Metor 6WP

MAINTENANCE MANUAL

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1. INTRODUCTION

Metor 6WP is a walk-through metal detector designed to detect metal objects people are carrying with them. In addition to detecting metal objects Metor 6WP can indicate the height where alarming object was taken through the unit.

The unit is available with two cross piece lengths, 76 cm and 81 cm. Part numbers are:

- 76 cm: METOR 6WP-30
- 81 cm: METOR 6WP-32

The product structures of both configurations showing main modules and their submodules are included into the appendices. The modules are:

Level	Type	Description
1	MCES 5252	Cross Piece and Electronics Set
2	MELS 5249	Electronics Set
3	MCCU 5250	Control and Communication Unit
2	MCDS 5155-6WP	Control and Display Set, Metor 6WP
3	MDPU 5162	Display Unit
2	MCSS 5253	Cross Piece Set
1	MTRS 5165	TX/RX Coil Panel Set
2	MTXS 5166	Transmitter Panel Set
3	MTXU 5223	Transmitter Unit
3	MZDS 5157	Zone Display Set
4	MZDU 5154	Zone Display Unit
4	MZDU 5158	Zone Display Unit (with IR transmitter)
4	MZDU 5251	Zone Display and Power Indicator Unit
3	MPIU 5255	Power Input Unit
2	MRXS 5167	Receiver Panel Set
3	MRXU 5224	Receiver Unit
3	MCRS 5159	Counter Receiver Set
4	MCRU 5198	Counter Receiver Unit
3	MPIU 5254	Power Input Unit

1.1. Technical Data

Power Supply

- Mains, nominal: 100 – 240 VAC
- Mains, max: 90 – 264 VAC
- Mains frequency, nominal: 50/60 Hz
- Maximum power consumption: 65 W (AC), 50 W (DC)

Recommended Operating Conditions:

- Ambient temperature: -20 – +60 °C (-4 – +140 °F)
- Relative humidity: 0 – 100 %
- Protection: IP 65 (IEC 60529)

1.2. Function of Main Modules

MCES 5252 Cross Piece and Electronics Set

MCES consists of the cross piece and the electronics modules inside the cross piece. The cardboard box of MCES also includes the external power supply, mounting screws, cardboard mounting jig, and installation and operating manual.

MELS 5249 Electronics Set

MELS is the main electronics module of Metor 6WP. MELS contains a single printed circuit board, MCCU 5250. MELS handles the magnetic field generation, detection of receiver signals, digital signal processing, and controls other modules. For connections to other modules see the wiring diagram in the appendices. MELS is powered by an external 12 VDC power supply or battery back-up set.

MCDS 5155-6WP Control and Display Set

MCDS is the visual and audio interface of the Metor 6WP having a LCD display, status LEDs and a buzzer. MCDS contains a single printed circuit board, MDPU 5162. Membrane keyboard on the cross piece is connected to MDPU. MCDS is powered by MELS. It is connected to MELS by a standard Ethernet cable.

MCSS 5253 Cross Piece Set

MCSS is made of aluminum and has a hatch with a lock for access to the electronics modules. Membrane keyboard plate is attached to the MCSS.

MTRS 5165 TX/RX Coil Panel Set

MTRS consists of coil panels. They are packed into a separate cardboard box from MCES.

MTXS 5166 Transmitter Panel Set

MTXS is the transmitter coil panel housing the magnetic field generating coils. In the PVC profiles at the panel edges are zone display LED units and IR transmitters used for passenger counting. Inside the top of the coil panel there is a PCB unit, MTXU 5223, which distributes the signals from the MELS to transmitter coils, zone displays and serial port.

MZDS 5157 Zone Display Set

MZDS consists of zone display LED units and a connection cable. There are three different zone display units, MZDU 5154 with just LEDs in it, MZDU 5158 with also IR transmitter for passenger counting, and MZDU 5251 with additional green LEDs for power on indication. Assembly of the MZDS is shown in the appendices.

MRXS 5167 Receiver Panel Set

MRXS is the receiver coil panel housing the magnetic field sensing coils. In the PVC profiles at the panel edges are IR receivers used for passenger counting. Inside the top of the coil panel there is a PCB unit, MRXU 5224, which distributes the signals from receiver coils and IR receivers to the MELS.

MCRS 5159 Counter Receiver Set

MCRS consists of a IR receiver unit and a connection cable. Assembly of the MCRS is shown in the appendices.

1.3. User Interface

Structure and operation of user interface is explained in the Installation and Operating Manual. There is also explained how to reset passwords, if needed.

Functions in submenu “6 DIAGNOSTICS” may be of use during troubleshooting.

Function “6-1 NOISE MEASUREMENTS” can be helpful when trying to determine the cause of external interference.

Function “6-2 DIRECTIONAL DATA” shows number of passengers (P1 and P2) and number of alarms (A1 and A2) in directions 1 and 2. In direction 1 people pass through the unit with TX panel on their right side. Also these counters are cleared when statistics is cleared in normal user interface.

Function “6-3 OPERATING TIME” shows total time unit has been on not counting standby state.

Function “6-4 CELL1/CELL2” shows state of the IR transmitter/receiver pairs. State is 0 when nothing is blocking the IR beam and 1 when beam is cut. CELL1 is the transmitter/receiver pair closer to you when you are standing in front of the unit with TX panel to your right.

Function “6-5 RUN LIGHT TEST” turn all lights of the unit on for ten seconds.

1.4. Useful Key Combinations

There are two useful key combinations available:

- Pressing simultaneously keys <0> and <5> shows unit’s software versions.
- Pressing simultaneously keys <7> and <9> starts keyboard test. If keyboard is working properly display recognizes each key when pressed. To exit test mode press keys <7> and <9> again.

2. INSTALLATION

Installation is explained in the Installation and Operating Manual.

Some useful tips:

- DC power connector (and dust caps) is of push-pull type. To connect push the connector into its place and it will lock. To disconnect simply pull from the connector housing to remove the connector. Never pull from the cable.
- Though power supply can be connected to either TX or RX panel, connection to TX panel is preferable to minimize the possibility of interference from power supply.
- Power supply should always be placed as far from the unit as possible to minimize possible interference.
- You may find it easier to make connections to the electronics while the unit is lying down.
- It is recommended to have two persons when lifting up the unit.

Tools needed in installation:

- 8 mm hex socket key, if hex socket screws are used in installation instead of hand screws
- power drill (for fixing the unit to the floor) and suitable screws

To check the operation of the unit after installation follow the instructions in document 04104582 Income Inspection, Metor 6WP, see appendices. Note that standard configuration does not include the remote control.

2.1. Product Identification

Master serial number label of the Metor 6WP is placed onto the cross piece, figure 2.1. It is also placed onto inner surface of the cross piece hatch.

Serial number labels of TX and RX coil panels are placed onto the upper connector cup together with the master serial number, figure 2.2.

Serial number labels of MELS and MCDS are placed onto the enclosures.

Figure 2.1.

Figure 2.2.

3. PERIODIC MAINTENANCE

Metor 6WP is virtually maintenance-free. However, component failures are possible and therefore the operation of the unit should be checked regularly.

It is recommended that detection is tested daily using a suitable test object or before each installation.

Recommended monthly maintenance is:

- Visual inspection to check the condition of all parts.
- Check power supply cables for possible wear.
- Check that coil panels are parallel using the mounting jig or a tape measure (permanent installations).
- Check the tightness of cross piece mounting screws (permanent installations).
- Check that the D-connectors on coil panels and coil cables are clean and undamaged (temporary installations).

Recommended yearly maintenance is:

- Clean electronics of possible dust.
- Check operation of the display, status LEDs and zone display LEDs.
- Check operation of the keyboard and buzzer.
- Check operation of passenger counters.
- Check condition of gaskets (temporary installations).

4. TROUBLESHOOTING

A document listing error messages and error numbers, 04105648 Fault Tracing and Error Messages, is added into appendices. The document also includes some fault tracing advice.

4.1. Random Alarming

Intermittent alarms that are not caused passing a metal object through the unit are called false alarms. False alarms are caused either by external interference or internal malfunctioning. External interference can be either electromagnetic in nature or caused by moving metallic structures.

Best way to rule out internal malfunctioning is to replace the unit by another one. If new unit also experiences false alarms the cause is external. In opposite case faulty part can be found out by replacing parts of the malfunctioning unit with the parts of the new unit one by one.

To find out the cause of false alarms user interface menu functions “6-11 EM NOISE” and “6-12 TOTAL NOISE” can be used. When “6-11 EM NOISE” is started TX coil currents are turned off and only RX coil sensing is in operation. Now moving metal structures or malfunctioning of TX driver circuitry can not produce a signal. Only external electromagnetic interferences (or malfunctioning RX circuitry – but this is very unlikely) can produce a signal. Using function “6-12 TOTAL NOISE” normal metal detection is in operation.

If both noise measurements give similar results the reason of false alarms is most likely external electromagnetic interference.

If only “TOTAL NOISE” shows noise the reason of false alarms is either moving metal structures in the vicinity of the unit or internal malfunctioning. Note that moving metal structures can be also above or under the unit and that for example a glass wall with steel or aluminum frames is effectively equal to a metal sheet of size of the frame.

Most common cause of false alarms is electromagnetic interference. First check that the cause is not another metal detector. As usually the cause of the interference, cable ducts, fuse boards, transformers, electric motors, etc., can not be moved, one is left to try to select a operating frequency that is least affected and try to move RX coil panel to a position least affected by the interference.

