Printer Communication Controller

PCC 400-x-PM

for connection to the Pipeline Master

User manual PCC 400 Pipeline Master-Software

only valid in connection with the installation guide PCC 400-x
from software 00.04.05 (x = variant)

Version 17.1

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Safety information

The personnel for installation, commissioning, diagnostics and maintenance must be fulfil the following requirements:

- Trained, qualified specialists must have a relevant qualification for this specific function and task
- Are authorised by the plant owner/operator
- Are familiar with federal/national regulations
- Before beginning work, the specialist staff must have read and understood the instructions in the User Manual and supplementary documentation as well as in the certificates (depending on the application)
- Following instructions and basic conditions

The operating personnel must fulfil the following requirements:

- Being instructed and authorised according to the requirements of the task by the facility's owner-operator
- Following the instructions in these Operating Instructions

Validity of Installation and Operating Instructions

- This User Manual applies to all PCC 400-x models with connection to Pipeline Master only in connection to the installation manual PCC 400-x (x = hardware version)
  At the time of creation of this manual variants A, B, C and D were available. Other variants are in preparation.
- The hardware is described in a separate manual. It is not possible to operate Batching Master and Pipeline Master on one PCC 400 simultaneously.
- Your IBS agent will be able to give you information about any improvements or modifications.
- The manufacturer is not responsible for damage caused by incorrect or unauthorised use. Conversions and changes to the instrument must not be made, otherwise the certification and guarantee become invalid.

If in this manual e. g. a specified serial COM is named, please use the Installation Guide for more information about this.

IT security

We turn off automatic safety updates (patches) in the operating system. If the PCC 400 is attached to the network/internet, the operator or the responsible network administrator must guarantee that corresponding security procedures are taken up (e. g. install Firewall).

The PCC 400 should be operated on an uninterruptible power supply.

Turn off the PCC 400 not by switching off the power supply.

Please press the power button on the PCC 400

or turn off via the software.

After briefly pressing the power button all running programs at the PCC 400 get closed within about 60 seconds and shuts off after further 15 seconds. Don't press the button for more than 1 second, because the PCC 400 then shuts off without previously shut down the operating system. This means that important data and programs could be destroyed on the hard disk.

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1 System description

The PCC 400 is a PC whose software starts automatically after power on. This is adapted to the flow computer Pipeline Master and is used to print and store metering data.

Other housings (e. g. mini-pc, standard housing, 19”...) and configurations are possible. Only the “PCC 400 Batching Master” software is described in this manual.

Mixed operation of Batching Master and Pipeline Master at the same PCC 400 is not possible. For the exact hardware description please refer to the installation guide PCC 400-x.

Meter readings can be printed and stored simultaneously as CSV file, PDF file or into a database.

The PCC 400 is a Modbus RTU Master. The Pipeline Masters are connected by an interface converter to the PCC 400. Intrinsically save Pipeline Master needs an “IPC 300i” for safety isolation additionally.

The connection of mouse, keyboard and monitor are recommended.

1.1 Password of the system administrator

The PCC 400 system administrator password is “IBSBatchControl” ex works. Please change this password. Open the terminal mode by pressing CTRL, Alt and T simultaneously and type

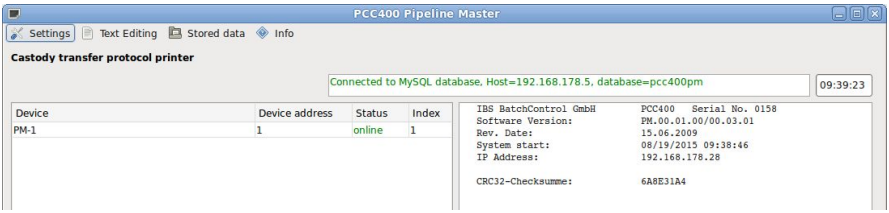
passwd [username].

The username is “pcc” ex works and displayed on the right top. Therefore you enter “passwd pcc” in the terminal. Confirm this with the RETURN key. Please take the further petitions from the terminal window.

2 Starting up PCC-Pipeline Master

After power-on the PCC 400, the operation system and the program will start automatically. If there is no Pipeline Master registered at the PCC 400 please register these as described in section 2.2.1.

2.1 Printout at PCC restart



If the printer for custody transfer printouts is connected correctly, the notification “custody transfer protocol printer online” is shown on the left side. The following text is shown in the right text field and printed:

IBS BatchControl GmbH	PCC 400 Serial No.:xxxx
Software Version:	PM.xx.xx.xx / xx.xx.xx
System Time:	dd.mm.yyyy hh:mm:ss
IP:	xxx.xxx.x.xxx
CRC32-Checksumme:	xxxxxxxxxx

The first part of the software version is the custody transfer version number, the second part is the not custody transfer version number. The connected Pipeline Masters are listed in the left part of the window.

If there is no Pipeline Master available, they must be logged (see section 2.2.1 TAG settings). The IP address is only used for network connection.

LAN0 obtains his address from the DHCP server.

The IP address for LAN1 is set at factory to 192.168.1.77.

All protocols are saved in the internal database and printed if required. They are shown similar in the right part of the display window. If this is not the situation, please check the Printer Settings submenu in the Install level of the Pipeline Master.

