Badger Meter Europa GmbH

LMS Baby System

Oil management system

USER MANUAL

May 2010

Firmware v2.21 - v3.9

LMS_Baby System_BA_02_1005

Contents Page

1. Basic safety recommendations

Before installing or using this product, please read this instruction manual thoroughly.
Only qualified personnel should install and/or repair this product. If a fault appears, contact your distributor.

Installation
Do not place any unit on an unstable surface that may allow it to fall.
Never place the units above a radiator or heating unit.
Route all cabling away from potential hazards.
Isolate from the mains before removing any covers.

Power connection
Use only the type of power source suitable for electronic equipment. If in doubt, contact your distributor. Ensure that any power cables are of a sufficiently high current rating.
All units must be earthed to eliminate risk of electric shock.
Failure to properly earth a unit may cause damage to that unit or data stored within it.

Protection class
The device has protection class IP 42 and needs to be protected against dripping water, water, oils, etc.

Setup & operation
Adjust only those controls that are covered by the operating instructions. Improper adjustment of other controls may result in damage, incorrect operation or loss of data.

Cleaning
Switch off all units and isolate from mains before cleaning.
Clean using a damp cloth. Do not use liquid or aerosol cleaners.

Repair of faults
Disconnect all units from power supply and have it repaired by a qualified service person if any of the following occurs:

- If any power cord or plug is damaged or frayed
- If a unit does not operate normally when operating instructions are followed
- If a unit exposed to rain/water or if any liquid has been spilled into it
- If a unit has been dropped or damaged
- If a unit shows a change in performance, indicating a need for service.

⚠ WARNING

Failure to adhere to these safety instructions may result in damage to the product or serious bodily injury.

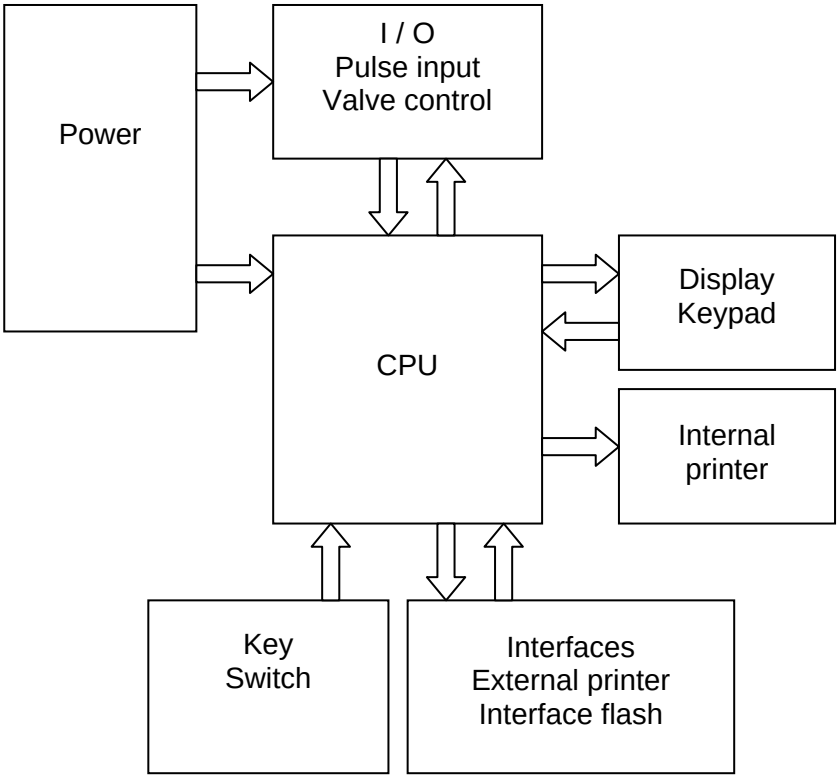
RoHs
Our products are RoHs compliant.

Battery disposal
The batteries contained in our products need to be disposed of as per your local legislation acc. to EU directive 2006/66/EG.

2. General description

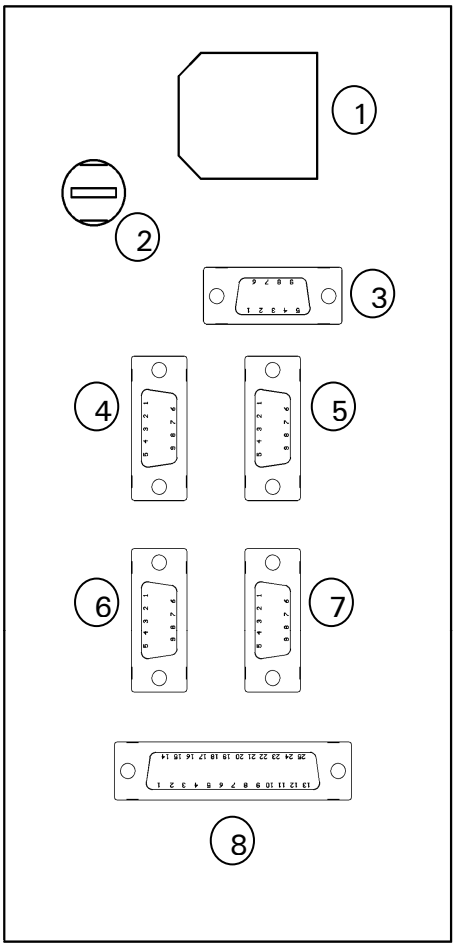
2.1 Technical data

CPU:	Atmel, AT103, 8-bit, serial flash, 128 K bytes of In–System programmable flash
Memory:	Flash, 1Mbit
Firmware update:	With special serial adapter
Interfaces:	1x 25-pole RS232 port to be use as printer or PC connection Baudrate 9600 - Parity none - Databits 8, Linefeed LF/CR
Fuses	F1 = Fuse controller 1.00 AmT F2 = Fuse I / O 3.15 AmT F3 = Fuse printer 6.30 AmT
Signal Input	NPN opto isolated
Relais load	2A at 250VAC or 30 VDC
Transactions	2999 max.
User	99 max.



