

Digital Block



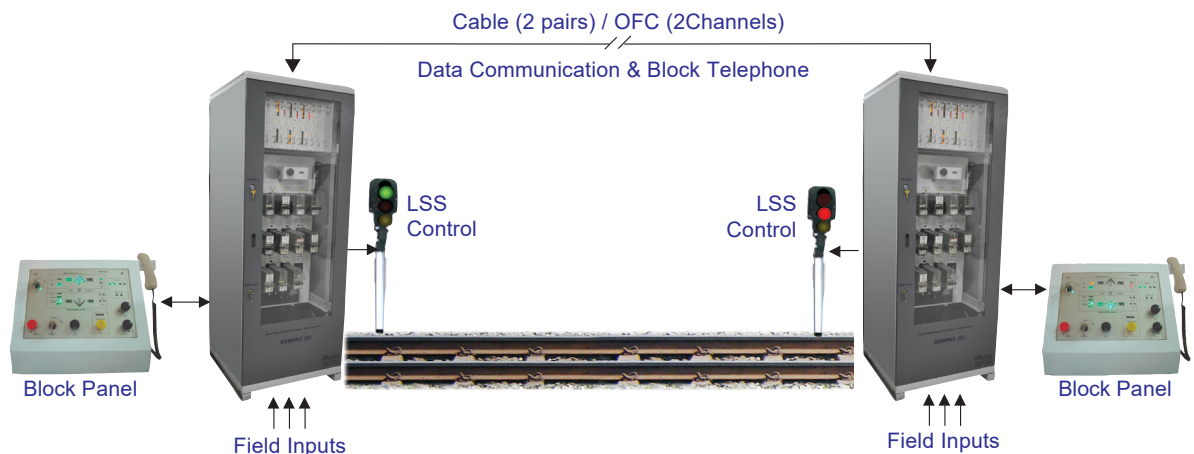
Digital Block is used for exchanging permissions in fail safe way for sending / receiving trains between two stations



SIL 4
CERTIFIED

FAIL SAFE AS PER
CENELEC

INDIAN
RAILWAYS
APPROVED



SALIENT FEATURES

- **Completely safe** – CENELEC SIL-4 certified
- **High reliability** – Inbuilt 2 out of 3 Architecture
- **Improved availability**
 - Works with variety of media – OFC (dark fibre) / Copper cable / E1 Channel / Voice channel – equipped with redundancy of media selection
 - Protection against surges
 - Redundant power supply
- **Flexible** – Fit for DC/AC/Diesel traction territories
- **Easy to deploy** – Embedded, prewired modules
- **Least operations** – Saves operations time
- **Fast operations** – Takes few seconds
- **Easy to maintain & troubleshoot** – Completely electronic, deskilling of trouble shooting with extensive diagnostics
- **Reduced cost of maintenance** – By Remote Condition Monitoring

ADVANTAGES

Operational Benefits

- Automatic TOL – block failure due to premature TOL operation eliminated.
- Automatic Line Close – Elimination of operator involvement results in time saving and immediate block closure.
- Block closing provision after push back operation, avoids block failure for next train.
- Audio-visual alarms on section occupancy and clearance.
- There is no block length limitation as equipment supports OFC.

Operational Benefits

- No periodic over hauling as there are no mechanical parts.
- Less number of relays used – improved reliability.
- Error code displayed numerically for ease of understanding.
- Status of all relays indicated by LED – reduces MTTR.
- Diagnostic LED indications provided on the PCB facia makes troubleshooting easy.
- Sufficient space provided in the equipment rack for keeping spares to reduce MTTR.

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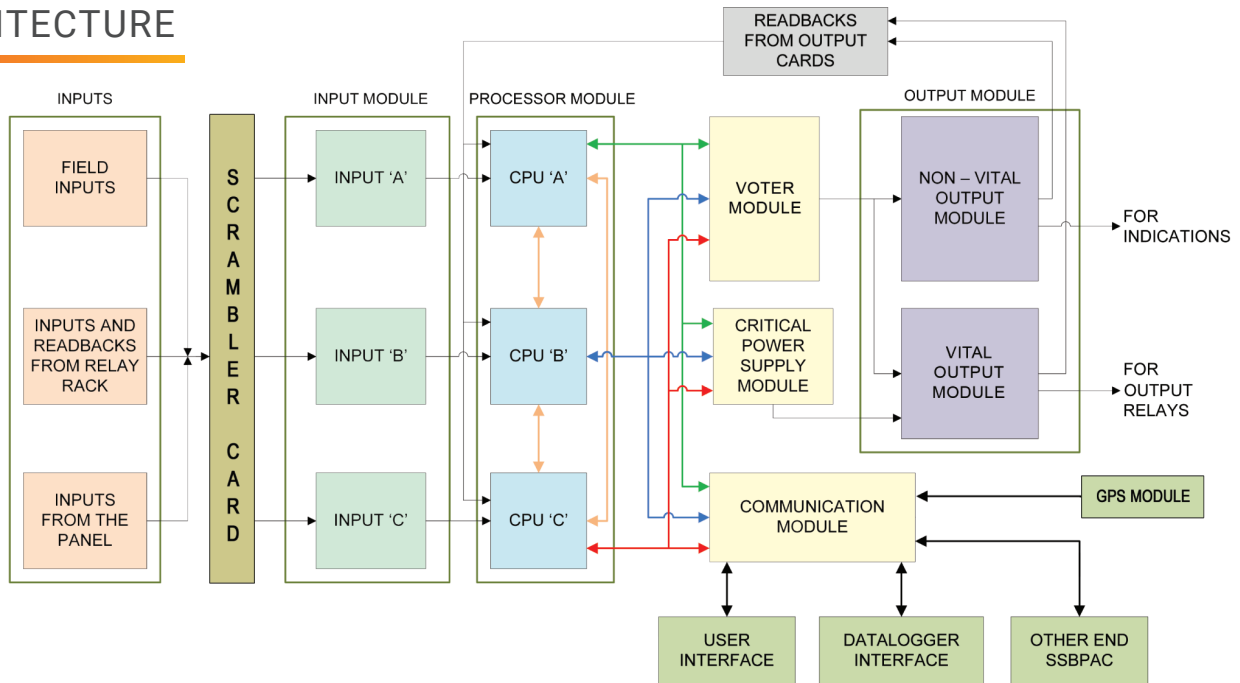
Safety

- 2 out of 3 Architecture ensures safety as well as availability.
- Inclusion of watch dog and mine fields for controlled software flow.
- Bi-state and de-bounce validations for inputs.
- Independent 2 out of 3 Architectural Voter card for placing validated outputs.
- Critical Power Control module using twin relays for assisting safe shutdown.
- Latching nature of TGTR and TCFR QL1 Type relays is tested for its every operation

Additional Benefits

- Block instrument clock is synchronized with GPS.
- Extra Modem is provided for communication between data logger and Digital Block.
- Industrial grade, components provided to ensure reliability.
- Communication lines and power supply lines are protected with SPDs.
- Burn-in and temperature cycle tests in the manufacturing process ensures zero fault production.
- Each processor card is provided with independent power supply system – ensures reliability.

ARCHITECTURE



INSTALLATIONS



90+
Installations

2300
Equipment Months