Dec	Output			
A1	A2	A3 bzw.		8	4	2	1
A10	A20	A30		BCD-Code			
				20	10		
x	U+	GND	0	0	0	0	0
GND	U+	x	1	0	0	0	1
GND	U+	U+	2	0	0	1	0
GND	x	U+	3	0	0	1	1
GND	GND	U+	4	0	1	0	0
x	GND	U+	5	0	1	0	1
U+	GND	x	6	0	1	1	0
U+	GND	GND	7	0	1	1	1
U+	x	GND	8	1	0	0	0
U+	U+	GND	9	1	0	0	1

Transfer behavior

The intrinsically AWZ safe code requires that all 6 inputs (A1... A30) are always connected.

At the open input, the ½ AWZ U+ voltage can be measured.

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 ... +65 °C
Storage, transport -25 ... +85 °C

Pinout

Socket connector F1 10pol.	
1	L (+)
2	N (-)
3	
4	Relay reference
5	Relay BCD20
6	Relay BCD10
7	Relay BCD 8
8	Relay BCD 4
9	Relay BCD 2
10	Relay BCD 1

Socket connector F2 16pol.	
11	A1
12	A2
13	A3
14	A10
15	A20
16	A30
17	AWZ U+
18	AWZ GND
19	U+ (Feat. E12)
20	GND BCD
21	BCD 20
22	BCD 10
23	BCD 8
24	BCD 4
25	BCD 2
26	BCD 1

FastOn-male 6.3mm on case allows the connection of a protective earth wire.

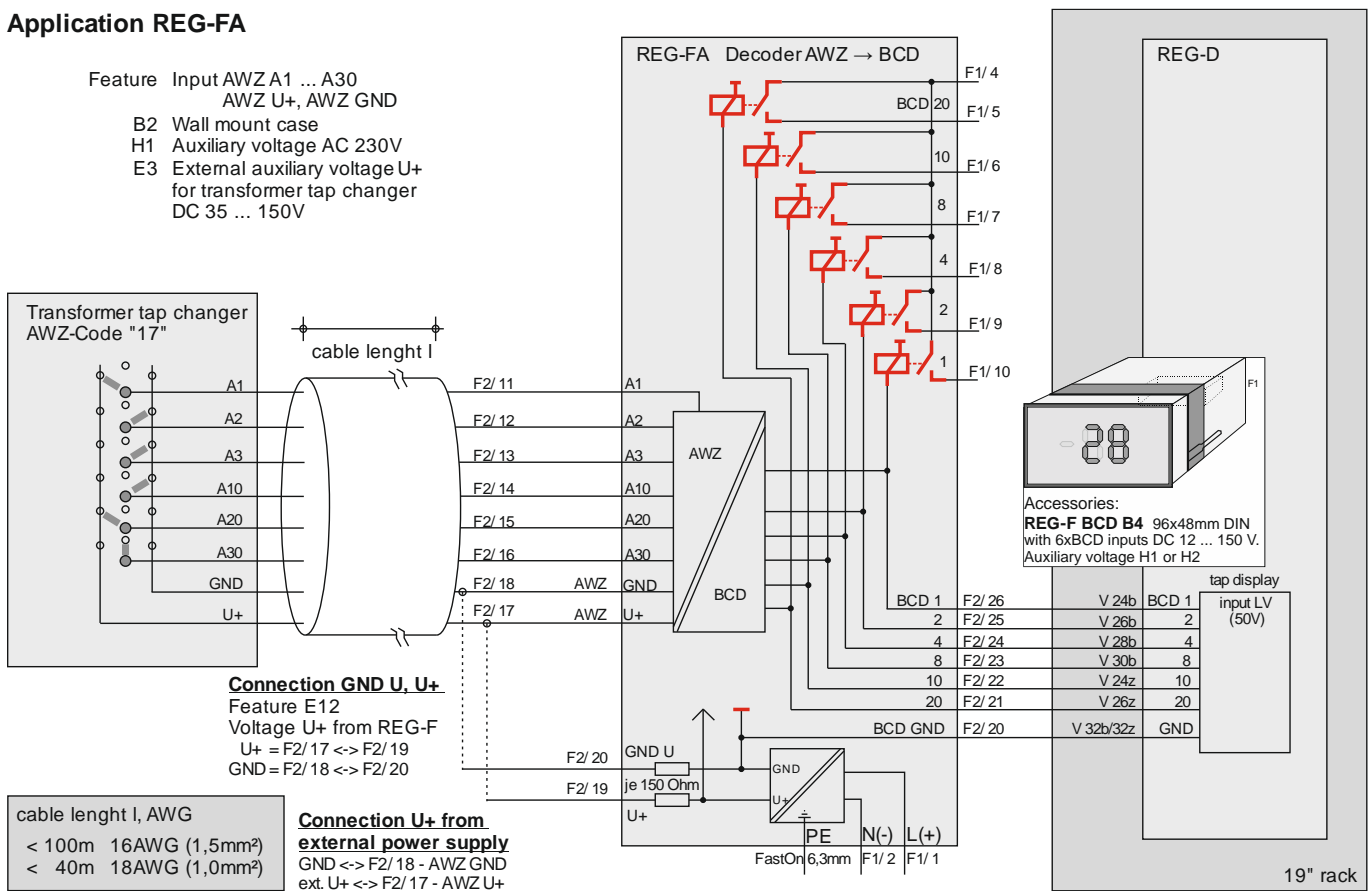
We take care of it.

Features		Code		
Position indicator interface REG-FA	wall mount case	REG-FA B2		
Auxiliary voltage galvanically isolated	AC 100..240 V / DC 100 ... 353V	H1		
	AC 20... 60 V / DC 20 ... 72V	H2		
Voltage U+ from REG-FA at U+ , GND U	DC 15V			
or external Voltage at AWZ U+	DC 12 ... 100V	E12		
External voltage at AWZ U+	DC 35 ... 150V	E3		

The REG-FA interface is also available as a 19" plug-in module 8T 3H (feature B1) or panel mount case with display (feature B3).

Alternative assemblies for binary output codes, Gray-code, tap-change resistances or 4..20mA current are available in different implementations, with or without display.

Application REG-FA



For longer distances between REG-FA and the tap changer row, the maximum cable length is less due to the DC resistance (see example), but rather determined by interference from parallel cables. A superimposed AC voltage up to 2V at the REG-FA input is allowed. Each application has different earthing and voltage conditions. The only general statement that can be made, with shielded cables and greater distance to the parallel cables, a longer distance is possible. Optocouplers at the inputs provide a better interference suppression.

Example cable length L.

RLtg = Supply or return line = 5Ω

Wire with 16AWG wire gauge A = 1,5mm²

rho CU 0,025

$L = R \times A / \rho = 5 \times 1,5 / 0,025 = 300 \text{ m}$

5Ω 1,5mm² results a cable length of 300m. The DC resistance is compensated. Superimposed interference not taken into account.