



PTB Approvable Multi Point Dispense Module.

# **LUBE-Master**

## **Monitoring System**



## **Manual**

## **53600**

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## 1. Introduction

The PTB approvable MPDM, (Multi Point Dispense Module), is the dispense controller and power supply in an PTB approvable LUBE-Master monitoring system. It measures dispensed volumes and opens / closes the solenoid valves.

It is built by a combination of a standard MPDM 53400, the PCB 203 02 64 of the standard Printer module (PM 53402) and a real-time Clock module (CM 53405).

Together with a Keypad (KP 53401) and a LED display (LED 53404) it forms the foundation of a PTB approvable LUBE-Master monitoring system.

## 2. Installation

**NOTE! The LUBE-Master installation manual should be available when installing and configuring a MPDM.**

### 2.1. Mechanical installation

The PTB-MPDM is delivered mounted in a metal box with power supply. The box is mounted on a wall or other suitable place using the four  $\varnothing 5$  mm holes in the bottom corners of the box.

### 2.2. Electric installation

When installing the MPDM (53600) there are different areas of connection.

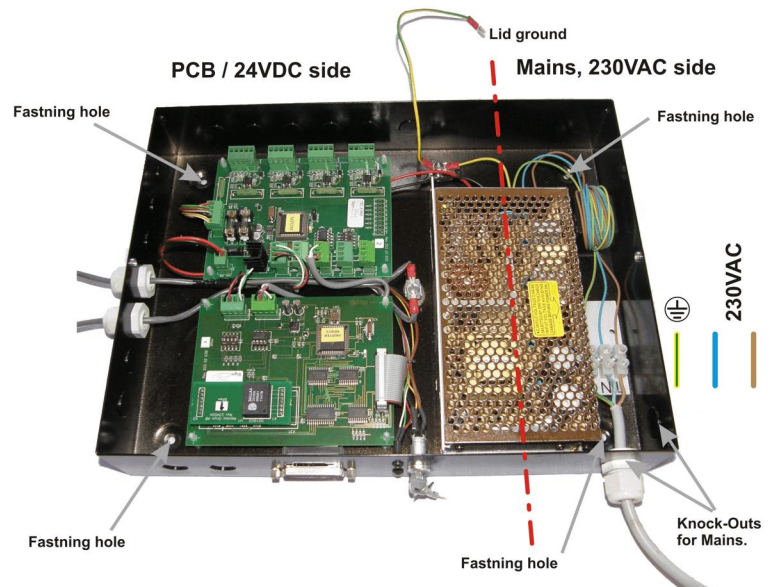
**Note! Before connecting the module or maintenance, make sure that the mains power is shut down.**

#### 2.2.1. Mains, 230VAC side

The MPDM should be connected to mains 230VAC/50Hz using phase, neutral and ground.

Eurolube Equipment AB recommends that the connection is done through a 2-pole lockable working switch.

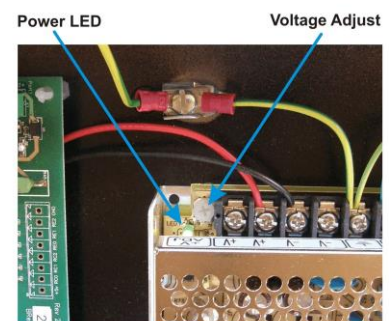
The “knock-out” holes on the lower right hand (see picture) should only be used for mains power supply (230VAC) to separate it from the circuit board (24DC) side of the module.



#### 2.2.2. Switched power supply

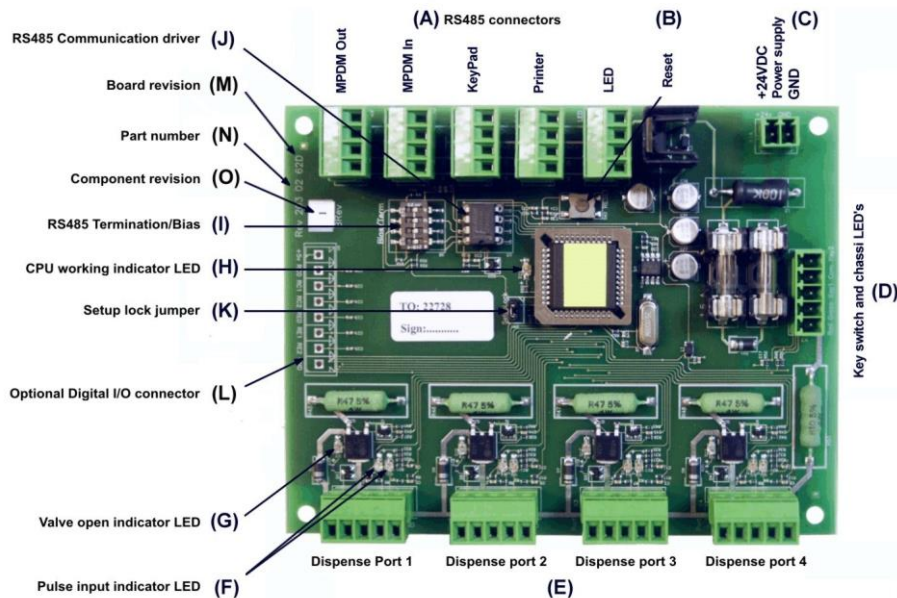
To the left of the connection screws there are a power LED (GREEN) and a Voltage adjustment screw. This can be used to adjust the output DC voltage if necessary. The output of the switched power supply is short circuit protected and if there is a short circuit the power LED will not be lit.

The power supply can be set for 110VAC/60Hz or 220VAC/50Hz. 220VAC/50Hz is the factory default setting. The yellow sticker on the power supply points on the switch controlling this.



## 2.2.3. MPDM Circuit board, 203 02 62.

The version (M) of the MPDM PCB part number (N) 203 02 62 that should be used in a PTB approvable system is D. And the component revision (O) should be 1.



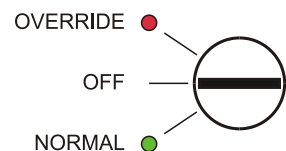
### 2.2.3.1. Miscellaneous connections

24VDC supply is connected to the connector (C). In a MPDM (53600) this is already connected.

**NOTE!** If the connector (C) has been removed and should be reconnected, check polarity! The poles are labelled on the circuit board. Red cable is +24VDC and Black is GND.

The chassis-mounted key switch and indication diodes are connected connector (D).

With the key switch you can set the status of the module to **NORMAL-** (GREEN light), **OFF-** (NO light) or **OVERRIDE-** (RED light) mode.



In a MPDM (53600) this is already connected.

