



**TMV**

*control systems*

**20th Anniversary**

**CATALOG**

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**Locomotive Products**

Full Control Systems and accessories

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# MISSION STATEMENT

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*It is the objective of TMV to design and manufacture the next generation of locomotive control systems.*



*At TMV, we're celebrating 20 years of looking forward to the future. We work hard to ensure our products stand the test of time and raise the bar as to what it looks like to future-proof a development process. This was true from the early days in 2005 with the initial launch of TMV Control Systems Inc. in partnership with a locomotive builder and our first facility a home office, all the way to where we are today in our 13,000 sq ft manufacturing and office facility as we shipped out our 1,000th CPU module, which represents approx 800 TECU systems. Our Goal has always been to offer the rail industry an advanced, robust control system with long-term performance. Our engineering and design team will keep working hard against the odds to ensure that any given product we produce has the potential be both functional and relevant for at least the next 50 years. See page 14 for environmental tests.*

*We are thankful to our many customers for their support. They include a Class 1 rail-road, locomotive leasing companies, locomotive builders, rail maintenance companies, and numerous short lines. We are committed to continue to source parts locally when possible, building them to be long-term reach-back capable whenever we can. We also keep this same philosophy for all updates and re-designs, ideally only replacing smaller parts of our modular TECU system when needed. Our products avoid End of Life (EOL) obsolescence while proving to be cost-effective long term solutions, intelligently reducing wear and saving you fuel with every install.*

*As a B2B company, we know our legitimacy helps our customers' businesses. Since 2014 TMV has been ISO certified and currently holds the latest ISO 9001:2015. Every year we maintain internal audits, record keeping and improvements to the entire scope of our system and organization so we can serve potential customers like yourself, with an international standard of integrity.*



**TMVcontrol.com**

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2024 TMV team picture

## TECU MODULES

Complete line of highly customizable Traction Engine Control Unit modules

TMV offers a variety of optimized TRACTION ENGINE CONTROL UNIT (TECU) solutions for almost any locomotive build, rebuild, or upgrade.

The TECU's features include wheel slip correction, control for wheel creep, pinion slip and locked axle detection, all successfully maximizing tractive effort.

It also communicates with potentially dozens of sensors detecting axle speed, engine speed, fuel level etc, and can be configured to remotely send crucial information formatted in a way to be viewed at your convenience on your own device!



