NRE®

ELECTRONICS CATALOG

PROPULSION & CONTROLS

WELCOME TO NRE®

NRE Locomotive-Electronics, a division of NRE, was founded in 2004 to provide innovative and high quality solutions for the railway industry. Our railway control products are used in a broad range of applications in industrial, and traction markets. NRE's strategy is to exploit the intrinsic strengths of its core business, and develop opportunities in new markets with new applications.

Our products are developed, designed and implemented by skilled engineers, technicians and programmers with extensive experience in the railway, power generation and industrial control industries. We understand basic business values like loyalty and trust, and are committed to backing NRE products with excellence.

DESIGN STANDARDS

NRE Locomotive-Electronics is an ISO 9001:2008 registered company. It is considered a top priority for NRE to continuously improve the quality of our products and services to meet and exceed customer requirements.

Our commitment to quality is geared towards satisfying our customers and employees with the aim of maintaining our leadership position as the provider of innovative solutions for the railway industry.

We design and manufacture high quality, highly reliable products for customers across the globe.

With NRE Locomotive-Electronics, you can expect:

IMPROVED LOCOMOTIVE EFFICIENCY

Our innovative solutions improve the efficiency and operational performance of your locomotive equipment.

ADVANCED INFORMATION SYSTEMS

We utilize state-of-the-art global communication systems to bring you real-time information about your mobile assets.

HIGH QUALITY SOLUTIONS

We take pride in the high performance and accelerated response time of our solutions and services.

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NFORCE

The NFORCE Control System uses the latest technology specifically to allow aging locomotives to be upgraded to a level of performance matching that of their modern counterparts. The heart of the NFORCE Control System is a powerful microprocessor that controls the various locomotive systems. The NFORCE System is based on a modular concept, in which functions can be added later without changing the entire system.

BENEFITS

- Initiate locomotive tests from a laptop computer or optional NVISION Display Panel
- Advanced wheel slip/creep control increases dispatch adhesion
- Motor management software calculates heat build-up in the traction motors
- Reduce electrical cabinet relays by up to 75%
- Perform and display load tests in real time

STANDARD FEATURES

- Main Generator Control
- Transition Control
- Field Shunting Control
- Advanced Wheel Slip/Creep Control
- Traction Motor Management
- Motoring & Dynamic Braking Control
- Speed Indicator Drive
- Automatic Sanding Control

OPTIONAL FEATURES

- Vigilance System
- Slow Speed Control
- Idle Limiting Control
- J1939 CAN Communications
- Engine Governor Control
- Radiator Shutter & Cooling Fan Control
- Air Compressor Control
- Automatic Ground Relay Reset
- Battery Charging Regulation
- Contactor & Relay Control
- Traction Motor Cutout Control
- NVISION Interface Display
- Load Meter Control
- NGAUGE Fuel Monitoring
- NCOMPASS Wireless System

NHANCE

The NHANCE Control System uses the latest technology to allow aging DC and SW locomotives to be upgraded to a level of performance matching that of their modern counterparts. The system is designed for four-axle locomotives using the 74V batteries to excite the Main Generator, providing consistent locomotive performance, increased reliability through reduction in high maintenance components and greatly improved all weather tractive effort.

STANDARD FEATURES

- Increased Adhesion
- Smoother Excitation
- Main Generator Excitation & Protection
- Field Shunting Control (if equipped)
- Commutator-Type Load Regulator assembly no longer required
- Time Based Traction Motor Protection
- Advanced Wheel Slip/Creep Control
- Automatic Wheel Slip Sanding Control
- Integrated Diagnostics

OPTIONAL FEATURES

- Operator Interface Display
- Ambient Based Traction Motor Protection

CABLES

Temperature Sensor Cable

Part # 057-0001-000

Measures ambient air, engine oil and coolant temperature.

PART ATTACHMENTS

Ambient Temperature Mounting Bracket
Part # 665-0017-000

Water Temperature Mounting Bracket
Part # 665-0016-000

Pressure Sensor Cable

Part # 057-0002-000

Measures pressure from devices such as the Air Compressor, Brake Cylinder and Brake Pipe

PART ATTACHMENTS

Pressure Connection
1/4" NPT

ADDITIONAL CABLE PARTS

Axle Generator Cable
Part # 057-0003-000

Current Sensor Cable
Part # 057-0005-000

NFORCE Communication Cable
Part # 058-0001-000

NVISION Communication Cable
Part # 058-0002-000

CONTROL BOARDS

IO Board
Part # 580-0003-000

TMD Control Board
Part # 580-0065-000

DBM Board
Part # 580-0037-000

Power Supply Board
Part # 580-0066-000

CPU Board
Part # 580-0074-000

SENSORS

1000 Amp Current Sensor

Part # 775-0012-000

Measures DC or AC (true RMS) current flow from devices such as traction motor current and grid current.

