

Operating Device

MMIIB



The operating device MMIIB 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 handset and a loudspeaker the driving crew is able to carry out diverse communication tasks. It can be equipped optionally with a handsfree system featuring echo compensation and noise cancelling.

OPERATING CONCEPT

Funkwerk's operation devices are developed in accordance with the specification as well as to 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.

The design of the key symbols is based on DIN CLC/TS 50459-5:2008-05; VDE V 0831-459-5:2008-05 part 5.

The MMIL has a 10.1" color touch display with protective glass and two hard keys with fixed functions. The emergency call button is equipped with a misoperation protection feature.

The following functions are realised by the hard keys:

- » Emergency call
- » Power button

All other operating functions will be controlled by softkeys.

The functional assignment of the softkeys is shown in the immediately adjacent area of the display and depends on the radio system set and the current menu level.

TECHNICAL DATA

DIMENSIONS / WEIGHT

Construction	closed housing with mounting bracket
Dimensions (w x h x d)	(266 x 175 x 111) mm
Weight	3.3 kg without handsfree module 3.5 kg with handsfree module

POWER SUPPLY

Input nominal voltage range	alternatively 24 or 48 V DC (by default via central device with 48 V) ¹
Maximum power consumption	40 W
Interruption of voltage supply	S1 (no interruption) acc. to EN 50155
Protection class	I (PE conductor via connection point)
Withstand voltage	acc. to EN 50155
Reverse-polarity protection, mechanical	connector protected against polarity reversal
Insulation	750 V DC to housing (PE) and all other electric circuits

ENVIRONMENTAL CONDITIONS

Degree of protection acc. to EN 60529	front side: IP65 (except USB charging port) rear side: IP20
Vibrations and shocks	acc. to EN 50155 and EN 60068-2-6
EMC	acc. to EN 50121-3-2 and EN 50155
UV resistance	no photochemical reaction with solar radiation up to 1200 W/m ²

¹ only possible for one MMIIB and for a cable length ≤40 m with a cable cross-section of 0.75 mm². For a sec-ond MMIIB or for cable lengths >40 m with a cable cross-section of 0.75 mm², an external power supply via DC/DC converter is necessary in agreement with the manufacturer.

TECHNICAL DATA

CLIMATIC CONDITIONS

Operating temperature	OT3: -25 to +70 °C
Extended temperature range	ST1: OT3 +15 °C (when switched on for max. 10 minutes)
Storage temperature	-40 °C to +70 °C (in original packaging)
Maximum gradient	± 1 °C/min of ambient temperature
maximum humidity	75 % on an annual average
Relative humidity	acc. to EN 50155
Altitude & pressure fluctuations	-100 m to 1800 m above sea level

FIRE PROTECTION PROPERTIES

Hazard Level HL1 to HL3	according to EN 45545-2
Utilisation category OC1 to OC4	according to EN 45545-5

DISPLAY

Type	transmissive TFT colour LCD with touch function
Diagonal screen size	10.1"
Effective visible range of the display	(217 x 136) mm
Resolution	1280 x 800 pixels
Backlighting	LED-backlighting white, dimmable
Luminance above the protective glass at 100 % PWM	ca. 850 cd/m ² (typical) ca. 650 cd/m ² (minimum)
Contrast Ratio (CR) at 25 °C	approx. 600 to 800
Reading angle at 25 °C	vertical: ±85°, horizontal: ±85° (with ≥ CR 10)

TECHNICAL DATA

KEYBOARD

Type	membrane keyboard
Plating	matt, scratch-proof coating
Backlighting	LED-backlighting, dimmable
Base colour	deepblack (RAL 9005)
Colours of key lettering and bordering	Emergency Call button red (RAL 3002), translucent other keys white (RAL 9010), translucent
Key embossing	dome embossing, tactile response
Actuating force	(6 ± 1) N at 25 °C
Lifetime	≥ 1*10 ⁶ switch cycles without failure
Number of keys, total	2 keys
Number of keys with status LED	1
Brightness sensor	transparent window, diameter 3 mm

HANDSFREE MODULE (OPTIONAL)

Type	vicCOM2 pc board
Input nominal voltage	12 V DC (supply through operating device)
Maximum power consumption	0.33 W

BLUETOOTH (OPTIONAL)

Antenna	Dual band 2.4 GHz and 4.9 GHz to 6 GHz
Range	approx. 10 m (indoors)
Module	Dual Mode Bluetooth Smart Ready
Supported Bluetooth version	v4.2 EDR
Profile	HFP1.6 (WBS) etc.

TECHNICAL DATA

INTERFACES

Central device MESA 26 (IFOT)	25-pin D-Sub male
Microphones (Gooseneck, hands-free microphone)	9-pin D-Sub female
Handset, loudspeaker, dig. I/O	25-pin D-Sub female
Hands-free module	25-pin D-Sub female
RS422 (Data application/IFS)	15-pin D-Sub female
Ethernet	8-pin M12 female (X coding)
Miscellaneous	Protective ground

INTERFACES FRONT

USB Port	USB Typ A; charging current 1.5 A; charging power 7.5 W
Bluetooth (optional)	

