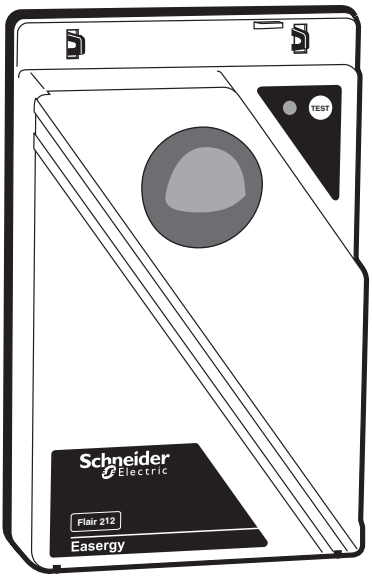
MV network management

Easergy range

Flair 212/213

Fault passage indicator for underground MV networks

User's manual



Schneider Electric

Flair 212/213 contents

Thank you for choosing Easergy **Flair 212** or **Flair 213** faulted circuit indicator.
This dependable indication device will greatly help you in reducing your outage time by shortening the time needed to locate the faults on your MV network.

Important notice
Faulted circuit indicators must catch the fault passage before the feeder protection device actually trips and interrupts the MV supply. They also must reset automatically when the MV supply is restored.

It is therefore important, prior to purchasing, to check two important feeder parameters:
1/ Sensing time [msec]: it must be less than the feeder protection device (Circuit breakers + protection relay, usually) opening time.
2/ Fault Current Trip Value [A]: it must be less or equal to your feeder protection relay trip value.

In doubt, please consult your local Schneider Electric dealer.

Housing installation

Release the clips to open the device. Mount the base plate. Four mounting lugs, inside the housing, have been provided for this purpose.

Flair 212

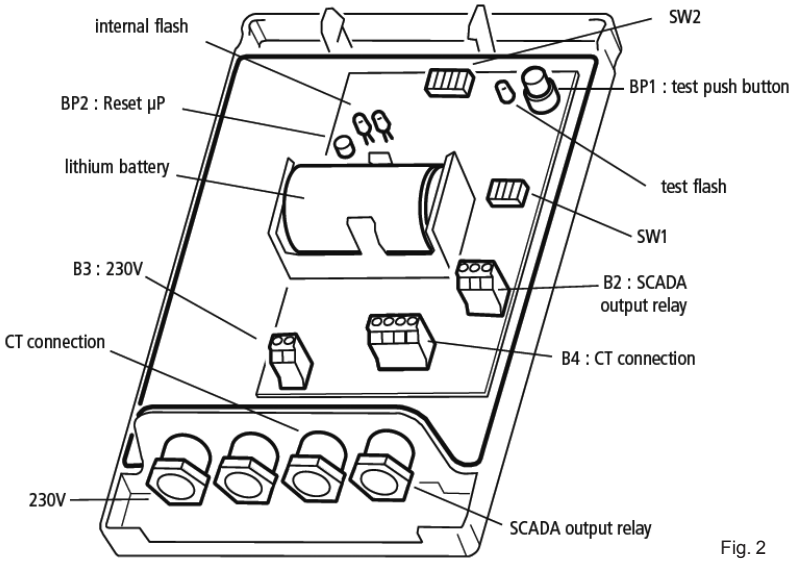


Fig. 2

Flair 213

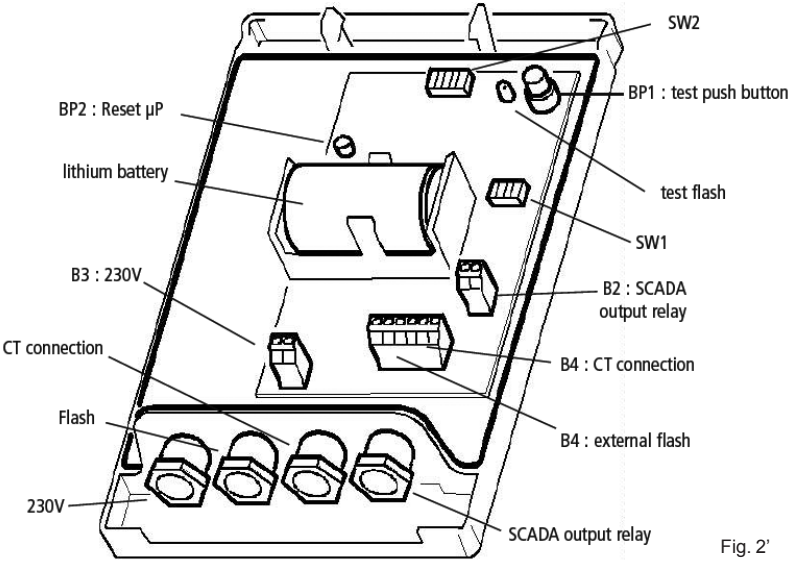


Fig. 2'