### 2.2.3.2. Communication

It has five connectors (A) for the LUBE-Master communication. Two of these connectors, **MPDM IN** and **MPDM OUT** are not connected to +24V and are intended for a connection to other MPDM's or other modules that already have +24VDC. This is to prevent interconnecting of +24VDC from two power supplies.

The other three connectors are used to connect external devices without a power source such as a Printer Module (PM), a LED Module (LED) and/or a Keypad (KP). These connectors can only supply power to a single device.

For more detailed information, see the **LUBE-Master Installation Guide**

**NOTE!** If the communication loop should interconnect two modules with power supply either MPDM IN or MPDM OUT must be used or +24V (red cable) should not be connected.

**NOTE!** Communication cables should only be connected through "knock-out" holes to the "left side" (PCB / 24VDC side) of the module to prevent mixing of mains 230VAC and 24VDC cables.

**NOTE!** Communication cable screens should be connected to the Shield/Ground screw between the PCB's and the power supply.

### 2.2.3.3. Meters and solenoid valves

The four connectors (E) marked +24 V, Sol, A, B and GND are used for dispense points. Solenoid valves and meters are connected to these.

[+24V] on the MPDM connects to [o] on the meter.

[Sol] on the MPDM connects to the [unmarked] pole on the meter.

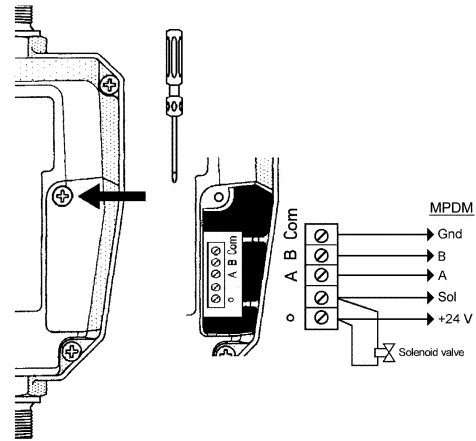
[A] on the MPDM port is connects to [A] on the meter.

[B] on the MPDM port connects to [B] on the meter.

[GND] on the MPDM port connects to [Com] on the meter.

The solenoid valve connects between [o] and the [unmarked pole] on the meter.

The meter 1168520 is equipped with a valve symbol to indicate open dispense point.



**TIP!** If the Eurolube Equipment AB stock cable, (part. Nr. 53393), is used the colours should match the following:

<b>GREEN</b>	to	<b>GND.</b>
<b>GREY</b>	to	<b>B</b>
<b>WHITE</b>	to	<b>A</b>
<b>YELLOW</b>	to	<b>Sol</b>
<b>BROWN</b>	to	<b>+24V</b>



This will make service and support much faster

**NOTE!** Meter and solenoid valve cables should only be connected through "knock-out" holes to the "left side" (PCB / 24VDC side) of the module to prevent mixing of mains 230VAC and 24VDC cables.

**NOTE!** Grounding the Sol pole/yellow cable activates the solenoid valve. Make sure that the solenoid valve is connected properly and that the manual valve at the fluid outlet is closed before powering the module up.

### 2.2.3.4. Other hardware features

The RESET button (B) can be used to reset the module or reset the module address. Quick press reboots the module. If pressed more than 5 seconds the address of the module is set to DFF0 so the module can be readdressed from a keypad by typing 0 at the "adr:" prompt.

There are two diodes (F) for every port. These indicate the status of pulse inputs A and B

One diode (G) on each port indicates if that dispense point is open or not.

If the diode (H) is flashing the module is operational and working properly. A steady light or completely off indicates a problem.

DIL-switch for RS485 termination and BIAS are located at (I).

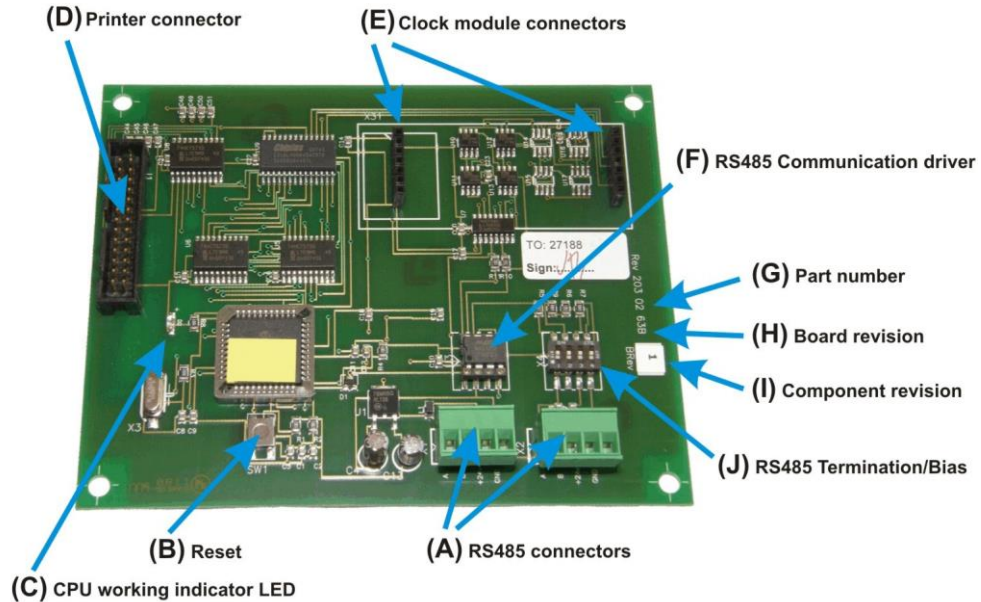
(J) shows the position of the replaceable communication driver.

If the **SetupLock** jumper at position (K) is removed, the PPU value (calibration) cannot be changed.

There are an optional 6-channel digital I/O connector with +5VDC and GND, this is marked (L).

## 2.2.4. PM Circuit board, 203 02 63.

The versions of the PM PCB (part number 203 02 63) that should be used in an PTB approvable system is D.



### 2.2.4.1. Power supply

A PM normally gets its power supply through the communication cable, +24V and GND on **one** of the connectors (A). If the module is placed far away from a module with power supply it is possible to apply an external power-supply to **one** of the connectors (A).

**NOTE!** +24VDC may only be applied to one of the connectors.

### 2.2.4.2. Communication

PM has two 4-pin connectors (A) marked A, B, +24 V and GND, which are used for the LUBE-Master communication.

DIL switches for termination and BIAS are marked (F).

For more detailed information, see the **LUBE-Master Installation Guide**

**NOTE!** If the communication loop should interconnect two modules with power supply either MPDM IN or MPDM OUT must be used or +24V (red cable) should not be connected.