2.2 Front plate description

2.3 Connections



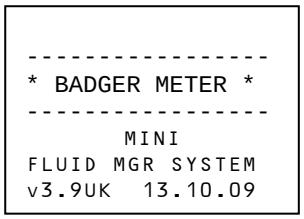
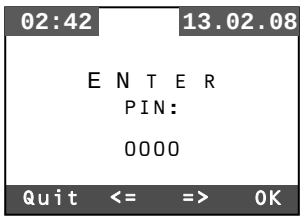
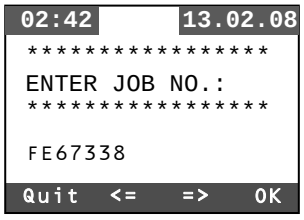
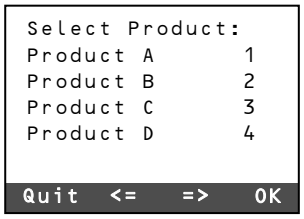
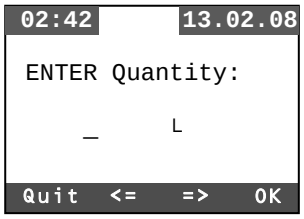
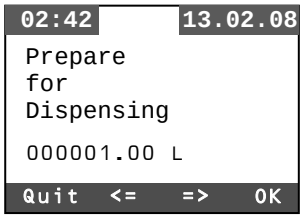
1. **Power supply**
   Voltage 230V/50Hz
   Fuse 5x20 3.15AmT
2. **Override key switch**
   ON/OFF
3. **Master valve / Pump control**
   Relais Pin 1, 2, 3, 4, 5/6, 7, 8, 9
4. **Hose 3**
   Meter pulses Pin 4/5 - yellow/green
   Valve relais Pin 1, 2/6, 7 - brown, red/blue, violet
5. **Hose 4**
   Meter pulses Pin 4/5 - yellow/green
   Valve relais Pin 1, 2/6, 7 - brown, red/blue, violet
6. **Hose 1**
   Meter pulses Pin 4/5 - yellow/green
   Valve relais Pin 1, 2/6, 7 - brown, red/blue, violet
7. **Hose 2**
   Meter pulses Pin 4/5 - yellow/green
   Valve relais Pin 1, 2/6, 7 - brown, red/blue, violet
8. **Serial port**
   Ext. printer / PC software
   RXD = Pin 3
   TXT = Pin 2
   GND = Pin 7

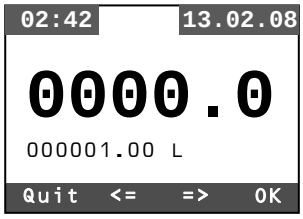
Programming interface
For firmware updates
RXD = Pin 17
TXT = Pin 21
MR = Pin 24
SCK = Pin 23
GND = Pin 7

Cable assignment: 9 pol. SUB-D cable

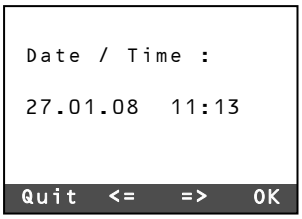
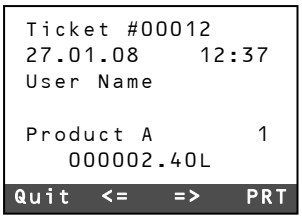
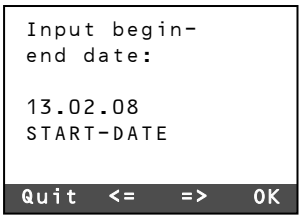
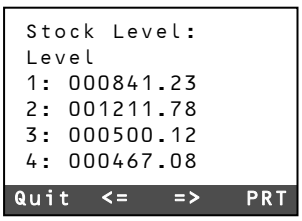
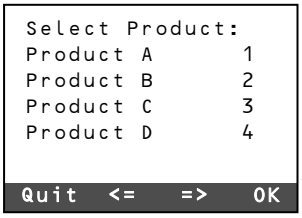
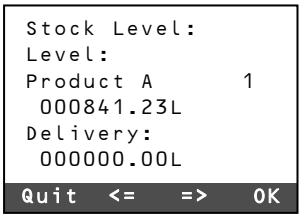
Pin 1 = brown	Pin 2 = red	Pin 3 = orange
Pin 4 = yellow	Pin 5 = green	Pin 6 = blue
Pin 7 = violet	Pin 8 = white	Pin 9 = black

3. Dispense procedure

Startup screen - displays of firmware version	
Enter your 4-digit PIN number for User Supervisor Installer 1111 8888 9999 Press key "OK" (1111 Default user by factory)	
The user name is briefly displayed and the screen automatically moves to the next menu. Enter your “order number”	
Enter your “Job Number”. Alphanumeric entry, max. 15 digits. Confirm with "OK"	
Select oil type on keypad or with arrow keys.	
Enter the requested quantity in liters. Confirm with "OK"	
The system is now ready to dispense oil.	