SPECIFICATIONS

Nominal Input Current: 1000 Amps peak | Output Signal: 4 to 20 mA, 3-wire connection, 62.5 amps/mA, unipolar Ambient Operating Range: -40º C to +70º C (-40º F to +158º F)

PART ATTACHMENTS

Electrical Connection
Part # 057-0005-000

Temperature Sensor

Part # 775-0001-000

Measures ambient air, engine oil and coolant temperature.

SPECIFICATIONS

Range: -100º C to +200º C (-212º F to +392º F) | Output Signal: 4 to 20 mA, 2-wire connection, 18.75º C (37.75º F/mA) | Ambient Operating Range: -40º C to +125º C (-40º F to +257º F)

PART ATTACHMENTS

Temperature Sensor Cable
Part # 057-0001-000

Ambient Temperature Mounting Bracket
Part # 665-0017-000

Water Temperature Mounting Bracket
Part # 665-0016-000

2000 Amp Current Sensor

Part # 775-0003-000

Measures DC or AC (true RMS) current flow from devices such as traction motors.

SPECIFICATIONS

Nominal Input Current: 2000 Amps peak | Output Signal: 4 to 20 mA, 3-wire connection, 125 amps/mA, unipolar Ambient Operating Range: -40º C to +70º C (-40º F to +158º F)

PART ATTACHMENTS

Electrical Connection
Part # 057-0005-000

DC Voltage Sensor

Part # 775-0004-000

Measures DC voltage across the main generator or differential voltage across a pair of traction motors.

SPECIFICATIONS

Nominal Input Voltage: 0 to 1700 Vdc | Output Signal: 4 to 20 mA, 2-wire connection, 108.75 volts/mA | Isolation Voltage: 20,000 Vdc | Ambient Operating Range: -40º C to +70º C (-40º F to +158º F)

200 Amp Current Sensor

Part # 775-0007-000

Measures DC or AC (true RMS) current flow from devices such as the main generator field and battery charging.

SPECIFICATIONS

Nominal Input Current: 200 Amps peak | Output Signal: 4 to 20 mA, 3-wire connection, 15.3 amps/mA, unipolar Ambient Operating Range: -40º C to +70º C (-40º F to +158º F)

PART ATTACHMENTS

Electrical Connection
Part # 057-0005-000

ADDITIONAL SENSOR PARTS

Voltage Sensor (Double)
Part # 775-0008-000

Voltage Sensor (Triple)
Part # 775-0009-000

Voltage Sensor (Quad)
Part # 775-0010-000

Pressure Sensor (0-200 PSI)
Part # 775-0005-000

Shock Sensor (10g)
Part # 775-0028-000

AXLE SPEED EQUIPMENT

Axle Generator (500 PPR)
Part # 908-0001-000

Axle Generator (20 PPR)
Part # 908-0002-000

Axle Generator (60 PPR)
Part # 908-0003-000

Axle Generator (120 PPR)
Part # 908-0004-000

Axle Generator Drive Shaft 3”
Part # 680-0002-000

Axle Generator Drive Shaft 6.3”
Part # 680-0004-000

Axle Generator Cable Bracket
Part # 715-0002-000

NRE axle generators are interchangeable with optical style Wabtec / Q-Tron / Quantum /Siemens axle generators.

NRE is not an authorized distributor, nor is otherwise associated or affiliated with Wabtec* / Q-Tron* / Quantum* / Siemens*. However, NRE does represent that its NRE replacement parts, components, subsystems and services are compatible with these brands.

PANELS

Shunt Interface Panel (6 Channel)

Part # 775-0011-000

Interfaces with up to six 200 mV/2000 amp shunts, which are used to monitor various current sources on the locomotive.

SPECIFICATIONS

Input Signal: Six 200 mV/2000 amp inputs | Output Signal: Six 4 to 20 mA, 2-wire connection, 125 amps/mA | Ambient Operating Range: -40º C to +70º C (-40º F to +158º F)

MGA Panel (AR10 or AR15)

Part # 775-0018-000

This sensor uses the main generator's internal current transformers to measure current output of the main generator.

SPECIFICATIONS

Output Signal: 4 to 20 mA, 2-wire connection | Ambient Operating Range: -40º C to +70º C (-40º F to +158º F) Scaling: 4 to 20 mA, 2-wire connection | Monitoring: 8,000 amps @ 20 mA | Braking: 1,143 amps @ 20 mA

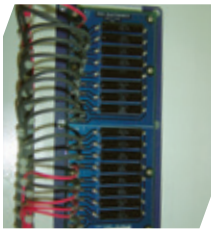
NFIELD Battery Field Driver

Part # 903-0001-000

A large current regulator designed to replace the Load Regulator Assembly in the battery field circuit of a DC generator.

