PROTOTYP

DIGITAL RADIO MODULE FOR FRMCS - MT18

HIGHLIGHTS AND TECHNICAL INFORMATION

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The next generation of cab radios will be based on FRMCS technology and will initially use a data transmission system that offers extremely high bandwidth and remarkably low latency. In addition, safety and reliability will be improved through the use of private and commercial 5G networks. Based on its many years of expertise in GSM-R, analogue train radio and LTE-based radio modules, Funkwerk has developed a 5G-based radio interface with a processor unit for the next generation of train communication.

In the radio module design, the mobile communications interfaces are implemented using integrated modem modules that comply with common industry standards for form factors and interfaces. This not only ensures existing support for various mobile communications systems and frequency bands, but also outstanding future-proofing and flexibility. This ensures, for example, that the **MT18** will be able to meet future requirements in global use and easily integrate certified FRMCS modems as soon as they become available.

HIGHLIGHTS

- Supports a wide range of 5G bands
- Control via a patchable embedded operating system based on Linux
- Standardised modems interchangeable (FRMCS)
- Meets the railway-specific requirements in accordance with ETSI TS 102 933 V2.1.1

TECHNICAL DATA

DIMENSIONS & WEIGHT

CONSTRUCTION	Compact slide-in module for 19“ rack	
HEIGHT	128,4 mm	with front panel and antenna connectors
WIDTH	35,2 mm	with front panel and antenna connectors
DEPTH	186,4 mm	with front panel and antenna connectors
DIMENSIONS FRONT PANEL	7 HP / 3 U	
WEIGHT	max. 0,5 kg	

ENVIRONMENTAL CONDITIONS

DEGREE OF PROTECTION ACCORDING TO EN 60529	IP20 (when installed)
VIBRATIONS AND SHOCKS	according to EN 50155
EMC	according to EN 50121-3-2 and EN 50155

CLIMATIC CONDITIONS

OPERATING TEMPERATURE RANGE	-25 °C to +70 °C
STORAGE TEMPERATURE RANGE	-40 °C to +85 °C
MAXIMUM GRADIENT	± 1 °C/min of ambient temperature
RELATIVE HUMIDITY	according to EN 50155

ELECTRICAL PROPERTIES

OPERATING VOLTAGES (TOLERANCES ACCORDING TO EN 50155)	12 V DC (11,7 to 12,9 V)	5 V DC (4,8 to 5,25 V)
INTERRUPTION OF VOLTAGE SUPPLY	S1 (no interruption) according to EN 50155	
AVERAGE POWER CONSUMPTION	at 12 V DC 54 W	at 5 V DC 7 W
MAXIMUM POWER CONSUMPTION	at 12 V DC 95 W ± 10 %	at 5 V DC 10 W ± 10 %

RF PROPERTIES INTEGRATION SAMPLE

TRANSMISSION POWER	23 dBm (5G Power Class 3)	
OPERATING FREQUENCIES	5G bands	n1, n3, n7, n8, n20, n28, n38, n40, n78
	4G bands	B1, B3, B7, B8, B20, B28a, B38, B40
	GNSS	GPS, GLONASS, BDS, Galileo, QZSS
SENSITIVITY	according to ETSI TS 138 101-1 V. 16	
RF FILTERING / BLOCKING PROPERTIES	according to ETSI TS 138 101-1 V. 16	

MECHANICAL DESIGN

RF CONNECTION	2
GNSS CONNECTION	1
POWER SUPPLY	about rewiring
LED	8 LEDs for operating statuses

The **MT18** is designed for integration into systems that already include an Ethernet switch for connecting vehicle-side applications and a controller for channelling communication requirements and controlling the radio module.

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