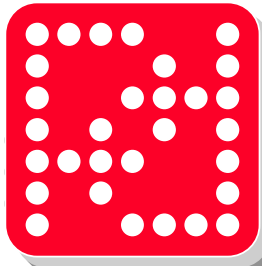


# P-NET Application for Road Tankers

Jens Kiib

PROCES-DATA A/S



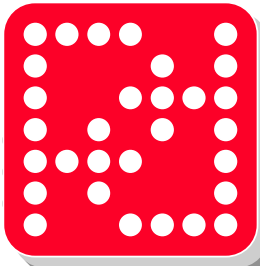
# Overview

- PD4000/340 Flowmeter-Display
- PC-tools: Printer Ticket Design  
PDFlow Customer Database
- Demonstration
- Questions



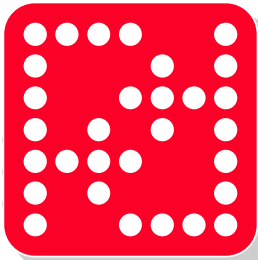
# Volume measuring





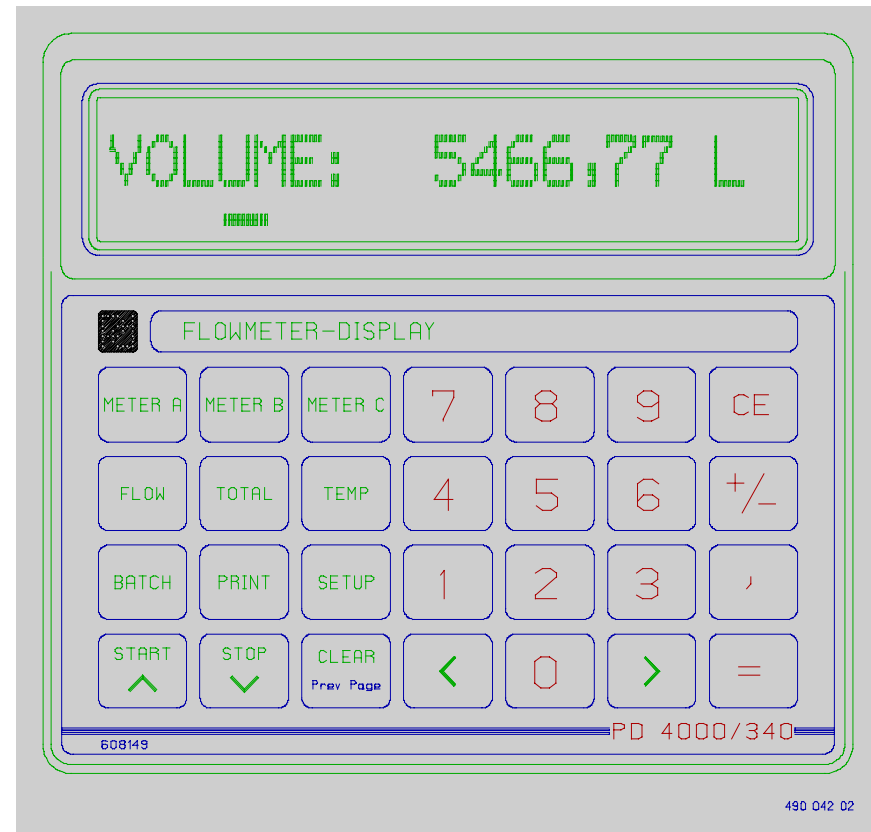
## PD4000/340 Main features

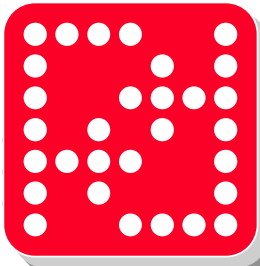
- Simultaneous supervisal of up to three flow transmitters
- Together with the PD340 Flow Transmitter it forms a type approved system
- Automatically configuration of connected Flow Transmitter
- Connection of printer by means of the PD3940 P-NET/RS232 converter module
- Built-in Batch Control
- P-NET Fieldbus communication
- Creation of a nodelist of the modules connected to the Fieldbus
- EMC approved (89/336/EEC)
- Vibration approved (IEC 68-2-6 Test Fc)