SPECIFICATIONS

Nominal Input Voltage: 68 to 80 Vdc | Control Signal: 4 to 20 mA, 3-wire connection
Ambient Operating Range: -40º C to +70º C (-40º F to +158º F) | Maximum Output Current: 80 Amps



Trainline Resistor Panel

Part # 904-0001-000

Provides noise suppression for trainlined signals monitored by the NFORCE Control System.

SPECIFICATIONS

Resistance: Sixteen 1,500 Ohms, 10 W, 1% Resistors | Output: N/A
Ambient Operating Range: -40º C to +70º C (-40º F to +158º F)

Load Control Panel

Part # 775-0040-000

Used in conjunction with the NFIELD to replace the OEM Commutator Type Load Regulator

Load Control Kit

Kit 903-K0006-000

Current Transducer Panel (6 Channel)

Part # 905-0001-000

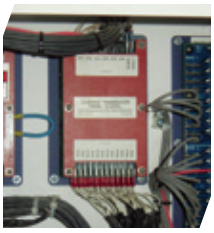
Used to provide power for up to 6 current transducer sensors, which are used to monitor various current sources of the locomotive.

SPECIFICATIONS

Input Signal: Six 4 to 20 mA, 3-wire inputs | Output Signal: Six 4 to 20 mA, 2-wire outputs
Ambient Operating Range: -40º C to +70º C (-40º F to +158º F)

PART ATTACHMENTS

Electrical Connection
Part # 057-0005-000



Current Transducer Panel (12 Channel)

Part # 905-0002-000

Used to provide power for up to 12 current transducer sensors, which are used to monitor various current sources of the locomotive.

SPECIFICATIONS

Input Signal: Twelve 4 to 20 mA, 3-wire inputs | Output Signal: Twelve 4 to 20 mA, 2-wire outputs
Ambient Operating Range: -40º C to +70º C (-40º F to +158º F)

PART ATTACHMENTS

Electrical Connection
Part # 057-0005-000

Current Transducer Panel (18 Channel)

Part # 905-0003-000

Used to provide power for up to 18 current transducer sensors, which are used to monitor various current sources of the locomotive.

SPECIFICATIONS

Input Signal: Eighteen 4 to 20 mA, 3-wire inputs | Output Signal: Eighteen 4 to 20 mA, 2-wire outputs
Ambient Operating Range: -40º C to +70º C (-40º F to +158º F)

PART ATTACHMENTS

Electrical Connection
Part # 057-0005-000

NVISION

Part # 902-0001-000

The NVISION Display Panel allows the user to interface with the NFORCE Control System, providing valuable troubleshooting and diagnostics tools.

SPECIFICATIONS

Communication Ports (1): RS-232 port for interfacing to NFORCE | Man-Machine Interface: 4-line by 40-character backlit LCD alphanumeric display screen, 5 button keypad
Ambient Operating Range: -40º C to +70º C (-40º F to +158º F)

ADDITIONAL PANEL PARTS

Shunt Panel (2 Channel)
Part # 775-0016-000

Shunt Panel (8 Channel)
Part # 775-0019-000

MGA Panel (AR 11)
Part # 775-0035-000

AC Voltage Panel (1 Channel)
Part # 775-0024-000

AC Voltage Panel (2 Channel)
Part # 775-0025-000

AC Voltage Panel (3 Channel)
Part # 775-0026-000

NVISION II (USB Download)
Part # 902-0003-000

Slow Speed Setup Panel
Part # 715-0006-000

NLIMIT

The NLIMIT Idle Control Module, or Automatic Engine Start/Stop (AESS), reduces fuel consumption and exhaust emissions by monitoring locomotive operating parameters and automatically shutting down and restarting the engine during appropriate locomotive idle times. The heart of the NLIMIT Module is a powerful microprocessor which is based on a modular concept, in which functions can be added later without changing the entire system. It's compact design allows for flexible installation in a variety of locomotive cabinets regardless of manufacture and vintage.

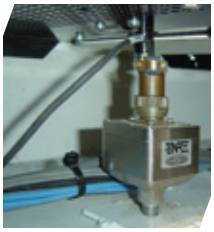
PRIMARY FEATURES & BENEFITS

- Reduced fuel consumption
- System indicators (lights & sirens), which indicate the status of the NLIMIT Module
- Integrated recording function, which records fuel report statistics, locomotive statistics, events, and alarm logs
- Governor Assist Pump, which works in conjunction with the engine governor during restarts to provide sufficient fuel necessary to start the locomotive
- EPD Override, which overrides the engine protection device (EPD) during restarts, preventing false engine shut downs due to false sensor readings
- Automatic Ground Relay Reset, which resets the Ground Relay after every NLIMIT restart
- EPA 40 CFR part 1033.115(g) certified

OPTIONAL FEATURES

- Load Shedding, which eliminates repeated – and unnecessary – engine restarts resulting from a low battery voltage condition by turning off battery loads such as the locomotive headlights and air conditioners
- Electronic Engine Temperature Control, which eliminates existing water manifold temperature switches, replacing them with a reliable solid-state sensor. Cooling fans are cycled to maximize operating life.
- High Idle Control, which helps maintain operational engine temperature in inclement weather.
- Low Idle Control, which provides additional fuel savings when the locomotive is idle, and awaiting an NLIMIT engine shut down.
- Additional recording functions such as locomotive kilowatt-hour or locomotive speed and distance.