If the connection to the Pipeline Master failed, an error massage is displayed. The status “online” changed to “offline”.

2.2 Global settings

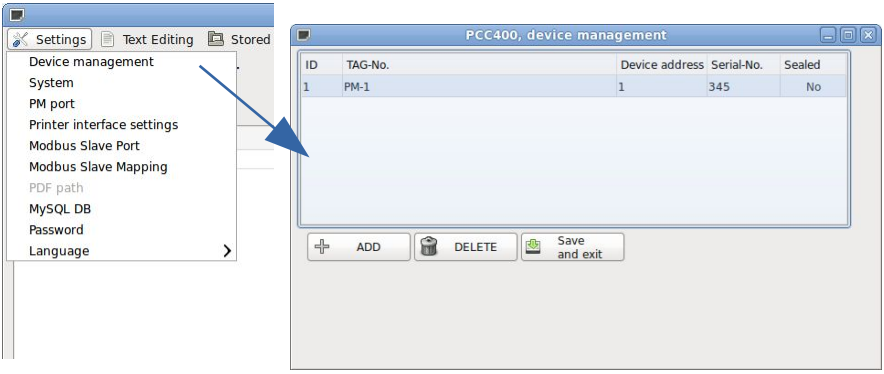
The menu settings are in the upper line. As long as the dongle is active, only settings for not custody transfer data are possible

A password is required before changes are possible.

The standard password at delivery is “password”. How to change the password is described in section 2.5.10.

2.2.1 TAG settings

Define the TAG-No. and the addresses of the connected Pipeline Master in the menu Settings – Device management



Click ADD and the input box for address and name of the Pipeline Master is shown.

After marking the Pipeline Master as “sealed” and the dongle is active (a padlock icon is shown in the column “sealed”), no changes at custody transfer settings are possible. Custody transfer data are embedded in *.

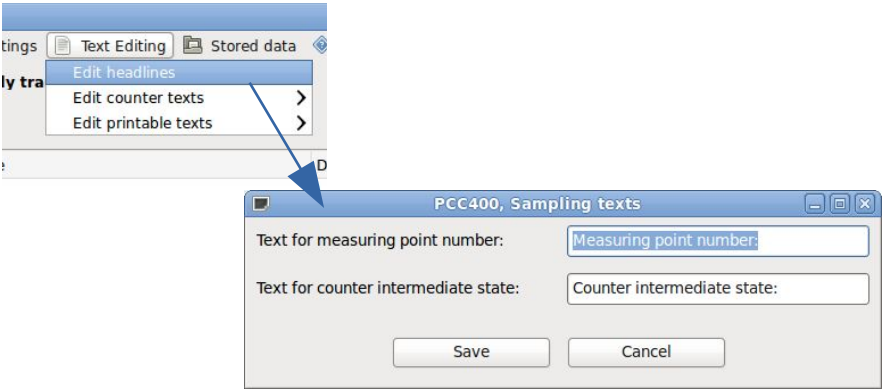
As long as the dongle is active, no new Pipeline Master could be market as custody transfer unit.

The serial numbers of the Pipeline Masters are discovered after closing the window and are displayed the next time.

To change the TAG-No. double click the line with the Pipeline Master which you want to change.

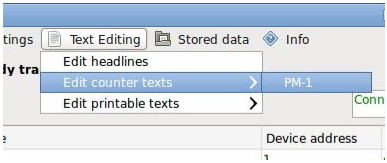
2.3 Text for TAG-Number

The text that is to appear before the metering point number and when the intermediate meter reading is printed out can be edited in the following window. Thus, for example, instead of the designation "Measuring point number", "TAG number" can also be written. The window opens when you click on Text editing – Edit headlines in the menu.

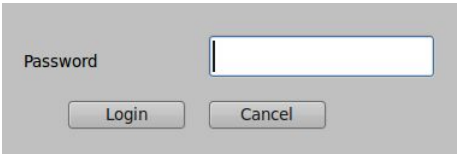


The individual counter names for the display at the Pipeline Master are edited in the following window. The factory-made appointed names are obvious here. For the custom-designed names the Pipeline Master must set in the point menu A... F29 to "Modbus register Text display". If there are more as (respectively upper line) 16 characters registered, the display changes between the two petitions if the corresponding point was selected in the Pipeline Master advertisement.

