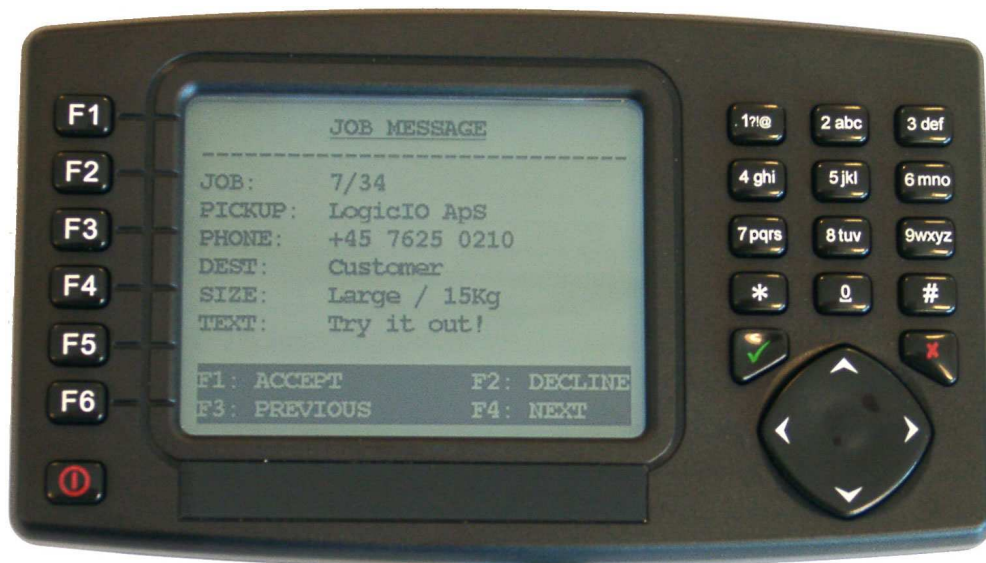# Technical Manual for the MDT-200

Version 1.01

Introduction

This manual contains technical documentation allowing easy installation and use of the unit. For programming information please consult the RTCU Programming Documentation and/or the RTCU IDE Online help.

The Mobile Data Terminal (MDT-200) extends the RTCU units (MX2 /DX4/AX9/ M11 series) with a flexible and easy-to-use user interface solution with many advanced features, allowing all kinds of two-way messaging applications to be implemented. The MDT-200 is robust, field proven, and is packed to survive thermal extremes and vibrations.

The MDT is easily connected to the RTCU units and includes the following features:

- Monochrome Graphical Liquid Crystal Display (LCD)
- 320 x 240 pixels resolution (1/4 VGA)
- 11 lines with 28 characters.
- 21 tactile, user definable keys and a four way cursor.
- Built in piezo buzzer.
- 10 user selectable backlight and contrast levels.
- Two easy mounting options.
- High-level VPL library.
- Simulator support in RTCU-IDE.
- Built for tough environments.
- Easy vehicle installation.
- MDT on/off and standby functionality.

Table of Contents

Graphical view

7 tactile keys

14 tactile keys

4 way cursor

Large easy-to-read display
(11 x 28)

