

BSF-5 – Tracker Fault Detector

Applications

The Tracker Fault Detector BSF-5 is used in photovoltaic installations containing several trackers or strings. Together with the NINFAC DC Breakers, it determines which tracker has an insulation fault once it has been detected by the installation's Insulation Monitoring Device.

Operation

As shown in figure 2 on page 2, when the FAC3 Insulation Monitoring Device detects an insulation fault, it tells the BSF-5 Tracker Fault Detector to activate a short-circuit in all the NINFAC DC Breakers. Once this has taken place, the BSF-5 initiates a **search programmed** to find the faulty tracker.



After a few seconds, it clears the shortcircuit in the first tracker and checks whether the fault re-occurs. If there is no fault, it lets the tracker resume normal operation; if there is a fault, it shorts the tracker again. It carries out the same process with all the trackers until it has tested all of them. At the end of the test programmed, the trackers which have an insulation fault will remain tripped-off.

When the FAC3 Insulation Monitoring Device generates a reclose command, the BSF-5 clears the shortcircuit from the trackers which are in a tripped state.

Reclosing function

If an insulation monitoring device is used which contains inverters inside, the model BSF-5/R with integrated reclosing function should be used. It features five stepped reclosing intervals.

Once the search cycle has been completed and a tracker remains in a tripped state, the device will then clear any shortcircuits after an initial period of five minutes. If the fault has disappeared, the installation will start to operate again. If the fault remains, the Insulation Monitoring Device will transmit a new short-circuit command to the BSF-5, which will initiate the search cycle. Once this has been completed, it will wait two minutes before starting to clear the shortcircuits. This process will be repeated up to five times with reclosing intervals of 1, 2, 4, 8 and 16 minutes. If the fault persists after 5 attempts, it will not reconnect again.

Operational characteristics

- It features 10 output contacts to carry out the search cycle on 5 trackers - two per tracker, one to activate and one to clear the shortcircuit in the NINFAC.
- Two inputs to receive instructions to activate and clear from the insulation monitoring device.
- **Red LED** which signals when the device is performing processes on NINFAC devices.
- **Green LED** on front indicating presence of auxiliary supply voltage.

Design Characteristics

- Includes microcontroller
- Plastic casing for track installation
- Terminals on front panel
- Potential-free output contacts

Technical specifications

- Auxiliary voltage: 230 Voc
- Consumption when on standby: 1.5 W
- Consumption with fault: <2W
- Standards complied with:
 - Insulation test voltage
 - High frequency interference
 - Rapid transients
 - Voltage impulse

- Relay contact properties:

Models

BSF-5/ X Y
 X = R reclosing
 Y = T timed one minute search cycle

PROAT

- o Permanent current: 5 A
- o Max. switch. voltage: 440 Voc
- o Max. switch. pot.: 2000 VA

Maintenance

We recommend pressing the test button (PRUEBA) to test the equipment is working properly every six months or during periodical inspections.

Terminal connection

6- 7- } Insolation fault	28- RL6 29- RL6	30- RL7 31- RL7	32- RL8 33- RL8	34- RL9 35- RL9	16- RL10 17- RL10	1- } 230VAC 3- }
8- 9- } Clear short circuit	18- RL1 19- RL1	20- RL2 21- RL2	22- RL3 23- RL3	24- RL4 25- RL4	26- RL5 27- RL5	PROAT