The display moves on count mode. Once the oil has been dispensed, the internal printer prints a ticket.	

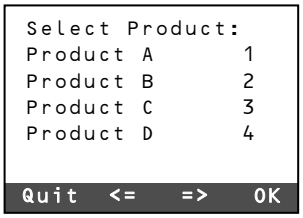
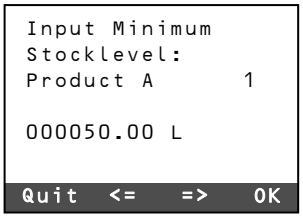
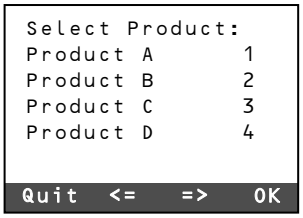
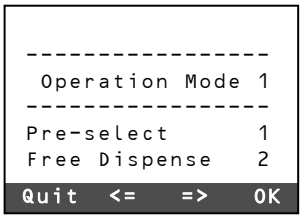
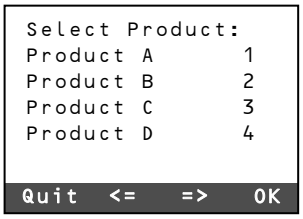
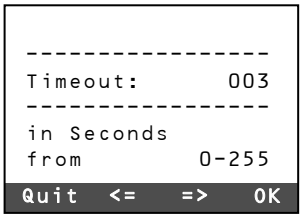
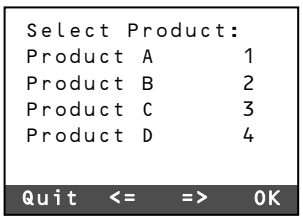
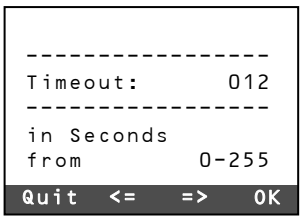
4. Supervisor menu: PIN 8888 (default)

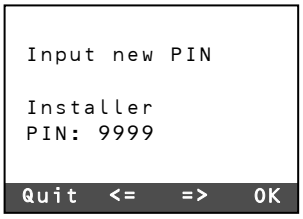
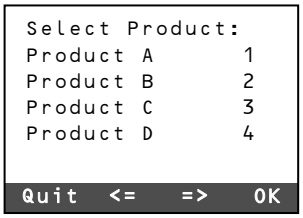
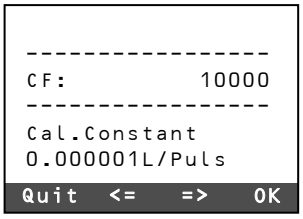
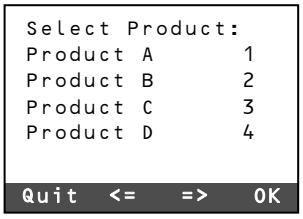
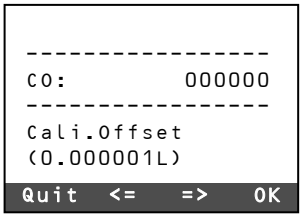
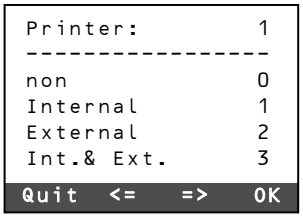
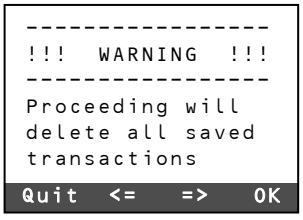
Set Date & Time	Defines date and time	
Transaction Rep	A ticket can be reprinted. Scroll with the left and right arrow the desired transaction and select PRT.	
Print Report	Transactions report by date Choose the desired time frame and confirm with OK. Note: To avoid any error message, please make sure to select the external printer.	
Stock Level	Will print the actual stock levels Choose "PRT" to print or "Quit" to return	
Prod. Delivery	Oil delivery can be added to the current stock (tank). Select a product and confirm with “OK” or return with “Quit”. Enter the delivered quantity and confirm with “OK” or return with “Quit”.	 

Set Stock Level	Tank level correction Select a product and confirm with “OK” or return with “Quit”. Enter the new stock (tank) level and confirm with “OK” or return with “Quit”.	Select Product: Product A 1 Product B 2 Product C 3 Product D 4 Quit <= => OK Input new Stock Level: Product A 1 000841.23L Quit <= => OK
Supervisor PIN	PIN 8888 can be changed. “Error” is displayed if the entered PIN number has already been allocated to another operator. Enter the PIN number and confirm with “OK” or return with “Quit”.	Input new PIN: Supervisor PIN: 8888 Quit <= => OK
Add new User	To add a new user: Enter new user name Enter PIN number with * key Enter PIN number on keypad Confirm with "OK" Return with "Quit"	Add new User: 4 *MUELLER* PIN: 4711 Quit <= => OK
Delete User	To delete an user: Select user with arrow keys Confirm with "OK" Return with "Quit"	USER : 4 ---------- MUELLER ---------- !! r e m o v e !! Quit <= => OK