2.4 Configure counter texts



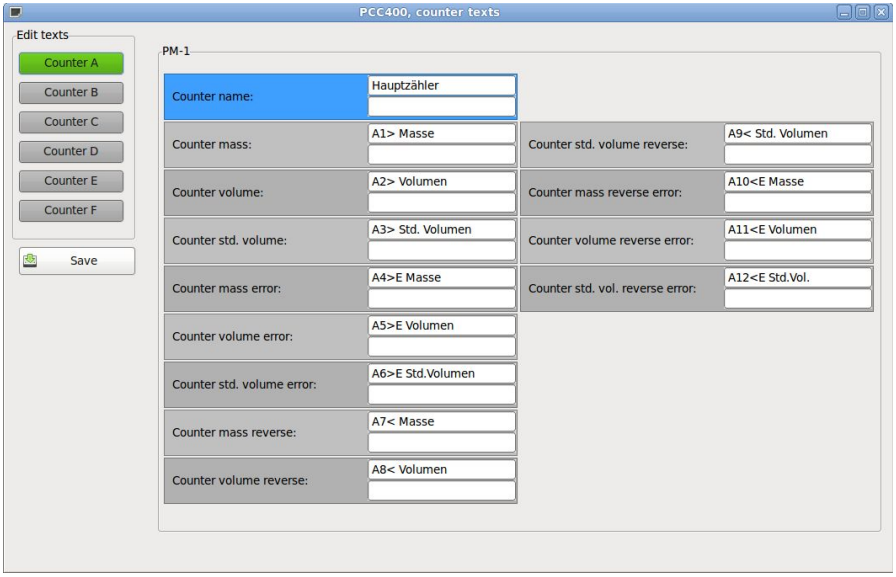
The counter text shown in front of the scattered values from the Pipeline Master can be edited. For editing this texts select Text editing – Edit counter texts from the selected Pipeline Master.



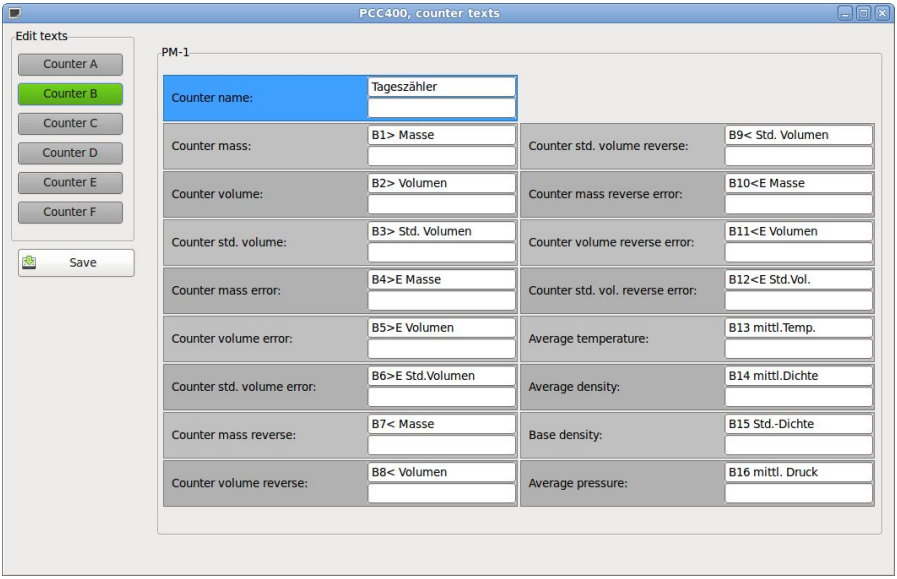
The password is required. The standard password at delivery is

“password”.

For counter A the following window appears:

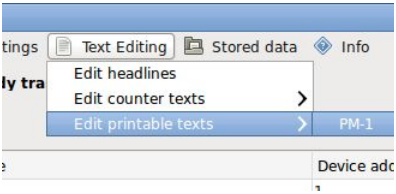


For counter B to F further settings are possible:

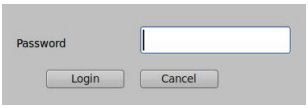


The counter name (in the blue field) can be changed directly and is shown at the LCD from the Pipeline Master. The gray text fields are only active, if the Pipeline Master menu x.29 (x = counter A to F) is set to text display – Modbus Register.

