ME**A**SURING PROGRAM for ANALOG-ME**A**SURING CASE

Operation manual
for 12 analog inputs
for different Sensors

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Identificationcode:		
Program number	:	0401-0009144659
Measuring case number	:	MKA-8009

SYSTEM REQUIREMENTS

WINDOWS 98 und WINDOWS NT 4.0, WINDOWS 2000, XP

INSTALLATION.

Insert the CD-Rom in your computer.

The setup will start automaticly

If not, please start the setup manually by double click on setup.exe

Operation Manual

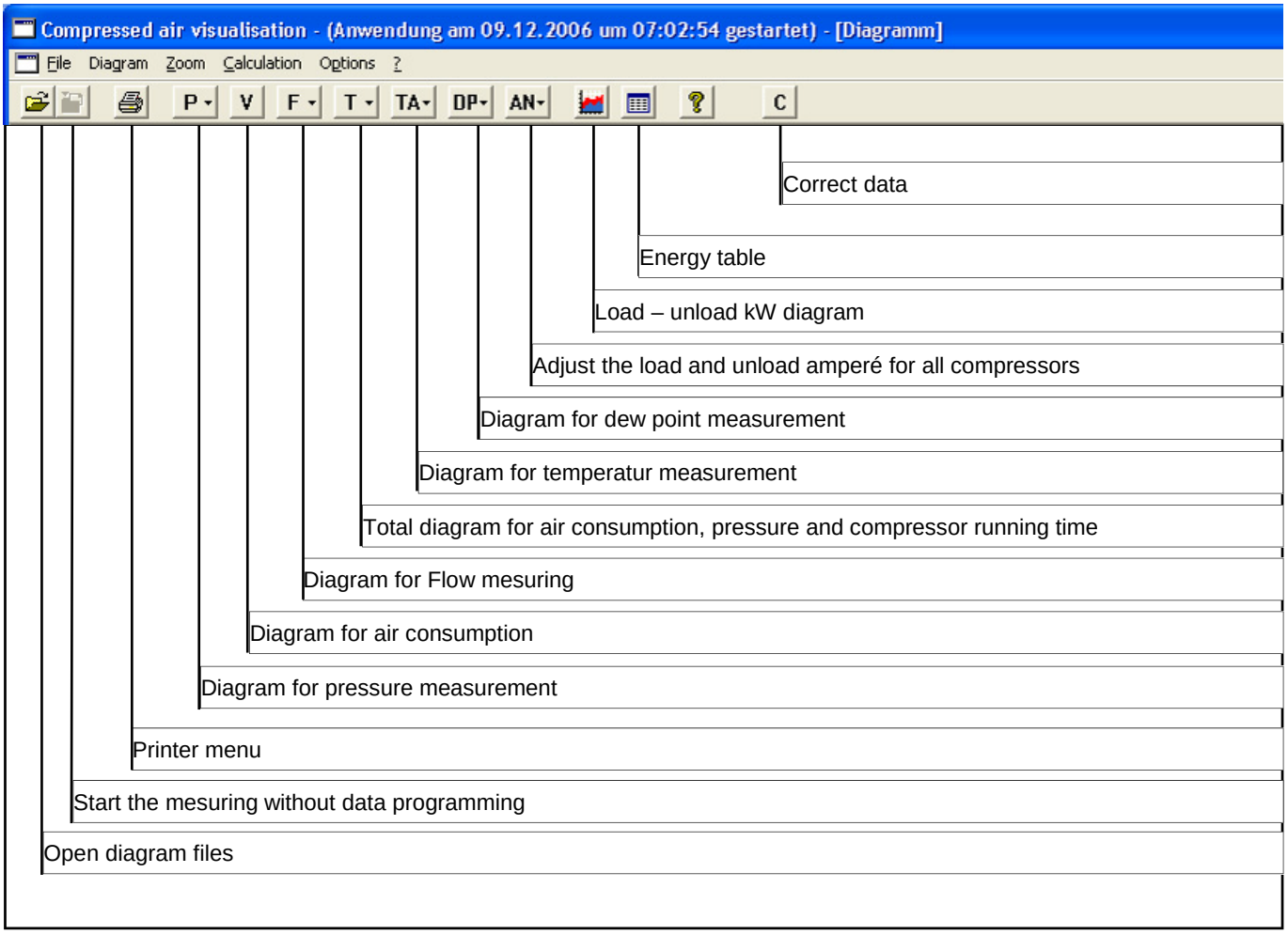
The compressed air measuring with this program contains the following measuring forms:

1. **Compressed air measuring with analog amperé clamp**

2. **measuring with different sensors:**
   - Pressure Transducer
   - Dew Point
   - Temperature
   - Flow
   - Power

The PC program makes the energy consumption for compressed air transparent.