5. Installer menu: PIN 9999 (default)

Products	Defines a new product name. Select a product and confirm with “OK” or return with “Quit”. Enter the new product name and confirm with “OK” or return with “Quit”.	Select Product: Product A 1 Product B 2 Product C 3 Product D 4 Quit <= => OK Input new Productname: Product A 1 Quit <= => OK

Set Min Stock	Defines the minimum stock level (tank level), when system should give a warning message. Stock Level: 000000.00 L Select a product and confirm with “OK” or return with “Quit”. Enter the new minimum stock level and confirm with “OK” or return with “Quit”.	 
Set Mode	Normal preselection mode or free dispense mode, see also flow chart under chapter 7. Preselect 1 Free dispense 2 Select a product and confirm with “OK” or return with “Quit”. Enter the new operation mode and confirm with “OK” or return with “Quit”.	 
Initial Timeout	Defines the delay, when the valve opens and the will batch start. Select a product and confirm with “OK” or return with “Quit”. Enter the new timout and confirm with “OK” or return with “Quit”.	 
Inactive Timeout	If the pulse input from the meter stops before the preselected quantity has been reached, the system will wait for the defined time before the batch stops and the valve closes (default 12 sec). Select a product and confirm with “OK” or return with “Quit”. Enter the new timout and confirm with “OK” or return with “Quit”.	 

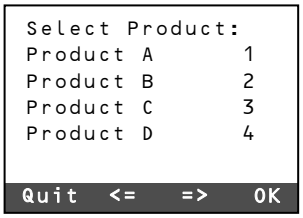
Install PIN	PIN 9999 can be changed "Error" is displayed if the entered PIN number has already been allocated to another operator. Enter the PIN number and confirm with "OK" or return with "Quit".	
Hose Calibration	Calibration or scale factor for each hose (meter). System expects 100 PPL will be displayed as 1.00 L Note: Error caused by viscosity or density of the fluid. Calibration CF: 10000 Can be read as scale factor: 1,0000 Select a product and confirm with "OK" or return with "Quit". Enter the calibration factor and confirm with "OK" or return with "Quit".	 
Hose Offset	Can correct a difference between the preselected quantity and the actual dispensed quantity. Note: Error caused by a slow valve. Hose 1 CO: 000000 Calibr. offset 0.000001 l For example: CO: 003000 will shut off 0,03 l earlier. Select a product and confirm with "OK" or return with "Quit". Enter the hose offset and confirm with "OK" or return with "Quit".	 
Print Parameter	Will print the current configuration on the specified printer for each hose	No sub menu.
Setup Printer	Printer selection 0: No printer assigned 1: Internal printer 2: External printer 3: Internal and external printer	
Clear Transactions	Deletes all stored transactions.	

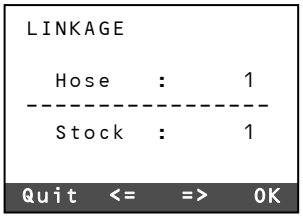
Hose Linkage

Defines which hose (meter) will be linked to a certain stock (tank).

Select a product and confirm with “OK”
or return with “Quit”.

Enter the hose linkage and confirm with “OK”
or return with “Quit”.



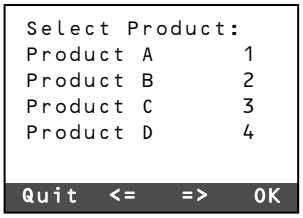


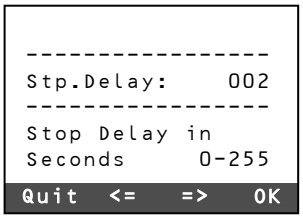
Inactive Delay

Can eliminate the closing time of a slow butterfly or solenoid valve. Correction is done by time and not by volume as in the menu “Hose Offset”.
0 - 255sec

Select a product and confirm with “OK”
or return with “Quit”.

Enter the delay and confirm with “OK”
or return with “Quit”.





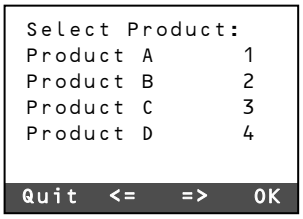
Scaling Unit

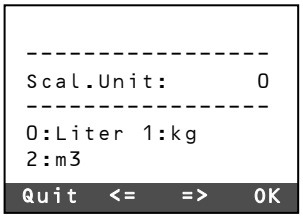
Unit can be selected

Display		Meter must supply	
0,00 L	>>	100 PPL	
0,00 m3	>>	100 PPm3	= 0,1PPL
0,00 hl	>>	100 PPhl	= 1 PPL

Only firmware v3.7 Unit: 0: Liter 1:m3 2:hl
Only firmware v3.9 Unit: 0: Liter 1:kg 2:m3

Select a product and confirm with “OK”, or return with “Quit”.
Enter the unit and confirm with “OK” , or return with “Quit”.

