5Ge-Rail

5Ge Rail: 5G communication platform for Railway

Introduction

The Teldat 5Ge Rail is a new device which enables railway scenarios to have 5G (and higher 4G categories) connectivity with low installation cost and no losses due to long antenna cables. The 5Ge Rail, due to its small size, is able to be installed near the rooftop antenna, making easier the selection of antenna spots, and the installation itself. Featuring also PoE, for less cables, and less hassle. Its two ethernet ports enable for multiple installation scenarios.

Destacar

- **5G Radio with fallback to LTE up to Cat. 20**
- **2x 2.5 Gbps port ethernet (1xPoE)**
- **MU-MIMO 4x4**
- **Dual SIM capabilities for multiple carriers**
- **Compliant with railway regulations**
- **Full routing capabilities (optional)**

Interfaces

WWAN - Cellular module	5G fallback LTE Cat. 20 - 4x4 MIMO
GNSS	GPS/Gallileo/Glonass/BeiDou
Ethernet interface	2 x 2.5 GbE (1 x PoE) - M12-X connector
Didital I/O	One pin
Serial	RS232
Power Supply	M12-A 4 poles connector

Competitive Advantage

5G and LTE superior categories	Up to 2.5Gbps download and 650 upload, enabled for 700MHz band
Ruggedized hardware	Designed to withstand vibrations and extreme temp (-25 to 70°C). Certified according to railway standards (EN 50155, EN 50121-3-2, EN 45545-2, EN 301 908-1)
Service and GPS-based automation	Communication monitoring and location tracking for dynamic routing policies per- service/link/position
Fanless architecture	The enclosure acts as a big heatsink, avoiding the use of mobile parts, which results in a higher MTBF.

Key Features

- **Broadband 5G module prepared both for NSA and SA** 5G connectivity now, but prepared for the next SA evolution. With fallback to LTE in locations with low 5G coverage.

- **Hardware design for use on trains** Designed to withstand vibration and extreme temperatures (-25 to 70°C) and has full onboard train certifications (EN 50155, EN 50121-3-2, EN 301 511, EN 301 908-1, EN 45545-2).

- **Compatible with standards-based management platforms** Seamless integration with third party standards-based management tools (SNMP). It has also been integrated into Teldat's Colibri network manager platform for remote monitoring and management.

- **Location-based (GPS) dynamic behavior** Ideal for telemarketing and fleet management. The device has a GPS (accessible via a TCP port) that provides real-time geo-location data in NMEA format.

- **Dual SIM** Operating both as a backup or as a location-selected operator, which enables for full flexibility, even in international routes.

- **Event and alert notifications** The device sends information with different levels of security through Syslog client, SNMP traps and e-mail alerts.

- **Secure, isolated multi-service communications** The use of advanced networking protocols with multiple WAN links allows the services and management of the different solutions sharing the communications to be logically separated from each other.

- **Advanced troubleshooting (fine-tuned, cloud)** Advanced troubleshooting (such as sniffer and syslog) for analyzing service/position/coverage problems along the route. Cloud management and auto-provisioning allow even unskilled personnel to install the equipment.

CARACTERíSTICA TéCNICA DEL HARDWARE

5G-NR/LTE/WCDMA connectivity
5G NR Radio (Sub-6G) 3GPP Release 15 (NSA and SA modes) up to 3.33Gbps (DL)
LTE Cat. 20, up to 2Gbps (DL). HSPA+ Cat 24/6: 42Mbps/5.76Mbps (DL/UL)
2 Mini-SIM (2FF) ISO/IEC 7810:2003, ID-000 (1.8V / 3V)

LAN Interface
2 x 10/100/ 1000 BaseT Giga-Ethernet switch (X-coded M-12 connector)
Port managed with MDI/MDX autodetection.
LEDs on each port for installation troubleshooting

Electrical Specifications
Nominal Supply Voltage: 24 V or 110 V DC (fluctuation 14.4/154 VDC)
Nominal Power Consumption 12 W, 18W max (full load), 55 W max (short time)
PoE: According to 802.3at (PoE+) on LAN-1 (>5ºC only)

GNSS interface
Active GPS antenna with FME and NMEA protocol
GPS/GLONASS/BeiDou/Gallileo: Up to 32 channels simultaneous tracking.
Acquisition: -147dBm . Tracking: -163dBm. Reacquisition: -158dBm

Configuration and I/O interface
M-12 8P A-coded connector
Serial RS232 Tx/Rx at 9,600 bps (configurable up to 115,200).
One digiral I/0. Switching: 110 VDC/1 A, Voltage Minumum High/Low: 12/6 VDC

Mechanical Specifications
Dimensions (W x L x H): 212 x 212 x 40 mm plus 30 mm mounting kit (2x15mm)
Weight: Approx. 3000 g. Fanless with 5 LEDs for Power, LAN1, LAN2, W, SIM
IP40 (EN 60529) Solid particle protection >1mm.