# Main functions

- A number of function keys makes it easy to select and display the main data from the flow transmitter.
- Meter A, Meter B, Meter C
- Flow
- Total
- Temp.
- Batch
- Print
- Setup



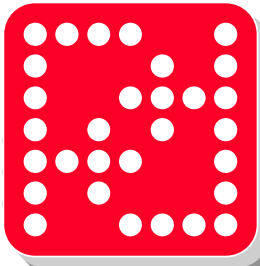


VOLUME: 5466,77 L

- An indicator bar shows if Meter A, Meter B or Meter C is chosen
- NoFlow detector with adjustable delay-time
- Volume is cleared by pressing the “CLEAR” key from this menu

TOTAL: 0,02 L  
CODE: \*\*\*\*

- The Total volume counter has a range of 9 digits
- Total is cleared by pressing and holding the “TOTAL” key and then pressing the “CLEAR” key
- The Total volume can be protected by a 4 digit security code

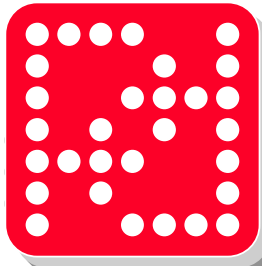


```
FLOW:      80,00L/h  
—
```

- Shows actual flow rate in the selected flow transmitter
- Unit and time constant can be changed from the Setup menu
- Temperature compensated flow is shown, if chosen from the Setup menu

```
PI_FLOW:  SETP: ■ 80,00L/h  
—        FLOW:  80,03L/h  
          OUT3: 25 MODE:A
```

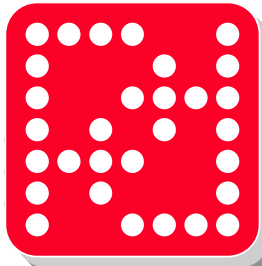
- If PI-Flow is chosen the flow setpoint can be set from this menu



TEMP.	:	52.7 °C
Average TEMP.	:	52.7 °C
—		

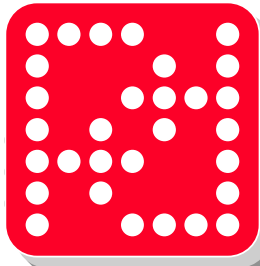
- Actual temperature in the selected flow transmitter
- Temperature displayed in Celcius or Fahrenheit
- Shows the calculated average temperature





```
BATCH: ■ SETP: 6000.00L
      _ VOL : 5472.96L
      OUT2: OFF
```

- Control of the built-in Batch function
- Entering of Setpoint value
- Automatically calculation of and correction due to Tail value
- Batching can be started and stopped from this menu by pressing a funktion key
- Readout of current output state



# Printer ticket

- Printout of last measurement showing the measured results together with matching customer data.
- A custom made printer ticket layout can be created on and downloaded from a PC.
- Same ticket layout for all three flowtransmitters.
- Available results: Volume, Setpoint, Total, Date, Time, AV\_Temp and Error text.
- Setable number of printouts.

```
TICKET EXAMPLE

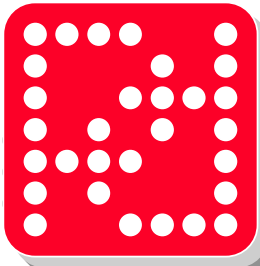
Zhejiang Dairy
120, Laos Road
Hangzhou 32101

Customer no.: [XXXXXXXXXX]
Customer:    [XXXXXXXXXXXXXXXXXXXX]
Address:     [XXXXXXXXXXXXXXXXXXXX]
            [XXXXXXXXXXXXXXXXXXXX]

Date:        [XXXXXXXXXX]

Ordered volume:  [XXXXXXXX.XX] L
Delivered volume: [XXXXXXXX.XX] L

Signature:.....
```



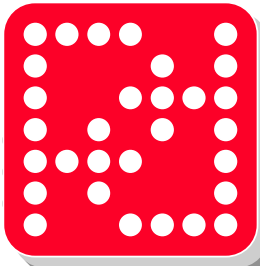
# Setup menu

```
FD 340 SERVICE MENU
AUTO SETUP:   SYSTEM:  
PRINTER     :   MANUAL:  
```