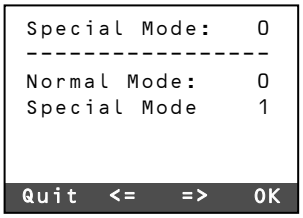




Special Mode

Relais will open the valve immediately after the PIN has been entered, see also the flow chart under point 7.
Normal mode -1
Special mode

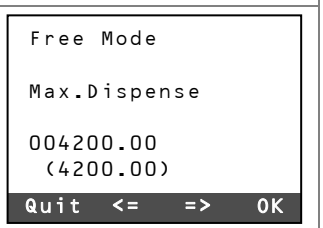
Only firmware v3.7 & v3.9

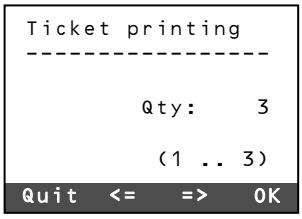


Max. Dispense

The maximum possible dispense:
004200,00 max. value (before 500)

Only firmware v3.9

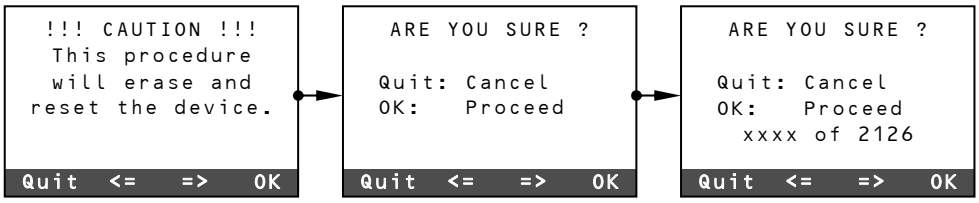


Ticket Qty.	Additional tickets will be printed, printer will stop after each copy. Voucher printing Quantity: 1 , 2 , 3 Only firmware v3.7 & v3.9	

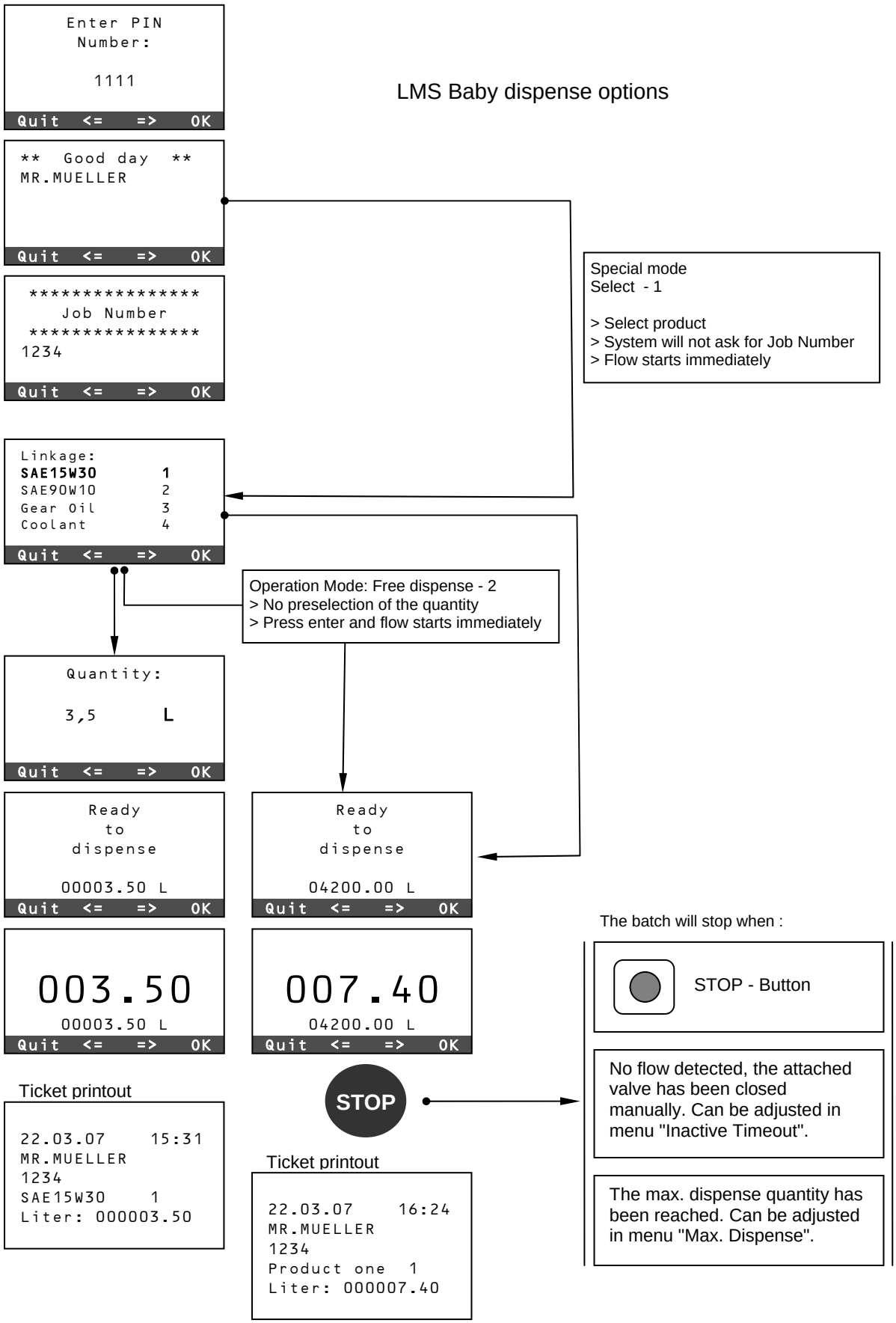
6. General system reset

This function will reset and erase the LMS Baby System (only firmware v3.9.)
Note: All data have to be entered again!