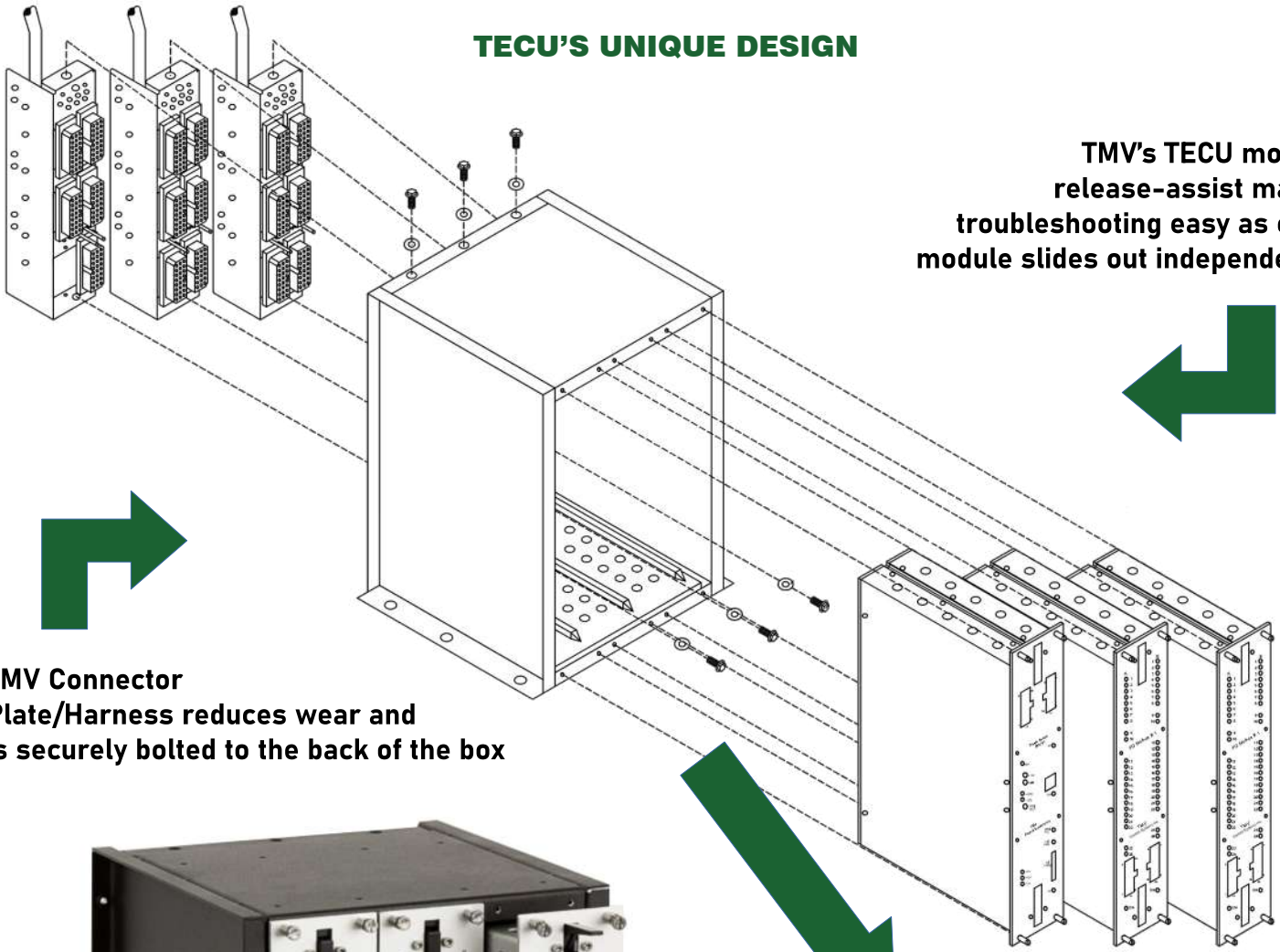
TMV P/N	MODULE	Description
T-06100/00	PS/CPU	Power Supply and Central Processing Unit - supplies power and collects all data from other TECU modules
T-06100/13	PS/CPU 24V	Lower voltage version of standard PS/CPU module
T-06100/01	I/O	Adds a significant number of both digital and analog inputs/outputs
T-06100/14	I/O 24V	Lower voltage version of standard I/O module
T-14117/00	VR/SCR	VR: Controls Auxiliary Generator field for battery charging SCR: Controls the companion alternator for modifying power flow from main generator.
T-06100/24	SCR/Field Driver	SCR stand alone module
T-06100/02	COMM	Connects and regulates communication systems on vehicle
T-06100/21	TECU Box - 3 Slot	Can house 3 modules, and is generally appropriate for locomotives with normal Input/Output requirements.
T-06100/02	TECU Box - 5 Slot	Can house up to 5 modules, and is appropriate for locomotives with high Input/Output requirements.
MM3-ST013	Front Plate Blank	When a TECU Box has more slots than modules needed, two plates "blank out" one of the slots



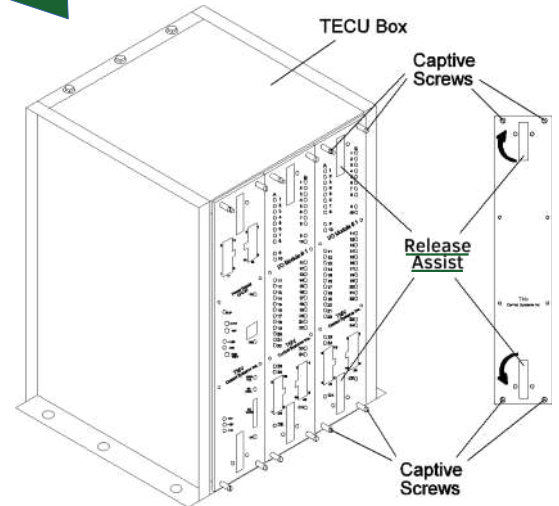
In addition to locomotives this innovative system can also be integrated into many other rail and marine vehicles, improving efficiency and reducing engine wear.