CABLES



Temperature Sensor Cable
Part # 057-0001-000

SPECIFICATIONS
Range: -100º C to +200º C (-212º F to +392º F) | Output Signal: 4 to 20 mA, 3-wire connection, 18.75º C (37.75º F/mA) | Ambient Operating Range: -40º C to +125º C (-40º F to +257º F)

PART ATTACHMENTS

Ambient Temperature Mounting Bracket
Part # 665-0017-000

Water Temperature Mounting Bracket
Part # 665-0016-000

ADDITIONAL PANEL PARTS

NFORCE Communication Cable
Part # 058-0001-000

Pressure Sensor Cable
Part # 057-0002-000

Current Sensor Cable
Part # 057-0005-000

CONTROL BOARDS

NLIMIT Board
Part # 580-0015-000

ADDITIONAL NLIMIT PARTS

NLIMIT Instructional Label
Part # 475-0030-000

NLIMIT SW Panel Label
Part # 475-0053-000

LE NLIMIT Instructional Label
Part # 475-0073-000

NFORCE Instructional Label
Part # 475-0078-000

NLIMIT Warning Labels
Part # 475-0029-000

Water Temperature Mounting Plate
Part # 665-0016-000

Ambient Temperature Mounting Plate
Part # 665-0017-000

EPA Compliance Label
Part # 475-0329-000

ASSEMBLY & SENSORS

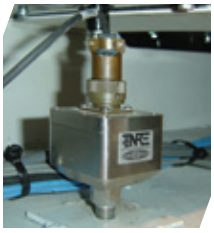
NLIMIT Audio Alarm

Part # 715-0010-000

Operates in conjunction with the NLIMIT or NFORCE system. This panel sounds to inform ground crew of the system's operating status

SPECIFICATIONS

Nominal Operating Voltage: 74 Vdc | Output Signal: Single amplitude, single frequency alarm – approximately 96 dB | Ambient Operating Range: -40º C to +70º C (-40º F to +158º F)



Temperature Sensor

Part # 775-0001-000

Measures ambient air, engine oil and coolant temperature.

SPECIFICATIONS

Range: -100º C to +200º C (-212º F to +392º F) | Output Signal: 4 to 20 mA, 3-wire connection, 18.75º C (37.75º F/mA) | Ambient Operating Range: -40º C to +125º C (-40º F to +257º F)

PART ATTACHMENTS

Temperature Sensor Cable
Part # 057-0001-000

200 Amp Current Sensor

Part # 775-0007-000

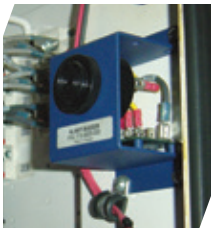
Measures DC or AC (true RMS) current flow from devices such as the main generator field and battery charging.

SPECIFICATIONS

Nominal Input Current: 200 Amps peak | Output Signal: 4 to 20 mA, 3-wire connection, 15.3 amps/mA, unipolar Ambient Operating Range: -40º C to +70º C (-40º F to +158º F)

PART ATTACHMENTS

Electrical Connection
Part # 057-0005-000



NLIMIT CAB Buzzer Assembly

Part # 715-0003-000

SPECIFICATIONS

Nominal Operating Voltage: 74 Vdc | Output Signal: Single amplitude, single frequency alarm – approximately 96 dB | Ambient Operating Range: -40º C to +70º C (-40º F to +158º F)