Procedure:
Unplug the LMS Baby and press the buttons 1 and 2.
Keep the buttons pressed and plug in the power supply.



7. Dispense flow chart



8. Printer

8.1 Internal ticket printer

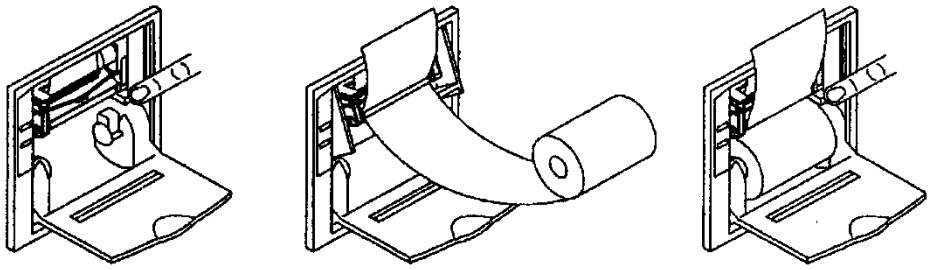
To change the paper roll, please proceed as follows:

Open the printer cover and press down "Push".

Insert the end of the paper roll in the slit of the print mechanism and position the paper roll so that it rotates in the right direction, as shown below.

The paper is automatically pulled by the roller for 3 or 4 cm.

Tear off the paper and re-close the cover.

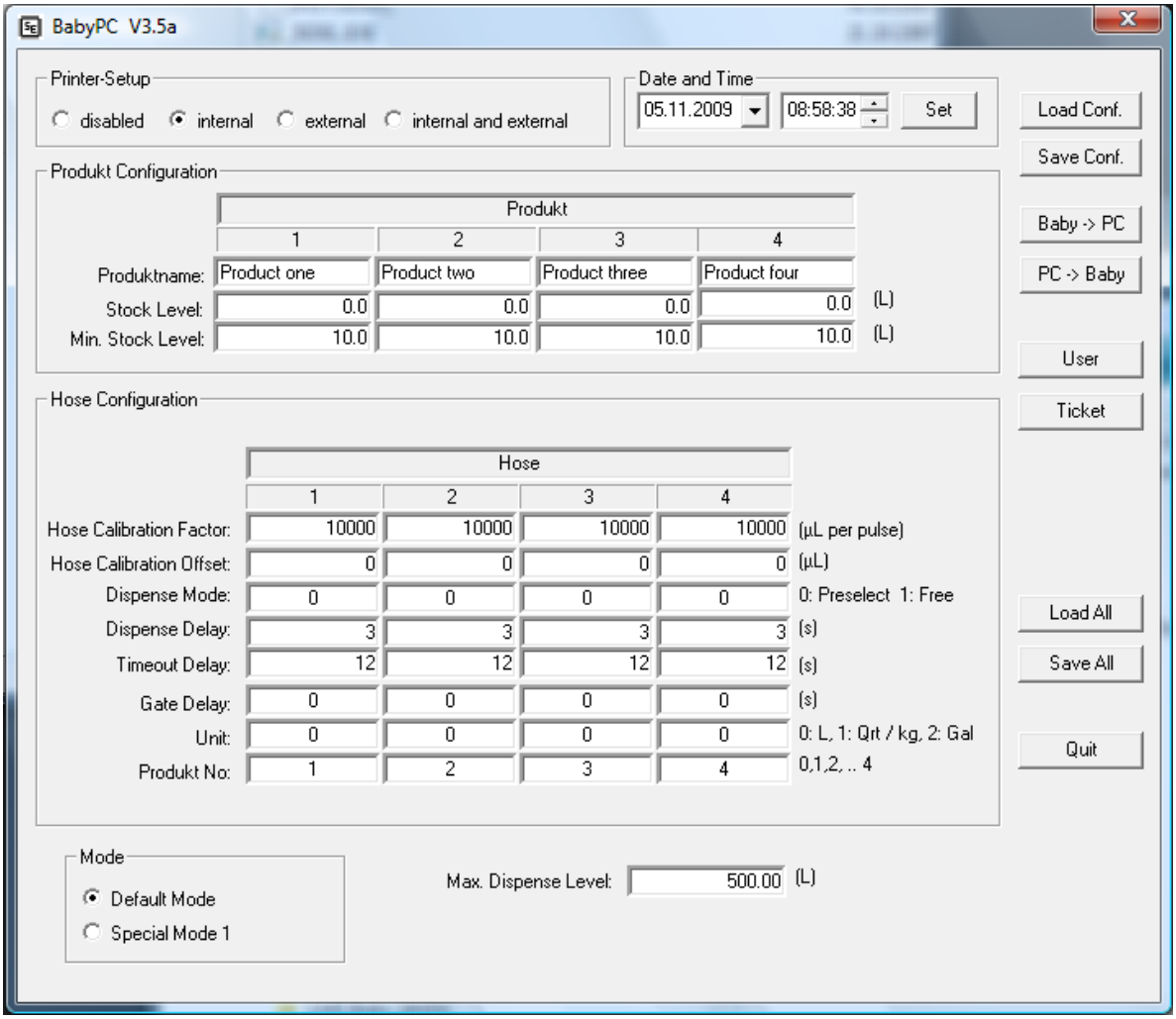


WARNING! Make sure the paper edge is straight before inserting it in the machine.