- Sub-menus lead to easy setup of flow transmitter and printer
- Manual configuration of all registers in the flow transmitter
- Automatic setup of a connected flow transmitter

```
SerialNo: 0003000
NodeNo:    035
Key in SerialNo of FD340
```

- Keying in Serialnumber will assign Node Address and perform Auto Setup of the flow transmitter

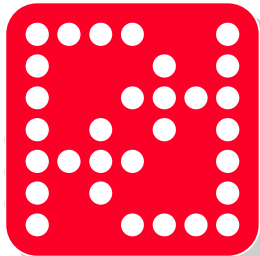


```
PD4000/340 setup: 0 ■  
Create NodeList : 0  
Vers / TruckNo  : 0
```

- Communication setup of the PD4000/340 system
- Creation of a nodelist of all connected modules
- Readout of program version, setup of display identification (TruckNo)

```
■      MetA  MetB  MetC  Print  
Node: 017   034   035   043  
4000Node: 02  Master: 06
```

- Node Address of Meter A, Meter B, Meter C and PD3940
- Node Address and Number of Masters, for PD4000/340 Display



```
^ NodeNo      :      34
  DeviceType :      340
v SerialNo    : 234567
```

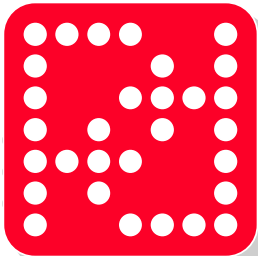
- A printout of the Node List is made when the “PRINT” key is pressed from the Create Nodelist menu

\*\*\*\*\* NODE LIST \*\*\*\*\*

```
NodeNo : 17
DeviceType: 340
SerialNo : 324322
Manufact. :PROCES-DATA DENMARK
```

```
NodeNo : 18
DeviceType: 1
SerialNo :002109-EDG
Manufact. :EPSON DEUTSCHLAND
```

```
NodeNo : 35
DeviceType: 340
SerialNo : 234567
Manufact. :PROCES-DATA DENMARK
```

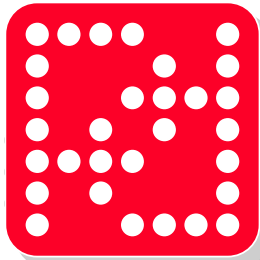


```
^ FlowDirect : UniDirecti
  @.2%Limit  : @.2% ignor
v TEMP Unit  : Celcius
```

- Configuration written in clear text
- Pressing the “PRINT” key from this menu performs a printout of setup of a connected flow transmitter

```
** SETUP - Meter A **

MeterSize : 40,0000
Ti       : 0,000000
PI Function: Auto
PI Input  : Setp-Data
PI Output : 0% => 4 mA
MeterNumber: 324322
Scale    : 40,0000
Flow ReadOu: 2 Decimals
Vol1 ReadOu: 2 Decimals
Vol2 ReadOu: 2 Decimals
Setp ReadOu: 2 Decimals
Out3 Functi: CurrOutput
Out3 Data  : Flow
Out2 Functi: PulsOutput
Volume Data: Flow
Flow Mode  : NormalMode
Batch Data : No Bat/Lim
```



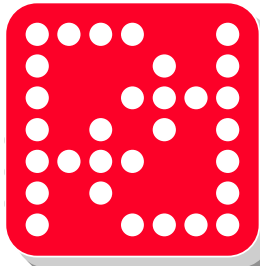
# PD 3940 Setup

```
PRINTER SETUP MENU  
COMM3940:  SET_PRINT:   
CONF3940:  PRINT_ALL: 
```

- Complete setup of the printerfunction
- Configuration of RS232 port on the PD 3940 module
- Configuration of the P-NET port on the PD 3940 module

```
3940 SerialNo: 901249022PD  
3940 NodeNo: 43  
3940 DevID: 3940
```

- Assignment of NodeAddress by keying in the serialnumber of the PD 3940



# Printout of day total

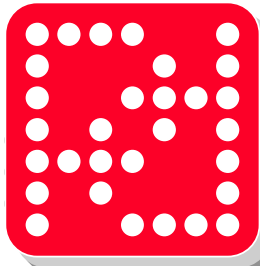
```
PRINTOUT OF DAY TOTAL  
Date: 97:03:04 ■  
Press "PRINT"
```

