GSM-R Radio Module

MT5E-ILSD

The MT5E-ILSD is a GSM Phase 2+ radio module with GSM-R enhancements. The module can be operated within the GSM-R frequency band at a maximum output power of 8 watts (GSM Power Class 2). The MT5E-ILSD operates also in the ER-GSM-frequency band.

It is able to supports EDGE and GPRS Multi-Slot Class 12 with the operation mode Class B. The protocol software meets the requirements of the specification Rel. 04 GSM.

The following tasks can be maintained:

- Interface configuration
- Software update
- Data connections (Circuit/Packet-Switched Data)
- Trace function using SW Tool "Trace2"

Highlights:

- Characteristic values are more strictly specified than required by the GSM standard.
- Maximum reliability and availability
- Electronic is housed in a sturdy chassis that can withstand against the poor conditions in the harsh environment of railway operations.
- Basic **GSM-** und **GPRS-Software** had been extended by railway specific functions (such as functional addressing, USS1 and USSD)
- Seperated Tx/Rx connector at the front side for the serial interfaces at the rear side
- Contains adapted filter for the spectrum in Israel (938 - 942 MHz) to fulfill the adapted requirements according to the **ETSI TS 102 933 V 2.1.1**.
- **Has improved characteristics against RF - blocking and interferences**
- The module is controlled via AT-commands according the GSM-specifications 3GPP TS 27.005, 3GPP TS 27.007 and MORANE.

Excellent characteristics against RF-blocking due to integrated filters

- Special solutions to protect the GSM-R frequencies
- Adaptive protection mechanisms (software-controlled)
- Improved receiver performance with adapted filter for the spectrum in Israel (938 - 942 MHz) to fulfill the adapted requirements according to the **ETSI TS 102 933 V 2.1.1**.

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Technical Data

GSM Services			
Tele Services			
TS11: Telephony		TS12: Emergency calls (112)	
TS21: Short Message Service MT/PP		TS22: Short Message Service MO/PP	
TS23: Short Message Service Cell Broadcast		TS61: Automatic Facsimile Group 3	
Bearer Services			
BS24: 2.4 kbits T/NT, UID, 3.1 kHz, V110 [1]		BS25: 4.8 kbits T/NT, UID, 3.1 kHz, V110	
BS26: 9.6 kbits T/NT, UDI, 3.1 kHz, V110		BS70: E/GPRS Bearer Service	
EIRENE Specific Features			
Functional addressing		Location dependent addressing	
Call preemption and arbitration (eMLPP) for P2P call or data calls		Support of GPRS header compression	
Support of GPRS data compression		Automatic GPRS attach procedure at switch-on	
Support for user settings of minimum QoS		Support of Secondary PDP Context Activation	
HF Characteristics			
Operating frequencies	R-GSM	876 to 915 MHz	921 to 960 MHz
	ER-GSM	873 to 876 MHz	918 to 921 MHz
	GSM	890.2 ... 914.8 MHz	935.2 ... 959.8 MHz
Power transmission	8 W (GSM Class 2)		
Sensitivity	-104 dBm		
Environmental Conditions			
Protection class	IP 20 according to EN 60529		
Vibration and shocks	according to EN 50155		
EMC	according to EN 50121-3-2 and EN 50155		
Climatic Conditions			
Operating Temperature	-25 °C to 70 °C	Maximal Gradient [2]	± 1 °C/min
Storage Temperature	-40 °C to 85 °C	Relative humidity	acc. to EN 50155
Electrical Data			
Input voltage		+5 VDC	+12 VDC
Power consumption [3]	Idle-Mode	3.4 W	0.1 W
	GSM-Mode	2.2 W	2.4 W
	GPRS-Mode	4.5 W	6.3 W
	EDGE-Mode	3.5 W	4.8 W
Backplane Connector			
Power Supply	Reset	Data / Service (TTL)	Analogue audio in/out

Mechanical Data	
MT5E-AD	**MT5E-SD**
3HE8TE	3HE10TE

1) V22 to/ V26 / V32 / V110
2) of ambient temperature
3) by measuring: in GSM with 1Tx and 1Rx
in GPRS with 4Tx and 1Rx
in EDGE with 4Tx and 1Rx
(Tx / Rx refers to the number of occupied time slots)

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