CARACTERíSTICA TéCNICA DEL SOFTWARE

IP protocol
Multicast: IGMP (v1, v2, v3), PIM-SM, MSDP, MLD, MLDv2 PSLA service probes
High availability: VRRP, TVRP (HSRP compatible)
ARP, ARP Proxy, MTU discovery, NAT, ECMP, BFD RIP, OSPF, BGP

Security
IPSec support in transport and tunnel mode (including DMVPNs)
Pre-shared authentication, RSA, Certificates, MDS, SHA-1.
Encryption: DES, 3DES, AES.

Management
CLI configuration and storage in a plain text file
Assignment of user/group licenses RADIUS and TACACS+
Compatible AAA support Netflow, RMON V5 and V9, SNMPv1, v2c y v3, Syslog

IP Services
Telnet, DHCP, DNS, FTP, SFTP, and SHH server and client NTP, LDAP, Syslog,
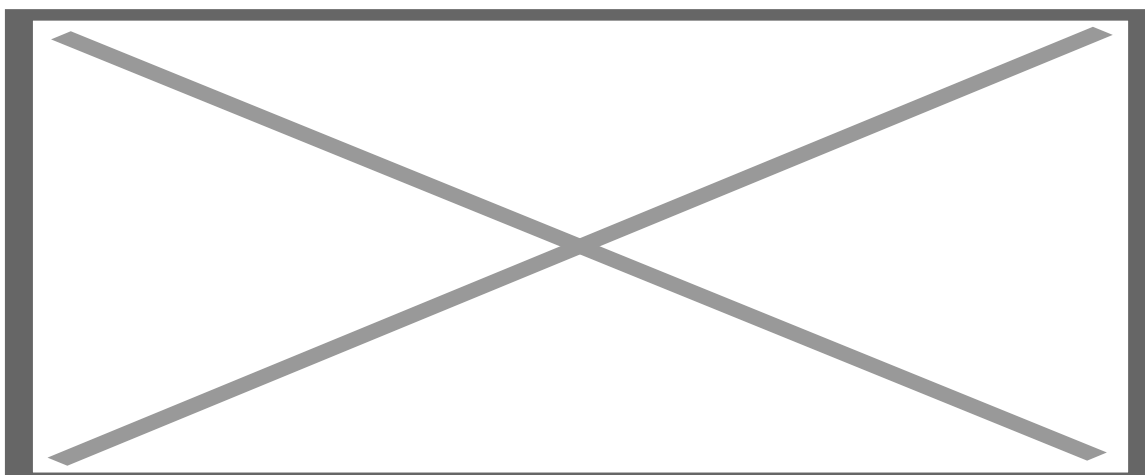SCP client.
TFTP server DHCP, dynDNS relay.

Quality of Service (QoS)
Classification, marking, BW management, BW prioritisation and limitation
Up to 32 classes 16 queues per interface Priority Queuing (PQ),
Low latency (LLQ), by weight/type (WFQ, CBWFQ)

CARACTERíSTICA TéCNICAS ADICIONALES

Environmental Specifications
Operating temperature range: EN 50155 OT3 from –25 to +70ºC.
Storage temperature min. -40 °C max. +75 °C.
Relative atmospheric humidity up to 95 %.

Certifications and Approvals
EN 50155. Electromagnetic compatibility EN 50121-3-2. Insulation EN 50124-1
Fire behaviour compliance EN 45545-2. Shock and Vibration: EN 61373.
Safety: EN 62368-1. RoHS and REACH.

Scenarios

Founded in 1985, Teldat is a Spanish company whose mission is to provide companies with valuable solutions for cloud access, remote office communications, cyberse-curity and voice/data connectivity both in the office and in specific environments whether they are industrial, railway, vehicles or public services.

Website: www.teldat.com

SPAIN
Calle Isaac Newton, 10
Tres Cantos - 28760
Madrid (Spain)
Phone:+34 91 807 6565
info@teldat.com

©2022 Teldat S.A.
Publish Date: April, 27th 2022
Version: 20221103113200