The compressed air consumption in your compressed air station is documented and evaluated.
You receive a compressed air consumption graphic for a graphic reproduction for every day,
compressor running time and an energy table.
The energy table lists the running time of your compressors for load and idle times and evaluates the compressed air costs in the respective national currency.
The produced compressed air crowd gets moreover single for every mpressor and in the sum pointed.
The operation explains herself by the badge marking of themselves



The beginning of the measuring without data input

Example: the following shall be measured in a compressed air station

1. 2 compressors with 12.5 m³/min capacity each
2. Net pressure
3. Flow with Flowsensor in extra station

Note the connected sensors to the data list together with the span of amperé mesurment.

In the example mentioned above was connected following equipment:

Input 1+2 compressors with a amperé clamp and measurment range from 0-200 A

Input 7 a pressure transducer for measuring of the net pressure (range 0-16 bar)

Input 8 Flowsensor for the measuring of the compressed air flow

Before the measuring, please, they write down the attached components to the data list,

so that for the measuring analysis the parameter settings and customer name are available.

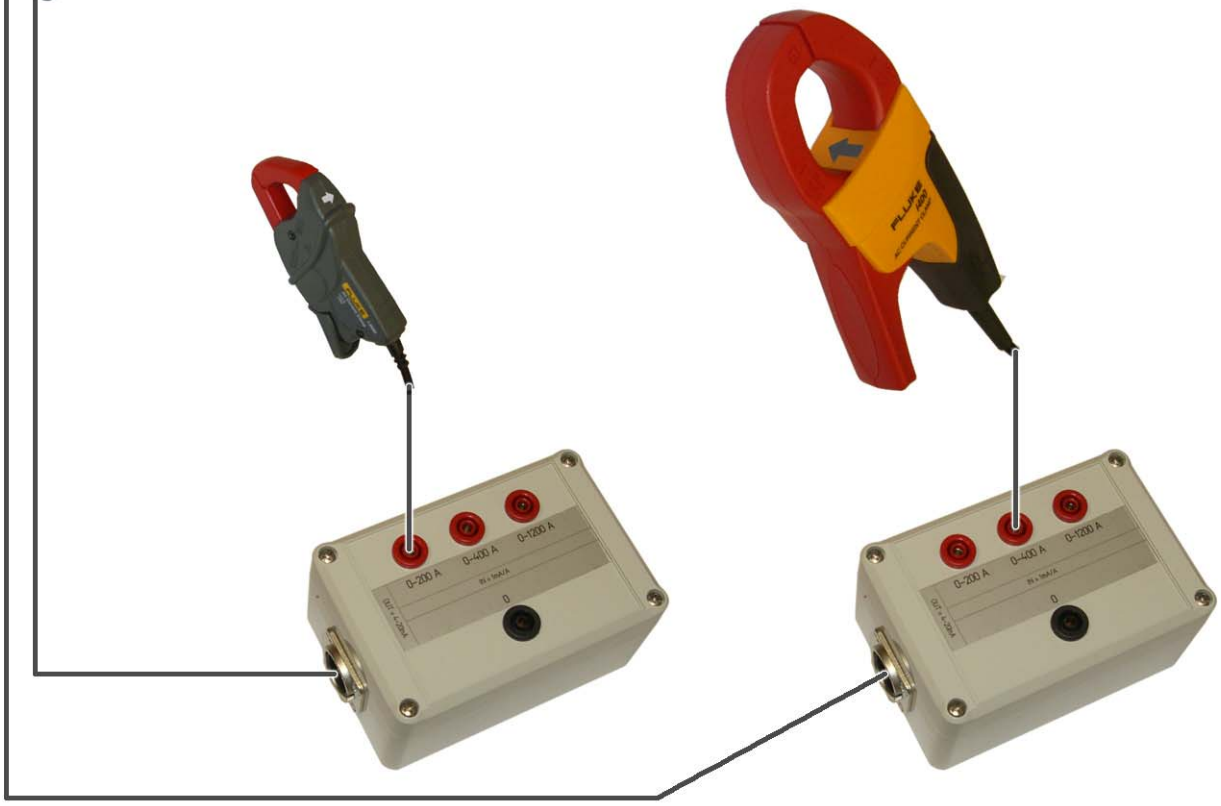
Data list for measuring without System data programming (data logging with PDA)

Input	Compressor Typ	variable speed Y/N	m³/min - Minimal	m³/min - Maximal	Motor kW	Cos phi	Amperé clamp Net pressure sensor Flowsensor Dewpoint sensor Temperature sensor Extra pressure sensor Amperé measuring	data at 4 mA	data at 20 mA	Input
1										1
2										2
3										3
4										4
5										5
6										6
7										7
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16										16
	CUSTOMERS NAME						DATE			

Amperé clamp connection for compressor measuring

ATTENTION

- this a measuring with on only one phase of the compressor.
- clamp the amperé device on one cable
- current sense is arrow direction ➔(look to arrow)
- plugging the red pole (plus) according the measuring range
- plugging the black pole (minus)



Current adapter:

The output of the current adapter is 4-20 mA and will be connected to the analog inputs of the measuring case
The customary amperé clams output signal is 1mA/A

Examble:

Clamp type	Measuring range	Output signal	Max. Motor kW
200 A	0-200 A	0-200 mA	75 kW
400 A	0-400A	0-400 mA	160 kW
1200 A	0-1200 A	0-1200 mA	500 kW