**TECU'S UNIQUE DESIGN**

**TMV's TECU module release-assist makes troubleshooting easy as each module slides out independently**



**TMV Connector Plate/Harness reduces wear and is securely bolted to the back of the box**



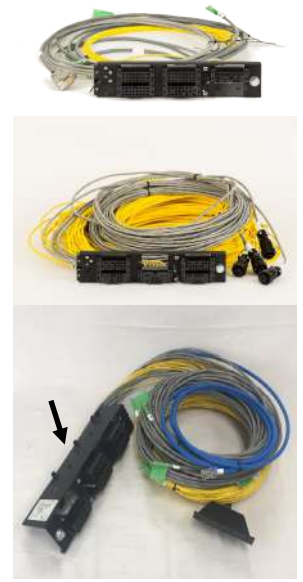
### TECU HARNESSES/DISPLAY

Complete line of Connector Plates, Harnesses and Displays



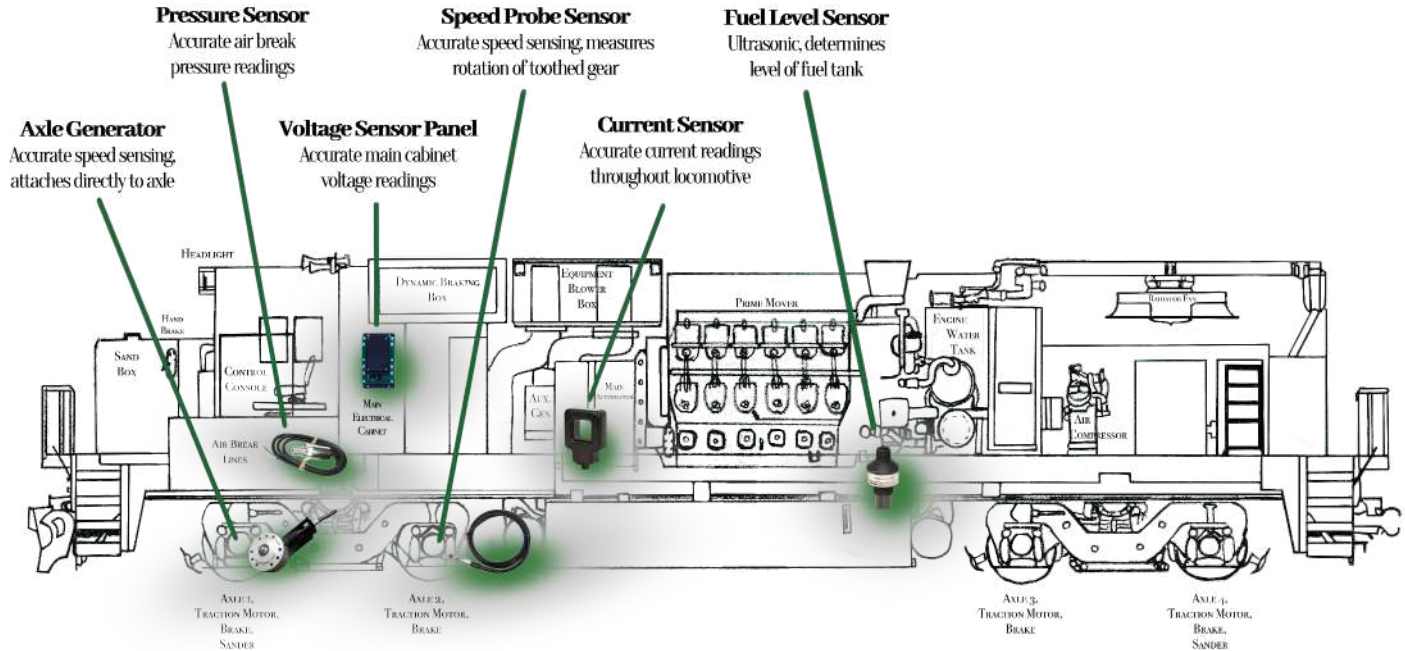
TMV TECU Display is the main navigation tool for viewing TECU and locomotive data

TMV P/N	Connector & Harness	Description
T-06100/05	PS/CPU Module	Connector plate for the PS/CPU Module has few connectors and wires, and controls the TMV Display
T-06100/06	I/O Module	Connector plate for the I/O Module connects to and enables the TECU system to control most of the Locomotive
T-14117/01	VR/SCR Module	Connector plate for the VR/SCR Module wires to the Auxiliary Generator and Companion Alternator to monitor and control power.
T-19150/00	TECU Display	7in Touchscreen Display