ADDITIONAL ASSEMBLY & SENSOR PARTS

NLIMIT Indicator Assembly
Part # 715-0004-000

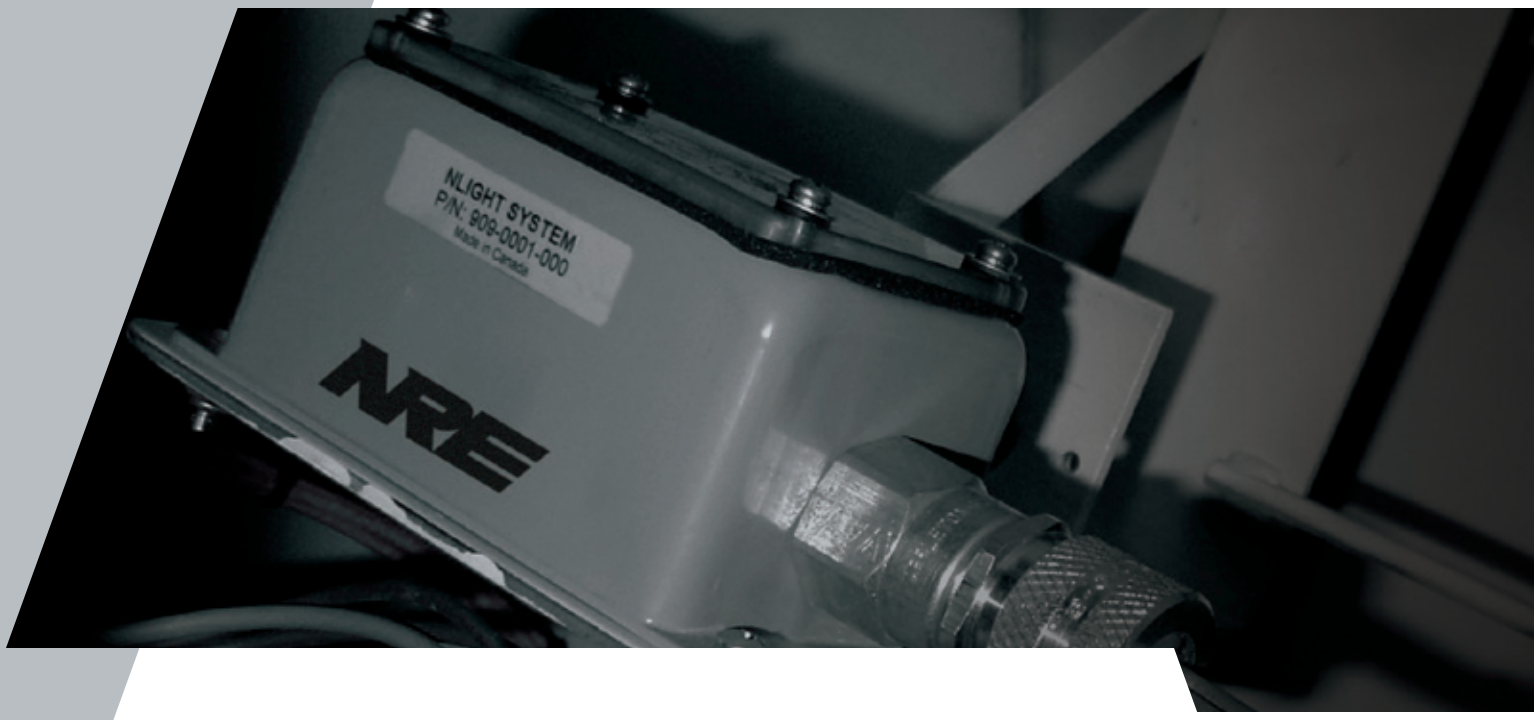
NLIMIT Switch Panel
Part # 715-0005-000

NLIMIT System Harness
Part # 725-0008-000

Pressure Sensor (200 PSIG)
Part # 775-0005-000

NLIGHT

The NLIGHT, lasting over 50,000 hours, has LED light elements which use less energy to provide similar or brighter lighting compared to traditional lighting.



NLIGHT

Part # 909-0001-000

SPECIFICATIONS

Nominal Operating Voltage: 74 Vdc @ 130 mA | Ambient Operating Range: -40º C to +70º C (-40º F to +158º F) | Light Output: Approximately 535 Lumens (roughly equivalent to 50 watts) with white, yellow, blue, red and amber lens filters

ADDITIONAL ASSEMBLY & SENSOR PARTS

NLIGHT Fixture (Red)

Part # 909-0003-000

NLIGHT Fixture (Amber)

Part # 909-0004-000

NLIGHT Bulb

Part # 909-0005-000

Cab NLIGHT (dimmable option)

Part # 909-0002-000

NLIGHT Fixture (120VAC Voltage Supply)

Part # 909-0009-000

NGAUGE

The NGAUGE is built on GWR technology– "Guided Wave Radar". A high speed pulse is launched down the probe, reflects off the surface of the liquid and returns back to the probe, where the total flight time of the pulse is calculated, and thus the level is measured.

Liquid level/volume is shown on a digital display using user defined units (gallons, liters). The sensor is customized to the exact tank dimensions, and programmed with overfill alarms.

ADVANTAGES

- Straightforward installation
- High quality, rugged, modular industrial design
- No float or moving parts
- Unaffected by liquid properties
- Insensitive to vapor and condensation
- High measuring accuracy
- NFORCE integration ready or stand alone
- Safe and reliable environmental spill prevention
- Ease of service: not required to enter the tank
- Wide range corrosive resistance
- Self cleaning probe
- Data retained without requiring a battery
- Excellent performance at low temperatures
- Static electricity protection
- Can be connected to NFORCE/NCOMPASS for remote monitoring

