Product Profile & Reference List
Import Substitution Products
Supplied to
Metro Railway, Kolkata

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**BaHN Automation** was privileged to be associated with **Metro Railway, Kolkata** as a supplier for indigenous development of critical imported Traction Electronic items for their rolling stock.

**BaHN’s** endeavor resulted in indigenous development of following critical imported electronic items meeting mechanical, electrical as well as functional requirement of the original items supplied by AEG & SIEMENS, Germany.

- DC-DC Current Transformer
- Slip and Slide Protection Unit
- Thyristor Power Unit
- Speed Limit Detector
- Plug-In Cards for Motor Alternator
- Slot Initiator
- Time Limit Relay
- Motor Amplifier
DC – DC Current Transformer

Features:
- Wide choice of input currents
- Optical isolation
- Immune to magnetic fields
- Advanced sigma / delta technology for A / D conversion
- Chopper stabilized amplifiers to achieve high linearity and low drift
- Circuit design with high safety margins
- Use of surface mount technology components for high reliability

Application:
Measurement of Traction Motor Currents
Slip and Slide Protection Unit

Application:
Detection & Protection against Wheel Slip and Slide of Metro Train

Features:
- Detect wheel slipping to reduce tractive effort so as to prevent wear out of wheels
- Detect wheel sliding to reduce braking effort so as to prevent flattening of wheels
- Independent computational modules for each axle of a bogie
- Use of high performance computing devices for high-speed real time evaluation of mathematical equations
- Reliable control & protection logic
- Anomalous and status signals monitoring thro’ LEDs
- Use of surface mount technology components for high reliability
Thyristor Power Unit

Features:

- Based on MOSFETs
- Single side printed circuit board design
- Optical isolation from input control signals for high noise immunity
- Reliable control & protection logic
- Circuits design with high safety margins
- Crowbar protection in the event of
  - Anomalous control conditions
  - Over current situation

Application:

Control of Drive Motor of Cam-Shaft-Controller of BHEL Rake
Speed Limit Detector

Application:
Detection of Train Speed for Control of Coach Doors

Features:

- When train is in motion, the opening of coach doors has to be prevented as a safety measure
- Continuous monitoring of train speed
- Only when train speed has come below specified limit, permissive signal is given for opening of coach doors
- Reliable control logic
- Circuits design with high safety margins
- Plug-in card design
- Use of surface mount technology components for high reliability
Plug-in Cards for Motor Alternator

Application:
Control / Regulation of Motor Alternator Set of NGEF Coaches

Features:
- Control and regulation of motor speed of Motor Alternator
- Control and regulation of alternator voltage of Motor Alternator
- Reliable control & protection logic
- Circuits design with high safety margins
- Metering sockets for monitoring of signals
- Plug-in cards design
Slot Initiator

Application:
Sensing of Cam-Shaft-Controller Position

Features:
- Sensing of cam shaft controller position
- Magnetic sensing method
- Accurate and linear output for position control
- Circuits design with high safety margins
- Use of surface mount technology components for high reliability
**Time Limit Relay**

**Application:**
Delayed switching of Relay for control of Motor Alternator set of BHEL Coaches

**Features:**
- Delayed switching of relay after switching ON of control supply
- Reduction in switching delay in case the ac signal is more than prescribed limit
- Optical isolation for ac signal
- Use of Silicon Controlled Rectifiers
- Accurate timing
- Circuits design with high safety margins
Motor Amplifier

Application:
Control of Drive Motor of Cam-Shaft-Controller of NGEF Coaches

Features:
- Based on MOSFETs
- Single side printed circuit board design
- Pulse width modulation
- Front panel status indicating LEDs
- Reliable control & protection logic
- Intelligent current limit system
- Protection against over current
- Circuits design with high safety margins