**NOTE!** Communication cable screens should be connected to the Shield/Ground screw between the PCB's and the power supply.

### 2.2.4.3. Printer

The short flat printer cable is connected to the Centronic® parallel port connector marked (D).

### 2.2.4.4. Other hardware features

The RESET button (B) can be used to reset the module or reset the module address. Quick press reboots the module. If pressed more than 5 seconds the address of the module is set to DFF0 so the module can be readdressed from a keypad by typing 0 at the "adr:" prompt.

If the LED (C) flashes it indicates that the PM is working. If it is unlit or lit all the time something is wrong.

Use the two connectors (E) when installing a clock module.



## 2.2.5. Clock module, 53405

The versions of the CM (part number 203 02 63) that should be used in an PTB approvable system is A.

### 2.2.5.1. Power supply

The clock module gets its power from the printer module it is attached to.

### 2.2.5.2. Connection

The module is installed using the two rows of pins at the bottom. It is installed on the corresponding connector on the printer module PCB (203 02 63). If replaced, make sure that all pins are aligned before pressing the module in place. Pins can be bent gently to make alignment easier.

## 3. Configuration

An LUBE-Master configuration sheet *should* always be filled or altered during the configuration.

**NOTE! To obtain technical support a copy of the configuration sheet for the complete installation must be sent to Eurolube Equipment AB at**

**Eurolube Equipment AB  
Stråsavägen 2  
S-711 76 Storå  
SWEDEN**

**Or at [lubemaster@eurolube.com](mailto:lubemaster@eurolube.com).**

### 3.1. Check before configuration

Check that the module is working and communicating with the system according to the LUBE-Master Manual chapter Testing modules.

**NOTE! Do not forget to check and adjust the termination and BIAS according to LUBE-Master Manual.**

### 3.2. Set-Up Lock jumper

On the MPDM PCB (203 03 62) there is a Jumper called SetupLock if this jumper is removed or moved to only one of the pins some configurations, for example the calibration, are disabled. If you change a configuration from a keypad when the jumper is moved the change will not be stored. If you configure from a PC the locked parameters is greyed and the flag L is shown in the "Update PNP array" table.

### 3.3. Addressing the modules

A new module has a default addresses when delivered. MPDM has address 1000, PM has address 2000, KP has address 3000 and LED has address 4000. The first things to do with a new module or set of modules are to change the factory default addresses. It can be done from a keypad or from a PC. Here it will be shown how to do it from a keypad.

**NOTE! Only one new module can be installed at a time. If you press the RESET-button on several terminals simultaneously or in a sequence, only the most recently pressed will be active.**

**TIP! Follow preferably "Recommendation for setting new addresses" when setting addresses.**

### 3.3.1. Recommendation for setting addresses

Each module demands a unique 16 bit hexadecimal address. There are some forbidden and some reserved addresses but it is possible to use all addresses between 0001 and 9999. To make it easier to upgrade and support the system we recommend using the chart to the right.

This means that the first MPDM should have the address 1001 and the next one 1002 etc. It is a good idea not to use the default address 1000, it makes it easier to add new MPDM's.

**NOTE!** It is essential to add modules to the configuration sheet continuously as they are configured to avoid collisions.

Address	Module
0000	Forbidden
1000 – 1xxx	MPDM
2000 – 2xxx	PM
2999	PC-database
3000 – 3xxx	KeyPad
4000 – 4xxx	LED-display
5000 – 5xxx	Reserved
6000 – 6xxx	Reserved
7000 – 7xxx	Reserved
8000 – 8xxx	TCM
A000 – FFFF	Forbidden

**NOTE!** Address 0000 is forbidden and addresses above 9999 are reserved for the system.

**NOTE!** If two or more MPDM's have the same address the system will fail. The MPDM's has to be re-addressed.

**HINT!** Follow preferably "Recommendation for setting addresses" when setting addresses.

### 3.3.2. Set-Up mode

Type the word "SETUP" on a KeyPad and press <ENTER>.

```
Reel: SETUP      ‡
EXIT STOP CE ENT
```

Type the password "LTDAB" and press <ENTER>.

```
Pass: ***** _ ‡
Enter Password
```

Type the address for the module that is to be configured, here a MPDM, and press <ENTER> to access its main menu. It is possible to add the 4-digit menu code to go directly to the desired menu.

```
Addr: 1???_ ‡
Address[CODE]
```

Scroll through the MPDM sub menus by pressing ↑ or ↓. When the desired menu is shown press <ENTER> etc.

```
MPDM: ‡
MPDM MainMenu
```

### 3.3.3. Change address [MPDM//Address]

Enter menu [MPDM//Address] by pressing <ENTER>.

```
MPDM: ‡
MPDM MainMenu
```

Press <ENTER> to get the cursor.

```
Address: 1XXX ‡
Set Address 1???
```

Type in the desired address and acknowledge by pressing <ENTER>. When the cursor disappears it is finished.

```
Address: 1XXX_ ‡
Set Address 1???
```

Press <EXIT> twice to leave Set-Up mode.

```
Address: 1XXX ‡
Set Address 1???
```

Done.

```
Reel: ‡
EXIT STOP CE ENT
```

### 3.3.4. Change address [PM//Address]

Enter menu [PM//Address] by pressing <ENTER>.

```
PM:                ‡
PM MainMenu
```

Press <ENTER> to get the cursor.

```
Address:2XXX     ‡
Set Address 2???
```

Type in the desired address and acknowledge by pressing <ENTER>. When the cursor disappears it is finished.

```
Address:2XXX_    ‡
Set Address 2???
```

Press <EXIT> twice to leave Set-Up mode.

```
Address:2XXX     ‡
Set Address 2???
```

Done.

```
Reel:            ‡
EXIT STOP CE ENT
```

## 3.4. Sphere number

MPDM's and Keypads belongs to a sphere and in a basic system they should be set to the same within a workbay, workplace or similar. Factory default is 255.

The sphere number is changed from a keypad. First open the Setup mode, se "3.3.4 Setup mode" above.

### 3.4.1. Change sphere [MPDM//Sno]

Enter menu [MPDM//Address] by pressing <ENTER>.

```
MPDM:            ‡
MPDM MainMenu
```

Scroll to menu Sphere: by pressing ↑ or ↓.

```
Address:1XXX     ‡
Set Address 1???
```

Press <ENTER> to get the cursor.

```
Sno:XXX         ‡
Set Sphere 0-255
```

Type in the **desired sphere** and acknowledge by pressing <ENTER>. When the cursor disappears it is finished.

```
Sno:XXX_        ‡
Set Sphere 0-255
```

Press <EXIT> twice to leave Set-Up mode.

```
Sno:XXX         ‡
Set Sphere 0-255
```

Done.

```
Reel:           ‡
EXIT STOP CE ENT
```

## 4. Configure the dispense ports

A MPDM has four ports that are used to control four fully separate dispense points (Reels).