### LOCOMOTIVE SENSORS

Complete line of highly reliable Sensors compatible with many Control Systems

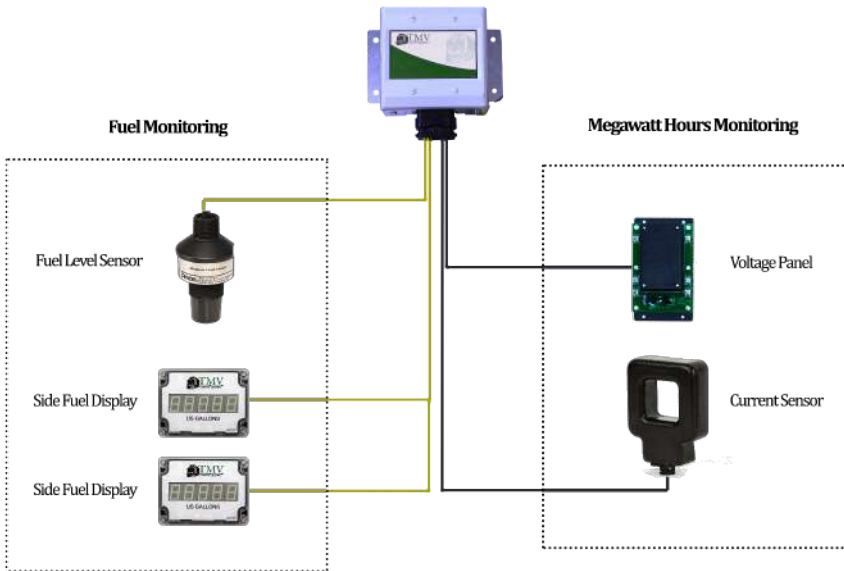


TMV P/N	Item
T-19153/00	1600V Voltage Panel
T-07103/00	1800A Current Sensor
T-07103/06	360A Current Sensor
SN-S001	Speed Probe
T-06102/00	120ppr Axle Gen
T-17102/01	60ppr Axle Gen
T-18102/01	Passive/Magnetic Axle Gen Kit, 60ppr
T-18102/00	Passive/Magnetic Axle Gen Kit, 20ppr
SN-P1401A	100 psi Pressure Sensor
SN-P1402A	200 psi Pressure Sensor
<b>*See page 10*</b>	<b>Thermistors</b>

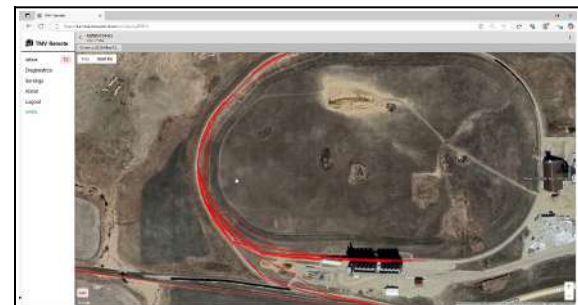
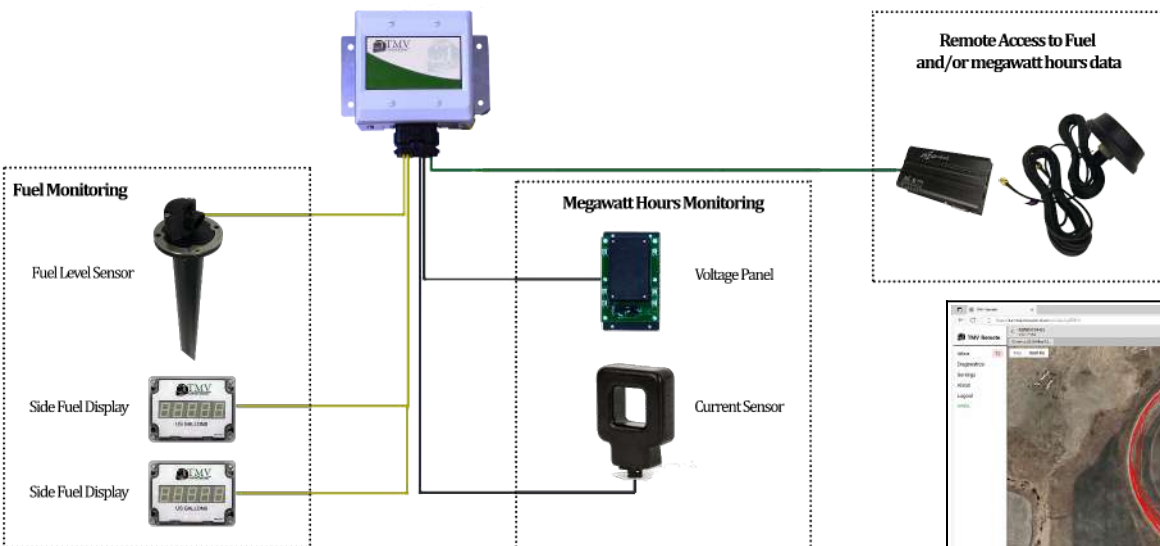