- Printout of all measurements from a specific date
- Measuring results are summed, if more measurements in one day at the same customer

```
***** DAY TOTAL *****  
  
NUMBER : 930412  
COMPANY: PROCES-DATA A/S  
DATE   : 96.08.28  
TIME   : 08.48.42  
VOLUME : 349.23  
AV_TEMP: 8.05  
  
NUMBER : 950427  
COMPANY: ZHEIJANG DAIRY  
DATE   : 96.08.28  
TIME   : 09.12.25  
VOLUME : 529.10  
AV_TEMP: 7.68
```

Printout of day total





# Manual configuration

```

FLOW:   TEMP:   INPUT1: 
VOL1:   VOL2:   VOL1+2: 
OUT2:   OUT3:   SETP   : 

```

- Actual configuration of a flow transmitter may be changed from this menu

```

TimeUnit   :  Digits    : 
FilterConst:  FlowDir   : 
0.2 % Limit:  Mode      : 

```

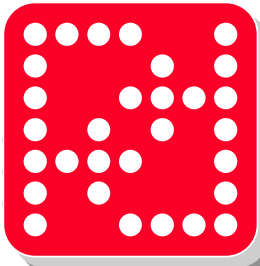
- Sub-menus guides you through the setup of the flow transmitter

```

Decimal places: 2
^ v For New settings
Press "=" To Select

```

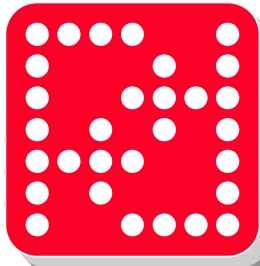
- At lowest menu-level it is possible to scroll in various configurations by means of the cursor up/down keys



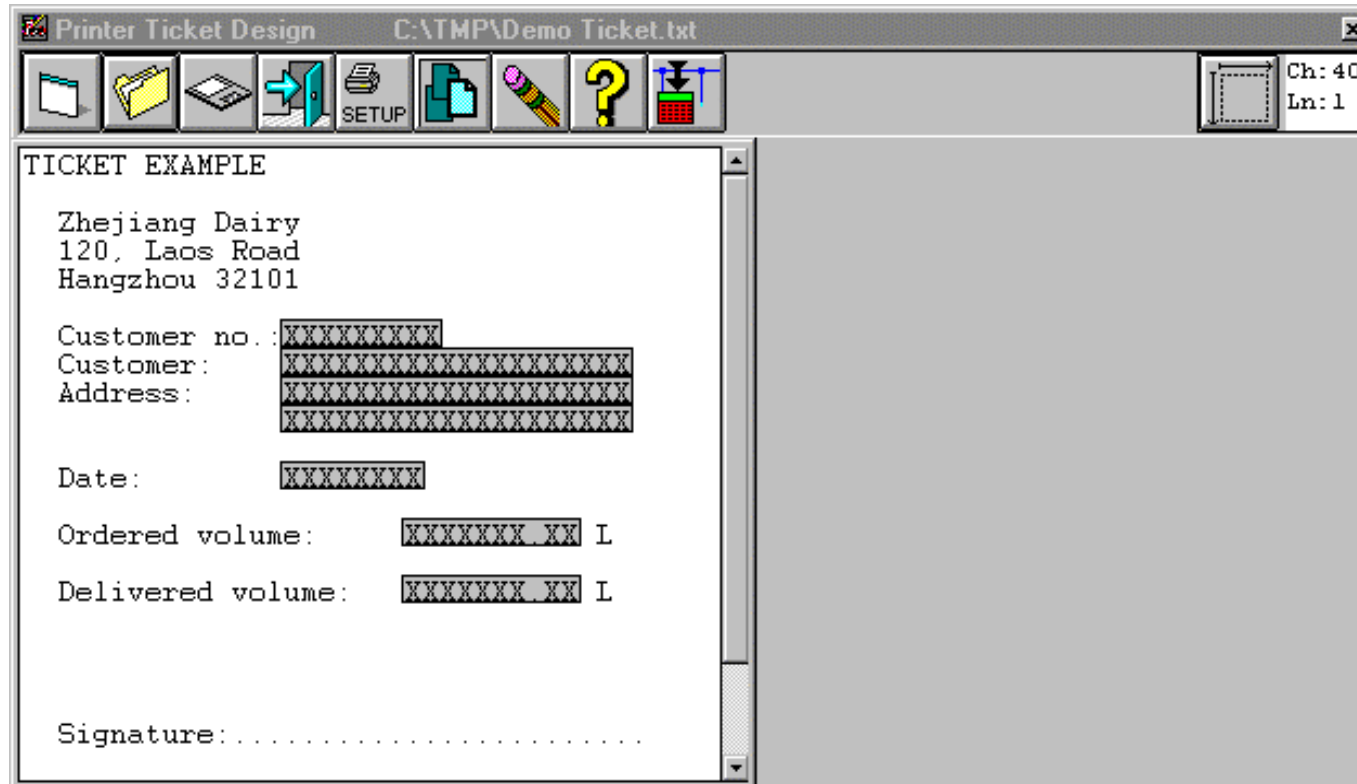
# Error detection

```
VOLUME:      56,18 L  
  _          Softw. Reset:F2
```