NGAUGE II Display
Part # 918-0003-000

NGAUGE Sensor
Part # 918-0001-000

ADDITIONAL NGAUGE PARTS

NGAUGE Sensor Head
Part # 775-0023-000

NGAUGE Probe
Part # 775-0034-000

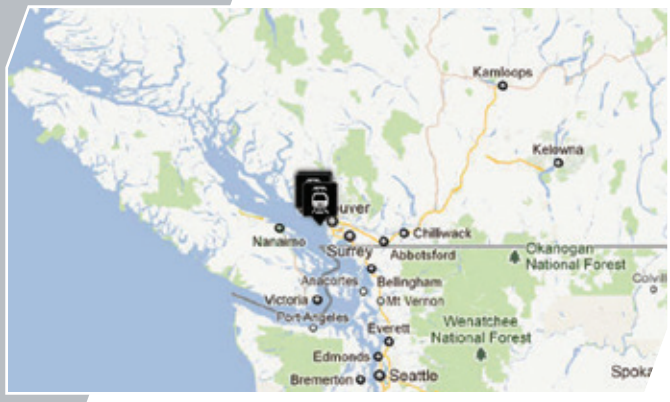
NGAUGE II Base Kit
Part # 918-K0006-000

NGAUGE II Remote Display Kit
Part # 918-K0007-000


30
30
NRE
30
74 VOLT
CAUTION
WATCH YOUR STEP
74 VOLT

NCOMPASS

NCOMPASS answers the questions "Where are my mobile assets, how are they performing, and how are they being used?" NCOMPASS places location and operational information at your fingertips. NCOMPASS utilizes components hardened for the industrial environment, assuring you excellent performance and availability. NCOMPASS wireless technologies now enable all types of assets to be connected throughout most of the world. NCOMPASS systems come with a complete wireless support infrastructure (WLAN, GSM, & Satellite).



GLOBAL POSITIONING

- This system is equipped with an embedded Global Positioning System (GPS) Module.
  - Can provide current location details
  - Past location tracking data
  - Geofence functionality
  - Tracking with mouse over details

UTILIZATION TRACKING

- Condition Based Monitoring
  - Monitoring condition of locomotive equipment and relaying of information
- Customer settable listening intervals to poll units for items such as:
  - Locomotive idle time (moving and stationary)
  - Utilization history (mileage, kilowatt hours, throttle duty cycle, odometer)
  - User searchable NFORCE fault logs
  - Fleet status mapping

NCOMPASS NOTIFICATIONS

- Customer settable alert functions allow you to select items which will notify you by SMS or email when active. Some of these items include:
  - Geofence & boundary violations
  - Excessive speed reports
  - Engine restart failures
  - Ground relay activations
  - Low fuel when used with NGAUGE
  - Alert on sensor threshold or state change (customer-settable)
  - Remote Over-The-Air (OTA) software updates for both the NCOMPASS board and the NFORCE CPU

NTRACK System

Part # 921-0001-000

NTRACK answers the question, “Where are my mobile assets?” It places location and operational information at your fingertips. All NTRACK systems come with GSM support infrastructure.

FEATURES

- Global positiong system (GPS)
- Past location tracking data
- Geofence functionality
- Tracking with mouse over details
- Web-based tools
- User settable listening interval options
- User settable alerts such as “Open Door”
- Durable construction with robust monitoring
- Long life self-contained batter for portable applications without local power suck as intermodal containers

ADDITIONAL NCOMPASS PARTS

NCOMPASS Board (with SIM)
Part # 580-0056-000

NCOMPASS Board (w/o SIM)
Part # 580-0076-000

NCOMPASS Harness
Part # 715-0087-000

NCOMPASS Antenna
Part # 715-0088-000

NCOMPASS Kit (w/o Satellite, w/o SIM)
Part # 901-K0097-001

NCOMPASS Kit (with Satellite)
Part # 901-K0085-000

POWER ELECTRONICS

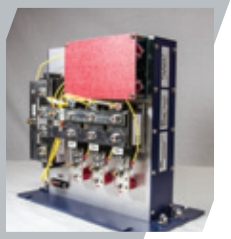
Voltage Regulator Panel

Part # 903-0002-000 (EMD)
Part # 903-0023-000 (GE)

This device is designed to replace the OEM Voltage Regulator Assembly in the Auxiliary Generator field circuit. The Voltage Regulator (VR) Panel monitors and regulates the auxiliary generator output voltage by controlling auxiliary generator field current. As required, the VR varies the auxiliary generator excitation level to produce the necessary auxiliary generator output voltage level. Regardless of engine (and auxiliary generator) speed variances, this voltage level must be maintained at all times. The VR uses solid-state electronic components to regulate auxiliary generator output voltage by turning the generator field circuit On and Off using pulse width modulation techniques. The On time, in relation to the Off time duty cycle, establishes the auxiliary generator field current, which controls the auxiliary generator voltage. The VR uses no mechanical parts, making it very reliable.