## MEGAWATT AND REMOTE HEALTH MONITORING

Complete Line of kits available to regulate Megawatt usage and Monitor your vehicle Remotely

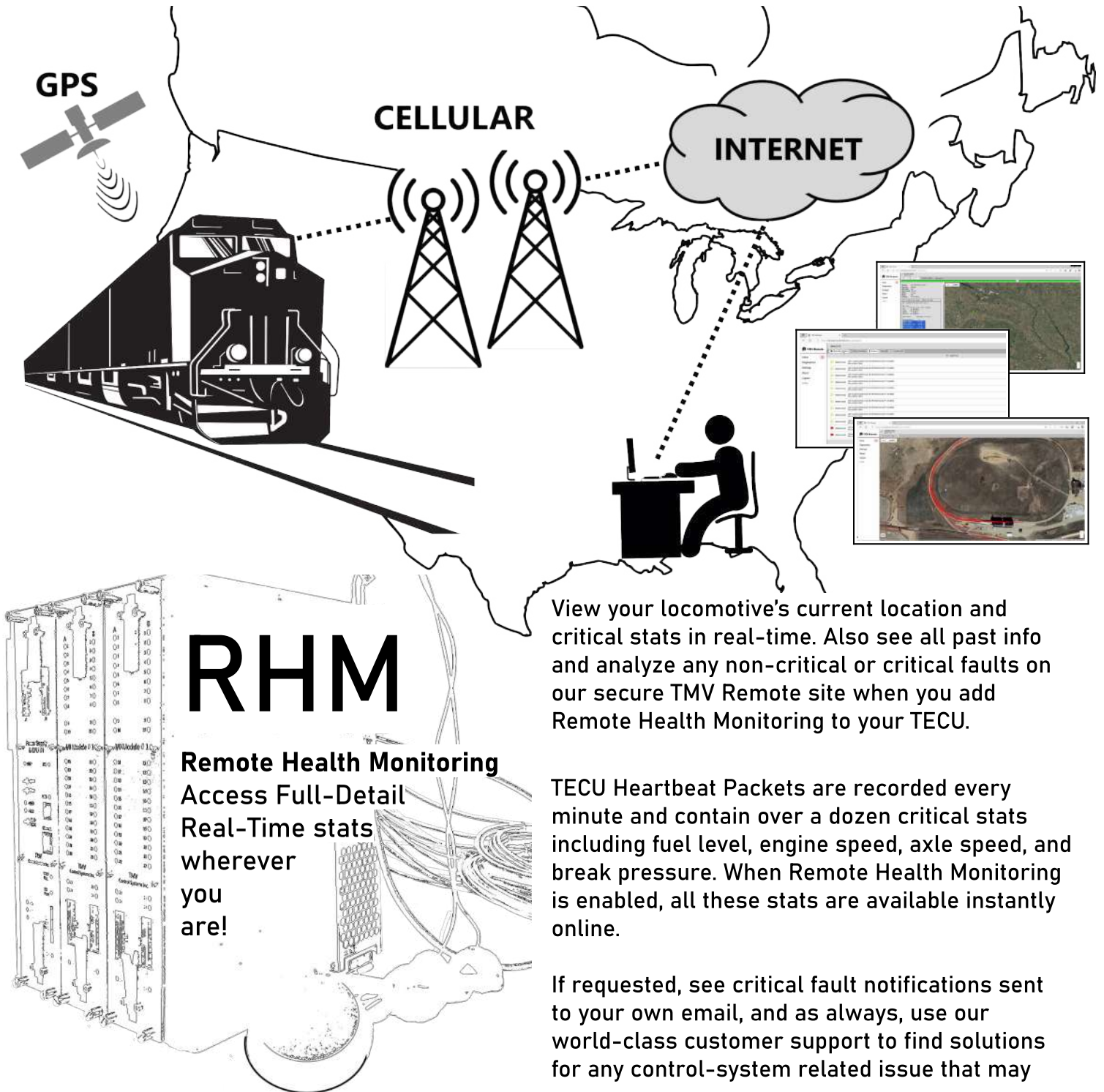


TMV P/N	Item
SN-RS04	Fuel Level Sensor
T-17136/00	Fuel Level Display – Gallons
T-17136/02	Fuel Level Display - Litres
T-21127/00	RHM Global Modem
T-W1227/01	RHM North American Modem
MC0226	Power Supply for Modem
MC0279	Antenna
MC0271	4-in-1 Antenna
<b>*See page 7*</b>	<b>1800A Current Sensor</b>
<b>*See page 7*</b>	<b>1600V Voltage Panel</b>



### RHM and the TECU

Remote Health Monitoring can be stand-alone or as an add-on to the TECU



# RHM

**Remote Health Monitoring**  
 Access Full-Detail  
 Real-Time stats  
 wherever  
 you  
 are!

View your locomotive's current location and critical stats in real-time. Also see all past info and analyze any non-critical or critical faults on our secure TMV Remote site when you add Remote Health Monitoring to your TECU.

TECU Heartbeat Packets are recorded every minute and contain over a dozen critical stats including fuel level, engine speed, axle speed, and break pressure. When Remote Health Monitoring is enabled, all these stats are available instantly online.

If requested, see critical fault notifications sent to your own email, and as always, use our world-class customer support to find solutions for any control-system related issue that may occur.

### **AUTO ENGINE START STOP (AESS)**

Complete Line of devices that safely Auto-Start/Stop a Locomotive Engine

The AESS system is designed to monitor a locomotive and automatically shut down the engine to save fuel. It then keeps the locomotive ready for restart and restarts when necessary.