4.2. Passenger Counting Not Working

First check that “4-21 COUNT DIRECTION” is correctly selected and is not set to “OFF”. Also check that dirt or anything else is not blocking IR beams between coil panels.

If counting still does not work either IR transmitter in MZDU 5158, or IR receiver in MCRU 5198, or MTXU 5223, or cables, or MELS is malfunctioning.

To check on which side of panels the failure is use function “6-4 CELL1/CELL2”. If status of cell is 1 while nothing is blocking the IR beam or the status does not change to 1 when beam is blocked, that side has the failure.

The height of IR transmitters and receivers is 82 cm from floor.

Operation of IR transmitter can be tested with commercial IR remote control tester. Also digital camera can be used check if IR transmitters are emitting by placing the camera lens in contact with side profile.

Once problematic side is found out, try switching the left and right side MCRS modules. If faulty side changes MCRU or its cable is malfunctioning. Replace MCRU or cable, as needed.

If faulty side remains the same switch MZDS modules. Again, if faulty side changes corresponding unit or cable is malfunctioning. Replace faulty item.

If faulty side still remains the same either MTXU, cables or MELS is malfunctioning. Check MTXU for damaged components. Check cables for damages. In case replacing MTXU or cables does not help MELS must be malfunctioning.

4.3. Zone Display Not Working

First check that zone display is enabled, “2-41 ZONES:” is not set to “OFF”.

Turn zone display on using function “6-5 RUN LIGHT TEST”. Note which LEDs or segments do not light. Replace faulty zone display units.

Note that if all segments from specific height downwards do not light not all corresponding units need to be malfunctioning as signal to lower units goes through the upper units.

If the whole zone display remains unlit either MZDUs, MTXU, cables or MELS is faulty.

Switch the left and right side MZDS modules. If faulty side changes corresponding module is malfunctioning. Replace faulty item.

If faulty side still remains the same either MTXU, cables or MELS is malfunctioning. Check MTXU for damaged components. Check cables for damages. In case replacing MTXU or cables does not help MELS must be malfunctioning.

4.4. Keyboard Not Working

First check that keyboard has not been disabled with a remote control using function “3-32 KEYPAD DISABLE”. This being the case either enable keyboard using a remote control or press LEARN button on MELS until you see text “VALIDATE REMOTE?”. Now press OK key on the keyboard.

To test the keyboard use key combination <7> and <9>.

If none of the keys work either keyboard connection to MCDS is disconnected or MCDS or keyboard itself is faulty. To check the connection you need to remove the screws fixing the MCDS to the cross piece. This is done easiest with the WTMD disassembled and the cross piece on a table.

4.5. MCDS Not Working

If during power-up display remains blank, no status LED light up, nor buzzer sounds, MCDS is not getting power from MELS or is broken. Check MCDS-MELS connection cable using a temporary Ethernet cable. Test several ports of MELS.

Check that MELS gets power. Zone display should light up during power-up.

If only buzzer is not working check that “2-11 VOLUME” is not zero.

4.6. TX or RX coil failure

In case of a TX or RX coil error faulty part can be MELS, TX/RX cables, MTXU/MRXU, or coils themselves.

If a known to be working MELS is available use it to check whether coil failure remains. If not, replace MELS.

Check that TX/RX cables and connectors are not damaged and that connectors are properly connected. Check cable resistances for faults.

Check MTXU/MRXU for damaged components.

Integrity of coils can be checked measuring coil resistances. Remove the hat from coil panel. Disconnect IDC connectors from MTXU/MRXU. Refer to the tables below for nominal resistances.

If coil resistance is close to zero there is a short in the coil. Check that the short is not at connector end. Replace the whole panel.

If coil resistance is significantly higher than the nominal value or fluctuates coil wire is not properly seated into the IDC connector or there is physical damage in the coil. If connection is properly done replace the whole coil panel.

TX coil	TX1	TX2	TX3	TX4a	TX4b	TX4c
Connector	X2	X8	X8	X8	X2	X2
Pins	1-2	5-6	3-4	1-1	5-6	3-4
R / ohm	7.5	5.5	4.5	2.0	0.5	2.5

RX coil	RX2	RX3	RX4	RX5	RX6	RX7	RX8	RX9	RX10
Connector	X5	X5	X5	X5	X5	X7	X7	X7	X7
Pins	9-10	7-8	5-6	3-4	1-2	9-10	7-8	5-6	3-4
R / ohm	5.5	4.5	2.0	2.5	3.0	3.5	3.5	3.5	3.0

5. PART REPLACEMENT

5.1. Replacing MELS

- Open cross piece hatch.
- Turn off the MELS.
- Disconnect all cables from the MELS.
- Loosen the two screws on TX side of the MELS. DO NOT remove these screws.
- Remove the two screws on RX side of the MELS. BE CAREFUL NOT TO LET THE MELS DROP.
- Install a new MELS in reverse order.

Tools needed:

- Cross piece hatch key
- Allen key size 4 mm

5.2. Replacing MCDS

- Even though MCDS can in principle be replaced with Metor 6M assembled it is much easier to replace with cross piece on a table.
- Remove MELS to get extra space.
- Remove the six screws fixing MCDS to the cross piece but do not let the MCDS drop off as it is still connected to the keyboard, figure 5.1.
- Unlock the keyboard connection strip connector and pull out the strip.
- Before installing the new MCDS remove the plastic display protection film.
- Push keyboard connection strip in the connector and lock the connector, figure 5.2.
- Fasten the screws. You may need to push the buzzer end slightly to get the screws on the threads. Do not over tighten the screws.
- Install and connect the MELS.
- Assemble the Metor.
- Test the operation of the keyboard.

Tools needed:

- Cross piece hatch key
- Allen key size 4 mm
- Phillips screwdriver size PH2, preferably with short blade

5.3. Replacing Keyboard

- Remove MELS and MCDS, see paragraphs 5.1. and 5.2.
- Remove both end flanges from the cross piece. Be careful not to damage the gaskets.
- Slide the keyboard plate towards buzzer end to remove it. Use a light hammer to get started, if needed.
- Remove masking tape from the new keyboard plate. Slide the keyboard plate into its place starting from buzzer end, figure 5.3. Be careful not to damage the connecting strip.
- Install MCDS. It is easier to install MCDS with flanges removed.
- Install flanges.
- Install MELS and connect MCDS.
- Assemble the Metor and test the operation of the keyboard.

Tools needed:

- Cross piece hatch key
- Allen key size 4mm
- Phillips screwdriver size PH2, preferably with short blade
- (Soft face hammer)

5.4. Replacing MZDU

- Lay the Metor 6WP down with a support under the cross piece so that top parts of panels do not touch floor. It is recommended two persons do this phase due to the weight of the product. Note that you need about 2 m of working space behind the cross piece.
- Remove the hat. Remove first the two center screws.
- Disconnect the connection cable of the module to be replaced from the MTXU.
- Pull the zone display profile out in a straight line. Note the orientation of the profile.
- Unfasten MZDU locking screws on the backside of the zone display profile.
- Pull the MZDU units gently out of the zone display profile. When a unit is out of the profile disconnect it from the next one. Note the order in which different MZDU units are in the profile, refer also to the assembly drawing.
- Replace the MZDU.
- If you are replacing MZDU 5158 which has the IR transmitter turn the switch position of the new unit to be the same as in the old unit, figure 5.4. The switch needs to point towards opposing (MRXS) coil panel when the MZDU is in place.
- If you are replacing topmost unit, MZDU 5251, secure the connection cable to the unit with a cable tie, figure 5.5.
- Push the units back into the profile in correct order. Connect next one before fully inserting a unit.
- When all units are back in the profile adjust them so that screw holes in the profile are in line with the holes in the MZDU units.
- Fasten the locking screws.
- Slide the profile back to the coil panel and connect cable to the MTXU.
- Before replacing the hat check that the gasket is in its place and that MZDS cables are out of the way of the end screws.
- Tighten each screw little by little until the hat stops moving. Tighten end screws first.

Tools needed:

- Phillips screwdriver size PH2

5.5. Replacing MCRU

- Place the Metor 6WP as in paragraph 5.4. and remove the hat.
- Disconnect the connection cable of the module to be replaced from the MRXU.
- Pull the zone display profile out in a straight line. Note the orientation of the profile.
- Unfasten the MCRU locking screw. Note the position of the MCRU in the profile.
- Pull the MCRU unit gently out of the zone display profile.
- Replace the MCRU. Turn the switch position of the new unit to be the same as in the old unit, figure 5.6. The switch needs to point towards opposing (MTXS) coil panel when the MCRU is in place.
- Slide new unit back into the profile and fasten it with the locking screw.
- Slide the profile back to the coil panel and connect cable to the MRXU.
- Before replacing the hat check that the gasket is in its place and that MCRS cables are out of the way of the end screws.
- Tighten each screw little by little until the hat stops moving. Tighten end screws first.

Tools needed:
- Phillips screwdriver size PH2

5.6. Replacing MTXU

- Disassemble the Metor 6WP and place TX panel to a table, if possible.
- Remove the coil panel hat. Remove first the two center screws.
- Disconnect MZDS cables, DC cable, and the Ethernet cable from the MTXU.
- Remove the four screws that hold the MTXU in the coil frame, figure 5.7.
- Unfasten the connector cup from the panel side and pull the MTXU out off the panel.
- Disconnect coil connectors from the MTXU, figure 5.8.
- Unfasten the old MTXU from the connector cup and fasten the new one.
- Connect coil connectors to the MTXU.
- Put the MTXU into the coil panel and fasten it with the four screws.
- Fasten the connector cup. Tighten the screws gently to avoid breaking the threads on the panel.
- Reconnect cables.
- Before replacing the hat check that the gasket is in its place and that MZDS cables are out of the way of the end screws.
- Tighten each screw little by little until the hat stops moving. Tighten end screws first.

