



MINAS DE BENGA LIMITADA  
COAL CHAIN

PROCUREMENT OF ELECTRONIC COMPONENTS FOR GT26C  
LOCOMOTIVES

	RESPONSIBILITY	SIGNATURE	DATE
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## PROCUREMENT OF ELECTRONIC COMPONENTS FOR GT26C LOCOMOTIVES

### TERMS OF REFERENCE

#### 1. Background

MBL has a fleet of 15 locomotives, GT26C Model (EMD 16-645E3B) supplied by National Railway Equipment, NRE -US. Those locomotives are diesel electric, and are fitted on each locomotive a Microprocessor, designated *NForce system*, which is the heart of the locomotive, and main task of this microprocessor is to oversee the locomotive power management including wheel-sleep control and troubleshooting. The above-mentioned microprocessor and all system consist on electronics components. Those components consist in communication cables, current sensors including cables, CPU boards, IO boards, temperatures sensors, etc., and due to time that have been working we might have any locomotive malfunction due to failure of defect of one of the components above-mentioned.

So, based on the failures already reported and considering the age of entire locomotives fleet, it is recommended to procure the electronic components as listed below to attend the running fleet including the locomotives under major repair.

#### 2. Scope of works

The scope of work will be to supply the locomotive electronic components as per OEM technical specifications and comply with technical standards that regulate the manufacture of locomotive parts including electronic components. The supplier to be selected should supply based on Part Number herewith provided. Note, the parts are for locomotive GT26 Model, using EMD Diesel Engine 16-645E3B, and supplied by National Railway Equipment -US, and use Nforce system to control the locomotive.



### 3. Technical reference & Quantity

Item	Description	Part number	Qty
1	Temperature Sensor cable	057-0001-000	3
2	MR presure sensor cable	057-0002-000	4
3	Axle alternator to TB30	057-0003-000	14
4	Current sensor cable	057-0005-000	2
5	Nforce communication cable	058-0001-000	2
6	Nforce to screen (Nvision) cable	058-0002-000	4
7	Axle alternator drive	680-0003-000	9
8	Screen (Nvision)	902-0001-000	1
9	Train line resistor	904-0001-000	1
10	Current transductor 12 channel	905-0002-000	3
11	Current transductor 18 channel	905-0003-000	2
12	Axle alternator	908-0001-000	4
13	Nlight	909-0001-000	10
14	IO board	580-0003-000	6
15	Power supply board	580-0066-000	4
16	CPU board	580-0074-000	4
17	Current sensor 200A	775-0007-000	7
18	Temperature sensor	775-0001-000	8
19	Current sensor 2000A	775-0003-000	2
20	Voltage sensor	775-0004-000	2
21	MR Pressure sensor	775-0005-000	5
22	Current sensor 1000A	775-0012-000	10

### 4. Supplier's experience

The Supplier should have an expertise and long experience of supplying locomotive parts including electronic components for NForce system, and be familiar with locomotives supplied by NRE -US.

### 5. Period for deliver

The period for delivery of the parts should be earliest possible.