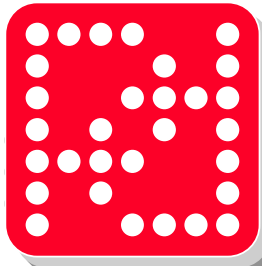
- Error text written in clear text on the bottom line in the display
- Internal errors detected in the flow transmitter
- Transmission errors on the P-NET
- If enabled the error text will be written on the print ticket



# Printer Ticket Design

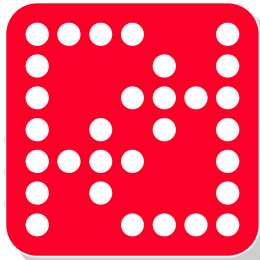


- The Printer Ticket Design program makes it possible to create a ticket layout on a PC monitor, and then download the design.



## Prnt\_Des features

- Printer ticket design using a standard text editor
- Data boxes are positioned with the PC mouse
- Data exchange between design program and P-NET is handled by VIGO
- Ticket layouts saved on PC hard disc as txt files
- Upload of ticket layouts from PC hard disc into editor
- Configuration of printer start and stop codes
- Download of ticket layout to the PD4000/340 Flowmeter-Display



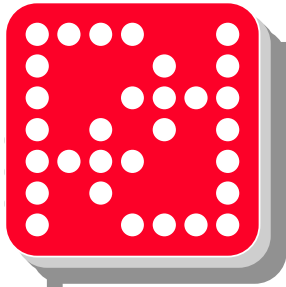
# PDFlow Customer Database

- Generation and download of database with up to 500 customers to PD4000/340
- Upload of delivery/collection data from PD4000/340, to the Delivery database table
- Database using the Access file format
- Data exchange by VIGO

The screenshot shows a window titled "Customer Database" with a toolbar containing icons for file operations, editing, printing, and help. Below the toolbar is a "Selection" section with input fields for "Number:" and "Customer:". The main form contains the following fields:

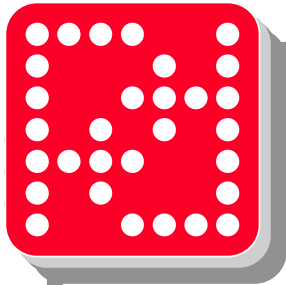
Number:	1
Customer:	PROCES-DATA A/S
Contact:	JENS KIIB
Address 1:	NAVERVEJ 8
Address 2:	8600 SILKEBORG
Address 3:	DENMARK
Phone:	+45 87200300
Fax:	+45 87200301
Route:	19
Remarks:	FIRST CUSTOMER
Info:	TEST PICTURE

At the bottom, there are "Show" and "Print" sections with radio buttons. The "Show" section has "All customers" selected, and the "Print" section has "Current element" selected. A "Record: 1" indicator and navigation arrows are also present. At the very bottom, there are three buttons: "Customer", "Delivery", and "Relations".



# PDFlow Customer Database

- Printout on PC-default printer
- Facility for adding, deleting and updating
- Extraction of customers due to Route Number
- Search facility for Customer Number and Customer Name
- Extraction of deliveries/collections due to Date an Route Number



5th International Conference on the P-NET

PROCES-DATA A/S