2.5 Configure printouts

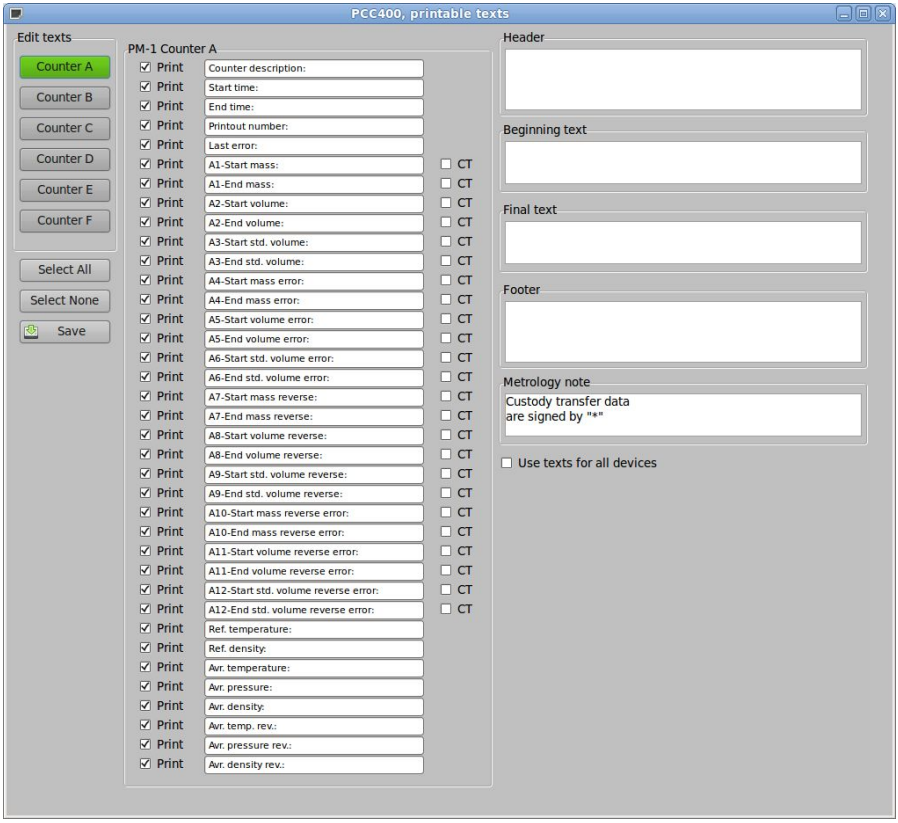


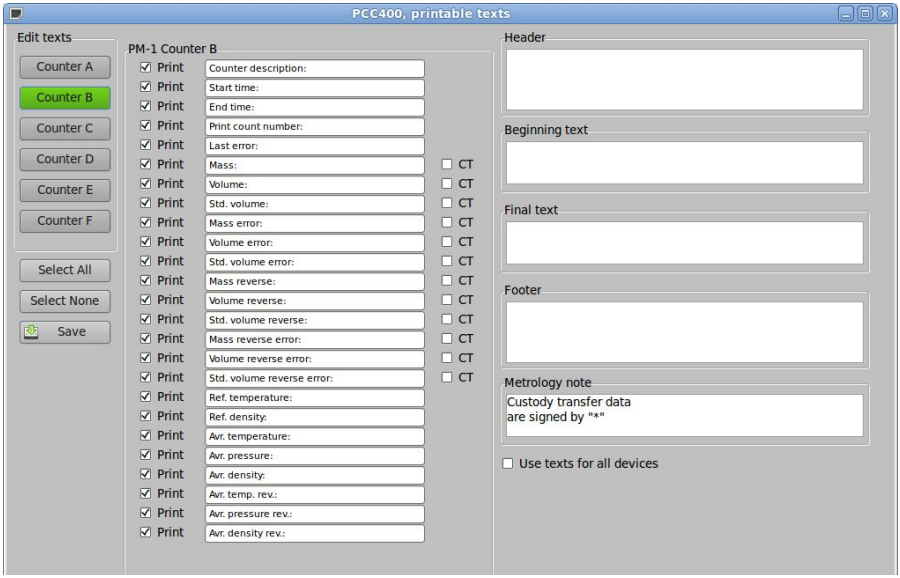
You can define text blocks which can be printed before and after the custody transfer printout. These texts can be written with a built in text editor. The PCC400 program starts automatically. To edit the text blocks choose in the menu Text editing – Edit printable texts the desired Pipeline Master.

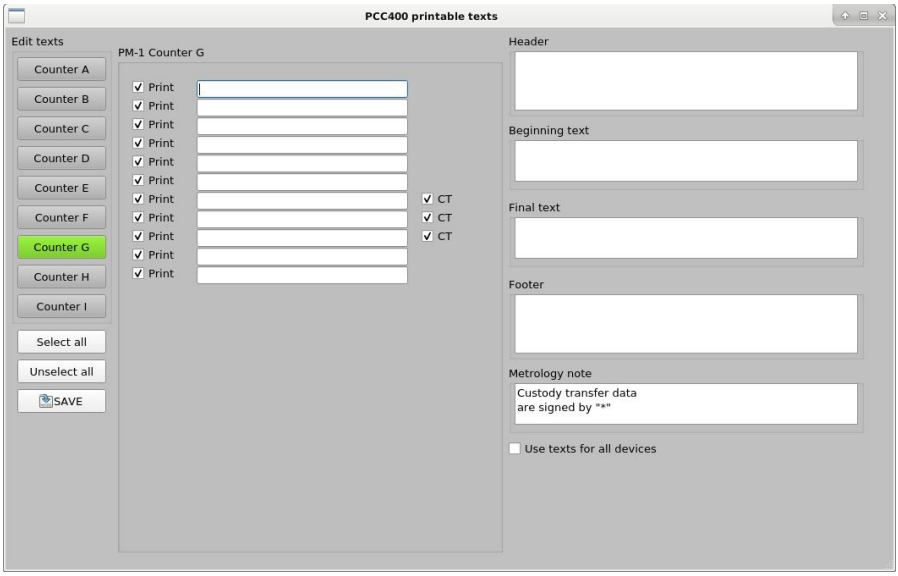


The password is required. The standard password at delivery is “password”.

If a custody transfer dongle is active and the Pipeline Master is selected as custody transfer unit, only header, footer, beginning and final text can be edited.







The check mark in the column “Print” activates this line for the printout. All data are stored every time in the data base. Not printed values are empty in the data base.

