

## REMS

## REMOTE ERROR MONITORING SYSTEM



### Features

- Retrieves vehicle error status information and transmits a relevant SMS/GPRS message
- Vehicle position is part of SMS/GPRS message and enables vehicle tracking functionality
- Customer specified evaluation algorithm defines the relevant SMS/GPRS message structure
- Integrated Automatic Vehicle Location (AVL) functionality

### Benefits

- Immediate vehicle error status information available for maintenance diagnostic resulting in cost savings

### Introduction

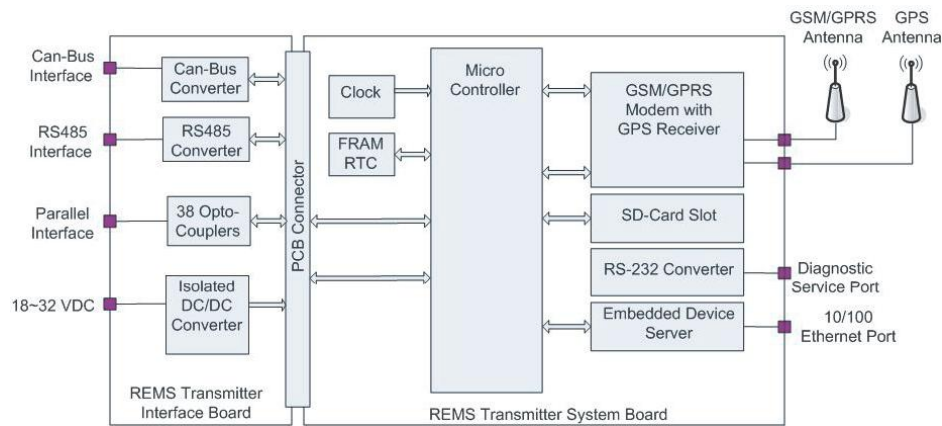
In order to ensure vehicle operation with minimum interruptions under any circumstances, permanent monitoring of the vehicles through diagnostics is necessary. The individual components such as boogie, brakes, air-conditioning, door controls, etc., have their own diagnostic function including error memory. The Remote Error Monitoring System (REMS) was specifically developed to retrieve the error status information detected by the various diagnostic systems, evaluate their importance and transmit a relevant SMS/GPRS message.

### Basic Functionality

The Remote Error Monitoring System consists of a REMS transmitter in each vehicle and a host computer with a monitor on the wayside. The REMS transmitter is designed to scan the digital event inputs of a Light Rail Vehicle (LRV) or a street car. After qualifying the input message according to a customer defined algorithm, the REMS transmitter will send a Short Message Service (SMS) or an optional GPRS message to a designated address. Each event message contains a vehicle-ID code, date and time stamp, a designation of which event was triggered or cleared and the geographic location of the vehicle.

The SMS/GPRS messages are received by a dedicated receiving station where the messages are displayed on the monitor of the host computer and forwarded to service personnel. These messages can also be used to have a specific rail system map on the monitor of the host computer and display the vehicles with an existing error condition dynamically on the rail system map. Additional to this functionality an Automatic Vehicle Location system (AVL) can be implemented using the same REMS transmitter. The only additional software function required is transmitting the vehicle location coordinates on a fixed time interval through a SMS/GPRS message to the host computer. In this instance the monitor of the host computer will have the specific rail system map and display each vehicle dynamically on the map.

An RS485 interface is available to connect an optional automatic passenger counting system. Additional information about this system is available upon request.



Block diagram of Remote Error Monitoring Transmitter

### Specifications Remote Error Monitoring System Transmitter

Digital Interfaces	Can-Bus Interface (J1939 and J1708) Parallel interface, 38 optically isolated inputs, active high input voltage 16.8 ~ 30 V DC Optional RS232 interface Optional RS485 interface for automatic passenger counting system
Microprocessor	ATMEL ATmega2560
Serial Interface	Diagnostic and service port for connection with Portable Test Unit (PTU)
SD-Card functions	Error storage capacity and firmware upgrade functions
GSM/GPRS Modem	Compatible with 850, 900, DCS1800 and PCS1900 Mhz networks
GPS Receiver	Extremely fast TTFF's at low level signals, Hot starts < 2 seconds, 200,000+ effective correlators Supports 20-channel GPS, Output message: NMEA 0183, GGA, GSA, GSV, RMC
Power Requirements	Power Consumption 24 VDC 1 Amp Input Voltage 16.8 ~ 30 V DC (for Un=24V in compliance with EN 50155)
Environment	Temperature -13 ~ +158 °F (-25 ~ +70 °C), Operating in compliance with EN 50155 Humidity -95% @ 104 °F (+40 °C) (non condensing), Operating Vibration Resistance 1 Grms, IEC 60068-2-64, Random, 5 ~ 500 Hz, 1 Oct/min, 1 hr/axis, Operating Shock Resistance 20 G, IEC 60068-2-27, half sine, 11 ms, Operating
Physical Characteristics	Construction Aluminum housing Mounting Stand alone or 19" rack mounting Dimensions (WxHxD) 6.50" x 4.10" x 1.75" (165 x 104 x 44 mm) Weight 2.4 lb (1.08 kg)

### Specifications combined GSM/GPRS/GPS Antenna

Frequency Range	GSM 900: 890-960 MHz, GSM 1800/1900: 1710-1990 MHz, GPS: 1575.42 MHz
Gain	2.15 dBi
VSWR	1.5 max
Impedance	50 Ohm
Max Power	10 W
Dimensions (LxWxH)	4.4" x 2.5" x 0.8" (11.2 x 6.4 x 2.0 cm)

### Ordering Information

Part Number	Description
6950 0000 6056	Remote Error Monitoring System Transmitter
6950 0000 6057	Combined GSM/GPRS/GPS Antenna

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VECOM USA is proud to be ISO 9001:2000 Certified

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