Tools needed:
- Phillips screwdriver size PH1

5.7. Replacing MRXU

- Disassemble the Metor 6WP and place RX panel to a table, if possible.
- Remove the coil panel hat. Remove first the two center screws.
- Disconnect MCRS cables and DC cable from the MRXU.
- Remove the four screws that hold the MRXU in the coil frame, figure 5.9.
- Unfasten the connector cup from the panel side and pull the MRXU out off the panel.
- Disconnect coil connectors from the MRXU, figure 5.10.
- Unfasten the old MRXU from the connector cup and fasten the new one.
- Connect coil connectors to the MRXU.
- Put the MRXU into the coil panel and fasten it with the four screws.
- Fasten the connector cup. Tighten the screws gently to avoid breaking the threads on the panel.
- Reconnect cables.
- Before replacing the hat check that the gasket is in its place and that MCRS cables are out of the way of the end screws.
- Tighten each screw little by little until the hat stops moving. Tighten end screws first.

Tools needed:
- Phillips screwdriver size PH1

5.8. Replacing MPIU

- Unfasten the lower connector cup from the panel and pull it out at the same time disconnecting DC power cable and serial line cable (only in MPIU 5255).
- Release the connector housing clips that keep the MPIU in place and remove MPIU, figure 5.11. MPIU 5255 in figure.
- Push new MPIU in place.
- Reconnect cable(s).
- Fasten the connector cup. Tighten the screws gently to avoid breaking the threads on the panel.

Tools needed:

- Phillips screwdriver size PH1

Figure 5.1.

Figure 5.2.

Figure 5.3.

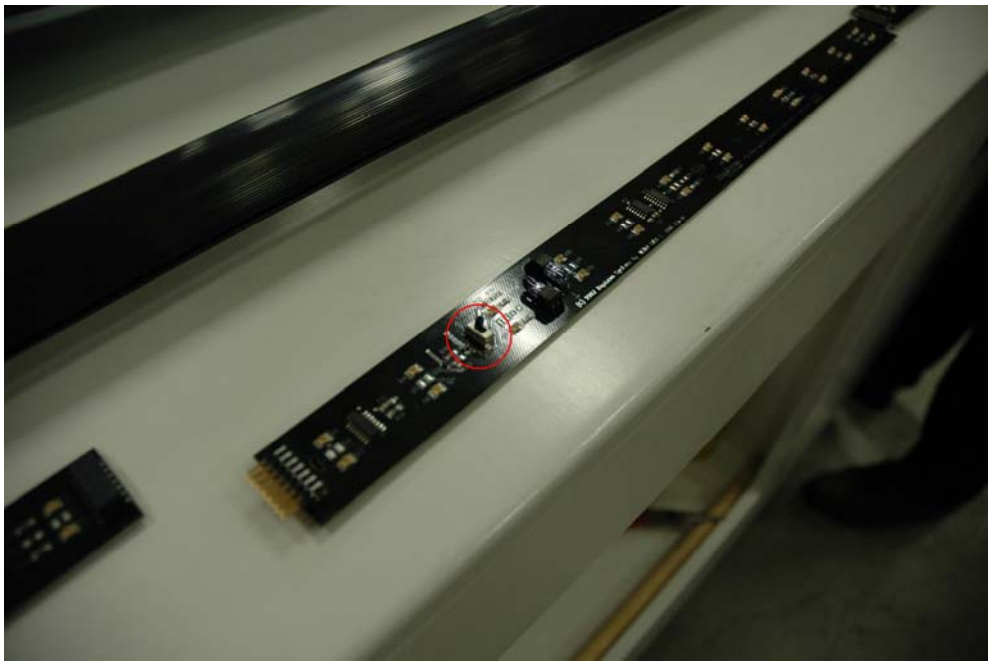


Figure 5.4.

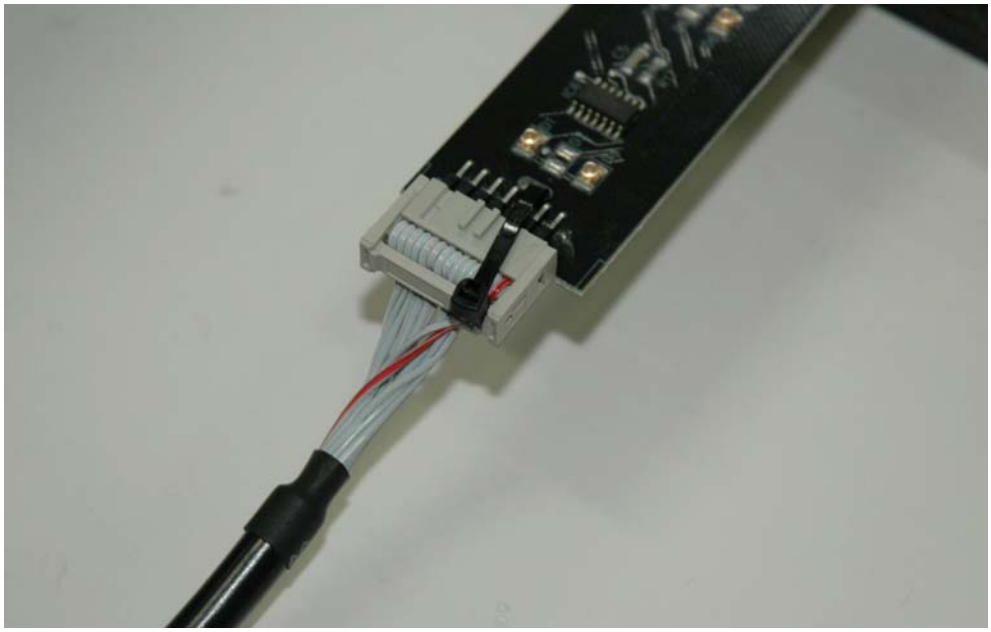


Figure 5.5.

Figure 5.6.

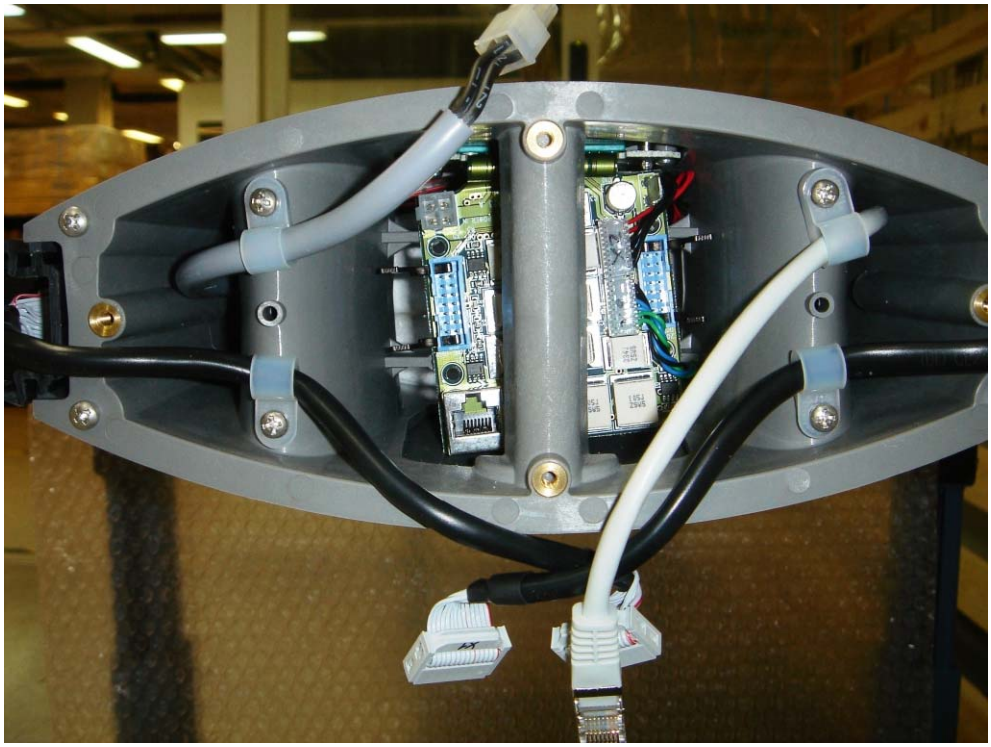


Figure 5.7.