Figure 1: Front view

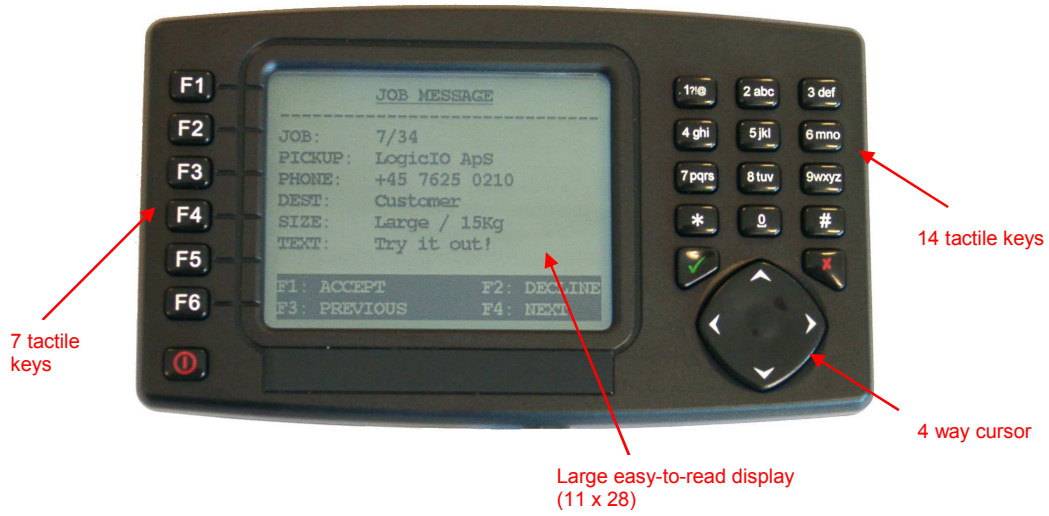

M3 Brass insert

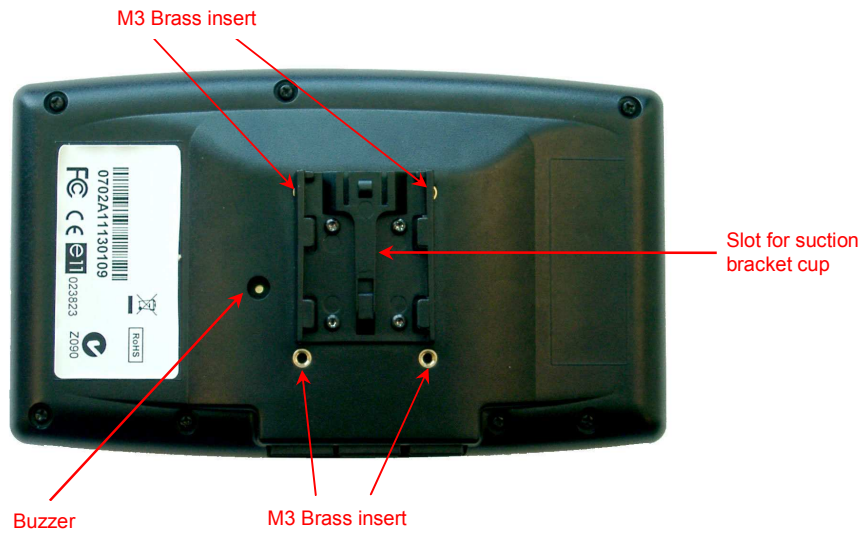Slot for suction bracket cup

Buzzer

M3 Brass insert

Figure 2: Back view

External connections

Overview
The MDT-200 uses a serial interface to communicate with the RTCU unit. Supply for the MDT-200 is also fed into the serial connector on the MDT-200. On the unit are three connectors, only one used is connector '2'. See Figure 3 for placement of connectors.

Connector '1'
Not used (blinded)

Connector '3'
Not used
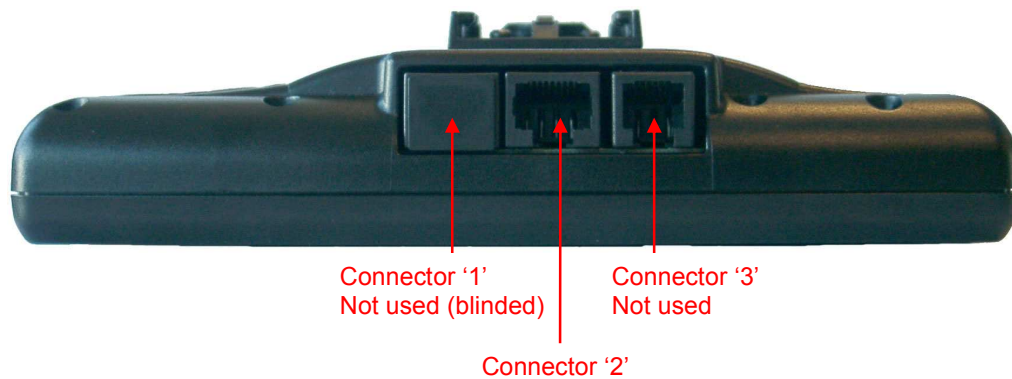
Connector '2'

Figure 3: Bottom view

Connector '2'
The unit needs an external DC power source this has to be connected to the interface cable. The supply voltage must be 8-30VDC and connected to the red (positive) and black (ground) wires on the interface cable.