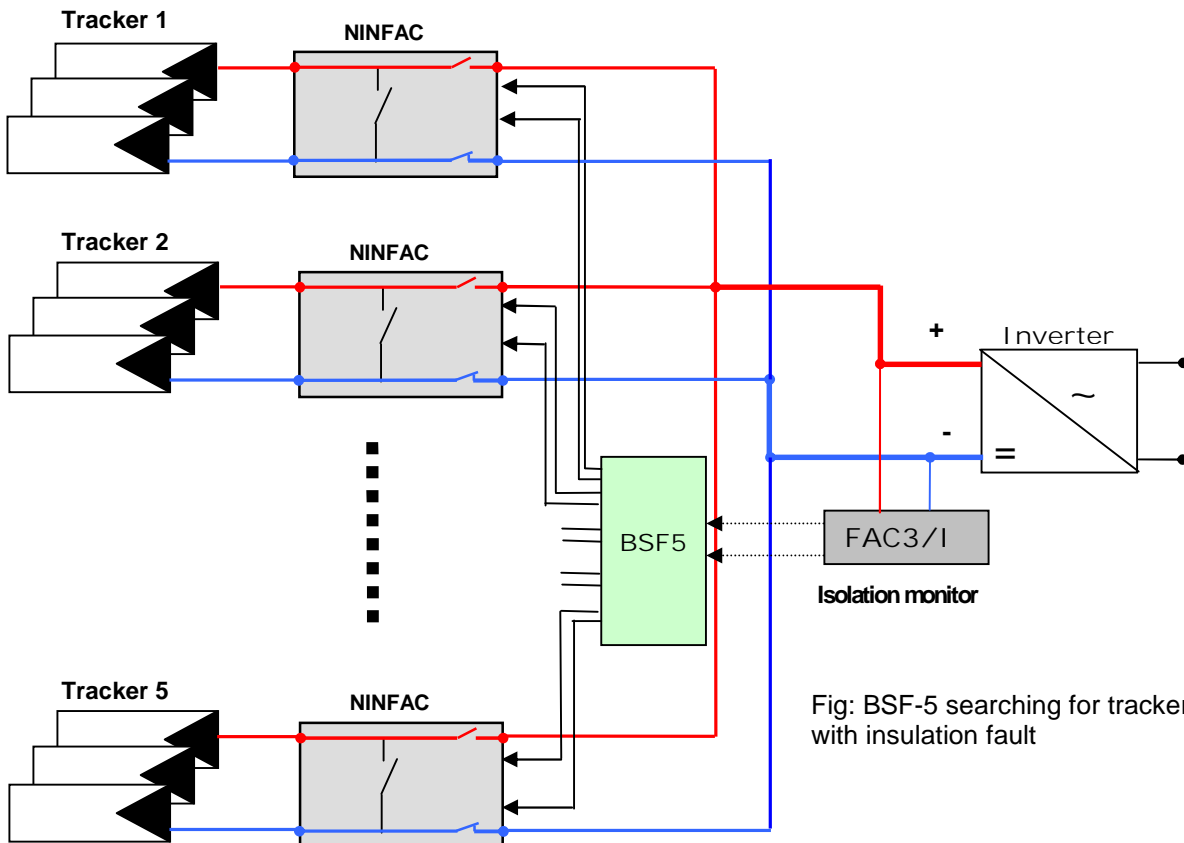
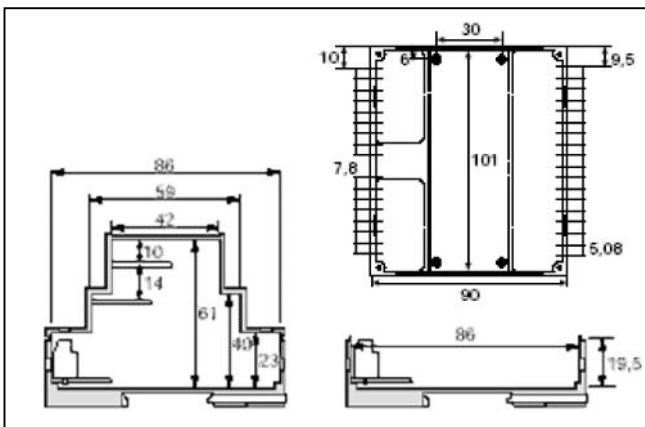


Fig: BSF-5 searching for tracker with insulation fault




PROAT

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