Characteristics of cables

The diameter of cable have to be 11 mm for 230 V and CT connection, and 13 mm for flash and SCADA output relay.

Light signals

Flair 212 has an internal flash LD2 & LD3, see fig. 2.
Flair 213 has an external flash.
The wiring must be comply with the fig. 2', connector B4.

Current transformer connection

Connect the CT bundle to the apparatus through the waterproof cable gland. Connect the corresponding two wires (S1 and S2 CT outputs) to the screw terminal located on the Printed Circuit Board (PCB) inside the plastic cover. Input #1 should be connected to the 2 wire (blue link). Follow the fig. 3.

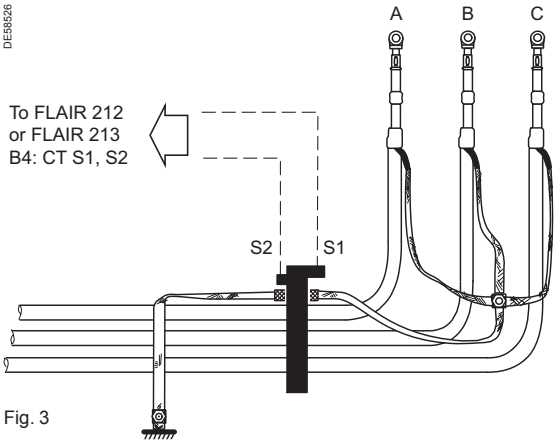


Fig. 3

Warning:
The earthing harness must go back in the CT and closer as possible from the coil.

Remote indication (SCADA output relay)

The Flair 212/213 can close a dry contact during the duration of the fault. If the contact has to be closed during the fault, connect the T output to the "+" wire and the C output to the "ground" wire. (Not provided).

Low voltage reset

Connect the 230 V mains to the screw terminal on the left of the PCB.
Note: if the 230 V is not available, don't connect it and set the max. flash duration on 2 hours.

Operation

Fault acknowledgement time

SW2	ST	1	2
	50 ms	ON	ON
	100 ms	OFF	ON
	200 ms	ON	OFF
	350 ms	**OFF**	**OFF**

Max. signalling time

SW2	Flash	Flashing period	3	4	5
	1 h	2 s	OFF	ON	ON
	2 h	2 s	ON	OFF	ON
	4 h	3 s	OFF	OFF	ON
	8 h	4 s	ON	ON	OFF
	16 h	5 s	OFF	ON	OFF
	24 h	6 s	ON	OFF	OFF
	32 h	**7 s**	**OFF**	**OFF**	**OFF**
	96 h	8 s	ON	ON	ON

In bold, factory settings

Micro-switches configuration

Ih homopolar current threshold

SW1	Ih (3 Io)	1	2	3	4
	10 A	ON	ON	ON	ON
	20 A	OFF	ON	ON	ON
	30 A	ON	OFF	ON	ON
	40 A	OFF	OFF	ON	ON
	50 A	ON	ON	OFF	ON
	60 A	**OFF**	**ON**	**OFF**	**ON**
	70 A	ON	OFF	OFF	ON
	80 A	OFF	OFF	OFF	ON
	90 A	ON	ON	ON	OFF
	100 A	OFF	ON	ON	OFF
	110 A	ON	OFF	ON	OFF
	120 A	OFF	OFF	ON	OFF
	130 A	ON	ON	OFF	OFF
	140 A	OFF	ON	OFF	OFF
	150 A	ON	OFF	OFF	OFF
	160 A	OFF	OFF	OFF	OFF

Settings and test

The settings of the Fault Indicator is wholly dependent on the settings of the protection relay of the feeder on which the indicator is installed. In principle, the Flair 212/213 must detect the passage of the fault current before the protection relay trips. The Flair sensing time must be at least 20% shorter than the feeder protection relay.
The zero phase earth fault trip current value must be set equal or higher than the feeder protection relay. If set higher the Flair might miss some “resistant” fault types. If set lower the Flair can trip when the protection relay does not.
Two DIP switches are located on the PCB: SW1 allows the user to select the earth fault current, SW2 allows the setting of the sensing time and the automatic timer reset duration.