Connector '1' & Connector '3'
Not used.

Installation

The interface cable provided in the MDT-200 package is made by Logic IO. The external supply wires and data signal **blue (MX2/DX4/AX9)** / **grey (M11)** cable are wired into one (**black**) cable to the MDT-200 unit. The total length of the cable is ~3.5m see the figure 4 below for details.
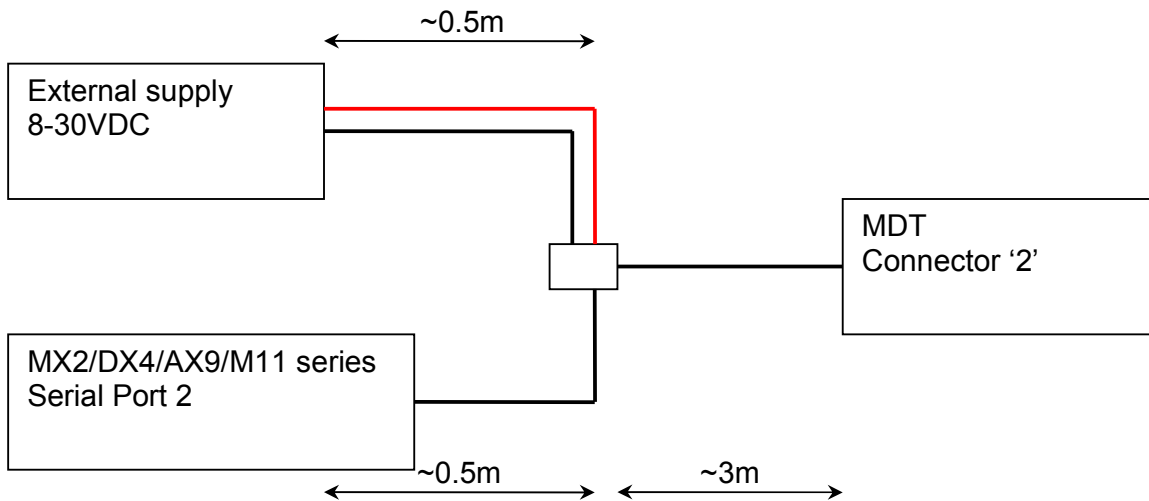
~0.5m

External supply
8-30VDC

MDT
Connector '2'

MX2/DX4/AX9/M11 series
Serial Port 2

~0.5m   ~3m

Figure 2: MX2/DX4/AX9 Cable dimensions

MX2/DX4

The **blue** cable must be inserted into serial port 2 on the MX2/DX4 unit, the **black** end must be inserted into connector '2' on the MDT-200 unit, see figure 3 for placement of connector '2' on the MDT-200. For further information on external connections on the MX2/DX4, see their Technical Manual.
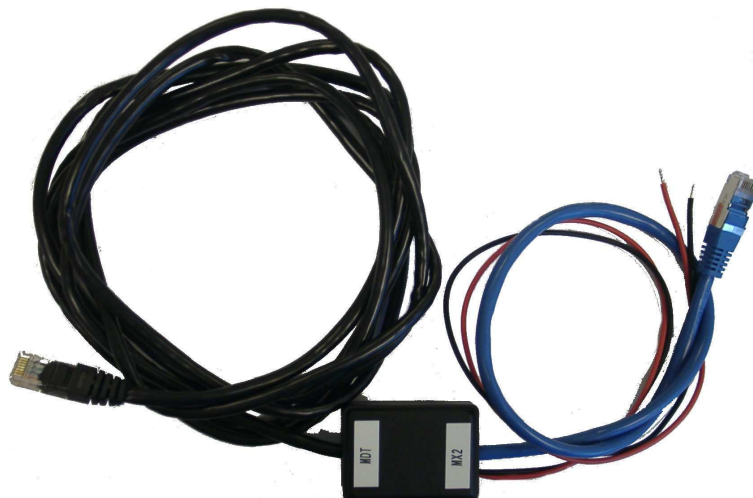
Figure 3: MX2 Cable

