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Elektronik

MANUAL

MTL381 Remote Expander

MTM800 FuG / MTM5400

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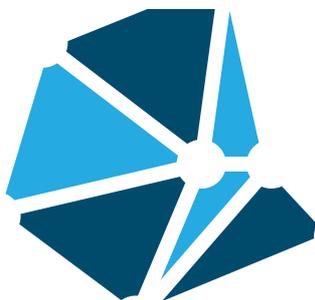
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1 Concerning this Manual

The installation of the MTL381 Remote Expander is described in this manual.

ATS products are characterised, among others, by the on-going development for which reason it is possible that the printed documentation is not always absolutely up-to-date.

NOTE

Read this manual carefully before use.
Retain this manual throughout the entire usage period of the product for future reference.

NOTE

This manual is addressed to trained service engineers and specialized radio dealers. Competent knowledge regarding programming and installation of the radio devices and their functions are taken for granted.

1.1 Scope of Supplies

Before you commence with start-up, please make sure that your supplies are complete:

- 1x MTL381-Radio (Art.-No. 93861002)
- 1x MTL381-Head (Art.-No. 93861003)
- 1x power supply unit for MTL381-Head (Art.-No. 92220032)
- 1x 10 pin Y cable (KAS028) (Art.-No. 93861005)
- 1x connector cable MTL381-H <-> control head (KAS051) (Art.-No. 93861016)
- this manual

ATS Elektronik GmbH reserves the right to change the scope of supplies without prior notice.

For operation you require the following components which are not included in the scope of supplies:

- Motorola MTM800 FuG Remote TETRA mobile radio set or
Motorola MTM5400 Remote TETRA mobile radio set
- Control head for the radio set
- CAT 7 S/FTP Ethernet cable in a 1:1 connector as extension cable of the required length (max. 1000 metres)
- Following accessories – not included in the scope of supplies – are at disposal (comp. 4 "Accessories" on page 13):
 - Loudspeaker SSN4020B with connection cable
 - Cable set (KAS27) loudspeaker adapter cable with open ends to connect an alternative loudspeaker (Art.-No. 93860019)
 - Cable set (KAS20) with open ends for Line Out Recorder, Hook, Vol+/- (Art.-No. 98820010)

1.2 Intended Use

The MTL381 Remote Expander may exclusively be used in closed rooms in conjunction with the Motorola MTM800 FuG, with the MTM5400 TETRA vehicle radio set respectively. The MTL381 Remote Expander is not suitable for use outdoors or in rooms with high humidity or under water.

The components of the MTL381 Remote Expander, the control head of the radio, transceiver part of the radio and the connection cable must be installed in the same building. No component of the system may leave the building.

1.3 Warranty

If the device had been bought directly from ATS Elektronik, warranty is in accordance with the legal regulations and the general terms and conditions. The period of warranty starts with the date of delivery of ATS Elektronik GmbH. There is no right to claim for guarantee in case of

- operating or programming errors
- defects caused by the client
- willful damages
- improper installation/removal of the operating head.

In case of warranty please send back the defect device to ATS Elektronik GmbH, accompanied by a copy of the delivery note or invoice. We will then check whether a warranty claim is justified. If your claim is rejected, you will receive a cost estimate for repair resp. an exchange unit. ATS Elektronik GmbH will not pay for any expenses caused by noncompliance with these warranty regulations. If the device had not been bought from ATS Elektronik, the respective warranty terms of your supplier will apply.

1.4 Disposal



European Union (EU) Directive on Waste Electrical and Electronic Equipment (WEEE):

Products that are brought onto the market in EU member states must be marked with a crossed-out waste bin symbol (in individual cases the packaging may be marked). The WEEE Directive specifies that customers and end users in member states of the European Union (EU) may not dispose of electronic or electrical equipment and electronic or electrical accessories in the household waste. Within the EU, please contact the local representative or the customer service department of the supplier of your equipment. He can give you information regarding the disposal or collection of waste equipment.

2 MTL381

With the MTL381 Remote Expander the remote operation of the TETRA radio MTM800 FuG, the MTM5400 respectively, can be operated at a distance of up to 1000 metres from the radio set. A CAT 7 S/FTP Ethernet cable is used as a connection line in a 1:1 connection with RJ45 plug system.

