Data Radio Device for ETCS Purpose

RIU-ETCS 5E

RIU-ETCS – Funkwerk's mobile solution for ETCS applications – in the standard version provides fully independent radio units EDOR-5E with state-of-the-art GSM-R mobile terminal MT5-E (8 watt) in combination with the integrated wide-range power supply covering the range of 24 to 110 V onboard voltage.

The EDOR-5E is compliant to latest specification for improved receiver parameters ETSI TS 102 933 V2.1.1.

EDOR-5E-MODULE

The RIU-ETCS 5E modules can be equipped with or without a data logger (RIU-ETCS 5E or RIU-ETCS 5E/D-LOG). The data logger is designed for raw data collection of the trace data from the fixed MT5-E radio modules inside the RIU-ETCS.

One or up to four modules RIU-ETCS 5E are contained in a approved and certified 19" standard rack.

The software of the radio module is based on the Release 04 GSM standard for operating in CS or PS mode.

ETCS

On an initiative of the EC, European Railways have introduced ETCS (European Train Control System) as the unified control system for train command and control for high speed traffic. This standard shall insure European interoperability with high reliable and safe operation, economic operation and increased speed and track capacity besides many other operational and technical benefits.

ETCS Level 1 is an overlay of the existing signalling systems with Eurobalises and track circuits. Levels 2 and 3 are supported via the GSM-R data communication.

The on-board equipment for level 2/3 requires in minimum two radio subsystems for GSM-R data calls independent to the GSM-R voice communication system.

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TECHNICAL DATA

DIMENSIONS / WEIGHT EDOR-5E

Height	132 mm (3U)
Width	483 mm
Depth	190 mm
Weight	7.5 kg (RIU-ETCS 5E - fully equipped)

POWER SUPPLY

Nominal battery voltage range	24 V to 110 V
Tolerances	16.8 to 137.5 V
Supply type	floating
Stand-by power Idle Mode	3.5 W / set
Maximum power GSM Mode	10.3 W / set
GPRS Mode	15.6 W / set
Connector	Phoenix PSC 1.5 / 5-M-PE protection class 1

ENVIRONMENTAL CONDITIONS

Operating temperature	-25 ... +70°C (EN 50155) T3
Storage temperature	-40 ... +85°C

DATA-INTERFACE

User (DATA)	V.24 / V.11 (RS422)
Service	V.24 / V.28 (RS232)

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TECHNICAL DATA

RADIO INTERFACE

Frequency range	ER-GSM: TX 873-915 MHz RX 918-960 MHz ARFCN: 940-1023, 0-124
Power transmission	8 W -2 /+2 dB GSM Class 2
Reference sensitivity	-104 dBm typically
Antenna connector	TNC female, 50 Ω
Multi-slot class 10	CS-1, CS-2, CS-3, CS-4, MCS5-MCS9

CONFIGURATION

with data logger(s)	
	RIU-ETCS 5E/1MT/1DLOG =→ 1 modul EDOR-5E/DLOG
	RIU-ETCS 5E/2MT/2DLOG =→ 2 module EDOR-5E/DLOG
	RIU-ETCS 5E/3MT/3DLOG =→ 3 module EDOR-5E/DLOG
	RIU-ETCS 5E/4MT/4DLOG =→ 4 module EDOR-5E/DLOG
without data logger(s)	
	RIU-ETCS 5E/1MT =→ 1 modul EDOR-5E
	RIU-ETCS 5E/2MT =→ 2 module EDOR-5E
	RIU-ETCS 5E/3MT =→ 3 module EDOR-5E
	RIU-ETCS 5E/4MT =→ 4 module EDOR-5E

GSM BEARER SERVICES

According GSM 02.02 (ETS 300 501)	Transparent according to GSM 04.22 (ETS 300 053)
BS24 Asynchronous data 2.4 kbit/s	BS25 Asynchronous data 4.8 kbit/s
BS26 Asynchronous data 9.6 kbit/s	BS70 GPRS | E-GPRS (EDGE)

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TECHNICAL DATA

SUPPLEMENTARY SERVICES

CLIP, CoLP, UUS1, eMLPP
Others: OTDI, cOTDI, USSD, CLIR, CoLR, CFU, CFB, CFNRy, CFNRc, CW, HOLD, MPTY, CUG, AoCI, AoCC, BAOC, BOIC, BOIC-exHC, BAIC, BAIC-Roam
additional Funkwerk specific functions, e.g. acceleration network search

DATALOGGER INTERFACE

GPS / Trace / ODO	3 x 5-pole M9 connector
Ethernet connector	4-pole M12 connector

MISCELLANEOUS

Internal ARM based processor system
SW coded on Linux Operation System
2 GB internal data memory on datalogger

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