



# GSM-R module



**TRM-5, TRM-5B**  
**TRM-5 ext**

**GSM-R new defined to cope with  
challenging radio interferer**

**Optional: Extended GSM-R**

**GSM-R technology for railways**

# TRM-5 / TRM-5 ext

The modules have a quite small foot-print and provide excellent receiver characteristics.



## Technical data

Dimensions	35 x 32.5 x 3 mm [LxWxH]
Weight	6 g
Supply voltage	3.3 – 4.8 Vdc
Current consumption	
Power down	50 $\mu$ A
Sleep mode	3 mA [DRX=5]
Idle mode:	17 mA
Speech mode:	260 mA [average]
GPRS (cl. 10):	450 mA [average]
Peak:	1.6 A
Temperature range	
Normal operation:	-20°C to +55°C
Restricted operation:	-40°C to -20°C and +55°C to +70°

## Interfaces

50-pin board-to-board connector	
2 serial interfaces	
1 digital and 2 analog audio	
Power supply	
Antenna connector	Type U.FL 50 $\Omega$
Card reader	Mini-SIM

## ASCI features

VGCS	[Voice Group Call Service]
VBS	[Voice Broadcast Service]
UUS1	[User-to-User Signaling type 1]
eMLPP	[enhanced Multi-Level Precedence and Preemption]

## EIRENE features

FN supported	[Functional Number]
PFN supported	[Presentation Functional Number]
REC supported	[Railway Emergency Call]

## Applications

The modules TRM-5, TRM-5B and TRM-5 ext can be used for voice data communication and applied to embedded solutions within GSM-R/EGSM-R environment.

## System / Standards

Frequency bands	
GSM-R/EGSM900/GSM1800	[TRM-5, TRM-5B]
EGSM-R/EGSM900/GSM1800	[TRM-5 ext]
RF output power	
Class 4 [2 W] for GSM-R/EGSM-R/EGSM900	
Class 1 [1 W] for GSM1800	
Professional Mobile Standard	ETSI TS 102 933 V 2.1.0
ER-GSM Frequencies	[TRM-5 ext only] ETSI TS 102 932 V 1.1.1
GSM Phase 2 and 2+	
Mobile station class B	
Audio	Voice triple-rate codec for HR, FR and EFR AMR for non ASCII applications supported Hands-free, noise reduction and echo cancellation

AT commands via serial interface

SIM application toolkit

## Data services

GPRS class 10 with up to 85.6 kbps [DL] and 42.8 kbps [UL]
PBCCH supported
Coding scheme CS 1-4
CSD data transmission with up to 14.4 kbps [Transparent and non transparent mode]
Fax group 3, class 2
TCP/IP stack access via AT commands
Protocols: TCP, UDP, HTTP, FTP, SMTP and POP3
SMS via GSM, GSM-R and GPRS [MO, MT, CB, text and PDU mode]

## Part no.

TRM-5	1301
TRM-5 ext	1302