### 4.1. Connect a dispense point to a port [MPDM//PortX/ReelNo]

Enter menu [MPDM//PortX] by scrolling with ↑ or ↓.

```
MPDM:            ‡
MPDM MainMenu
```

At **PortX**: press <ENTER>.

```
PortX:          ‡
MPDM MainMenu
```

Press <ENTER> to get the cursor.

```
Reel:X         ‡
Set ReelNo ???
```

Check the number of the dispense point (Reel) that is connected to portX, type that number in and press <ENTER> to acknowledge. When the cursor disappears it is finished.

```
Reel:X_        ‡
Set ReelNo ???
```

Press <EXIT> twice to leave Set-Up mode.

```
Reel:X         ‡
Set ReelNo ???
```

Done.

```
Reel:          ‡
```

# LUBE-MASTER MULTI POINT DISPENSE MODULE

PART NO 53600



EXIT STOP CE ENT



## 4.2. Group [MPDM//PortX/Group]

A user can be a member of eight different groups named A-H. It is possible to make advanced and complex user rights for dispense points.

**EXAMPLE:** "Bob" is a member of groups AB, user "Stan" is a member of groups BC and the dispense points is divided into three bays A, B and C. In this case both users can open dispense points in bay B but only "Bob" can open dispense points in bay A and only "Stan" can open dispense points in bay C.

Each group is represented by a value shown in the chart to the right. The group value is calculated by adding the values for each desired group. Group A and E give a group value of (1+16) which is 17.

Group	Value
A	1
B	2
C	4
D	8
E	16
F	32
G	64
H	128

Enter menu [MPDM//PortX/] by scrolling with ↑ or ↓.

MPDM:	‡
MPDM MainMenu	

At **PortX:** press <ENTER>.

PortX:	‡
MPDM MainMenu	

Scroll to **Group:** using ↑ or ↓.

Reel:X	‡
Set ReelNr ???	

Press <ENTER> to get the cursor.

Group:XXX	‡
Set Group 0-255	

Type the **group** value and press <ENTER> to acknowledge. When the cursor disappears it is finished.

Group:XXX_	‡
Set Group 0-255	

Press <EXIT> **twice** to leave Set-Up mode.

Group:XXX	‡
Set Group 0-255	

Done.

Reel:	‡
EXIT STOP CE ENT	

**NOTE:** Which group a user is a member of is set when administrating users.

### 4.3. Mask [MPDM//PortX/Mask]

How a dispense point should work is controlled by a mask. This is done by adding the values for the desired functions, in the chart to the right.

**EXAMPLE:** At a dispense point you want to use JOB number but you do not want to type in a desired volume or a PIN code. The meter has two reed switches and you want to use them. In this case you should add the values 2 and 16. 2+16=18. The mask should be set to 18.

Name	Value	PTB
Use PIN code	1	-
Use WO/Job number	2	-
Use Volume	4	-
Use After run compensation	8	-
Use 2 REED switches	16	YES
External User validation	32	-
External WO/Job validation	64	-
External Tank validation	128	-
Use Input B as a trigger	256	NO
LED counts down	256	-
Dual/Quadra pulse count	1024	YES
Cyclic Dispense mode	2048	NO

Enter menu [MPDM//PortX] by scrolling with ↑ or ↓.

```
MPDM:          ‡
MPDM MainMenu
```

At PortX: press <ENTER>.

```
PortX:         ‡
MPDM MainMenu
```

Scroll to Mask: using ↑ or ↓.

```
Reel:X        ‡
Set ReelNo ???
```

Press <ENTER> to get the cursor.

```
Mask:XXX     ‡
Set Mask 0-3567
```

Type the **mask value** and press <ENTER> to acknowledge. When the cursor disappears it is finished.

```
Mask:XXX_    ‡
Set Mask 0-3567
```

Press <EXIT> twice to leave Setup mode.

```
Mask:XXX     ‡
Set Mask 0-3567
```

Done.

```
Reel:        ‡
EXIT STOP CE ENT
```

#### 4.3.1. Use PIN code

Sets if the dispense point should ask for a PIN code input or not.

#### 4.3.2. Use JOB no

Sets if the dispense point should ask for a Work order/Job code input or not.

#### 4.3.3. Use Volume

Sets if the dispense point should ask for a volume input or not. If set the dispense point will ask for a volume to dispense. If not set the dispense point will open for the volume defined in Max Vol.

#### 4.3.4. Use Pulse compensation

Sets if the dispense point should auto adjust for after run. If it is set the dispense point will adjust the valve shut-off to compensate for flow and temperature changes.

#### 4.3.5. Use two REED switches

Enables/Disables the use of a meter with two REED switches. (Two pulse train output). If a meter with two pulse trains (Eurolube Equipment AB part no. 1168520) is used and "Use two REED switches" is enabled the flow direction will be detected.

*This cannot be used if “Use Input B as a trigger” is set.*

#### 4.3.6. Use external User Validation

If this is set the dispense point will validate the PIN code to the source specified in DBAddress. If it is not set the dispense point will validate the PIN code to the internal PIN code database of the MPDM.

#### 4.3.7. Use external JOB validation

If this is set the dispense point will validate the Work order/Job number to the source specified in DBAddress. If it is not set the dispense point will only register the Work order/Job number but not validate it.

#### 4.3.8. Use external Tank validation

If this is set the dispense point will validate the Requested volume to the specified Tank number at the source specified in DBAddress. If the “Current Stock” minus the “Requested Volume” is above the specified “Stop Volume” the dispense point will open.

#### 4.3.9. Use Input B as a trigger

If this parameter is set it enables the use of an external signal connected to the Input B pin of the port connector.

The function is active low and can be done with a push button connected between Input B and GND of the port connector.

When Input B goes low the dispense point will open for the volume specified by the MaxVol parameter.

*This cannot be used if “Use two REED switches” is set.*

#### 4.3.10. LED counts down

Sets if the LED specified by the parameter LEDAddress should count the dispensed volume forwards or backwards, 0 -> Requested volume or Requested volume ->0.

#### 4.3.11. Dual/Quadra pulse count

This sets if the pulse input of the dispense point should count only rising edge or rising and falling edge of the pulse train. If a single pulse train meter is used the PPU will be doubled and if a two pulse train meter is used the PPU will increased 4 times.

This can be used to increase accuracy for grease dispensing and large meters with low PPU.