2.5.1 Custody transfer data

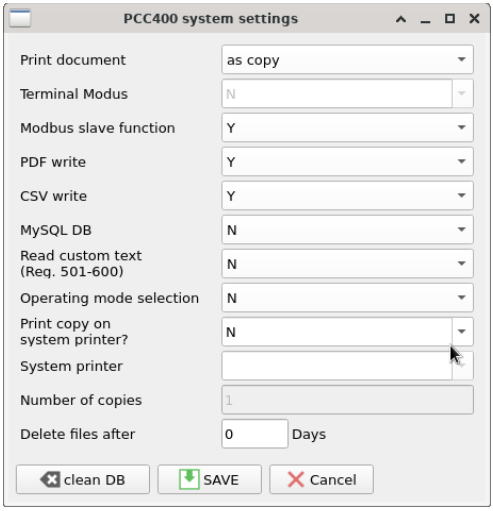
The texts are pre-set and appear in front of the printed line. These texts can be translated into national languages of other countries. If the check mark “metrological relevant” is set, the dongle inserted and sealed, then this value is printed included stars.

The printout format is as following:

TAG NO.: xxxxxxxx

Station name: xxxxxxxx
Time start: dd.mm.yyyy hh:mm:ss
Time end: dd.mm.yyyy hh:mm:ss
Batch number: xx
Last error: no error
A1 mass start: * xxxx*
A1 mass end: * xxxx*
Custody transfer data
are signed by *.
(possible error massages)

2.5.2 System settings



You can set the system settings in the menu Settings – System. Choose in the first box to select whether the original document or a copy is printed. The document must not be printed and is only saved in the PCC.

The terminal mode is undeliverable.

You can activate the option Modbus slave function (see section 2.5.5). This is an option and must be agreed with the distribution before ordering.

A copy of the batch report can be stored as a PDF or CSV file. The directories CSV_Data and PCC_PDF are always released. The saved data can then be read there.

The connection to a database described in section 2.5.9 can be ordered optionally and activated here.

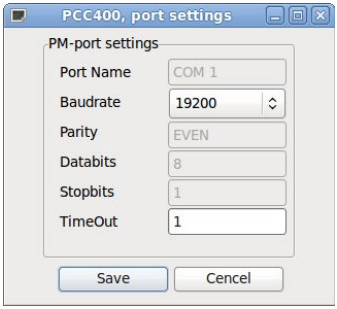
Via the interface, user-defined texts can be written into the Modbus registers 501 to 600 of the Pipeline Master from an external system.

Operating system selection is a custom application that is normally disabled.

Copies of the hardcopy are printed on a system printer to be installed. No printer is pre-installed. The number of copies is specified directly.

The data of the internal data base will be deleted after the registered number of days. If this value is set to 0 days the data will never be deleted.

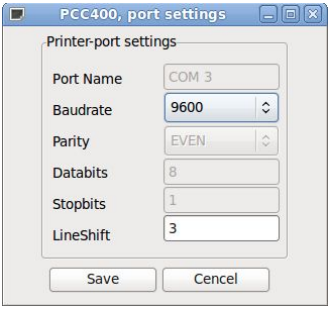
2.5.3 Pipeline Master – Interface settings



You configure the interface for the connection to the Pipeline Masters in the menu PM Port.

You can select between available serial COM-Ports, USB or LAN.

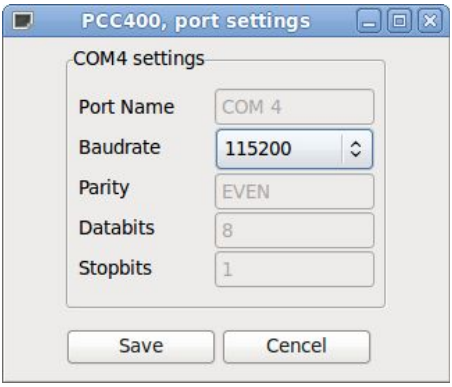
2.5.4 Printer – interface settings



You configure all parameters of the printer interface in the menu printer port. You can select between available serial COM-Ports, USB or LAN.

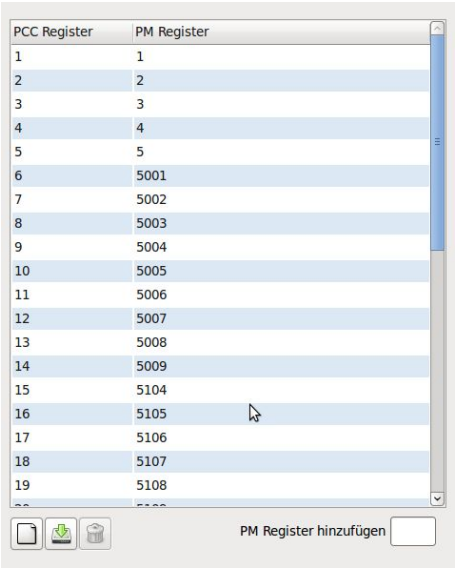
Spaces at the left side of the paper are specified with LineShift.

2.5.5 Modbus Slave Port – settings (Option)



You set the baud rate of the Modbus slave interface. All other settings are fixed. The supervisory system (e. g. PLC) can only read (Modbus function 03) 120 fixed Modbus register listed in the following table.