<b>TMV P/N</b>	<b>Item</b>
T-09105/00A	Mechanical Governor Oil Pump Rev1
T-09105/02A	Hose Fitting Kit - Oil Pump
MM3-ST028	Oil Pump Weld Plate
T-15126/00	EPD Override Solenoid Kit
SOL17400	Solenoid Valve, Oil, LOS Override, 74v
SN-TU4100-4A	Thermistor, 100 K Ohm, Air Duct Temp Sensor - Metal Casing
SN-TU4100-2A	Thermistor, 10 K Ohm, Liquid Temp Sensor, 100 C max - With Connector
MM1-ST003	ENG Water Temp Blanking Plate
MM1-ST004	ENG Water Temp Sensing Plate
RY003002	Relay, 3-Pole, DT
RY002001	Load Shed Relay - Dual
MC0094	Buzzer Alarm for AESS – 74v
SN-P1401A	BC: 100PSI, 12v Supply, 1-5v Output, 1/4" Pipe Thread - With Connector
SN-P1402A	MR: 200PSI, 12v Supply, 1-5v Output, 1/4" Pipe Thread – With Connector
SN-P4101	Pressure Switch, 10PSI, 1/8" Pipe Thread
<b>** SEE PAGE 7**</b>	<b>360A Current Sensor</b>

### CRASH HARDENED MEMORY INTERFACE

TMV's CHMI preserves data even in Extreme Conditions.



Successfully tested for survival under conditions of fire, impact shock, static crush, fluid immersion and hydro-static pressure. Certified DOT (Department of Transportation) crashworthy, the CHMI preserves data in the event of an accident.

The USA Federal Railroad Administration requires the crashworthy event recorder to be mounted to protect the recorder. TMV offers the following **mounting formats** to ensure multiple mounting options:

- EMD Dash 2 Rack
- LSI 4 MCU Rack Mount
- Wall mount compatible

To improve crashworthiness of TMV's TECU Control System, data necessary in accident analysis is routed to the CHMI 10x a second.