AX9

The **blue** cable must be connected to serial port 2 on the AX9 unit, the **black** end must be inserted into connector '2' on the MDT-200 unit, see figure 3 for placement of connector '2' on the MDT-200. For further information on external connections on the AX9, see AX9 Technical Manual.
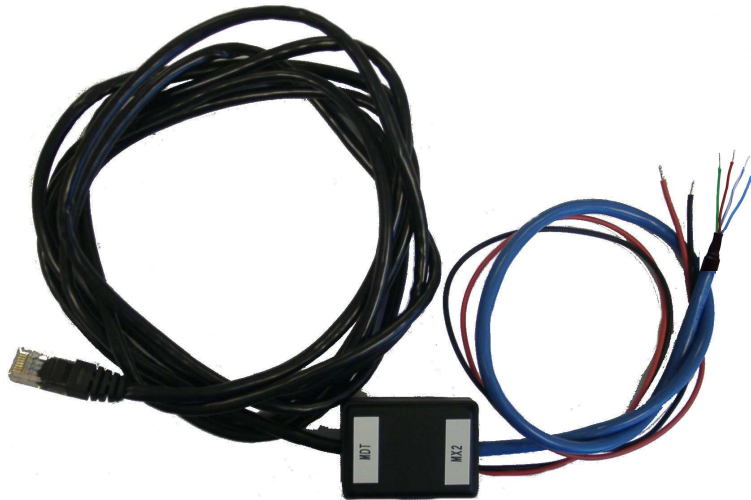

Figure 4: AX9 Cable

As the MDT-200 cable not delivered with RJ45 connector at the end of the **blue** cable, the color coded cable needs to be connected to the AX9 manually. Cables are color coded, and these colors will be used in the following description:
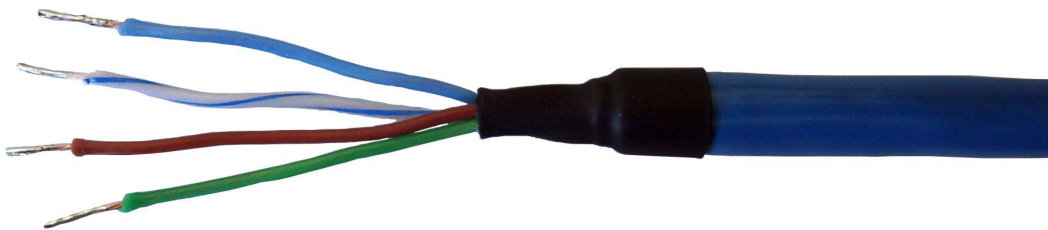

Figure 5 AX9 cable close-up

As seen on the above picture, there are 4 signals to be connected to the AX9 Pro. The cable colors and the signal names on the AX9 Pro are given in the following table:

Color	Signal Name
Blue	SGND
Blue/white	SER2_RXD
Green	SER2_TXD
Brown	SER2_RTS

Connect the 4 colored cables to their respective labeled angled screw terminals as mentioned in the table in the previous page. Please refer to AX9 Pro Technical Manual to locate the terminals.

M11 Series

The grey cable must be inserted into serial port 2 on the M11 unit, the **black** end must be inserted into connector '2' on the MDT-200 unit, see figure 3 for placement of connector '2' on the MDT-200. For further information on external connections on the M11 series, see the appropriate M11 Technical Manual.
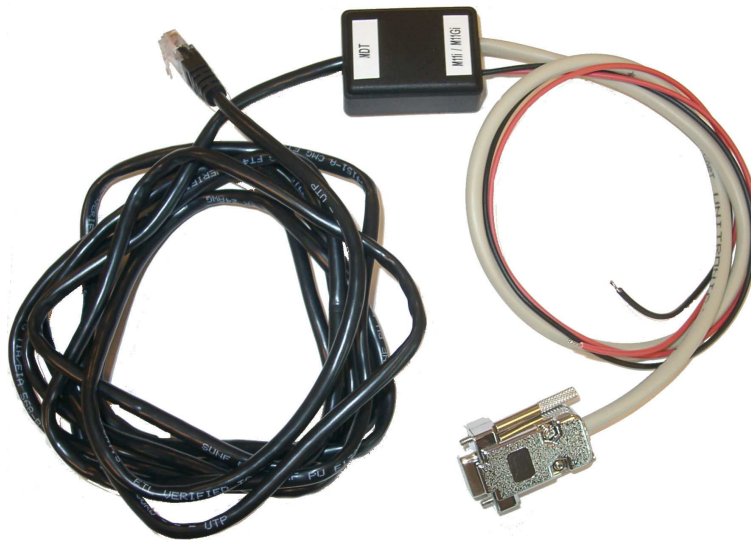

Figure 6: M11i / M11Gi Cable

Power and standby modes

The MDT-200 has two power modes with different behaviors and power consumption:

- *Power*: Controls the DC supply for the MDT-200, if turned off it's not possible to use the keys, this way the MDT-200 must be turned on from the software. In this state the power savings are at maximal.