2.5.6 Modbus Slave Mapping (option)



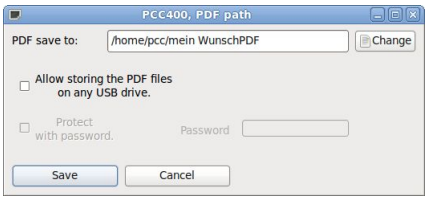
You can access 120 registers of the connected Pipeline Master by a supervisor system (e. g. a DCS). The assignment of the Pipeline Master Modbus register is carried out in the mapping table. The Pipeline Master register, written down in the text box at the right bottom of the window, is written to the next free PCC register in the mapping list. These registers are only readable. The PCC 400 polls the connected Pipeline Master and updates the register table. If it is necessary to write Modbus register of a Pipeline Master, write direct into the Pipeline Master register (not to the mapping register). The write command is passed on from the PCC 400 direct to the Pipeline Master.

The following registers can be written down on the mapping table:

1 – 140	current process values and status information
5001 – 5086	current counter readings counter A
5101 – 5161	current counter readings counter B
6001 – 6150	last printed values from counter A
6201 – 6278	last printed values from counter B

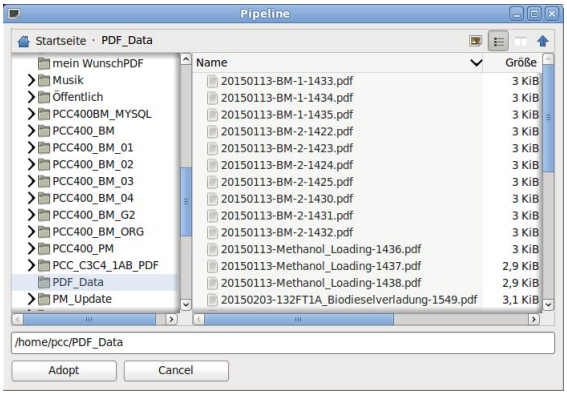
2.5.7 Storing the batch report as a copy into a PDF file

To save PDF files, "Write PDF" must be set to Yes (Y) in the system setting (see sectionn 2.5.2).



In the Settings – PDF path, you can then confirm the storage location that is entered or select a different storage location.

Clicking on "Change" opens the window for selecting the directory. The folder in which to save can be selected in the directory /home/pcc/ can be selected. If the desired directory does not exist, enter it in the text field (e.g. //home/pcc/PDF_Data).



USB-Storage-Devices are also possible. Only the specified USB stick can be used.

If any USB sticks are to be used for storage, this must be enabled by checking the box "Allow saving of PDF files on any USB stick". The PCC 400 then recognises this automatically. If no USB stick is connected, the files are temporarily saved in the PCC 400. As soon as a USB stick is available, these files are then transferred and deleted on the PCC 400.
The USB sticks can be provided with password protection. The USB memory to be used must then contain an empty file without file name extension, with the password entered here as the file name. The files are saved in the /PDF folder of the USB stick. USB sticks that do not have this file cannot be used for storage.

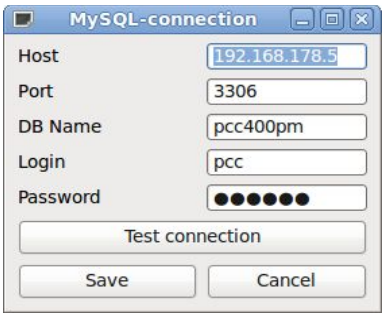
2.5.8 Storing the batch report as a copy into a CSV file

For storing CSV files to the PCC 400 set in the menu System – Settings (see section 2.5.2) CSV write to Yes (Y).

The CSV files are stored in the folder /home/pcc/CSV_Data. This is a released folder for all users.

2.5.9 MySQL Data base connection (option)

An external MySQL database can be connected to the PCC 400 on request. The determined values and informations are written in the database after every batch. For this in the menu Settings – System MySQL DB must be set to „Y“ (see section 2.5.2).



Then choose in the menu Settings MySQL DB. The following windows opens:

The system informations of your MySQL database must be typed in here. Please ask your responsible administrator.

The MySQL administrator has to lay out the database name, the login name and the password for the database. The tables are produced by the PCC automatically in the MySQL database. The PCC can write only in the database.

The user PCC needs the following rights for some schemes:

PCC database (e. g. pcc400)	Select, Insert, Update, Delete, Create
information_schema	Select

Please clarify the database connection and the exact function with our sales employees before the order.

For every batch the following column names exist:

Column name	***Data type***	***Description***
TAG_number	varchar(32)	TAG number
start_time	varchar(32)	Time at start
end_time	varchar(32)	Time at end
printout_number	varchar(32)	Serial number
last_error	varchar(32)	Last error
A1_start_mass	varchar(32)	Mass counter at start time
A1_end_mass	varchar(32)	Mass counter at end time
A2_start_volume	varchar(32)	Volume counter at start time
A2_end_volume	varchar(32)	Volume counter at end time
A3_start_base_volume	varchar(32)	Standard volume