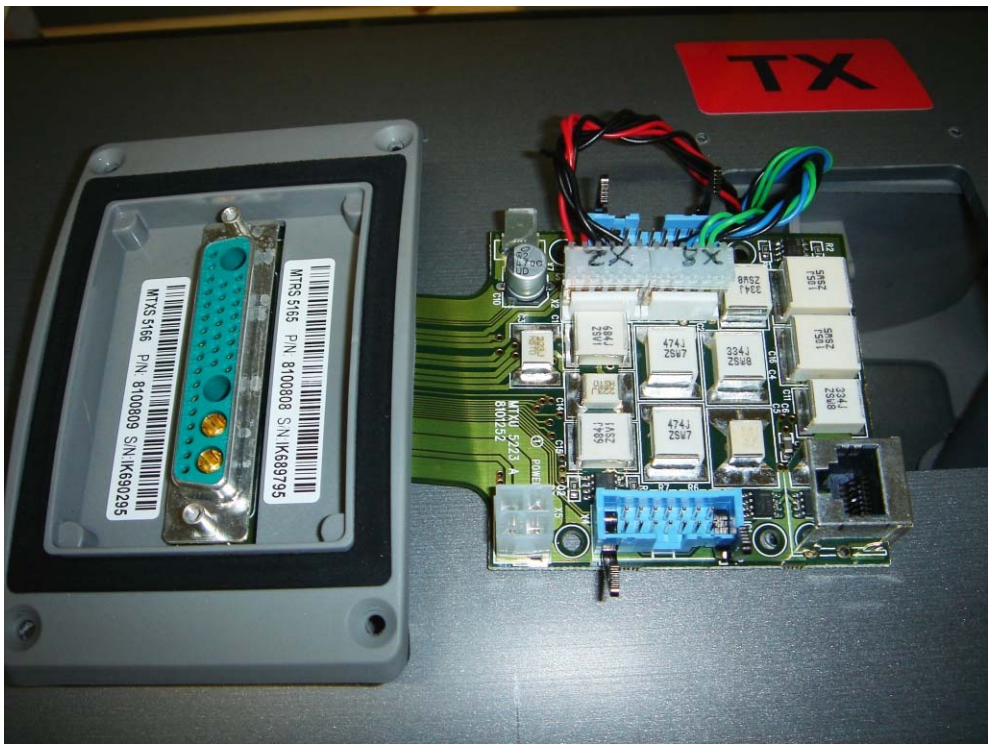


Figure 5.8.

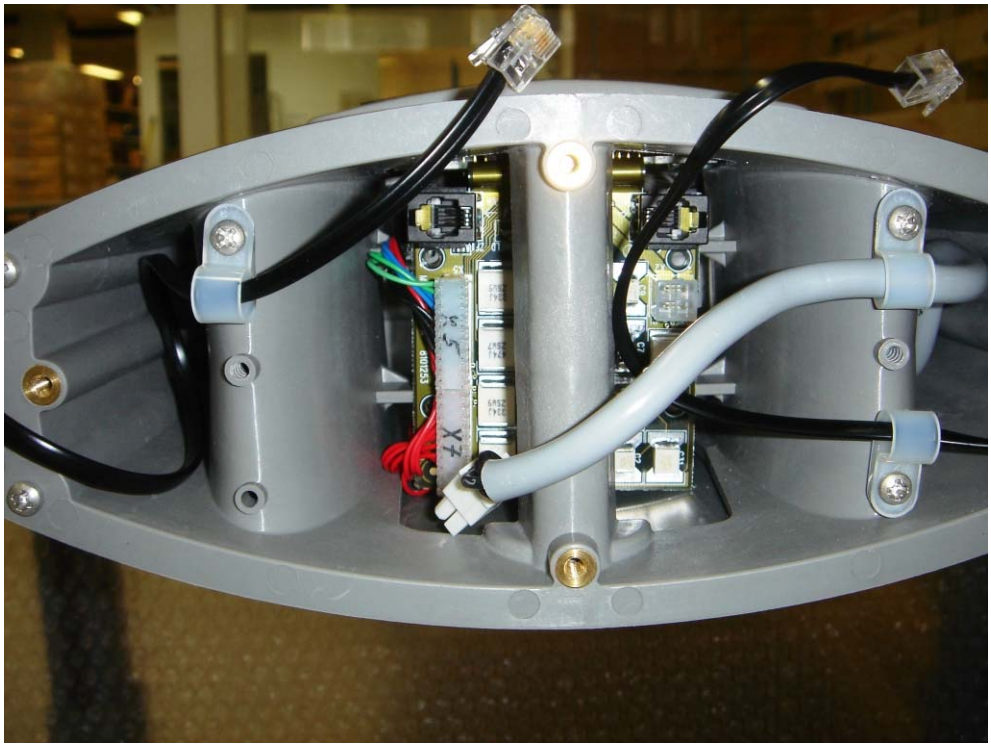


Figure 5.9.

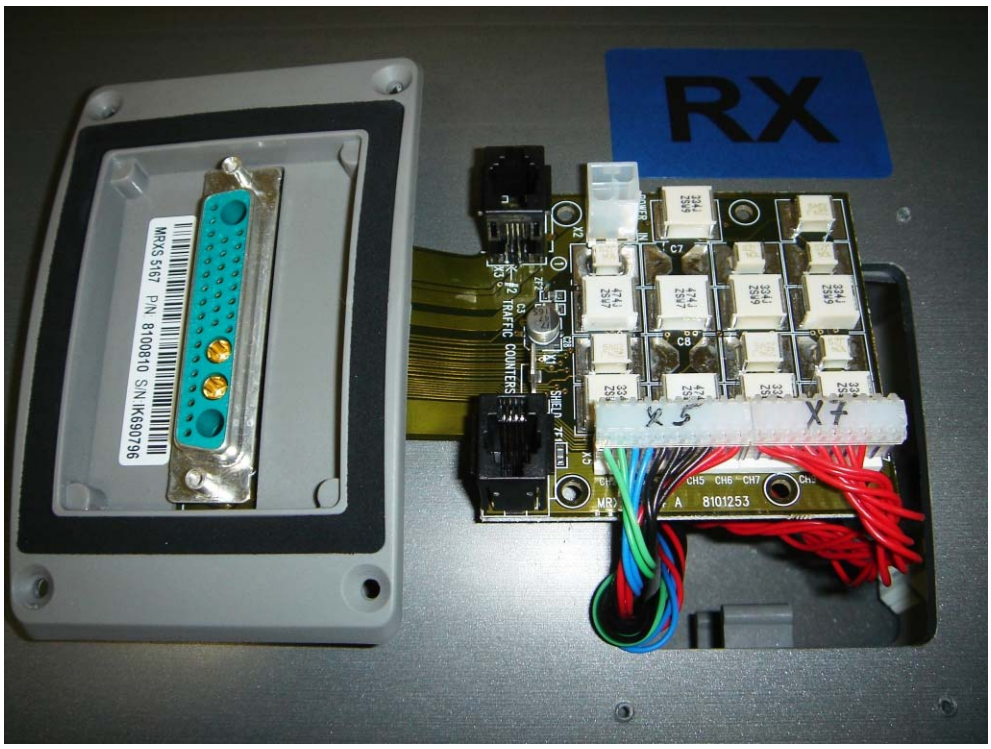


Figure 5.10.

Figure 5.11.

6. SPARE PARTS

In addition to individual spare parts on-site and maintenance kits are available.

6.1. Individual Spare Parts

P/N	Description
20104248-30	MCSS 5253-30 CROSS PIECE SET 76CM/30”
20104248-32	MCSS 5253-32 CROSS PIECE SET 81CM/32”
20104254	MELS 5249 ELECTRONICS SET
8100780-6WP	MCDS 5155-6WP CONTROL AND DISPLAY SET, METOR 6WP
8100809	MTXS 5166 TRANSMITTER PANEL SET
8100777	MZDS 5157 ZONE DISPLAY SET
8101250	MTXU 5223 TRANSMITTER UNIT
22104560	MPIU 5255 POWER INDICATOR UNIT
8100810	MRXS 5167 RECEIVER PANEL SET
8100802	MCRS 5159 COUNTER DISPLAY SET
8101251	MRXU 5224 RECEIVER UNIT
22104559	MPIU 5254 POWER INPUT UNIT
8101174	POWER SUPPLY EU
8101175	POWER SUPPLY US
8101176	POWER SUPPLY UK
8100798	ZONE DISPLAY PROFILE
88103741	CROSS PIECE FRONT PLATE 76CM
88103742	CROSS PIECE FRONT PLATE 81CM
20104595	STABILIZER SET, METOR 6WP

6.2. On-Site Kit

The contents of Metor 6WP on-site kit, P/N 20104589, are:

P/N	Description	Qty
8101254	TX COIL CABLE	1
8101255	RX COIL CABLE	1
3061721	CABLE, DISPLAY, M300P, ETHERNET, CAT5, RJ45, 0.5M	1
3061818	HAND SCREW M10X100 TN62	4
57102922	LOCK KEY, #CH751	2
8101190	SLEEVE GASKET	4
8100862	UPPER CONNECTOR CUP FRONT GASKET	2

6.3. Maintenance Kit

The contents of Metor 6WP maintenance kit, P/N 20104590, are:

P/N	Description	Qty
20104589	ON-SITE KIT, METOR 6WP	1
20104254	MELS 5249 ELECTRONICS SET	1
8100780-6WP	MCDS 5155-6WP CONTROL AND DISPLAY SET, METOR 6WP	1
8100777	MZDS 5157 ZONE DISPLAY SET	1
8100802	MCRS 5159 COUNTER RECEIVER SET	1
810250	MTXU 5223 TRANSMITTER UNIT	1
810251	MRXU 5224 RECEIVER UNIT	1