8.2 Configuration external report printer

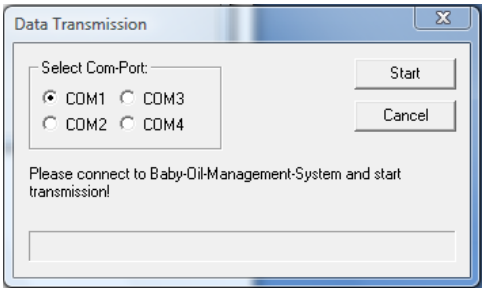
RS232	Baudrate 9600, Databit 8, Parity none, StopBit 1
Connection	25-pole D-SUB RXD PIN 3, TXD PIN 2, GND PIN 7
For example:	Matrix printer EPSON LX-300II

9. Administration software

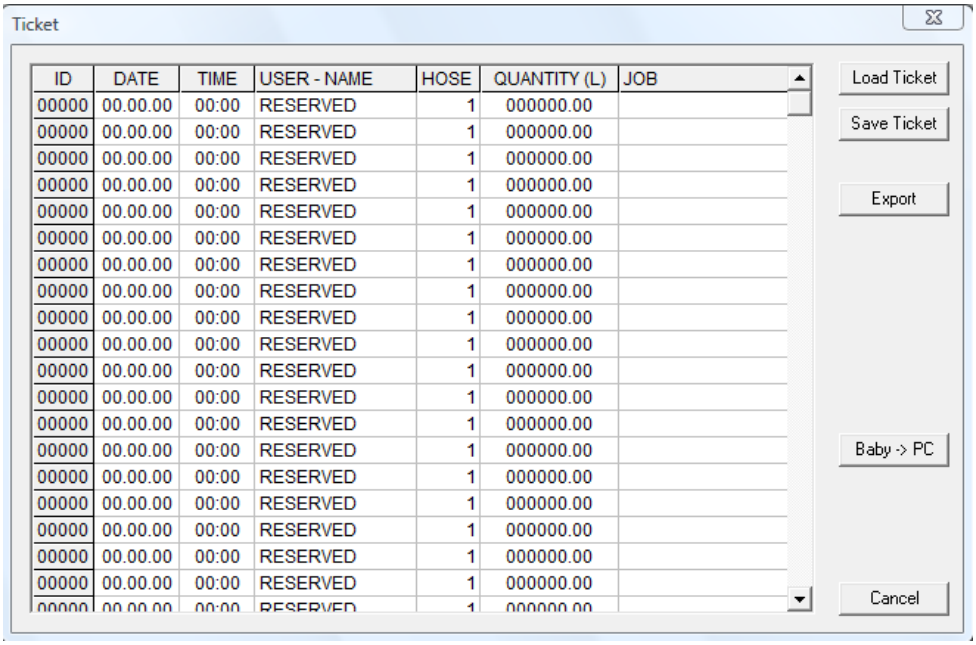


Printer Setup	Printer selection
Date and Time	Set date and time
Product Configuration	Enter product names, min. product quantity, new quantity
Hose Configuration	Setting of calibration factor for pulse transmitter 1-4
Adjusting of calibration offset	Scale factor meter. 10000 must be read as 1,0000
Setting of dispense mode	Free or preselection mode
Setting of dispense delay	Delay until the solenoid valves opens
Setting of inactive delay	Pulse timeout - The time when the solenoid valves closes
Setting gate delay	Eliminates the error of a slow closing valve.
Setting unit	Changes the unit, which will be displayed.
Mode selection	Special mode 1, will bypass the job n° request

Baby → PC Select interface COM1–COM4	Readout of the configuration “Baby” to the PC
PC → Baby Select interface COM1–COM4	Send configuration data from PC to the “Baby”



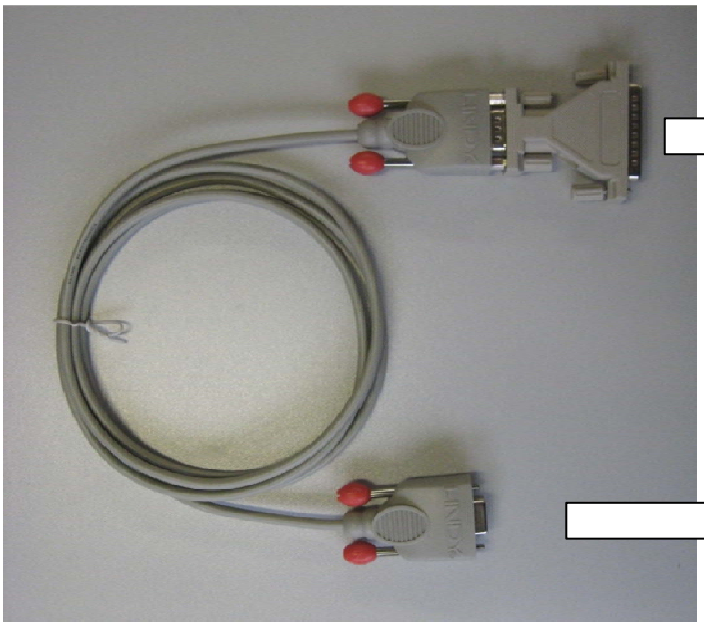
Save Conf.	Saving in a configuration file
Save All	All data are saved into files
Load All	Loading of saved data
Quit	Close program
Ticket	The following window appears:



