

# DuraMAR 2150

## Rugged Rolling Stock Mobile Access Router

### Features

**IP routing:**

Integrated Cisco 3230 Wireless & Mobile Router; Robust Cisco IOS Software Security, Management, QoS, VLAN, & Routing Protocol Support, including IPv6 and IP Mobility (IETF Mobile IP Standard RFC 2002)

**MTBF:**

20,000 hours ground mobile

**Internal Router Wireless Interfaces:**

- Wireless carrier including
  - Sierra Wireless 7.2Mbps HSDPA
  - MC-55 GPRS modem

**Wireless Diagnostic port:**

- Using 3-band internal GPRS/GSM wireless modem
- SNMP Remote diagnostics, status and alarm monitoring

**External Serial ports:**

- 1 RS-232 Controller utility/debug port
- 1 RS-232 AUX port of CISCO MAR

**External Ethernet ports:**

- 1 routed 10/100Mbit Ethernet

**Enclosure:**

Extruded anodized aluminium with 4 x M4 jam nuts

**Power supply:**

- Isolated + 110Vdc nominal train feeder input

**Environmental:**

- IP 55
- -20 to +70°C operating temperature for MAR
- -20 to +55°C with wireless terminals



### General Description

The DuraMAR™ 2150 is an integrated rugged Mobile IP router designed for net-centric operation in rolling stock installations such as on trains and metros. Leveraging Cisco Systems' industry standard IOS® software and 3200 series mobile access routing (MAR) technology and Eurotech embedded Linux wireless communication controller, the DuraMAR router enables prime contractors and systems integrators to achieve mobile communications-on-the-move (COTM) and a wide range of new in-vehicle networking applications, from wireless Internet access to Voice over IP (VoIP), passenger WiFi services to streaming video surveillance and smart vehicle diagnostics/maintenance.

The DuraMAR2150 model is particularly well suited for demanding train-borne applications where system operational reliability and integrated structure are required as this rugged router is designed to meet shock, vibration, humidity, safety, and immersion standards of IP55, EN50155, EN61373, as well as radiated and conducted EMI/EMC levels and immunity of EN50121. One 10/100Mbit Ethernet port is brought out through a sealed locking automotive grade connector. The Wireless terminals such as HSDPA, WiMAX and/or CDMA2000 EV-DO Rev. A may be integrated inside the DuraMAR2150 router.

An internal 3-band GPRS/GSM modem allows remote access to the DuraMAR2150 for diagnostics, status monitoring, configuration, as well as alarms using SNMP protocol. This independent wireless interface enables remote access to HW modules of the system such as the embedded PC, router wireless interfaces as well as the CISCO router. SNMP protocol can be used over GPRS TCP/IP data to interrogate the DuraMAR2150 independently of the wireless interfaces used for primary router communication.

The unit's purpose built power supply supports standard 110Vdc nominal train feeder voltage inputs, spikes, and transient levels. LED status indicators for power, system and modem status, as well as SIM card holders, a serial terminal port for the CISCO router and USB port to the communication controller are located on the front panel under a sealed service panel.

The system is conductively cooled and the anodized chassis eliminates all moving parts and incorporates 4 M4 jam nuts for simple installation.

## CISCO Networking and Routing Features

- **IP Mobility** - Cisco NAT Traversal over Mobile IP, Home Agent And Mobile Router Redundancy, Preferred Interfaces, Reverse Tunnelling, Asymmetric Links, Static and Dynamic networks, Static Co-Located Care of Address, Authentication, Authorization, and Accounting (AAA) Server And Mobile IP Mobile-IP tunnel templates support, configuration of IP Multicast and IPsec on Mobile-IP tunnels, Mobile-IP foreign agent local routing optimization
- **Routing and Bridging** - IPv4 and IPv6 support, Up to 32 VLANs per system, Point-To-Point Protocol, Frame Relay, X.25, XOT, HDLC, Telnet, Asynchronous Tunnelling, Dial-On-Demand Routing (DDR), PPP Over Frame Relay
- **Security** - Route and Router Authentication, PAP, CHAP, Local Password, IP Basic and Extended Access Lists, and Time-Based Access Control Lists, Stateful Inspection Firewall, Firewall Intrusion Detection, Port-To-Application Mapping, Generic Routing Encapsulation (GRE), IPSec, Easy VPN Version 4.1 for client and server, Tunnel Endpoint Discovery, SSH 1.5 Client And Server, STAC Compression, Routing Table Protocol (RTP) Header Compression

**NOTE: Above features are specific and limited to CISCO IOS and MAR**

## Physical Characteristics

- **Dimensions:** 129 (W) x 254 (L) mm
- **Thickness:** 83 mm
- **Power consumption:** typical 20W, peak 25W
- **Temperature:**
  - 20 ~ + 70 °C (operating MAR)
  - 20 ~ + 55 °C (with wireless)
  - 25 ~ + 70 °C (storage)
- **Mounting:** M4 jam nut

## Connectors

- Sealed Automotive connectors
  - RJ-45 Ethernet port
- 3 pole MIL-grade connector for 50 Ohm RF antennas
- Under service panel
  - 2 x SIM sockets, USB, CISCO terminal serial port

## Compliance

- Environmental:
  - EN50155 Cooling, EN50155-T1 dry heat (+55°C)
- Mechanical
  - EN61373 (ed. 2000) Sections 8,9,10
- EMC
  - Immunity/Emissions EN50121, Power supply EN50155
  - Emissions 2004/104/EC
- Safety
  - EN60950

## Power Supply

- Voltage options (must be defined upon order)
  - Isolated 110V (+77 to +121Vdc ) train feeder input, + 137Vdc absolute maximum
  - +8 to +36Vdc vehicle input
- 50W peak power, structural heat dissipation
- Purpose built for compliance for train installation