- *Standby*: In standby mode the display will be turned off, this way it looks like the MDT-200 is turned off, but it's possible to turn on the MDT-200 on the keys. Power savings are minimal in this state.

For more information on this subject please consult the RTCU Programming Documentation and/or the RTCU IDE Online help.

Mounting

There are two ways to mount the MDT unit these are described below.

Flexible suction cup.

1. Match the two slides on the bracket to the corresponding slots on the back of the MDT-200 unit until they firmly latch into place.
2. Find a smooth surface and clean it thoroughly.
3. Press the suction cup firmly to the surface while pulling the lever down to seal the suction cup.
4. Hold the bracket base and bend the stalk to adjust the viewing position.

M3 mounting holes.

The brass inserts on the backside can be used to mount the MDT on a custom made bracket. There are four M3 mounting holes available, see figure 6 below for guidance. Be careful not to over tighten the screws as driving the screws in too far may cause damage, therefore use M3x6mm screws. Too use the mounting holes the slot for the suction cup must be removed.
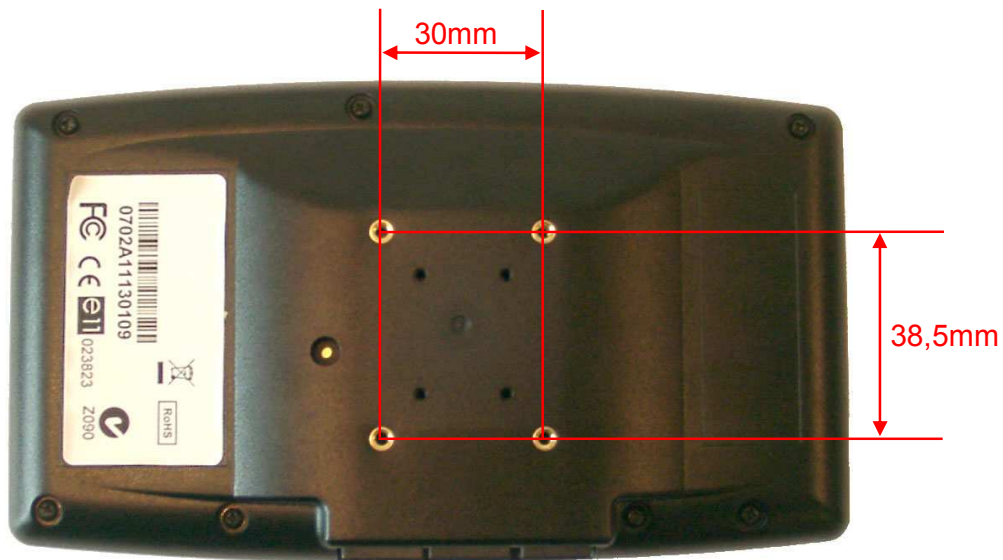

Figure 6: M3 brass inserts placements

Specifications for the Mobile Data Terminal

Power supply		8 – 30 VDC				
Currents		@8	@12	@30	VDC	
Standby Unit operating, no backlight Unit operating, full backlight		70 90 135	50 60 90	25 30 40	mA mA mA	
Storage temperature		-40	-	+85	°C	External interface:
Operating temperature		-25	-	+60	°C	• RJ45 for seriel interface and power supply
Humidity				95	%	
Weight		0.295			Kg	
External dimensions		W 163 x H 95 x D 27 mm				Without mounting brackets
Enclosure		UV stabilized, high-temperature resistant				
Piezo buzzer	Sound level	80	-	90	dB	Measured 1m in front of unit
	Frequency		1		kHz	
LCD	Lines	11				
	Characters / line	28				
	Pixels	320x240				