7. REVISION HISTORY

Rev. 1, 2011-03-30 / TV

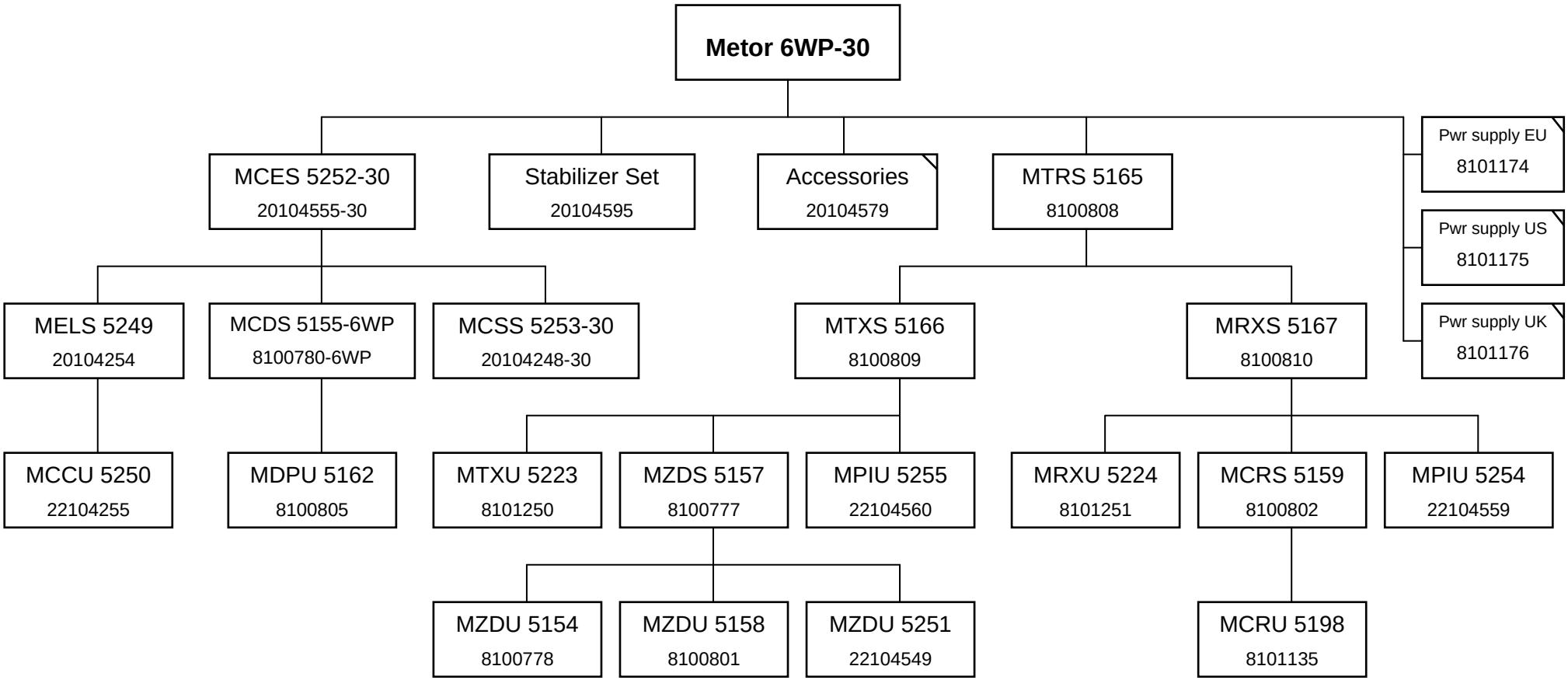
- Document created.

8. APPENDICES

No.	P/N	Description
1	04104580-30	PRODUCT STRUCTURE, METOR 6WP-30
2	04104580-32	PRODUCT STRUCTURE, METOR 6WP-32
3	04103745	MAIN DIMENSION DRAWING, METOR 6WP
4	04104569	WIRING DIAGRAM, METOR 6WP
5	9100747	ASSEMBLY DRAWING, MZDS 5157
6	9100748	ASSEMBLY DRAWING, MCRS 5159
7	04104582	INCOME INSPECTION, METOR 6WP
8	04105648	FAULT TRACING AND ERROR MESSAGES

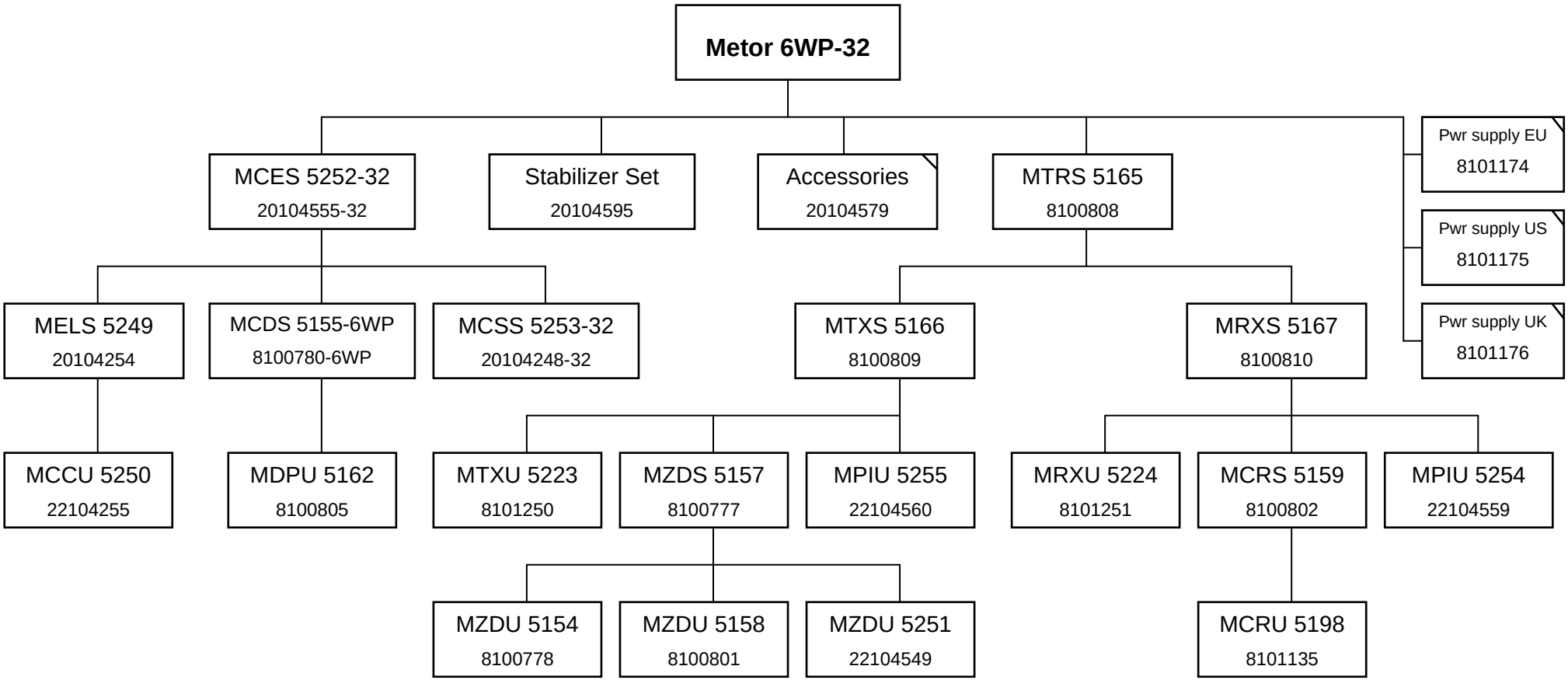
Author	Rev.	Code
T. Virtanen	1	04104580-30
Approved	Date	Document
Veli-Matti Pisilä	2011-02-18	
Product		Archives
Metor 6WP with 76cm/30” Cross Piece		
Title		
Product Structure		

Depends on customer

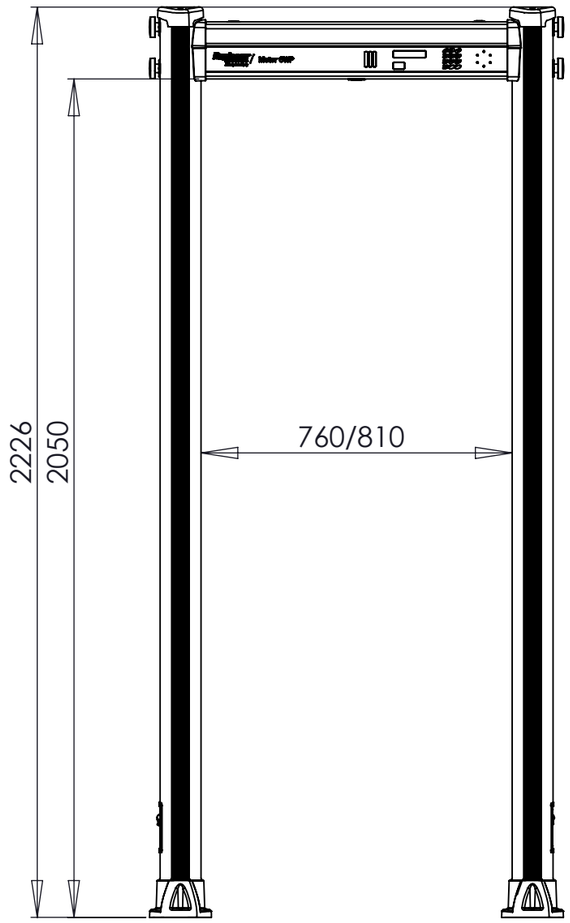


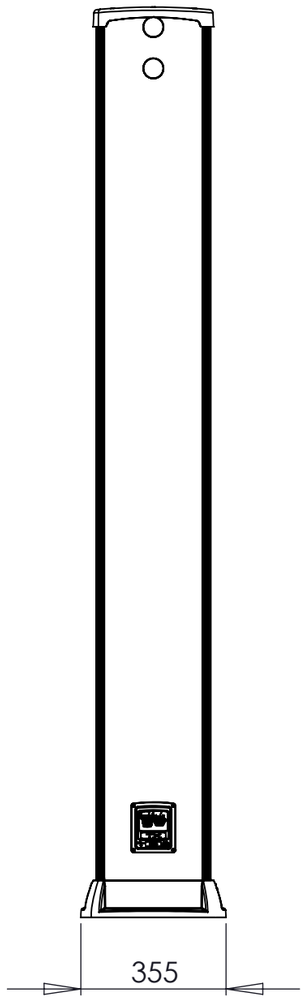
Author	Rev.	Code
T. Virtanen	1	04104580-32
Approved	Date	Document
Veli-Matti Pisilä	2011-02-18	
Product		Archives
Metor 6WP with 81cm/32” Cross Piece		
Title		
Product Structure		