#### 4.3.12. Cyclic Dispense mode

If this is set the dispense point dispenses the volume specified by the MaxVol parameter with a time interval specified by the Time-Out parameter in minutes. Then the normal Time-Out for the dispense point is hard coded to 30 seconds. If there is an error it is possible to get an error signal output on the optional I/O connector on the MPDM board rev 2030262D.

#### 4.3.13. PTB Mask

For a PTB approved system the mandatory mask bits are marked in the Mask table as "YES" and "NO" so the basic PTB mask is then  $8+16+1024 = 1048$ .

## 4.4. Set "Time-Out" function [MPDM//PortX/TimeOut]

The function Time-Out set the time for how long a dispense point should be open if no fluid is taken. After the time-out time the solenoid valve shuts automatically. As soon as fluid is passing the meter the time will start from 0. The value is in minutes.

Enter menu [MPDM//PortX] by scrolling with ↑ or ↓.

MPDM:	‡
MPDM MainMenu	

At **PortX**: press <ENTER>.

PortX:	‡
MPDM MainMenu	

Scroll to **Timer**: using ↑ or ↓.

Reel:X	‡
Set ReelNo ???	

Press <ENTER> to get the cursor.

Timer:X	‡
1-255 Min 0=Off	

Type the number of minutes, 0=OFF max 255, the dispense point should be open without being used press **ENTER** to acknowledge. When the cursor disappears it is finished.

Timer:X	‡
1-255 Min 0=Off	

Press <EXIT> **twice** to leave Set-Up mode.

Timer:X	‡
1-255 Min 0=Off	

Done.

Reel:	‡
EXIT STOP CE ENT	



## 4.5. Calibrating [MPDM//PortX/PPU]

If the **SetupLock** jumper is removed it is not possible to change the PPU value. If it is done from a KeyPad a new value can be typed in but it will not change the present value.

### 4.5.1. Pulses Per Unit, PPU.

An LUBE-Master dispense port uses decimal PPU instead of a common integer PPU.

Decimal PPU: looks like this “326.54” compared to integer PPU: like 326.

The theoretical geometric PPU for the meter 1168520 is

328 Pulses per litre if standard counting mode is used

1312 Pulses per litre if Quadra counting mode is used.

### 4.5.2. Manual calibration

Meters generate pulses according to the amount of fluid that has passed. By opening a dispense point for a certain amount of fluid and then compare how much that has been dispensed (RECORDED) to how much fluid you really received (RECEIVED) you will know if the meter is calibrated or not. If you receive more than the requested amount the PPU value should be decreased and increased if you received less (see formula below). The system default is set to the meter 1168520 which generate 328 pulses per litre. If another meter is connected it must be calibrated to dispense the correct requested amount.



**NOTE!** Be very thorough when the received volume is measured because a small error at calibration can result in a large volume error at large volume. Use an accurate measuring vessel that is completely empty and make sure that all visible air is gone before the vessel is read.

Enter menu [MPDM//PortX] by scrolling with ↑ or ↓.

MPDM:	‡
MPDM MainMenu	

At PortX: press <ENTER>.

PortX:	‡
MPDM MainMenu	

Scroll to PPU: using ↑ or ↓.

Reel:X	‡
Set ReelNo ???	

Press <ENTER> to get the cursor.

PPU:XXX	‡
Set PPU 1-5000	

Type the **number of pulses per unit**, max 5000, for the meter connected to the port and press <ENTER> to acknowledge.

PPU:YYY_	‡
Set PPU 1-5000	

Press **EXIT twice** to leave Setup mode.

PPU:YYY	‡
Set PPU 1-5000	

Done.

Reel:	‡
EXIT STOP CE ENT	

### 4.5.3. Semi automatic calibration

Open the dispense point for a volume (normally not less that 2 L) and dispense. When the dispense point is closed, and before it is used again.

Go to the **PPU:** value for this dispense point, see above and press <ENTER> to get the cursor.

PPU:XXX	‡
Set PPU 1-5000	

Type in the received volume with a leading “-“ sign like “-1.45” followed by <ENTER>.”-“ is two times ↓ and then the “?” button.

PPU: -1.45_	‡
Set PPU 1-5000	

The dispense point calculates the new PPU value by itself and shows the new PPU. Press <EXIT> **twice** to leave Setup mode.

PPU:YYY	‡
Set PPU 1-5000	

# LUBE-MASTER MULTI POINT DISPENSE MODULE

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Done.

Reel:	‡
EXIT STOP CE ENT	

## 4.6. Set volume intervals [MPDM//PortX/MinV] and [MPDM//PortX/MaxV]

Enter menu [MPDM//PortX] by scrolling with ↑ or ↓.

MPDM:	‡
MPDM MainMenu	

At **PortX**: press <ENTER>.

PortX:	‡
MPDM MainMenu	

Scroll to **MinV**: using ↑ or ↓. (Or scroll directly to MaxV:)

Reel:X	‡
Set ReelNo ???	

Press <ENTER> to get the cursor.

MinV: <u>X</u> .XX	‡
Min Vol ??.	

Type the **smallest volume**, min 0.5, to be dispensed from this dispense point and press **ENTER**. When the cursor disappears it is finished.

MinV: Y.YY_	‡
Min Vol ??.	

Press ↓ to **MaxV**: (Or press <EXIT> twice to leave Setup mode.)

MinV: Y.YY	‡
Min Vol ??.	

Press <ENTER> to get the cursor.

MaxV: <u>X</u> .XX	‡
Max Vol ?????.	

Type the **largest volume**, min 0.5 max 9999.99, to be dispensed from this dispense point and press <ENTER> to acknowledge. When the cursor disappears it is finished.

MaxV: Y.YY_	‡
Max Vol ?????.	

Press <ENTER> **twice** to leave Setup mode.

MaxV: Y.YY	‡
Max Vol ?????.	

Done.

Reel:	‡
EXIT STOP CE ENT	

## 4.7. Validation of JOB number

MPDM dispense points can internally log JOB numbers entered when dispenses is done. If there is a Printer module in the system or if WinDB service is loaded in a PC system dispenses demanded can be validated from a JOB number database, Se also **6.3. Mask**.

## 5. Connect a dispense point to information modules

Each port can be separately connected to a display <LED:> and a ticket printer <Printer:> / database <DB:>. This means that a dispense can be shown on a LED display during the dispense and shows the received volume after the dispense. Information about the dispenses could be stored in a database and printed. To connect information module to a port the address should be set at the correct place in the port menu.

### 5.1. Connect a dispense point to a Printer/Database module [MPDM//PortX/DB]

Enter menu [MPDM//PortX] by scrolling with ↑ or ↓.

MPDM:	‡
MPDM MainMenu	

At **PortX**: press <ENTER>.