- Set-up the DIP switch as required
- Closing of the apparatus: clip the bottom part of the cover first and than the top until you hear the “click” of the cover on the sole.
- Now that the Flair 212/213 is installed and connected, you can test the electronic PCB and the battery by pressing the TEST push-button located on the top right hand side on the plastic cover. The flash light and the LED will flash for 10 s, and will stop if the 220 V is present. If the 220 V is absent, flash light and LED will continue to flash, auxiliary contact will be active until LV is back, or until test button is press again.

This test procedure does not test the CT and the bundle.
To do so the VALTEST injection portable case must be used. (see specific data sheet).

If “Test” push button doesn’t work, open the device and press “Reset µP” button (see fig. 2). Close the device and test again.

Detection - Maintenance

Fault detection without MV outage

When the earth fault current exceeds the selected threshold during a time superior or equivalent to the selected sensing time, the device trips.

The following sequence is started:

- Flashing during 10 s or all along current fault duration.
- No change in SCADA output relay.

Note: “RESET” push-button is invalid during the first 10 s.

Fault detection with MV outage before 10 s

When the earth fault current exceeds the selected threshold during a time superior or equivalent to the selected sensing time, the device trips.

The following sequence is started:

- Flashing starts

Note: “RESET” push-button is invalid during the 10 first seconds.

- 10 s after the fault detection, the auxiliary contact closes.
- The reset of the device will occur only after the time set-up is elapsed or after a “RESET” command, or after return of LV.

Note: the flashing duty cycle is related to cumulative elapsed flashing time. The Flair 212/213 has a unique “power save” feature that allows it to adapt the period of the flash to the duration of the fault.
Depending on the selected reset period the Flair 212/213 will flash every 2 s for the first two hours, then 3 s between 2 and 4 hours etc… with a maximum of 7 s.
This allows it to optimize the battery duration.

Maintenance

It is strongly suggested to allow battery change on time, to insure its voltage is no lower than 3 volts.
Battery change: cut tie-wrap, remove battery, replace battery, and tie-wrap it.

Spare parts :
Lithium battery: SL-780 D
3.6 V/13 Ah Sonnenschein.

Dimensions, physical form

The device is delivered in a carton-box containing both a Flair 212/213 indicator and a Current Transformer (CT) with its 10 meters bundle.

The Flair 212/213 dimensions are mm 250 x 160x 65,

Net weight 720 g.

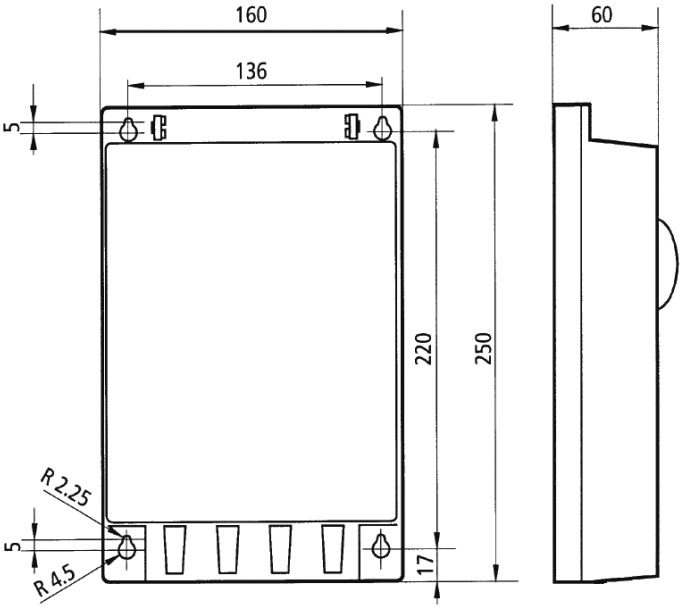


Fig. 1

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