The MTL381 consists of the components MTL381-Radio and MTL381-Head. The MTL381-Radio is connected to the radio set via a short 10 pin Y cable. The MTL381-Head is provided with power by the 12V/1A power supply unit included in the supplies. As option a loudspeaker (4 or 8 ohm) can be connected.

Note

Firmware and Codeplug of the radio set and of the control head must fit together.

Attention

Interference possible:

The baud rate of the radio set must be changed to **115200 baud** using the Motorola programming software CPS.

You can obtain further information from your radio retailer or ATS Elektronik.

3 Programming Radio Set

The baud rate of the radio set and the control head must be changed to 115200 baud.

Note

This manual is addressed to trained service engineers and specialized radio dealers. Competent knowledge regarding programming and installation of the radio devices and their functions are taken for granted.

Note

The following descriptions do not replace the operating documentation for the Motorola CPS programming software. They are merely supplementary to it. Please pay particular attention to the help texts below the parameters in the CPS.

Motorola CPS

For programming of the radios you require:

- Programming software Motorola CPS for TETRA radios
- Programming cable

Programme the following parameters. You will get the required data from the system administrator of the TETRA network:

- Radio devices ISSI
- Group GSSI
- National and network code
- Frequency

Programme the baud rate **115200 baud** additionally for control head and radio set.

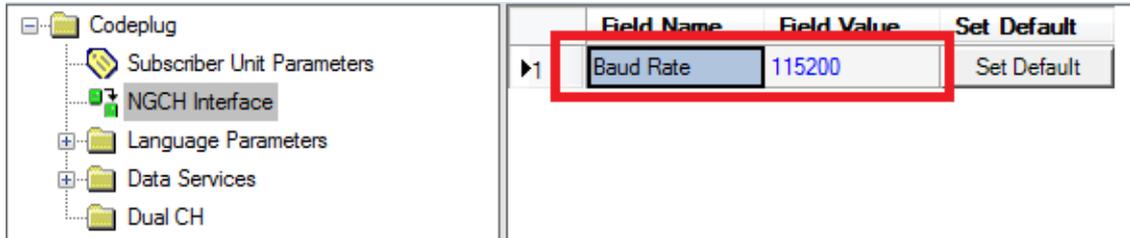


Fig. 3-1 Baud rate control head

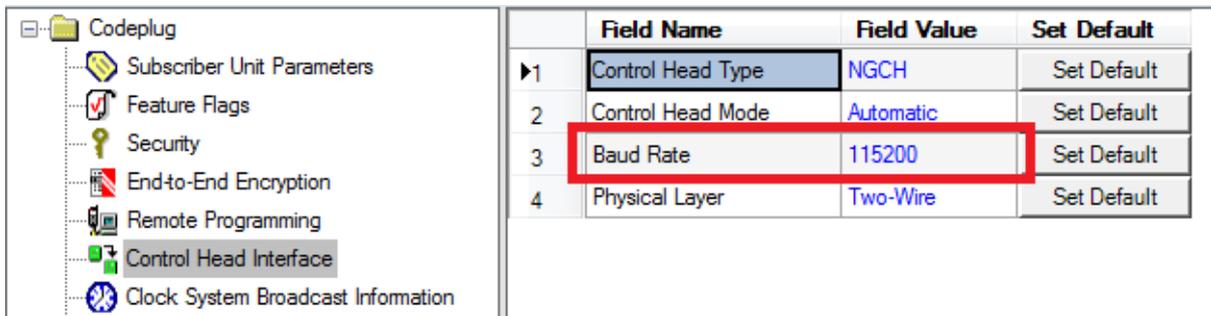


Fig. 3-2 Baud rate radio set

4 Installation

To be able to remove the control head from the TETRA radio MTM800 FuG the MTM5400 respectively, the following components have to be interconnected:

- MTM800 FuG , MTM5400 TETRA radio (1)
- 10 pin Y cable (KAS028) (2)
- MTL381-Radio (3)
- CAT 7 S/FTP Ethernet cable in a 1:1 connection (4)
- MTL381-Head (5)
- 10 pin ribbon cable (KAS051) (6)
- Control head MTM800 FuG, MTM5400 (7) respectively
- Power supply MTL381-Head with connection cable (8)
- Loudspeaker connection cable of the SSN4020B, the loudspeaker adapter cable with open ends (9) resp.
- Loudspeaker (10)
- Optional adapter cable with open ends for Line Out Recorder, Hook, Vol+/- (11)

