



## MESA 23: Dual Mode Cab Radio

### MTRS 1+A RIH

The MTRS 1+A RIH is a terminal unit for the purpose of train radio, shunting radio and data applications which operates in GSM-R networks and in the analogue radio networks in accordance with UIC 751-3 (450 MHz). It fulfils the European requirements for use in rail vehicles.

The MTRS 1+A RIH consists of the digital and analogue transmission and receiving device, the controls, the interface modules and the power supply. The CON/IFOT module controls the radio module, manages the priority of the calls, controls the operating devices, the modules for analogue train radiotelephony, the additional data applications and the interface modules.

The terminal unit operates in the 900 MHz GSM frequency range in the following frequencies:

- Transmitting frequency range: 876 to 915 MHz (873 to 915 MHz)\*
- Receiving frequency range: 921 to 960 MHz (918 to 960 MHz)\*

Together with operating device MMIS, handsets and loudspeakers, the MTRS 1+A RIH realises full train radio functionality. This standard model can be equipped with the following assemblies:

- **IFS module** with 2 serial interfaces for data transmission

- **IFS-A module** with 1 serial interface for data transmission and 1 interface to connect external radio devices
- **UIC module** for connecting to the train's internal UIC line according to UIC 568. (PA/Intercom)

### MESA 23:

The universal system architecture contains uniform and standardised interfaces and sub-assemblies conceived as 19" plug-in printed circuit boards. Thereby an easy and fast exchange of the sub-assemblies and the possibility of using the sub-assemblies in all equipment variants and types is guaranteed.

The consistent replacement assemblies ensures cost-optimised spares inventory to permit fast and efficient repair and minimized training needed by the maintenance personnel.

\* with MT5E

# Technical Specification

Power Supply		Dimensions+ Weight	
Input voltage	nominal 24, 36, 48, 72 or 110 V <sub>DC</sub>	Construction	Module rack (9 U / 32 HP)
Tolerances	according to DIN EN 50155	Width	167.25 mm
Interruption	according to DIN EN 50155, Class S1 (no interruption)	Height	423.5 mm
Maximal input power	nominal 240 W (calculated)	Depth	233.25 mm
Maximal power consumption	2.2 A to 10 A (depending on voltage 110 V <sub>DC</sub> to 24 V <sub>DC</sub> )	Weight	max. 11 kg

## Environmental Conditions

Protection class	IP 20 according to DIN EN 60529
Vibration and shocks	in compliance with DIN EN 50155
EMC	in compliance with DIN EN 50121-3-2 and DIN EN 50155

## Climatic Conditions

Operating temperature range	-25 °C to +55 °C
Storage temperature range	-40 °C to +70 °C (in original package)
Maximal gradient	± 1 °C/min of ambient temperature
Maximal humidity	75 % in annual average
Relative humidity	95 % on max. 30 days per year
Altitude and pressure fluctuation	-100 m to 1,800 m above sea level

## Interfaces

Operating devices MMIS	2x 26-pin HD-D-Sub
Antenna connection	2x TNC female (analogue and GSM-R)
UIC line	25-pin D-Sub (option)
Digital input and output	15-pin HD-D-Sub
RS422	IFS: 2x / IFS-A: 1x 15-pin HD-D-Sub (option)
Service, diagnostics	9-pin D-Sub
Miscellaneous	power supply, protective earth conductor

## Note

Designation scheme	<b>MTRS[1: GSM-R; +A: Analogue] [design] / [nominal input voltage] / optional: UIC / optional: IFS or IFS-A</b>
System identification	<b>MESA 23-02:</b> including central unit (MTRS 1+A RIH), operating unit(s) MMIS, handset(s), loudspeaker(s) and cables