Baby → PC	Upload data from “Baby” to PC
Save ticket	Saving of the readout data
Load ticket	Open a file
Export	Exporting data to an evaluation program, e.g. Microsoft® Excel
Cancel	Back to main menu

9.1 Cable set - RS232

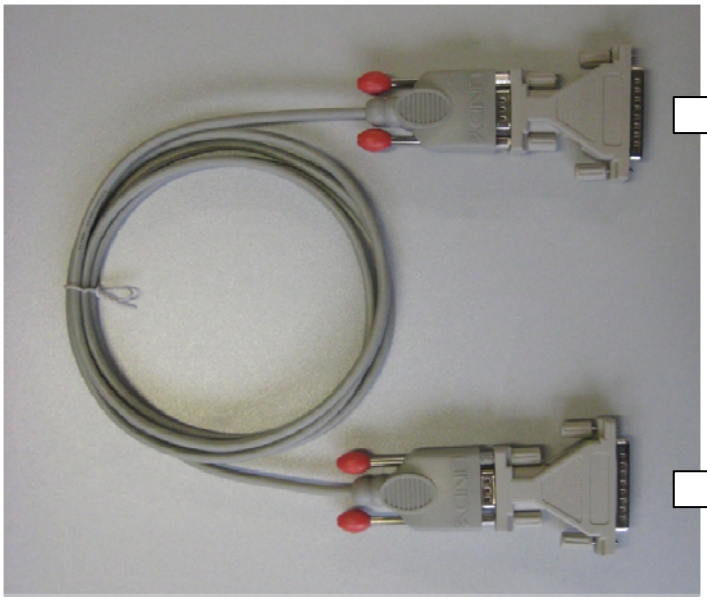
1. To configure & backup the system



Baby System
25-pole connection

SOFTWARE
PC
RS232 serial port

2. To connect a printer



Baby System
25-pole connection

Serial printer (*)
RS232 serial port

Baudrate	9600
Databit	8
Parity	none
Stopbit	1

(*) or with PC and terminal program.

Part number 205522.

10. Manufacturer´s declaration

Badger Meter Europa

CE

Herstellererklärung
Manufacturers Declaration

Bauart Typ *Model Type*	Managementsystem für Flüssigkeiten *Management System for fluids*
Typenbezeichnung *Model Name*	MDS-2000, LMS-RF, LMS-Baby *MDS-2000, LMS-RF, LMS-Baby*
Seriennummer *Serial Number*	Nach Komponenten gelistet *Listet by components*
Baujahr *Construction year*	ab 1997 *from 1997*

Referenz / Reference:

Maschinen Richtlinien *Machine Directives*	CE-Richtlinien Elektrische Betriebsmittel *Electrical Device Directives*
unterliegt **nicht** dem Anwendungsbereich von	2006/95/EG
2006/42/EG nach Artikel 1	93/68/EEC
isn't subjected to the application area of	
2006/42/EG acc. to 1	

Hiermit bestätigen wir die Übereinstimmung unserer Geräte mit den o.g. Richtlinien.
Vor Inbetriebnahme der oben genannten Geräte muss sichergestellt sein, dass die Gesamtanlage bzw. Maschine, in der die Geräte verwendet werden, den geltenden Richtlinien und Bestimmungen entspricht.

We herewith confirm that our products are in accordance with above mentioned directives.
The equipment identified above must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of above directives.

09.06.2010

Unterschrift / Signature	Unterschrift / Signature
Geschäftsführer / General Manager	Qualitätsmanagement / Quality Manager
Horst Gras	Eberhard Wannenwetsch

QM_MDS-ZF_CE_d_e_107.doc 06/10

Badger Meter Europa GmbH - Nürtinger Strasse 76 - 72639 Neuffen (Germany)
Tel. +49-7025-9208-0 Fax +49-7025-9208-15 www.badgermeter.de E-mail:badger@badgermeter.de

11. Warranty

Badger Meter warrants meters and parts manufactured by it and supplied hereunder to be free from defects in materials and workmanship for a period of 18 months from date of shipment or 12 months from date of installation, whichever period shall be shorter. If within such period any meters or parts shall be proved to Seller´s satisfaction to be defective, such meters or parts shall be repaired or replaced at Seller´s option. Seller´s obligation hereunder shall be limited to such repair and replacement and shall be conditioned upon Seller´s receiving written notice of any alleged defect within 10 days after its discovery and, at Seller´s option, return of such meters or parts to Seller, f.o.b. its factory. THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES WHATSOEVER INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES (EXCEPT OF TITLE) OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Badger Meter shall not be liable for any defects attributable to acts or omissions of others after shipment, nor any consequential, incidental or contigent damage whatsoever.

12. DIN ISO certificate

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

TÜV SÜD Management Service

CERTIFICATE

The Certification Body
of TÜV SÜD Management Service GmbH
certifies that

Badger Meter Europa GmbH
Nürtinger Strasse 76
D-72639 Neuffen

has established and applies
a Quality Management System for

Flowmetering and Control,
Design, Selling and Production.

An audit was performed, Report No. 70002816
Proof has been furnished that the requirements
according to

ISO 9001: 2000

are fulfilled. The certificate is valid until 2011-02-13
Certificate Registration No. 12 100 24674 TMS

Munich, 2008-02-16

QMS-TGA-ZM-07-92

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