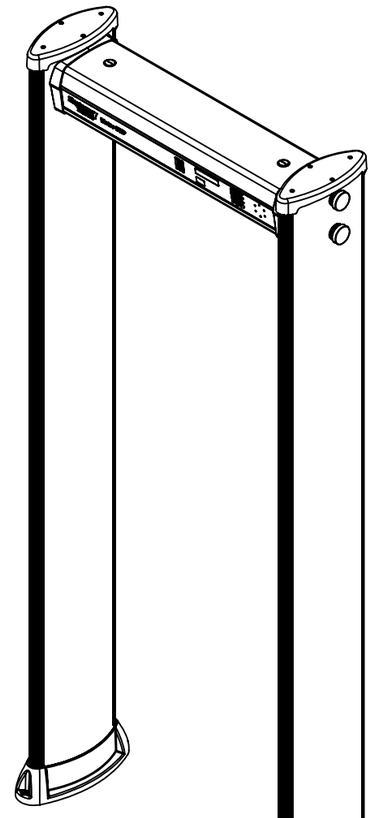
Depends on customer

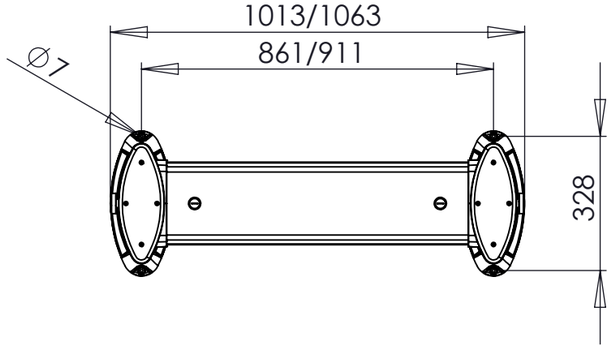


Revision	Description	Date
002	Updated drawing.	21.2.2011
001	Approved.	4.2.2011

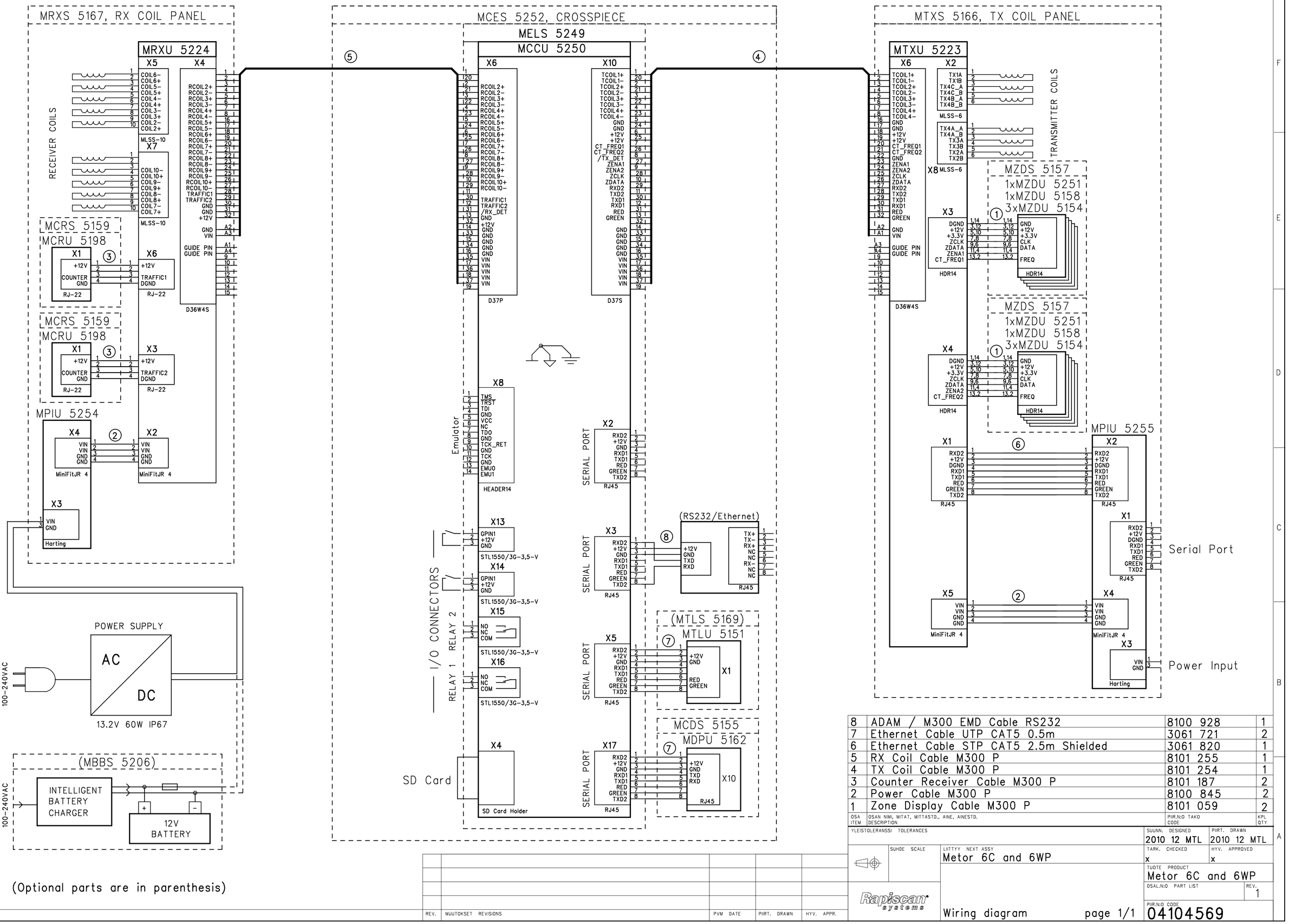








YLEISTOLERANSSIT TOLERANCES STANDARDIT STANDARDS	AINE MATERIAL / STANDARDI STANDARD: /			
	PINTAKÄSITTELY SURFACE TREATMENT			
SUHDE SCALE: 1:15	A3	VÄRI COLOR	TUOTE PRODUCT: Metor	SUUNN. DESIGNED / PVM DATE: MVA / 18.01.2011
MASSA MASS		Main Dimension Drawing Metor 6WP		3D-TIEDOSTO LIITTYY 3D-FILE APPENDIX ☐ TARKASTUSOHJE LIITTYY QUALITY CONTROL APPENDIX ☐
Rapiscan systems				PIIR.NRO. DWG.NO: 04103745 / REV.: 002



8	ADAM / M300 EMD Cable RS232	8100 928	1
7	Ethernet Cable UTP CAT5 0.5m	3061 721	2
6	Ethernet Cable STP CAT5 2.5m Shielded	3061 820	1
5	RX Coil Cable M300 P	8101 255	1
4	TX Coil Cable M300 P	8101 254	1
3	Counter Receiver Cable M300 P	8101 187	2
2	Power Cable M300 P	8100 845	2
1	Zone Display Cable M300 P	8101 059	2

OSA ITEM	OSAN NIMI, MITAT, MITTASTD., AINE, AINESTD. DESCRIPTION	PIIR.N:O TAKO CODE	KPL QTY

YLEISTOLERANSSI TOLERANCES

SUHDE SCALE

LIITTYY NEXT ASSY: Metor 6C and 6WP

SUUNN. DESIGNED: 2010 12 MTL | PIIRT. DRAWN: 2010 12 MTL

TARK. CHECKED: x | HYV. APPROVED: x

TUOTE PRODUCT: Metor 6C and 6WP

OSAL.N:O PART LIST | REV.: 1

PIIR.N:O CODE: 04104569

Rapiscan systems

Wiring diagram page 1/1

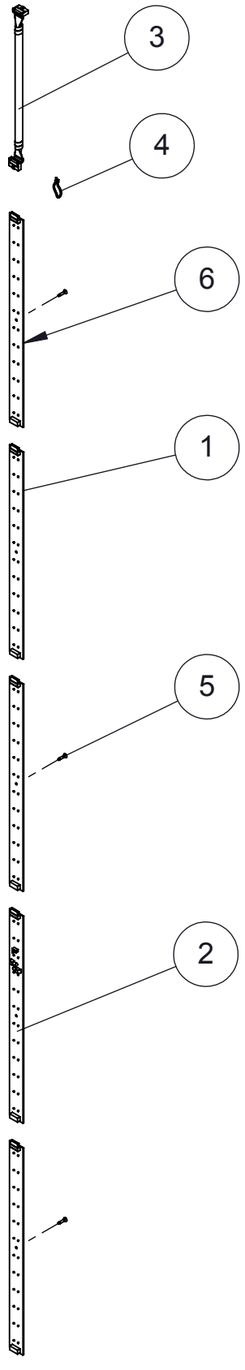
REV.	MUUTOKSET REVISIONS	PVM DATE	PIIRT. DRAWN	HYV. APPR.