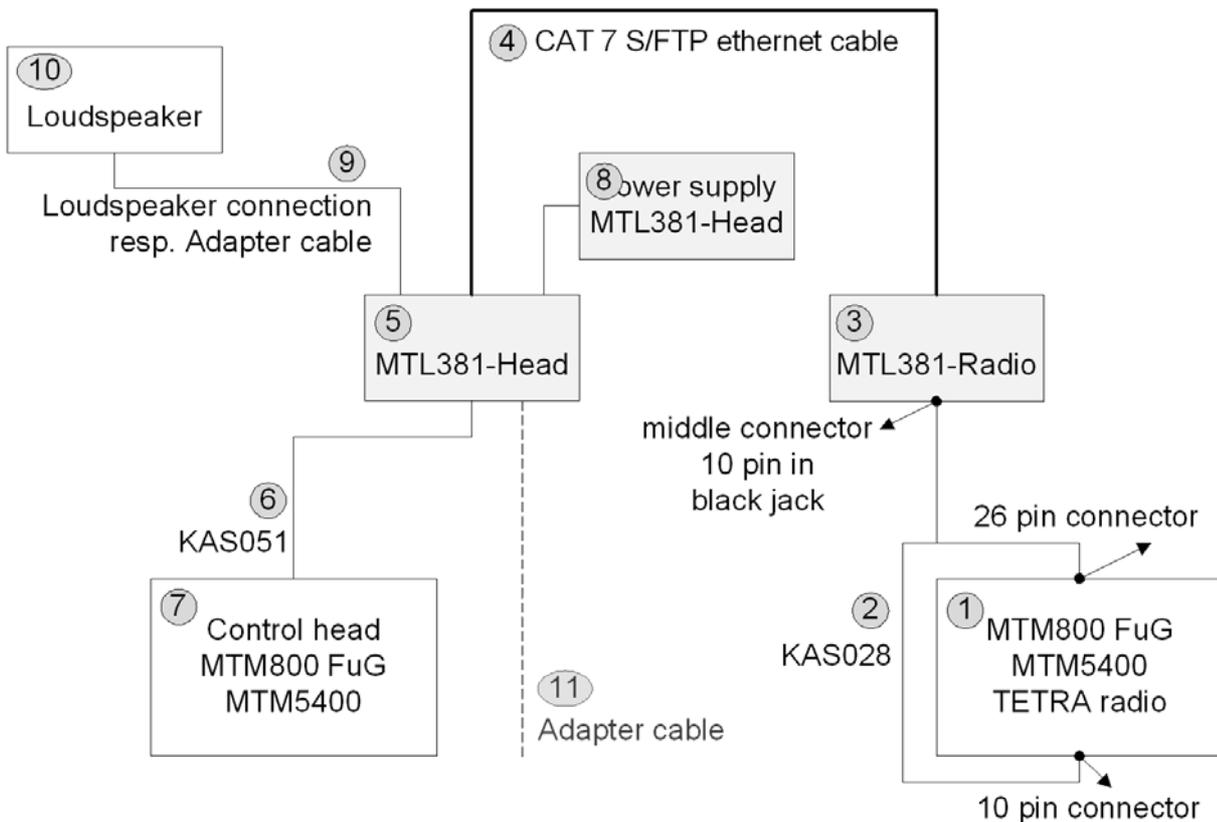


Fig. 4-1 MTL381 System sketch

4.1 MTL381-Radio

The MTL381-Radio has a outlet for the connection to the radio set at the front. The RJ45 outlet for the connection of the extension cable and an operation LED is located at the rear.



Fig. 4-2 MTL381-Radio Front and Rear

1. Connect the MTL381-Radio to the radio set at the front via the 10 pin Y cable.
2. Connect the MTL381-Radio with the MTL381-Head at the rear via the CAT 7 S/FTP cable.

Attention

Only the radio set may be connected to the black outlet in front. The operating voltage of 15 V DC may not be exceeded.