PortX:	‡
MPDM MainMenu	

Scroll to **DB**: using ↑ or ↓.

Reel:X	‡
Set ReelNo ???	

Press <ENTER> to get the cursor.

DB:2XXX	‡
DB Address 2???	

Type the **address** to the desired DB module and press <ENTER> to acknowledge. When the cursor disappears it is finished.

DB:2YYY_	‡
DB Address 2???	

Press <ENTER> **twice** to leave Setup mode.

DB:2YYY	‡
DB Address 2???	

Done.

Reel:	‡
EXIT STOP CE ENT	

**NOTE!** Each information module can be connected to multiple ports.

### 5.2. Connect a dispense point to a PTB Database module [MPDM//PortX/PDB]

Enter menu [MPDM//PortX] by scrolling with ↑ or ↓.

MPDM:	‡
MPDM MainMenu	

At **PortX**: press <ENTER>.

PortX:	‡
MPDM MainMenu	

Scroll to **PDB**: using ↑ or ↓.

Reel:X	‡
Set ReelNo ???	

Press <ENTER> to get the cursor.

PDB:2XXX	‡
DB Address 2???	

Type the **address** to the desired PTB Database module and press <ENTER> to acknowledge. When the cursor disappears it is finished.

PDB:2ZZZ_	‡
DB Address 2???	

Press <ENTER> **twice** to leave Setup mode.

PDB:2ZZZ	‡
DB Address 2???	

Done.

Reel:	‡
EXIT STOP CE ENT	

**NOTE!** Each information module can be connected to multiple ports.

### 5.3. Connect a dispense point to a LED module [MPDM//PortX/LED]

Enter menu [MPDM//PortX] by scrolling with ↑ or ↓.

MPDM:	‡
MPDM MainMenu	

At **PortX**: press <ENTER>.

PortX:	‡
MPDM MainMenu	

Scroll to **LED**: using ↑ or ↓.

Reel:X	‡
Set ReelNo ???	

Press <ENTER> to get the cursor.

LED:4???	‡
LED Address 4???	

Type the **address** to the desired LED module and press <ENTER> to acknowledge. When the cursor disappears it is finished.

LED:4???	‡
LED Address 4???	

Press <ENTER> **twice** to leave Setup mode.

LED:4???	‡
LED Address 4???	

Done.

Reel:	‡
EXIT STOP CE ENT	

### 5.4. Set number of decimals on a LED module [MPDM//PortX/NoDec]

Enter menu [MPDM//PortX] by scrolling with ↑ or ↓.

MPDM:	‡
MPDM MainMenu	

At **PortX**: press <ENTER>.

PortX:	‡
MPDM MainMenu	

Scroll to **NoDec**: using ↑ or ↓.

Reel:X	‡
Set ReelNo ???	

Press <ENTER> to get the cursor.

NoDec:2	‡
LED no decimals	

Type how many decimals that should be shown for the port and press <ENTER> to acknowledge.

NoDec:3	‡
LED no decimals	

Press <ENTER> **twice** to leave Setup mode.

NoDec:3	‡
LED no decimals	

Done.

Reel:	‡
EXIT STOP CE ENT	

**Note! The number of decimals will automatically decrease to fit in the display if needed. Setting number of decimals to 255 will result in 2 decimals.**

## 5.5. Connect a dispense point to a tank [MPDM//PortX/Tank]

If there is a printer module in the system, a dispense point can be connected to one of max 8 tanks per PM. In this case the system will be able to check if there is enough oil in the tank and subtract the oil dispensed from it.

Enter menu [MPDM//PortX], scroll with ↑ or ↓.

MPDM:	‡
MPDM MainMenu	

At **PortX**: press <ENTER>.

PortX:	‡
MPDM MainMenu	

Scroll to **Tank**: using ↑ or ↓.

Reel:X	‡
Set ReelNo ???	

Press <ENTER> to get the cursor.

Tank:X	‡
Set TankNo	

Type which tank is connected to the port and press <ENTER> to acknowledge.