FEATURES

- Does not require calibration (74VDC nominal)
- Aux Gen Field over current protection (14 Amps)
- Software battery over voltage protection @ 80VDC
- Hardware battery over voltage protection @ 85VDC
- 500Hz PWM control
- +/- 1 volt regulation threshold across the engine throttle range



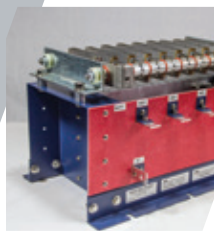
SCR Module

Part # 903-0010-000

This device converts the D14 three-phase power for the main generator field excitation. The SCR consist of a three-phase bridge rectifier circuit and related transient suppression circuitry. To obtain a controllable current output one of the diodes in each leg of the bridge is replaced with a silicon controlled rectifier. Drop-in replacement for EMD 8451653.

SPECIFICATIONS

Storage Temperature: -40º C to +60º C (-40º F to +140º F) | Ambient Operating Range: -40º C to +50º C (-40º F to +122º F) | Input Signal: D14 alternator three-phase | Output Signal: 0-150 Amps DC



Battery Charging Rectifier Assembly (Rectifier Module, 18kW)

Part # 903-0011-000

The rectifier module will use modular isolated thermal baseplate components for the rectifier and diode placements. The primary loads on the rectifier module are the 64V battery bank, lighting, and control power. Drop-in replacement for EMD 8479400.

LVPS III 22Kw, 240VAC, 27 & 74VDC outputs

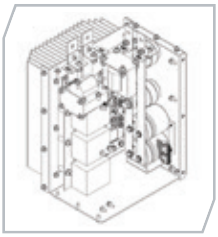
Part # 903-0012-000

The LVPS has been designed to provide two isolated power supplies (74VDC and 27VDC) from the AC output provided by a single genset. 2 separate power conversion “channels” are provided, 1 for each voltage. The front end rectifier, DC bus, and control electronics are common for both DC outputs. 2 transformers are each driven with its own H-bridge primary and used to implement the 2 separate DC outputs.

ALSO AVAILABLE

LVPS IV 12Kw, 480VAC, 27 & 74VDC outputs
Part # 903-0009-000

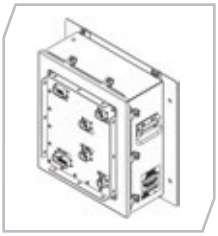
LVPS 20Kw, 240VAC, 74VDC output ONLY
Part # 903-0015-000



DC/DC Converter, 74V to 24VDC, 30A

Part # 903-0013-000

The DC/DC Converter is designed to provide a single isolated power supply of 24VDC at 30A peak from a 74VDC source. Typical applications of this converter include solid state lighting supply and PLC control power supply. The DC/DC Converter is designed to operate without forced air cooling being required in ambient conditions exceeding 50º C (122º F).



EFI 645/710

Part # 919-001-000

NRE’s complete line of EFI systems gives you several options to choose from when deciding to upgrade your engine to modern electronic fuel injection. Our EFI systems provide excellent throttle response throughout the RPM range along with smooth engine operation. They also offer the potential for improved fuel economy by making the engine more efficient. NRE’s EFI systems are the most complete systems available on the market, giving you everything you need to add powerful and efficient fuel injection to your system. All of these systems are EPA tested to deliver proven-performance results. Finally, NRE offers a dedicated support staff to assist you and answer any questions. NRE EFI systems offer you the most value for your dollar!

DC CHOPPERS

Chopper III

Part # 903-0004-000

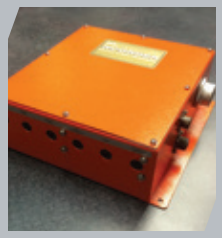
Chopper II (Drop-In)

Part # 903-0005-000

FOR MORE INFORMATION ON OUR CUSTOM BUILD ELECTRONICS, CONTACT:

618-241-9270 or sales@nre.com

ADDITIONAL **PRODUCTS**



Event Recorder

Part # 920-0008-000

The primary function of the event recorder is to monitor and record analog and digital locomotive signals for future downloading and analysis. The event recorder also provides locomotive health monitoring recordings. The locomotive air system interface consists of a six-port Air Manifold incorporated within the event recorder. The piping interface is on the plug plate end of the recorder box. This manifold contains two pressure transducers and four pressure switches.

SPECIFICATIONS

Memory: 16MB internal | Communication Ports (3): Two RS-232 ports for interfacing to laptop and/or EOT system, USB port for downloading event logs | Internal 6-Port Air Manifold: Two pressure transducers and four pressure switches | Ambient Operating Range: -40º C to +60º C (-40º F to +140º F) | FRA 49, 229, 135 compliant

PRESSURE TRANSDUCERS

Signal	*Input Range*
Brake Cylinder	0-100 PSI
Brake Pipe	0-100 PSI

PRESSURE SWITCHES

Signal	*Contact Position*	*Threshold*
Bell	Normally Open	15 PSI
Horn	Normally Open	15 PSI
Emergency	Normally Open	15 PSI
Nullify	Normally Open	15 PSI

PART ATTACHMENTS

Main Event Recorder Harness

Part # 725-0088-000

Connects event recorder to analog and digital signals via locomotive terminal boards

RDU Cable

Part # 058-0028-000

Connects event recorder to Remote Download Box

EOT Cable

Part # 058-0029-000

Connects event recorder to locomotive End of Train device

Remote Download Unit (RDU)

Part # 920-0002-000

The Remote Download Unit is a device that allows data to be copied from the event recorder at a remote location from the event recorder such as the locomotive cab. The data can be copied to a USB stick or a laptop computer. The Remote Download Unit also provides a remote port for the connection of a laptop computer to the event recorder. The RDU also provided event recorder health indication.