4.2 MTL381-Head

The MTL381-Head has an outlet at the front for the connection to the control head and an outlet, among others, for the optional Line Out Recorder. The operation LED, the 'RJ45 outlet for the extension cable, the outlet for the power supply, the outlet for the optional loudspeaker and the control knob for the volume are located at the rear.

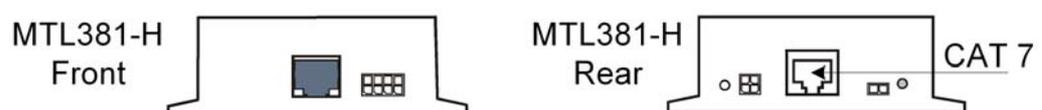


Fig. 4-3 MTL381-Head Front and Rear

1. Connect the MTL381-Head with the control head at the front using the 10 pin ribbon cable.
2. The MTL381-Head is connected with the MTL381-Radio at the rear via the CAT 7 S/FTP cable.

3. Connect power supply to the 4 pin sockets on the left.

Attention

Only the control head may be connected to the black outlet at the front.

Note

If the control head is separated from the MTL381-Head and reconnected during on-going operation, a reset at MTL381-Head has to be carried out. For this purpose disconnect the power supply at the MTL381-Head for at least 30 seconds.

Attention

Interruption of operation possible:
The connection between MTL381-Radio and MTL381-Head as well as the connection between MTL381-Radio and MTM800 FuG, MTM5400 respectively, may not be interrupted during on-going operation. The system no longer reacts after such an interruption.

Note

The system has to be completely disconnected for of at least 30 seconds before restart after a line interruption.

4.3 Loudspeaker

The optional loudspeaker is connected to the 2 pin, horizontal outlet at the rear of the MTL381-Head. Depending on the length of the CAT 7 S/FTP Ethernet extension cable and the loudspeaker type, the volume of the loudspeaker has to be adjusted as described in the following. The shorter the connection cable, the lower the volume of loudspeaker outlet has to be adjusted. The factory default setting is very low for short connection cables.

Attention

Auditory damage possible.

The maximum volume that can be adjusted for very short connection cables is very loud. Set the volume of the loudspeaker at "low" (turn the control knob completely to the left).

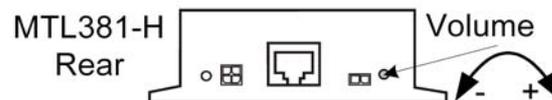


Fig. 4-4 Volume adjustment MTL381-Head

1. Adjust the volume via the control knob. Turn the control knob clockwise to increase the volume.

Note

Should loud interference noises be perceived, check the cable contacts, the local distribution system.

4.4 Line Out Recorder i. V.

Using the optional adapter cable for the Line Out Recorder the activities at the control head and the external communications can be recorded, for instance via the sound card in a PC. For this purpose a matching plug has to be fitted to the open ends of the adapter cable.

The connections for the Line Out Recorder are located on the 8 pin connection on the extreme right of the MTL381 Head (comp. labelling on casing). The functions Line Out, Hook and volume control "Vol+/Vol-" are in preparation.

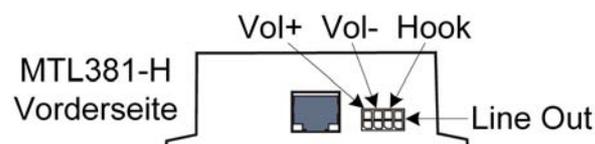


Fig. 3-5 Connection Line Out Recorder

Depending on the length of the CAT 7 S/FTP Ethernet extension cable, the volume of the Line Out Recorder has to be adjusted as

described in the following. The shorter the connection cable, the lower the volume of the Line-Out outlet has to be adjusted.

Attention

Auditory damage possible.

The maximum volume that can be adjusted for very short connection cables is very loud. Set the volume of the Line-Out Recorder at "low".

Attention

The MTL380-Head may only be opened by trained specialists. Volume control may only be carried out by trained specialists.