Tank:Y_	‡
Set TankNo	

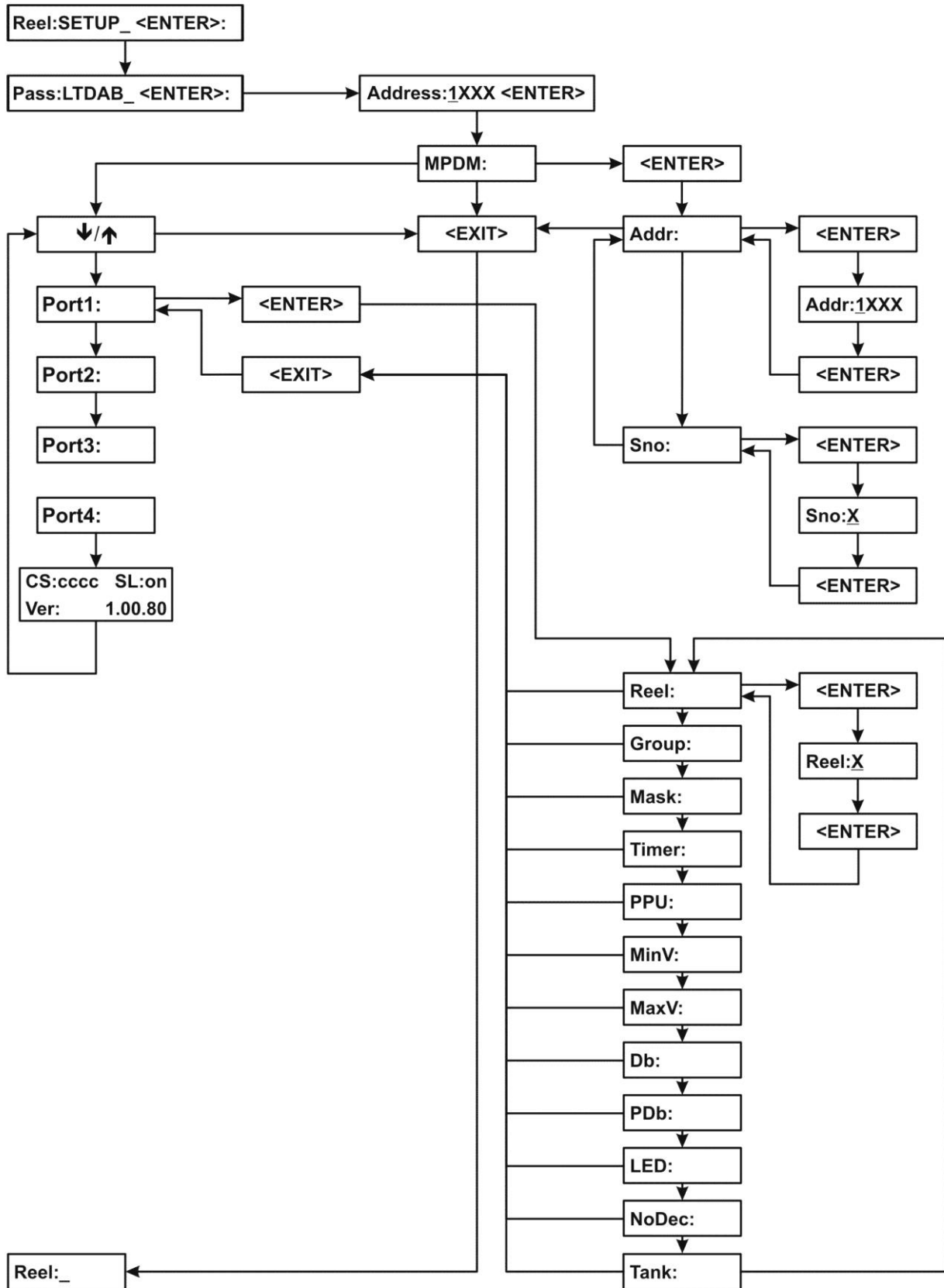
Press **EXIT** twice to exit Setup mode

Tank:X	‡
Set TankNo	

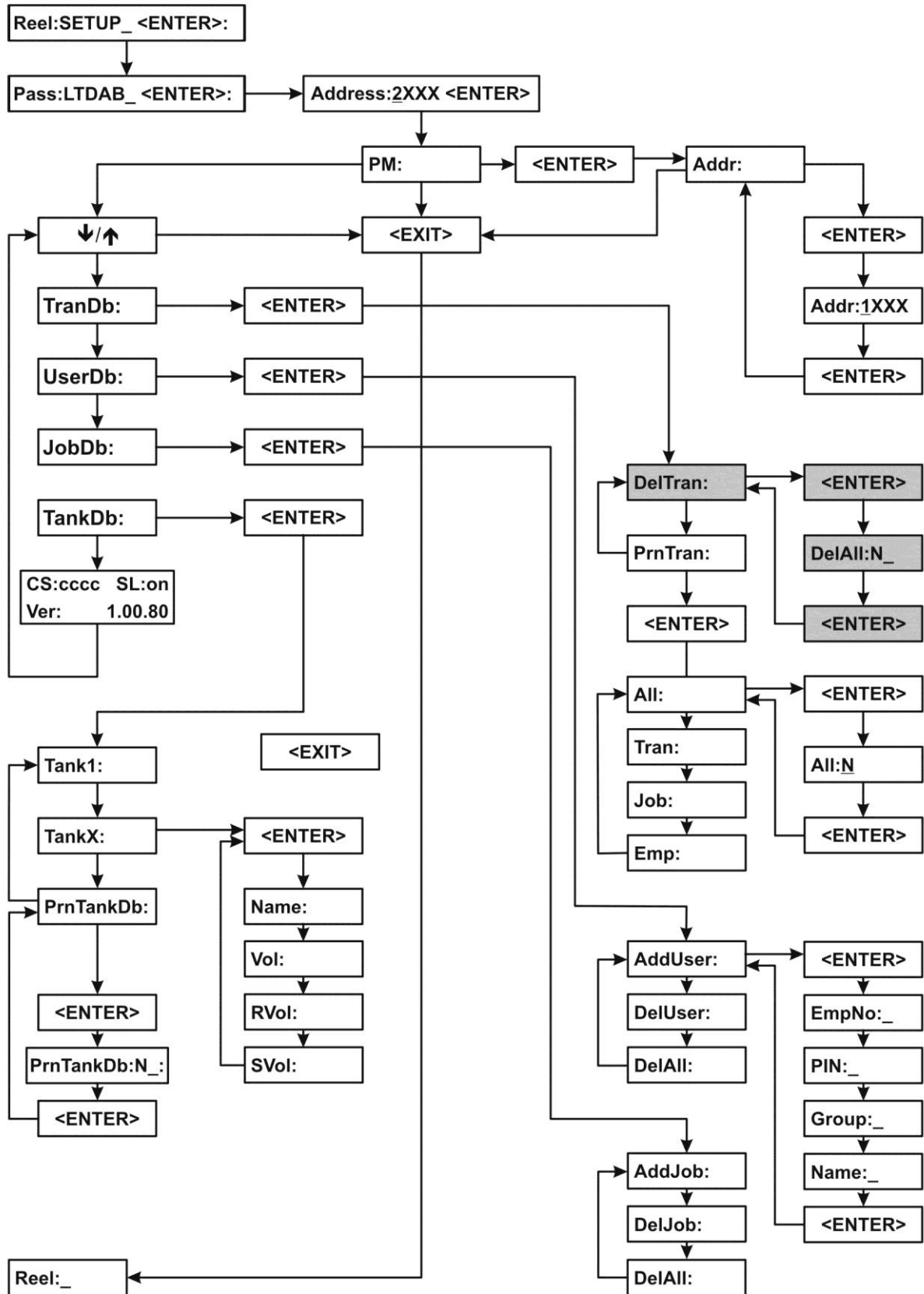
Done !

Reel:	‡
EXIT STOP CE ENT	

## 6. Menu tree for MPDM.



## 7. Menu tree for PM.





## 8. Fast Menu codes

With a PC and the LUBE-Master WinTools software and a SIO, you can customize the quick menu that appear when you press "??". To do this, assign a name to the menu, a module address and then a code. Password is optional. This code can also be used together with the address after you have typed SETUP followed by the password.

For an MPDM-module it will look like this,

New user                    10000062            YYYYYY            where YYYYYY=password

<b>MPDM</b>				
<b>Part</b>	<b>Function</b>	<b>Address</b>	<b>Code</b>	<b>Comment</b>
<i>Main menu</i>	Change address		0800	
	Change Sphere		0801	
<i>Ports</i>	Change Dispense point Nr.		0X00	Where X is the port number
	Change Group		0X01	Where X is the port number
	Change Mask		0X02	Where X is the port number
	Change Time-Out		0X03	Where X is the port number
	Change PPU		0X04	Where X is the port number
	Change Min Volume		0X05	Where X is the port number
	Change Max Volume		0X06	Where X is the port number
	Change DB address		0X07	Where X is the port number
	Change LED address		0X08	Where X is the port number
	Change Tank number		0X09	Where X is the port number
	Change Number of decimals		0X10	Where X is the port number
	Directly to dispense input		0X20	Where X is the port number
<b>PM</b>				
<i>Main menu</i>	Change address		0800	
<i>Standard</i>	Print all	2000	0221	On delivery
	Print by transaction	2000	0221	On delivery
	Print by Job	2000	0222	On delivery
	Print by user	2000	0223	On delivery
	Print tank report	2000	0224	On delivery
	Set report start date		0225	
	Set report end date		0226	
<i>TankDb</i>	Update tank volume		28X3	Where X is Tank number
	Change fluid name		28X2	Where X is Tank number
	Change order point		28X4	Where X is Tank number
	Change stop-volume		28X5	Where X is Tank number
	Print tank report		0224	
<i>UserDb</i>	New user		0260	
	Remove user		0261	
	Remove all users		0262	
<i>JobDb</i>	New JOB-number		0230	
	Remove JOB-number		0231	
	Remove all JOB-numbers		0232	
<i>TransactionDb</i>	Remove all transactions			
	Print transactions			
	Print all transactions		0220	
	Print by transaction		0221	
	Print by JOB		0222	
	Print by user		0223	