Column name	***Data type***	***Description***
		counter at start time
A3_end_base_volume	varchar(32)	Standard volume counter at end time
A4_start_mass_error	varchar(32)	Error mass counter at start time
A4_end_mass_error	varchar(32)	Error mass counter at end time
A5_start_volume_error	varchar(32)	Error volume counter at start time
A5_end_volume_error	varchar(32)	Error volume counter at end time
A6_start_base_volume_error	varchar(32)	Error standard volume counter at start time
A6_end_base_volume_error	varchar(32)	Error standard volume counter at end time
A7_start_mass_reverse	varchar(32)	Reverse mass counter at start time
A7_end_mass_reverse	varchar(32)	Reverse mass counter at end time
A8_start_volume_reverse	varchar(32)	Reverse volume counter at start time
A8_end_volume_reverse	varchar(32)	Reverse volume counter at end time
A9_start_base_volume_reverse	varchar(32)	Reverse standard volume counter at start time
A9_end_base_volume_reverse	varchar(32)	Reverse standard volume counter at end time
A10_start_mass_reverse_error	varchar(32)	Reverse error mass counter at start time
A10_end_mass_reverse_error	varchar(32)	Reverse error mass counter at end time
A11_start_volume_reverse_error	varchar(32)	Reverse error volume counter at start time

Column name	***Data type***	***Description***
A11_end_volume_reverse_error	varchar(32)	Reverse error volume counter at end time
A12_start_base_volume_reverse_error	varchar(32)	Reverse error standard volume counter at start time
A12_end_base_volume_reverse_error	varchar(32)	Reverse error standard volume counter at end time
base_temperature	varchar(32)	Standard temperature
base_density	varchar(32)	Standard density
avr_temperature	varchar(32)	Average temperature
avr_pressure	varchar(32)	Average pressure
avr_density	varchar(32)	Average density
avr_temp_reverse	varchar(32)	Average temperature reverse
avr_pressure_reverse	varchar(32)	Average pressure reverse
avr_density_reverse	varchar(32)	Average density reverse
creation_date	date	Creation date
id	int(11)	Primary key auto increment

For counter B to F the following column names are existing:

Column name	***Data type***	***Description***
TAG_number	varchar(32)	
start_time	varchar(32)	
end_time	varchar(32)	
printout_number	varchar(32)	
last_error	varchar(32)	
B1_mass	varchar(32)	
B2_volume	varchar(32)	
B3_base_volume	varchar(32)	
B4_mass_error	varchar(32)	

Column name	***Data type***	***Description***
B5_volume_error	varchar(32)	
B6_base_volume_error	varchar(32)	
B7_mass_reverse	varchar(32)	
B8_volume_reverse	varchar(32)	
B9_base_volume_reverse	varchar(32)	
B10_mass_reverse_error	varchar(32)	
B11_volume_reverse_error	varchar(32)	
B12_base_volume_reverse_error	varchar(32)	
base_temperature	varchar(32)	
base_density	varchar(32)	
B13_avr_temperature	varchar(32)	
B14_avr_pressure	varchar(32)	
B15_avr_density	varchar(32)	
avr_temp_reverse	varchar(32)	
avr_pressure_reverse	varchar(32)	
avr_density_reverse	varchar(32)	
creation_date	date	
id	int(11)	Primary key auto increment

The following column names are available for counters G to I:

Spaltenname	***Datentyp***	***Bemerkungen***
start_time_seconds	16 Bit int	Start time
start_time_minutes	16 Bit int	
start_time_hours	16 Bit int	
start_time_day	16 Bit int	
start_time_month	16 Bit int	
start_time_year	16 Bit int	
end_time_seconds	16 Bit int	End time
end_time_minutes	16 Bit int	
end_time_hours	16 Bit int	
end_time_day	16 Bit int	
end_time_month	16 Bit int	
end_time_year	16 Bit int	

Spaltenname	*Datentyp*	*Bemerkungen*
consecutive_number	16 Bit int	Sequential no.
last_error	16 Bit int	Last error
start_value_G1	7 bit float	Start value
start_value_overflow_G2	7 bit float	
end_value_G3	7 bit float	End value
end_value_overflow_G3	7 bit float	
counter_unit_G3	16 Bit int	Unit
process_variable_G3	16 Bit int	Process varialble
mode_G3	16 Bit int	Operating mode
reserve	16 Bit int	
crc	16 Bit int	

2.5.10 Password

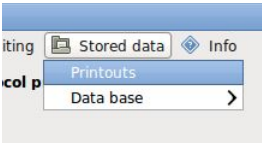
You should change the standard password (password) to a private password. Please keep the password safe carefully, because we don't have any possibility of resetting this password.

After the password was entered correctly, one can carry out petitions without renewed password input also in other menu items for five minutes. The password must be entered once more only after this time.

