

# INSTALLATION

## GENERAL

Following practices should be followed in installing UFSBI at site:

**Battery:** Good quality 24V 80AH battery with low internal resistance should be used for UFSBI. UFSBI battery should not be shared with any other gear or any other adjacent UFSBI.

**Battery Charger:** A low ripple battery charger with high input transient rejection, preferably SMPS, should be used for UFSBI battery. Float mode terminal voltage should nominally set at 26V. Terminal voltage should never be outside 21.6V to 28.8V.

**Earthing:** Good earthing should be provided for UFSBI termination. UFSBI should be grounded through proper earth only. Arbitrary earthing must be avoided. It is preferable to provide separate earth pit for UFSBI.

**Communication Channel:** One 4-wire voice channel from the OFC mux / quad cable should be provided for UFSBI communication. Block telephone should be connected with a separate 2-wire channel. The UFSBI channel should be have S/N ratio of better than 20db.

**Communication cable:** For connecting UFSBI to the optical mux, 0.9mm / 600 ohms telephone cable should be used. A single segment of cable without in between joints, should be used for this connection.

**Environment:** Adequately spacious, clean, dry and well ventilated location should be used for UFSBI. Enough room around the UFSBI should be provided for easy access for maintenance.

All the UFSBI units including the modules, connectors and other accessories are factory-checked. However, after unpacking, following pre-installation test schedule is being recommended to examine if any kind of damage has occurred during transportation.

Physical Examination:

Required for:

- a) Connectors
- b) Relays and Relay-bases
- c) All the PCB modules / cards

- d) Rack and the sub-rack
- e) Card Guides
- f) Motherboard (Backplane)
- g) Interconnecting cables and wires

If any major damages is found it should be brought to the notice of site supervisor for subsequent necessary action.

### **Power Supply**

- a) Battery Voltage should not exceed the range: 21.6 to 28.8V DC.
- b) Ensure that the above supply is not arbitrarily grounded.
- c) Before insertion of other modules, Power Supply units (PSU) are to be inserted and power connection to the Battery Supply is to be provided. The 'Start' switch on the front panel of the PSU should be lifted once to bring them into operation. The correct output levels should be read from the front panel monitoring points as:

|      |     |   |               |
|------|-----|---|---------------|
| + 5V | Int | = | 5.6V – 6V     |
|      | BP  | = | 4.9V – 5.3V   |
| +12V | Int | = | 12.5V – 13.1V |
|      | BP  | = | 11.8V – 12.4V |

The 'OK' LED for +5V & +12V should glow, indicating proper health of PSU.

Installation of UFSBI is kept very simple as and such no elaborate procedure will be required except those given as under:

## **Inter Connections:**

- a) Plug in all the relays to the respective relay bases in the following order:

M1 : M3 : M5 : M7 : M9 : M11 : M13 : M15 :

M2 : M4 : M6 : M8 : M10 : M12 : M14 : M16 :

M17 : M19 : M21 : M23 : M25 : M27 : M29 : M31 : (Optional)

M18 : M20 : M22 : M24 : M26 : M28 : M30 : M32 : (Optional)

SD1 : SD2 : WD.

Note: For SGE, all the above relays except M7 are QN1 type. M7 only is QS3 type.

- b) Insert all the modules/cards in the UFSBI 6U Rack **in power off condition**.
- c) Plug in all the connectors to their matched counter part. As the length or wire groups corresponding to each connector is optimally fixed, probability of wrong connection is ruled out. Put on the UFSBI PSUs.
- d) Connect the respective Block Instrument (SGE type) with UFSBI .

## **Start-up & Operation**

### Start-up

When initially power is applied to the system, 1).the count no. of veeder counter will increase by one as soon as the system passes through Power on Reset, 2).the system goes through some initial self checkings showing 'SYSTEM CHECK'. If any of the checks fails system goes to shutdown. Now the system comes to a point where it looks for control voltage of the output card showing 'CNTL. VOLT ABSENT'. When 'CNTL. VOLT' switch is pressed momentarily, desired voltage gets available, otherwise system goes to shutdown. Now the system will transit to SSB state, assuming failure of inter block communication and will display the message "IB RX FAIL". When the system at the other end is also powered ON, the local end system will transit to the NORMAL state after successful reception of at least three interblock communication packets and will display the message "SYSTEM OK".

### Normal operation

Once the system has successfully completed initialisation, it is now ready for interfacing various signalling information of a block instrument (SGE type) at one end of a block section and exchanging them with the UBX 2000 terminal at the other end

A "Test Signalling Round" involving at least 10 operations need to be performed before the real operations or the trail run starts. The block operation through UFSBI to be kept under observation at least for three up and three down movements of trains.

A close monitoring of the train movements through UFSBI to be done at least for 48 Hrs after immediate installation and commissioning of the system.

## **Following materials are to be provided by Railway (for SGE)**

1. 25 nos. ARA terminal near the interface for SGE BI termination.
2. 18 nos. QN1 (8F/8B) DC 24V Coil 345 Ohms Relay.
3. 1 no. QS3 (4F/4B) 12V DC coil 1000 Ohms Relay.
4. 1 Nos. 24V DC supply with good quality 80 AH (Min) battery having low internal resistance & a battery charger preferably SMPS based charger.
5. A good quality earth connection (preferably with separate pit).
6. A 4 wire OFC voice channel / quad near interface.
7. A 2 wire OFC voice channel / quad for block telephone.
8. SGE type Block Instrument with block bell.
9. Block telephone.