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TMV also produces both Non-Crash Hardened and a Crash Hardened Event Recorder that can be hooked up to virtually any set of sensors, including those involved in our Auto Engine Start Stop (AESS) Kit. It has the ability to receive/store data for approx. 1 year, which is the same expected data retention time span as the CHMI.

Crash Hard Memory Module

Pressure Sensors  
Pressure Switches



Yellow Reset Button



Alerter Head



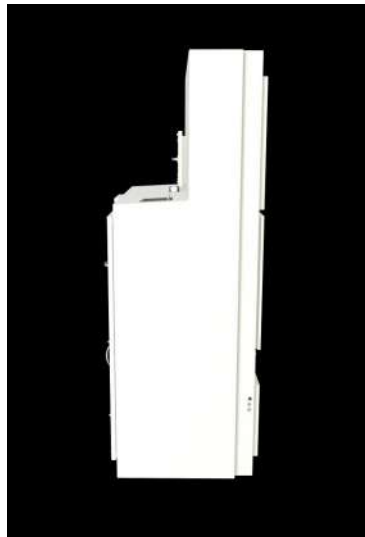
TMV P/N	Item
T-18148/00	CHMI - Crash Hard Memory Interface
T-19151/12	CHER - Crash Hardened Event Recorder
RY101019	Alerter Reset Button
T-19151/02	TMV Alerter Head
T-19151/18	Remote Access Box
<u>*See page 7*</u>	Pressure Sensors

## MAIN ELECTRICAL CABINET

Custom-Built main electrical cabinets for use in any Build, Rebuild or Upgrade



Each cabinet starts with a schematic and 3D model for custom metal work from our engineering department.



## CONTROL STANDS

The Next Generation of Control Stands for any Build, Rebuild or Upgrade



AAR Style Control Stands available in Analog  
and DUAL 12in display.



Access panel removed to display innovative wiring etiquette

**Built for long-term use**, every detail is meant to minimize operator fatigue while maximizing the end-user's experience. With tool-less access panels and easy-to-read back-lit controls, TMV's control stands are world-class instruments. For this, among other things, our engineering and design team is always ready to discuss any custom requirements or requests you may have.

**Contact Us** to inquire more about equipping your locomotive for the future



*"The next generation of  
locomotive control systems"*



Quality  
in  
Management

## **OTHER PRODUCTS**

Complete Line of other products and  
Services

TECU PC Data Logger

Schematic Work  
Engineering Work  
Series/Parallel transition of traction motors  
TMV Equipment Training Videos

Battery saver  
Gen Field Driver  
Coil Suppressor  
Alerter System  
Megawatt GP  
Slow speed control

World Class Customer Support  
French/Spanish/Korean Accommodation  
Extensive Shipping Capabilities

## **DISCLAIMER**

\*Every attempt has been made to keep information regarding TMV's products as accurate and precise as possible, but we cannot guarantee the accuracy of any information in this Catalog at the time you are reading it. Please contact TMV Control Systems Inc. to confirm all relevant information before making a purchasing decision.

Email: [sales@tmvcontrol.com](mailto:sales@tmvcontrol.com)  
Phone TMV: 519-624-8219

## **TECU Environmentally Tested and Passed**

EN 61000-4-3 Radiated Susceptibility  
EN 61000-4-6 Conducted Susceptibility  
EN50121-4:2006/FCC Part 15 Radiated  
Emissions  
EN50121-4:2006/FCC Part 15 Conducted  
Emissions  
EN50121-4:2006 IEC 61000-4-2:2008  
Electrostatic Discharge Immunity  
EN50121-4:2006 IEC 61000-4-4:2012  
Electrical Fast Transient/Burst Immunity  
EN50121-4:2006 IEC 61000-4-  
5:2005+Cor:2009 Surge Immunity  
IEC60571:2012 Section 12.2.4 Cold Start Test  
IEC60571:2012 Section 12.2.5 Dry Heat Test  
IEC60571:2012 Section 12.2.6 Damp Heat Cycle  
IEC60571:2012 Section 12.2.10 Insulation Test  
IEC60373: Railway Applications –  
Rolling Stock Equipment – Shock and  
Vibration Tests



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