



GSM-R Operating Device

MMIC-1 and MMIC-3

The operating device MMIC-1 and MMIC-3 as part of the train radio system MESA 26 is designed for the menu-driven operation of digital and analogue train radio. It fulfils the requirements for the operation on rail-vehicles and it is designed for the console installation in the driver's cabin. With the use of an audio communication device consisting of a handset and a loudspeaker the driving crew is able to carry out diverse communication tasks.

The DIN CLC/TS 50459-5:2008-05; VDE V 0831-459-5:2008-05 Teil 5 was used as basis for the design of the keyboard symbols.

The manifold railway specific functions are controlled by the keyboard consisting of 10 hard keys and 14 softkeys.

Hard keys: Keys with fixed functional allocation independent from the current menu level.

The following functions are realised by the hard keys:

- Emergency call
- Call to secondary controller
- Call to conductor
- Call to train public address
- Train to train call
- Direction button up
- Direction button down
- Enter button
- Reset of the train radio system
- Menu

All other operating functions will be activated with softkeys.

Softkeys: The functional allocation of the softkeys is given by the direct and adjacent area of the display and depends on current menu level of the radio system.

A fixed functional allocation at the same softkeys in the menu levels and an optimal display size allow an easy handling of all operating activities by the train driver.

Operating concept

Funkwerk's MMIs are developed in accordance with the specification as well European standards. They are characterised by its innovative and intuitive ease of use. Except for permanently reachable key functions our MMIs are mainly controlled by softkeys to facilitate its use and to provide the flexibility for functional adaptations without needed hardware modifications.

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Technical Specification

Display		Dimensions+ Weight	
Visible range	(171 x 61) mm	Construction	closed housing
Resolution	((800 x 480)) pixels	W x H x D	(296 x 116 x 118) mm
Reading angle at 25 °C	vertical: ±80°, horizontal: ± 80° (at CR ≥ 10)	Weight	2.1 kg
Environmental Conditions			
Protection class	front: IP 54 according to DIN EN 60529		
	rear side: IP 44 according to DIN EN 60529		
Vibration and shocks	according to DIN EN 50155		
EMC	according to DIN EN 50121-3-2 and DIN EN 50155		
Climatic Conditions			
Operating temperature range	-25 °C to +70 °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	according to DIN EN 50155		
Altitude and pressure fluctuation	-100 m to 1,800 m above sea level		
Interfaces			
X1: central unit	25-pin D-Sub		
X2: handset	9-pin D-Sub		
X3: loudspeaker	9-pin D-Sub		
X4: digital Input and Output	9-pin D-Sub		
X5: RS422 (data application)	15-pin HD-D-Sub		
Miscellaneous	brightness sensor, protective earth conductor		
Power Supply			
Input voltage	24 / 48 V _{DC} from central unit		