2.5.11 Language

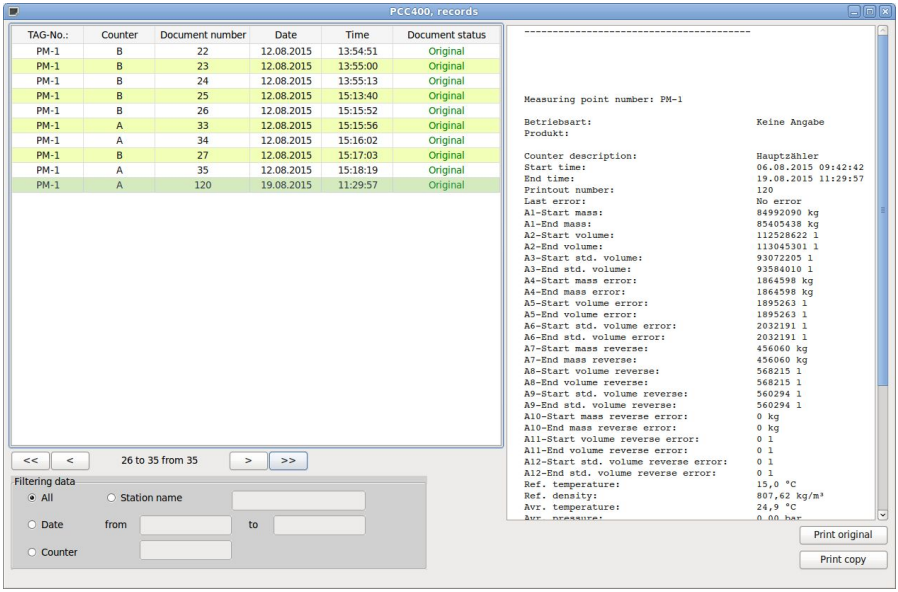
You can set the language directly to German or English in the menu Settings – Language.

2.6 Stored data



The menu stored data opens a new window with the choice possibility to show printouts and database.

2.6.1 Show printouts



The existing pieces of evidence are listed on the left.

Select the desired data record with the mouse.

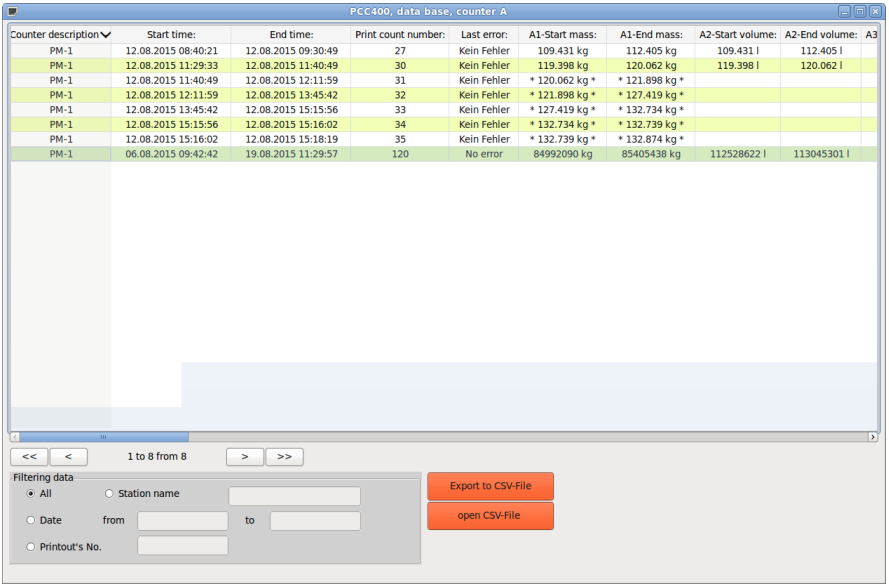
The content of the file are announced at the right window and can be printed. By pressing print original the original document is printed. With print copy a copy of the original is printed. “duplicate” is published at the copy in the topmost line.

As soon as an original was printed, the original file is indicated as duplicate and “duplicate” is published at the topmost line. A new original document cannot be printed any more.

To find the sought-after piece of evidence faster, the data can be filtered for TAG-number or date.

2.6.2 Database – Batches

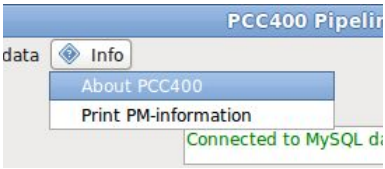
To find the sought-after piece of evidence faster, the data can be filtered for TAG-number or date. All information of the last data records are announced in tabular form. The selected records can then be exported or opened as a Calc table.



If you have selected a record with the mouse click, you can by the same window double-click as in case of “stored documents” open and print the piece of evidence directly.

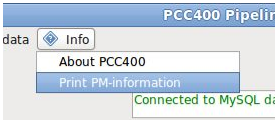
2.7 Info menu

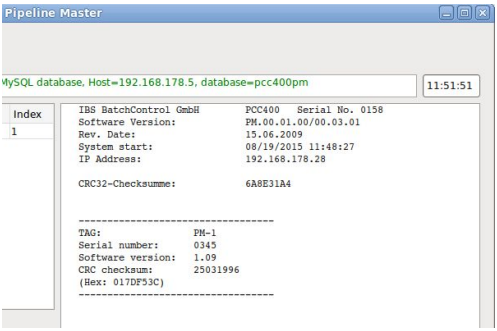
2.7.1 PCC 400 info



Informations of software version and checksum are shown.

2.7.2 Print Pipeline Master info





A list with PCC 400 software version and all connected Pipeline Masters including the software version and checksum (decimal and HEX) over all metrological relevant data is printed.

3 Notice