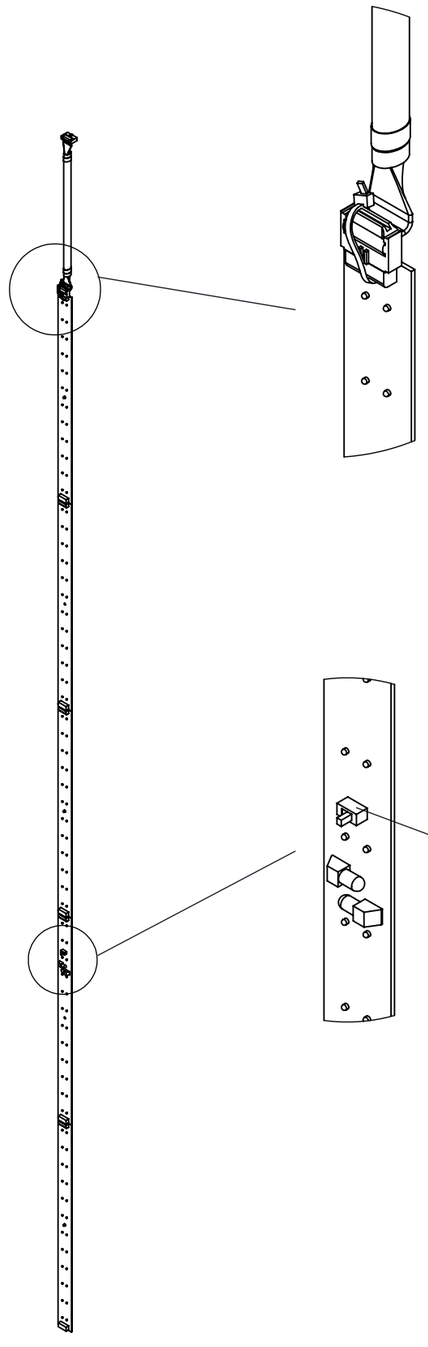
APPENDIX 5 Assembly Drawing, MZDS 5157

Parts in the drawing next page are:

Item no.	P/N	Description
1	8100778	MZDU 5154 ZONE DISPLAY UNIT
2	8100801	MZDU 5158 ZONE DISPLAY UNIT
3	8101059	ZONE DISPLAY CABLE
4	3061599	CABLE TIE
5	3061902	SELF TAPPING SCREW CSK 4.2X19 ZN PZ DIN 7982
6	22104549	MZDU 5251 ZONE DISPLAY AND POWER INDICATOR UNIT

Revision	Description	Date
004	Added part 6.	3.1.2011
003	Part number corrected	23.10.2007
002	Note for the switch added.	19.10.2007





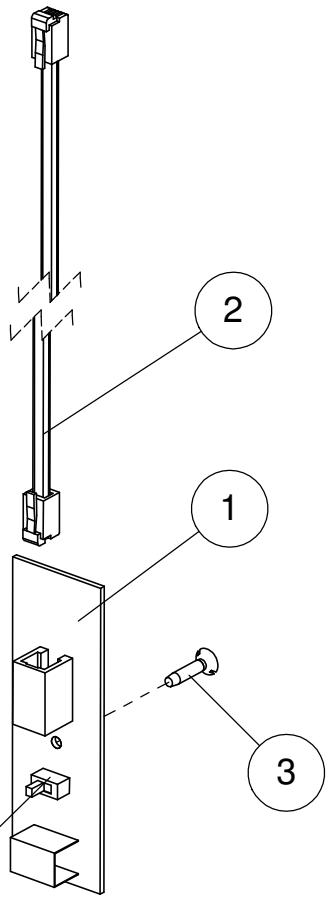
Before assembling into the light tube set the switch to point at the opposite panel.
Ennen asennusta vyöhykenäyttöprofiiliin aseta kytkin osoittamaan vastakkaista paneelia kohti.

YLEISTOLERANSSIT TOLERANCES STANDARDIT STANDARDS	AINE MATERIAL / STANDARDI STANDARD /			
	PINTAKÄSITTELY SURFACE TREATMENT			
SUHDE SCALE 1:10 A3	VÄRI COLOR	TUOTE PRODUCT Metor	SUUNN. DESIGNED / PVM DATE MVu /	
MASSA MASS	MZDS 5157 Zone display set		3D-TIEDOSTO LIITTYY 3D-FILE APPENDIX ☐	
Rapiscan systems			TARKASTUSOHJE LIITTYY QUALITY CONTROL APPENDIX ☐	
			PIIR.NRO. DWG.NO 9100747	REV. 004

APPENDIX 6 Assembly Drawing, MCRS 5159

Parts in the drawing next page are:

Item no.	P/N	Description
1	8101135	MCRU 5198 COUNTER RECEIVER UNIT
2	8101187	COUNTER RECEIVER CABLE
3	3061902	SELF TAPPING SCREW CSK 4.2X19 ZN PZ DIN 7982



Before assembling into the light tube set the switch to point at the opposite panel.
Ennen asennusta vyöhykenäyttöprofiiliin aseta kytkin osoittamaan vastakkaista paneelia kohti.

YLEISTOLERANSSIT TOLERANCES STANDARDIT STANDARDS	AINE MATERIAL / STANDARDI STANDARD: /		
	PINTAKÄSITTELY SURFACE TREATMENT		
SUHDE SCALE 1:2 A4	VÄRI COLOR	TUOTE PRODUCT: Metor	SUUNN. DESIGNED / PVM DATE: MVu / 8.10.2007
MASSA MASS	MCRS 5159 Counter receiver set	3D-TIEDOSTO LIITTYY 3D-FILE APPENDIX ☐	
Rapiscan systems		TARKASTUSOHJE LIITTYY QUALITY CONTROL APPENDIX ☐	
		PIIR.NRO. DWG.NO: 9100748	REV.: 001

Author	Revision	Date	Code
Tapio Virtanen	1	2011-03-08	04104582
Product: Metor 6WP			
Title: **INCOME INSPECTION**			

1. INTRODUCTION

The document is intended for company internal use when stocked units need to be checked after reconfiguration or because of other reasons.

2. TEST SETUP

Following parts and test items are needed in inspection:

1. MRCS 5116 Remote Control Set, P/N 8100577.
2. Metor Test Object Set, P/N 4100862.

3. TEST PROCEDURE

3.1. Inspection of Packages and Parts

1. Check that packages are undamaged and contain all required parts and test reports.
2. Check that cross piece box and coil panel box have same master serial number.
3. Check that all parts are undamaged.

3.2. Start-up

1. Assemble the unit and connect it to mains supply.
2. Turn on the unit.
3. Check that SW versions are correct.
4. Check that “METOR 6WP SELFCHECK OK” message appears to the display.
5. Ensure that no alarm messages appear.
6. Enter SUPER USER menu.
7. Run function “1-6 RESTORE FACTORY SETTINGS”.
8. Exit the menu by pressing <C> twice.

3.3. Keyboard test

1. Press keys <7> and <9> simultaneously to enter key test mode. If successful the display shows text “TEST KEYS:”.
2. Press each key in turn. If the keyboard is working properly display recognizes each key when pressed. Exit the test mode by again pressing keys <7> and <9> simultaneously.

3.4. Light test

1. Test the zone display LEDs and display LEDs with the “LIGHT TEST” function in diagnostics menu.
2. Enter SUPER USER menu.
3. Enter function “6-5 RUN LIGHT TEST”.
4. Check that all LEDs in the zone display and the LED bars in the cross piece display light up.
5. Exit the menu by pressing <C> twice.

3.5. Buzzer test

1. Press key <4> to enter volume control.
2. Select loudest volume and check that the buzzer sound is clear.
3. Reset the volume to 2 and leave the menu by pressing <C>.

3.6. Remote control test

1. Teach the remote control to the unit using the instructions in the operating manual.
2. Using the remote control enter SUPER USER menu.
3. Go to menu “1-5 COPY PARAMETERS”.
4. Select “1-51 COPY FROM METOR => REMOTE” check that the function operates correctly.
5. Select “1-52 COPY FROM REMOTE => METOR” check that the function operates correctly.
6. Go to function “3-21 REMOVE ALL VALID REMOTES” and remove the remote control from the unit’s memory.

3.7. Detection test

1. Remove all metal items, like watch, belt, keys, etc.
2. Select detection program PG = 03 MET3.
3. With 76 cm/30” cross piece (METOR 6WP-30) use sensitivity parameter value SE = 50 and with 81 cm/32” cross piece (METOR 6WP-32) value SE = 80.
4. Take 40 mm Fe cylinder through the unit at the height of 100 cm and check that it does produce an alarm.
5. Check that zone display shows correct location.
6. Take 30 mm Fe cylinder through the unit at the height of 100 cm and ensure that it does not produce an alarm.
7. Run function “1-6 RESTORE FACTORY SETTINGS”.

3.8. Counter test

1. Enter SUPER USER menu.
2. Run function “4-3 CLEAR STATISTICS” to clear counter values.
3. Enter function “4-11 PAX/ALM” and check that counter values are zero.
4. Walk through the unit keeping TX panel to your right and check that PAX counter value changes to one.
5. Run function “4-3 CLEAR STATISTICS” again to clear counter values.
6. Exit the menu by pressing <C> twice.
7. Turn off the unit.

4. REVISION HISTORY

Rev. 1, 2011-03-08 / TV

- Document created.

Author	Revision	Date	Code
Toni Akkala	1	2011-03-24	04105648
Product: Metor 6WP			
Title: **FAULT TRACING AND ERROR MESSAGES**			

1. FAULT TRACING

Here is listed some possible failures.