Stand Alone Alerter

Part # 920-0003-000

Delivers audible and visual crew alert signals in-cab as directed by the control module.

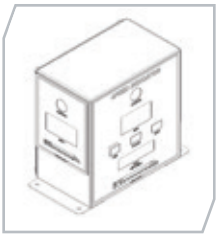
Speed Indicator

Part # 908-0005-000

The Speed Indicator is a multi-function, microprocessor-controlled speedometer designed to provide all of the requirements for accurate locomotive speed indications.

SPECIFICATIONS

Storage Temperature: -40º C to +60º C (-40º F to +140º F) | Ambient Operating Range: -40º C to +50º C (-40º F to +122º F) | Input Voltage: +74 VDC, ±15V (locomotive battery source) | Speed Signal Input: Pulses per wheel revolution (PPR) square wave, 5-12V minimum amplitude of various input signal types. 20, 60 or 120 PPR optical or other input. | Display: Imperial units, 3 digit display



Speed Indicator – Metric

Part # 908-0006-000

SPECIFICATIONS

Storage Temperature: -40º C to +60º C (-40º F to +140º F) | Ambient Operating Range: -40º C to +50º C (-40º F to +122º F) | Input Voltage: +74 VDC, ±15V (locomotive battery source) | Speed Signal Input: Pulses per wheel revolution (PPR) square wave, 5-12V minimum amplitude of various input signal types. 20, 60 or 120 PPR optical or other input.
Display: Metric units, 3 digit display

Dynamic Brake Hatch

Mounted on Long Hood Frame. Eight Grid Resistor Boxes. Two Blowers. Inverter Protection Resistance. Cable Assemblies.

Radiator Cooling Fan Assembly

Inverted Squirrel Cage. Dual Speed. Double Winding. 3-Phase Induction Machines. Low Vibration Levels. Energy Efficient.

Auxiliary Generator

One 3-Phase Pilot Exciter Assembly. Develops 74 VDC at all speeds. Brushless AC Generator. Voltage rectified by 3-Phase, 6 Wave Diode System. Nominal Output of 18kW at 55VAC.

Tier 0+ Certified Power Assemblies

NRE carries complete line of 710 & 645 EMD Power Assemblies and Components.

BENEFITS
100% New Power Assembly | Improved Fuel Economy | Reduced Oil Consumption
Longer Product Life Cycle | 2 Year Warranty

Electrical Cabinets

State-of-the-art electrical cabinets with quality looming and termination

Tier 0+ Emission Kits

Tier 0+ Emission Kits by NRE is currently being marketed to the rail and marine industries. The new kit meets and exceeds the new emission standard requirements of the new Environmental Protection Agency regulations for diesel locomotives effective as of January 2010.

KIT COMPONENTS

Emission KIT-E

- Kit Part # NRE8-645E
- Kit Part # NRE12-645E
- Kit Part # NRE16-645E

Emission KIT-E3

- Kit Part # NRE8-645E3
- Kit Part # NRE12-645E3
- Kit Part # NRE16-645E3
- Kit Part # NRE20-645E3

Emission KIT-E3B/C

- Kit Part # NRE8-645E3B
- Kit Part # NRE12-645E3B
- Kit Part # NRE16-645E3B (specify TS or SS upon ordering)
- Kit Part # NRE20-645E3B
- Kit Part # NRE16-645E3C

Emission KIT-F3B

- Kit Part # NRE8-645F3B
- Kit Part # NRE12-645F3B
- Kit Part # NRE16-645F3B

Emission KIT-MUI

- Kit Part # NRE12-710MUI
- Kit Part # NRE16-710MUI

New & Rebuilt Traction Motors

All new and rebuilt Traction Motors for all EMD and GE locomotives.

MOTORS

NR-761
NR-764
NR-D-29
NR-D-31
D-87BTR

A HISTORY OF SOLID GROWTH

NRE continues its history of solid growth using its highly skilled workforce and state-of-the-art manufacturing facilities to provide quality products and services to its customers worldwide. Founded in 1984 by Lawrence Beal, NRE has grown to encompass fifteen facilities and affiliates making it the world's largest independent supplier of new and remanufactured locomotives; new and rebuilt mechanical materials; electrical components; technical support and field services.

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