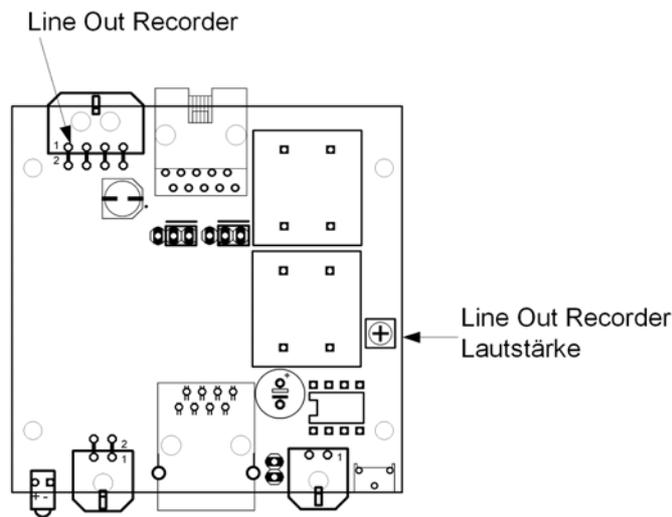


Fig. 4-5 Component layout MTL381-Head

1. Disconnect all the MTL381-Head connections.
2. Open the MTL381-Head casing.
3. Adjust the volume via control knob Line Out Recorder volume. Turn the control knob clockwise to increase the volume.
4. Close the casing.
5. Connect the MTL381-Head again.
6. Connect the Line Out Recorder using the 2 pin connector at the front of the MTL381-Head.

5 Accessories

You can connect the Motorola loudspeaker, Article No. SSN4020B directly to the MTL381 using the appertaining Molex connector. Should you want to connect another loudspeaker, you have to fit it with a Molex connector.

Molex connector

You can use the following Molex connector for the MTL381:

Power supply:

- Connector housing 4 pin, Order No. 43025-0400 Molex Micro Fit

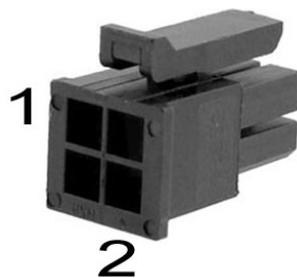


Fig. 5-1 Molex 43025-0400

- 1) +12 V
- 2) GND (ground)

Loudspeaker (max. 1 W on 8 Ohm):

- Connector housing 2 pin, Order No. 43645-0200 Molex Micro Fit

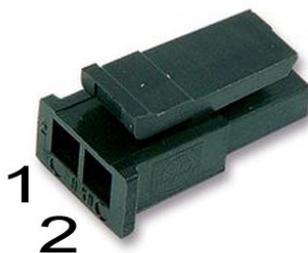


Fig. 5-2 Molex 43645-0200

- 1) Speaker +
- 2) Speaker -

Line Out Recorder (max. 1 Vss):

- Connector housing 8 pin, Order No. 43025-0800 Molex Micro Fit



Fig. 5-3 Molex 43025-0800

- 1) NF Out
- 2) GND (ground)
- 3) Hook
- 4) GND (ground)
- 5) Vol-
- 6) GND (ground)
- 7) Vol+
- 8) GND (ground)

**Crimp con-
tacts**

Additional crimp contacts are required for all Molex Micro Fit connector housings.

- Crimp contact, Order No. 43030-0007 (20-24 AWG)



Fig. 5-4 Crimp contact 43030-0007

Note

A special crimping tool is required for the crimp contacts.

6 Technical Data

Definition	Value
Power Supply	MTL381-Radio: supplied by the radio set MTL381-Head: 12V / 1A DC power supply
Current consumption	MTL381-Radio: approx. 37 mA MTL381-Head: approx. 65 mA
Weight	MTL381-Radio: 77 g MTL381-Head: 89 g
Dimensions	MTL381-Radio: 100 x 33 x 65 mm (L x W x H) MTL381-Head: 100 x 33 x 65 mm (L x W x H)
Ambient temperature	-20 - +60°C
Cable	Y cable KAS028 - MTL381-R <-> Transceiver part (approx.60/30cm) Cable KAS051 - MTL381-H <-> Remote Head (75 cm)
Line connection	up to 1000 m, tested with CAT7 UC900 SS23 S/FTP cable
Operation LED	green LED
Optional loudspeaker	4 or 8 ohm with 1 Watt NF
Optional loudspeaker connection-adapter cable	Length: max 2 m Shielding: none
Optional adapter cable for Line Out Recorder	Length: max. 2 m Shielding recommended
Radio set	MTM800 FuG Remote, MTM5400 Remote respectively, tested with Firmware R27.000.7791 (Codeplug 0172)

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