Symptom	Possible cause	Corrective action
Random alarming	External electromagnetic interference	Change operating frequency Relocate detector
No power to electronics	Power supply has failed Open circuit inside coil panel Coil cable loose or faulty	Replace power supply Connect power supply to the other coil panel Check coil cables
No power to RX or TX panel	Coil cable loose or faulty	Check coil cables
Zone display segment does not light up	Zone display defective	Replace zone display
Traffic counter does not work, traffic lights are always red	IR transmitter or receiver direction switch incorrectly set IR transmitter or receiver faulty	Check direction switches Replace faulty IR unit

2. ERROR MESSAGES

In the following are explained errors that are shown on the Display Unit.

Error Message	Possible cause	Corrective action
SYSTEM MESSAGE: ERROR CODE XXX	Depends on error number, see next table	Cycle power on the unit, if reappears contact service
SYSTEM MESSAGE: MDPU Vcc TOO LOW	Display unit connection cable faulty Internal failure	Replace cable Replace MCDS or MELS
SYSTEM MESSAGE: MDPU TEMP TOO LOW	Ambient temperature is too low	Wait for the unit to warm up
SYSTEM MESSAGE: MDPU TEMP TOO HIGH	Ambient temperature is too high, direct sunlight to unit	Move the unit to shadow
SYSTEM MESSAGE: MDPU EEPROM INIT.	Memory was corrupted	Cycle power on the unit Verify that all parameters are correct
SYSTEM MESSAGE: ACCESS CODES INIT.	Memory was corrupted	Cycle power Verify access codes
BATTERIES OF REMOTE CONTROL ARE EMPTY!	Empty batteries on remote control	Replace batteries
LOW REMOTE CONTROL BATTERY LEVEL!	Almost empty batteries on remote control	Replace batteries soon
SYSTEM MESSAGE: MCCU Vcc TOO LOW	Battery empty Power supply failure MCCU failure	Recharge battery Replace power supply Replace MELS

Error Message	Possible cause	Corrective action
SYSTEM MESSAGE: MCCU TEMP TOO LOW	Ambient temperature is too low	Wait for the unit to warm up
SYSTEM MESSAGE: MCCU TEMP TOO HIGH	Ambient temperature is too high Electrical failure	Move the unit to cooler place Replace MELS
SYSTEM MESSAGE: MCCU EEPROM INIT	Memory was corrupted	Cycle power on the unit Verify that all parameters are correct
SYSTEM MESSAGE: RX-CABLE FAILURE!	RX–cable is loose or disconnected	Check RX-cable connection
SYSTEM MESSAGE: TX-CABLE FAILURE!	TX–cable is loose or disconnected	Check TX-cable connection
SYSTEM MESSAGE: RECEIVER FAILURE X! (X is channel #)	RX Coil failure RX Cable failure Electrical failure	Check RX coil resistances Replace MRXS Check RX cable connector Replace MRXS Replace MELS
SYSTEM MESSAGE: TX X FAILURE! (X is channel #)	TX Coil failure TX Cable failure Electrical failure	Check TX coil resistances Replace MTXS Check TX cable connector Replace MTXS Replace MELS
SYSTEM FPGA INTERRUPT FAIL!	Electronics failure	Cycle power Replace MELS
OPERATION FAILED: NO REPLY FROM MCCU	Display unit cannot communicate with electronics MCCU failure MDPU failure	Verify that display unit cable is connected properly Replace display unit cable Replace MELS Replace MCDS
MAX COUNT OF REMOTES IS VALIDATED!	No more remote control units can be taught to gate	Remove all remotes and try again NOTE: This disables ALL previously taught remotes
CUSTOM PARAMS ARE NOT SET!	No custom parameters are saved	Save parameters before loading them
NO METAL DATA FROM MCCU	The MDPU does not get metal signal from the MCCU MCCU failure MDPU failure	Check display unit cable, cycle power Replace MELS Replace MCDS
MCCU PARAMS CORRUPTED!	MCCU parameters are corrupted MCCU failure	Cycle power on the unit Verify that all parameters are correct Replace display unit cable Replace MELS
NO REPLY FROM MDPU!	Display unit cannot communicate with electronics, MCCU failure MDPU failure	Verify that display unit cable is connected properly Replace display unit cable Replace MELS Replace MCDS
WARNING! POWER LOSS!	Power cord disconnected or unit switched OFF (Power Guard was ON)	Press ‘C’ to clear warning or reconnect power
SYSTEM MESSAGE: UI IS MISSING	UI is missing	Update UI

Error Message	Possible cause	Corrective action
SYSTEM MESSAGE: INVALID UI VERSION	UI version is incompatible	Update UI version
INCOMPATIBLE SW VERSIONS!	MCCU and MDPU versions are incompatible	Update MCCU or MDPU to correct version

3. ERROR NUMBERS

In the following are explained error numbers that are shown on the Display Unit as "SYSTEM MESSAGE: ERROR CODE XXX".

Code	Error	Possible cause
128	Not in use	
129	Not in use	
130	Not in use	
131	Not in use	
132	Not in use	
133	Not in use	
134	Not in use	
135	Not in use	
136	Not in use	
137	Not in use	
138	Not in use	
139	Not in use	
140	Not in use	
141	Not in use	
142	Not in use	
143	Not in use	
144	Data packet checksum	RS232 communication error in MCCU
145	Invalid USART command	RS232 communication error in MCCU
146	Unexpected error during saving the packet	MRCU failed to save data to EEPROM
147	Unexpected error during loading the packet	MRCU failed to load data from EEPROM
148	There is not enough memory in the EEPROM	MRCU error trying to save multiple pages
149	EEPROM is totally full	MRCU error
150	Error during page write	There was errors while writing to internal memory
151	Error during page read	There was errors while reading from internal memory
152	Tried to save data with illegal ID (0xFF)	MRCU error
153	Error in writing FAT entry	MRCU error
154	Error in writing Info-page	MRCU error
155	Error during packet write	MRCU error
156	Error during packet read	MRCU error
157	Wanted ID-type of data was not found from the EEPROM	MRCU error
158	Data with wanted index was not found from the EEPROM	MRCU error
159	Can not load the packet because EEPROM is empty	MRCU error

Code	Error	Possible cause
160	FAT-page loading failed	MRCU error
161	Raw Read/Write-operation is pointed to invalid EEPROM	MDPU or MRCU error
162	Raw Read/Write-operation is pointed to illegal page	MRCU error
163	Info-page loading failed	MRCU error
164	Page checksum error	Checksum error within memory page
165	LCD-timeout, no response	MDPU alphanumeric display failure
166	Invalid parameter value	Zone number
167	Invalid parameter value	Program number
168	Invalid parameter value	Sensitivity setting
169	Invalid parameter value	Frequency number
170	Invalid parameter value	HP filter setting
171	Invalid parameter value	LP filter setting
172	Invalid parameter value	Alarm delay setting
173	Invalid parameter value	Count direction setting
174	Invalid parameter value	Decrement mode setting
175	Invalid parameter value	Volume setting
176	Invalid parameter value	Volume min. setting
177	Invalid parameter value	Tone number
178	Invalid parameter ID	No such parameter number
179	MDPU job overflow	There was overflow in the MDPU job queue
180	Invalid parameter value	Display Mode
181	Invalid parameter value	Zone on/off
182	Invalid parameter value	Traffic light on/off
183	Invalid parameter value	Red on delay
184	Invalid parameter value	Zone on delay
185	No reply from Metor	No reply from Metor (MetorNet)
186	MRCU EEPROM init	MRCU EEPROM initialized
187	MDPU EEPROM cleared	MDPU has cleared EEPROM
188	Parameter index illegal	Parameter index was not recognized
189	NVRAM address illegal	Non-volatile memory address was illegal
190	MCCU job overflow	There was overflow in the MCCU job queue
191	Error I/O failed	Production test: I/O-test failed Requires loopback connector to I/O
192	MetorNet port failed	Production test: MetorNet port has failed Requires loopback connector to MetorNet port
193	NVRAM test failed	Non-volatile RAM failed (RTC chip)
194	Not in use	
195	Not in use	
196	Alive query not responded	MDPU didn’t response to MCCU alive queries within 5 seconds
197	MetorNet address illegal value	Illegal value for parameter
198	MetorNet read only illegal value	Illegal value for parameter
199	Invalid parameter value	Tamper
200	Invalid parameter value	Login type (alpha, numeric)
201	Invalid parameter value	Random rate
202	Invalid parameter value	Random tone
203	Invalid parameter value	Random volume
204	Invalid parameter value	Random display
205	Invalid parameter value	Key Volume

Code	Error	Possible cause
206	Invalid parameter value	Power indication
207	Invalid parameter value	Standby mode
208	MCCU is in standby mode	Operation can not be executed because MCCU is in standby mode
209	Not in use	
210	Invalid parameter value	Frequency search
211	Invalid parameter value	Parameter guard
212	Invalid parameter value	Power Guard
213	Invalid parameter value	MetorNet Read-only
214	Invalid parameter value	Fast data mode
215	MetorNet READ-ONLY	Mode was set ON and MetorNet was tried to use to adjust parameter
216	Invalid parameter value	Fast data mode
217	Invalid parameter value	Keypad disable
218	Not in use	
219	Invalid parameter value	Ready state violation
220	SD card operation failed	Currently executed operation for the SD card failed
221	Invalid parameter value	I/O
222	MFS initialization failed	Metor file system could not be initialized properly.
223	Not in use	
224	Not in use	
225	Invalid parameter value	Random alarms for alarming passengers

4. REVISION HISTORY

Rev. 1, 2011-03-24 / TIA

- Document created.