Rugged Rolling Stock
Mobile Access Router

DuraMAR® 2150

- **Passenger WiFi services**
- **Voice over IP (VoIP)**
- **Streaming video surveillance**
- **Smart vehicle diagnostics/maintenance.**

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 with option for
– Sierra Wireless GPRS/EDGE/UMTS/HSDPA
– CDMA2000
– WiFi 802.11 a/b/g on system carrier

Wireless Diagnostic port – 3-band internal stand alone GSM/GPRS wireless modem SNMP Remote diagnostics, status and alarm monitoring

External Serial ports – 2 RS-232 console ports

SIM holders – 1 Remote sim holder for HSDPA, 1 Remote sim holder for GSM/GPRS (diagnostic)

External Ethernet ports – 1 routed 10/100Mbit

Enclosure – Extruded anodized aluminium with 4 x M4 jam nuts

Power supply – Isolated + 110Vdc nominal train feeder input; Optional +8 to +36VDC general purpose vehicle input

Environmental – IP 65
-20 to +70°C operating temperature for MAR
-20 to +55°C with wireless terminals

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 mobile access routing (MAR) technology. With a Eurotech embedded Linux wireless communication controller, the DuraMAR enables mobile communications-on-the-move (COTM) and a wide range of new in-vehicle networking applications.

Designed to meet shock, vibration, humidity, safety, and protection standards of IP65, EN50155, EN61373, as well as radiated and conducted EMI/EMC levels and immunity of EN55011, the unit is particularly well suited for demanding train-borne applications where system operational reliability and integrated structure are required.

Routing to a single 10/100Mbit Ethernet port and two RS232 serial ports, wireless technologies such as GPRS/EDGE/UMTS/HSDPA, WiFi 802.11 a/b/g and/or CDMA2000 EV-DO Rev. A may be supported, whilst an internal, independent 3-band GPRS/GSM modem allows remote access to the DuraMAR® 2150 for diagnostics, status monitoring, configuration, and alarms using SNMP protocol.

Supporting standard 110Vdc nominal train feeder voltage inputs, spikes, and transient levels, the system is conductively cooled and the anodized chassis eliminates all moving parts and incorporates 4 M4 jam nuts for simple installation.

EUROTECH
Imagine. Build. Succeed.

DuraMAR® 2150

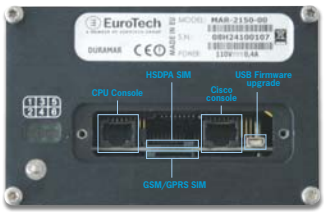
Specifications

Rugged Rolling Stock Mobile Access Router

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



Connectors

MIL-26482 CONNECTORS	RJ-45 Ethernet port 3 pole for power supply 3 pole for 50 Ohm RF antennas
UNDER SERVICE PANEL	2 x SIM sockets, USB, CISCO terminal serial port

Physical Characteristics

DIMENSIONS	129 (W) x 254 (L) 83 (H) mm
POWER CONSUMPTION AT 110V	typical 20W, peak 25W
TEMPERATURE	-20 ~ + 70 °C (operating MAR) -20 ~ + 55 °C (with wireless) -25 ~ + 70 °C (storage)
MOUNTING	M4 jam nut

Power Supply

Voltage options (must be defined upon order)	Isolated 110V (+77 to+137,5Vdc) train feeder input

Purpose built for compliance for train installation

Compliance

STANDARD

Designed to be compliant with:
CEI EN 50155 Railway applications
CEI EN 55011 Limits and methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM) radio frequency equipment
CEI EN 61000-4-2 Electrostatic discharges immunity test: performance criterion B
CEI EN 61000-4-3 Electromagnetic compatibility (EMC) – Part 4-3 Testing and measurement techniques- Radiated, radio-frequency, electromagnetic field immunity test
CEI EN 61000-4-4 Electromagnetic compatibility (EMC) – Part 4-4 Testing and measurement techniques- Electrical fast transient/burst immunity test
CEI EN 61000-4-5 Electromagnetic compatibility (EMC) – Part 4-5 Testing and measurement techniques- Surge immunity test
CEI EN 61000-4-6 Electromagnetic compatibility (EMC) – Part 4-6 Testing and measurement techniques- Immunity to conducted disturbances, inducted by radio frequency field
CEI EN 61000-4-11 Electromagnetic compatibility (EMC) – Part 4-11 Testing and measurement techniques- Voltage dips, short interruptions and voltage variations immunity test
CEI EN 60950-1 Safety of information technology equipment. Part 1 general requirements
CEI EN 61373 Random vibrations of simulated duration, random vibrations and shock testing with half sine pulses
CEI EN 60068-2-2 Environmental testing procedures, Dry heat
CEI EN 60068-2-1 Environmental testing procedures, Cold
CEI EN 60068-2-1 Environmental testing procedures, Cold

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