**LUBE-MASTER MULTI POINT DISPENSE MODULE**

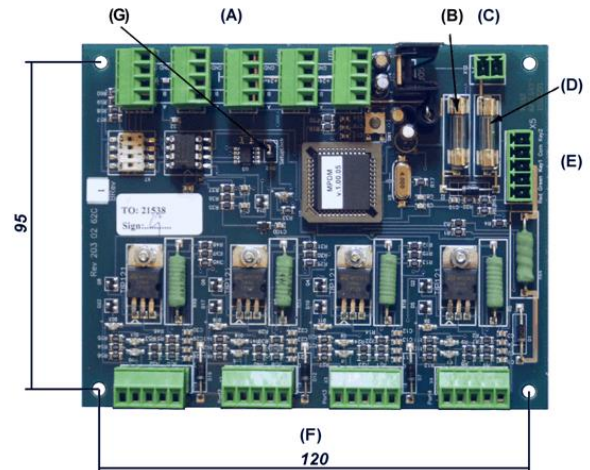
**PART NO 53600**



## 9. Technical specification.

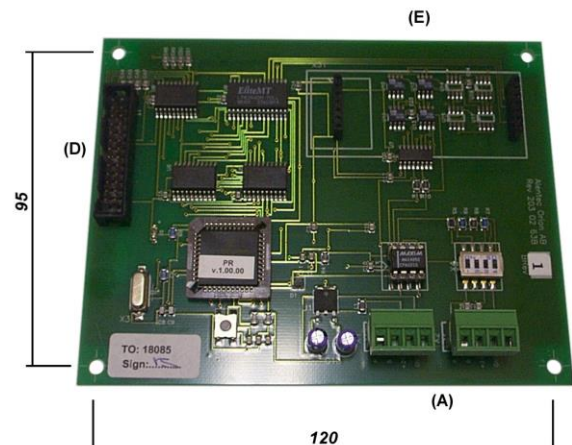
### MPDM Printed circuit board

Net ports:	5 LUBE-Master ports (A) for data communication, 2 without +24VDC.
Meter inputs:	4 (E) 32 bit for one or two pulse signals. Switch or active signal max 45 V. Supports flow direction and phase error detection.
Control outputs:	4 (F) for solenoid 24 VDC max 1,25 A. Closes after about 30 s when short circuited, this is logged in the database
Other:	RISC-based microprocessor EEPROM, 64 KB. Connector (C) for 24 VDC 6.3A power supply. Connector (E) for 3-pos key switch.
Fuses:	T6.3A (D) and F1.6A (B)
Max current:	500 mA + 4x1.25 A for solenoid valves.



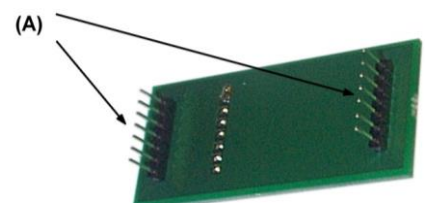
### Printer module Printed circuit board.

Net ports:	2 pieces of LUBE-Master ports (A) for data-communication.
Out ports:	1 piece (D) CENTRONIC for a parallel printer.
Other:	RISC-based microprocessor EEPROM, 64 KB.
Supply voltage:	24 VAC
Max current:	100 mA
Casing:	Strong black powder painted steel box
Outer measures:	23 x 195 x 55 mm.
Mounting:	4 x ø5mm CC = 175 x 140 mm
Weight:	1,6 kg (mounted in steel box)



### Clock module technical specification.(CM)

Connectors:	2 x 7-pin connectors (A).
Other:	Real-time clock with battery backup
Lifetime:	At least 10 years from date of manufacture.
Weight:	12 g



## Casing

Power supply:	Primary 230 VAC / 50Hz / 550mA. Fuse T630mA
Casing:	Strong black powder painted steel box
Outer measures:	303 x 228 x 65 mm.
Fitting:	4 x ø5mm CC = 250 x 175 mm
Weight:	3,9 kg.

## Environment

Use:	Indoors. Temperature 0 - +55°C Humidity 90-95%, not condensing
Transport:	Temperature -40 - +70°C Humidity 90-95%, not condensing
Storage:	Temperature -40 - +70°C Humidity 90-95%, not condensing

## 10. Chip types.

From the start of LUBE-Master in 1997 all modules have been equipped with an OTP processor Microchip 16C67. OTP means One Time Programmable. To day the flash technique has come to a point were we can use it for LUBE-Master.

Eurolube Equipment AB has worked intensely since the summer 2004 to convert and enhance the software for LUBE-Master modules to safely make use of the flash technology. The chip used is a Microchip 18F452.

In this development we have also made it possible to upgrade existing modules to use the flash technology by only changing the chip combined with a simple reprogramming of the chip language.

### 10.1. Demands on a Non-PC system.

The only demand is that you must use a PC and a SIO (PC-interface 53403) to reprogram the language of the modules.

### 10.2. Demands on a PC system.

The PC must be running LUBE-Master WinTools R7 to make it possible to se the modules on the PC.

If the PC is running R6 it can easily be updated to R7.

Earlier versions must be replaced by R7, contact a Eurolube Equipment AB representative for advice.

### 10.3. How to see the difference between chip types.

If a module is equipped with a flash chip it is shown by a yellow label on the chip.

### 10.4. What is the benefit of the flash chip.

No need for changing the chip for upgrading. The module software upgrade is a file you put on the hard drive of a PC. The upgrading is then done through the LUBE-Master WinTools software package.

The flash chip used is faster and have more advanced features than the old chip. This gives the possibility to make the modules more powerful.

The flash chip has about 4 times more software memory. It gives the possibility to add more functions.

## 10.5. PTB Approvable system

For a PTB approvable system Flash chips in all modules are mandatory.