



A hot standby DC-DC converter
Input: 24 V (-10%/+20%)
Output: 24V/4A, 5V/4A, +12V/1.5A, -12V/1A

Electronic cards
 I/P cards = 6 nos.
 CPU cards= 3 nos.
 CC card= 1no.

Reset Box and Modem

Q Series relays

Fig: 1
Universal Fail Safe Block Interface

Introduction

This pamphlet covers installation and maintenance check points on Block Proving by Axle Counter using UFSBI.

UFSBI installation

The following practices are to be observed in installing UFSBI at site:

- Battery
- Battery Charger
- Earthing: Good earthing is to be provided preferably less than 2 ohm.
- Communication Channel
- Allowable Channel Loss: 30 dB (max.) between 2 modems SNR: 20 dB (minimum)
- Transmit Power: -2 dBm (maximum at modem Tx pin)
- Receive Level: -32 dBm (minimum at modem Rx pin)
- The channel should be of good quality and must have steady performance for at least 72 hours before commissioning.

Check during Installation

Physical Examination: required for

- (a) Connectors
- (b) Relays and Relay-bases

- (c) All the PCB modules
- (d) Rack and the mainframe
- (e) Card Guides
- (f) Motherboard
- (g) Interconnecting ribbon cables and wires
- (h) Reset Box
- (i) Modem

Power Supply

- (a) Battery Voltage should not exceed the range: 19.5 V to 28.8 V DC.
- (b) Ensure that the above supply is not arbitrarily grounded.
- (c) Before insertion of other modules, DC-DC converter is to be connected to the Battery Supply and its correct output levels should read as:
 - (i) 5 V [+/- 3%]
 - (ii) +12 V [+/- 2%]
 - (iii) -12 V [+/- 2%]
 - (iv) 24 V [+/- 5%]

Maintenance

Preventive Maintenance

Power supply: A Regular check on power supply units such as battery banks, battery charger and DC-DC converters are mandatory.

Relays: UFSBI has used most reliable type of relays. But special care and testing is required for those to be used after long storage. No attempt is to be made to repair a relay. Use a new one

Maintenance of Communication Link

- (a) Telecom cable is to be protected from injury during other kinds of installation at its vicinity.
- (b) If disconnection of cable is required, the cable terminal is to be refitted firmly.
- (c) The loss of signal due to lossy cable is to be kept under check.
- (d) The display indication "33" indicates link failure. If the modem is found to be OK, next to be checked is the telecom cable.

Maintenance of Equipment

- (i) UFSBI unit will automatically trip-off if the Battery supply goes below 19.2 V & above 28.8 V DC.
- (ii) In case of repeated trip-off, both the DC supply level and the loading is to be checked.
- (iii) A healthy UFSBI should not draw more than 1.8 Amp DC.
- (iv) No attempt of "resetting" is to be made in case of supply impairment or link failure,
- (v) If a faulty UFSBI system is not brought back to normal after "resetting" one must check:
 - Is there any loosely fitted connector or improperly pressed PCB module.
 - Connecting leads inserted in Terminal.
 - The DC supply levels of the DC-DC converter.
- (vi) For specific information on faults, refer "UFSBI Error Code List" of the manual.

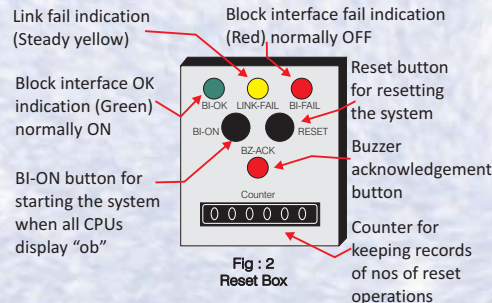
Do's & Don'ts

- (a) UFSBI system is to be operated or maintained only by trained persons.
- (b) No attempt is to be made to operate the equipment at Battery Voltage ranging below 19.2 V and above 28.8 V DC.
- (c) Connectors or PCBs is to be plugged in or out after switching off the Power Supply.
- (d) "RESET" should not be applied in case of "Link Failure" or "Supply" Break Down.
- (e) Replacement of components or modules is to be done with spares supplied/ prescribed by the manufacturer.
- (f) While plugging in / out a PCB, care is to be taken to avoid application of Excessive force.
- (g) Arbitrary grounding should not be done to any "common" terminal inside the equipment.
- (h) Relay testing should not be performed involving forced 'pick-up' or 'drop' while the instrument is 'ON'.
- (i) Standard restrictions against mishandling and opening of Block Instrument are applicable also to UFSBI.

The POWER-ON-RESET Operation

The following steps are to be performed for carrying out the RESET operation of the UFSBI.
 Turn off the system power.
 Wait for 1 minute.
 Power-on the system.

Check the display of the CPU. Wait till the display on all the CPUs display "Ob",
 If "Ob" is not displayed, try by pressing the RESET button. If the problem persists, check corresponding codes in the error code list and take appropriate action as suggested in the remedial action column.
 If all the CPUs display "Ob" then press the BI-ON button. Observe that both BIPR1 and BIPR2 pick up immediately after BI-ON is pressed.
 Once BIPR1 and BIPR2 pick up, BI fail (Red) indication goes off and BI OK (Green) indication comes on, Link fail (Yellow) steady indication goes off & starts flickering as soon as the Modem starts communicating with remote station modem and all the CPU's display "00".



General Maintenance

Power Supply should be periodically checked and ensured that the output voltage is well within the specified limit Battery should be periodically maintained.

The BPAC system must have a separate Earthing, which should be maintained at regular interval The Earth resistance must be kept below 2 ohms. The communication link db loss and SNR should be periodically checked.

In case of copper conductor, cable insulation resistance and loop resistance must also be periodically measured. In case any one of the CPU is showing an error code and the system is working in 2/3 mode, the fault must be attended immediately as directed in the error code list as preventive. A Single CPU and Power supply failure detection/alarm is provided.

If a faulty UFSBI system is not restored after "resetting", we need to check the following:

- (i) If there is any loosely fitted connector or improperly pressed PCB module.
- (ii) Connecting leads inserted in Terminal.
- (iii) The DC supply levels of the DC-DC converter output.

DISCLAIMER

The information given in this pamphlet does not supersede any existing provisions laid down in S.E.M., Rly. Board and RDSO publications. This document is not statutory and instructions given in it are for the purpose of guidance only. If at any point contradiction is observed, then S.E.M., Rly. Board/RDSO guidelines or Zonal Rly. instructions may be followed.



(For Official Use Only)

GOVERNMENT OF INDIA
 MINISTRY OF RAILWAYS

**MAINTENANCE CHECK POINTS ON
 BLOCK PROVING BY AXLE COUNTER
 USING UFSBI**



CAMTECH/S/PROJ/12-13/PAM-BPAC-UFSBI/1.0
 AUGUST 2012



Indian Railways
 Centre for Advanced Maintenance Technology

Contact Person

Director (S&T)

Indian Railways Centre for Advanced Maintenance Technology
 Maharajpur, Gwalior – 474 005
 Email: dstcamtech@rdsol.net.gov.in,
 dirscamtech@gmail.com