Data logging via PDA

1. open measuring case and switch on PDA

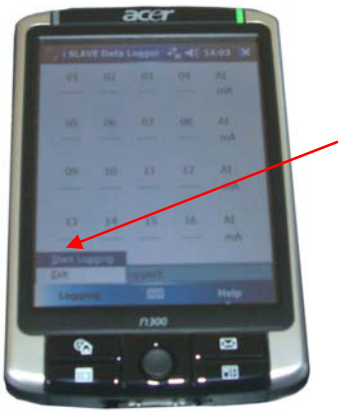
2. typing on „START“

Start logging program

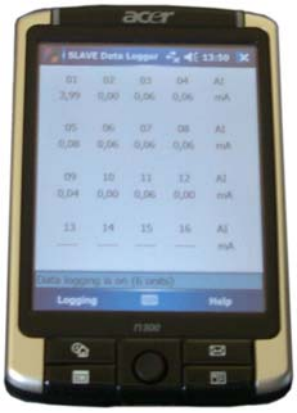
3. starting program
   typing on
   „Messkoffer-Measuring“

Start data logging

4. touch on „logging“
   than „Start logging“

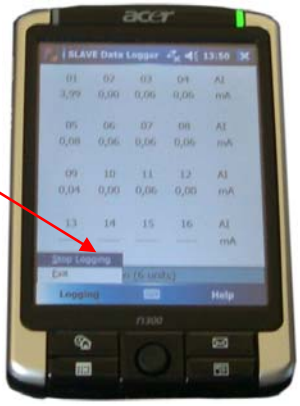


Status of all
connected analog signals
Over 4-20 mA



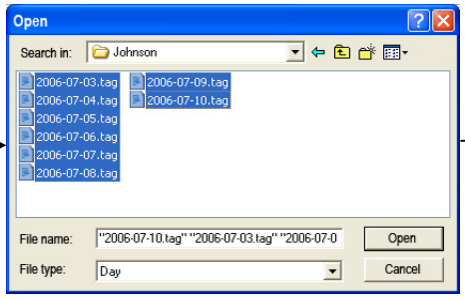
Stop data logging

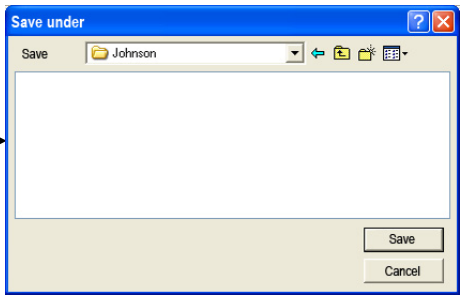
5. typing on „logging“
   than „Stop logging“



Reading measuring data and set parameters

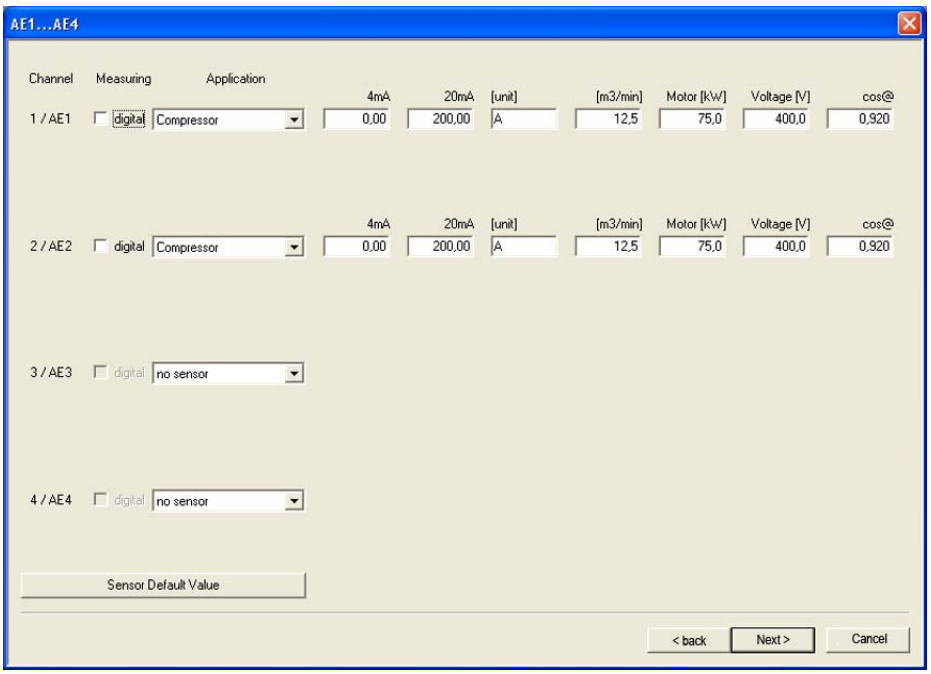
1. Go to the folder with the saved measuring files
2. Klick on „File“ - „analyse
3. Mark all files
4. Save files in a new folder





5. fill in with data from data list
   for compressor 1 and 2

   klick on button Next

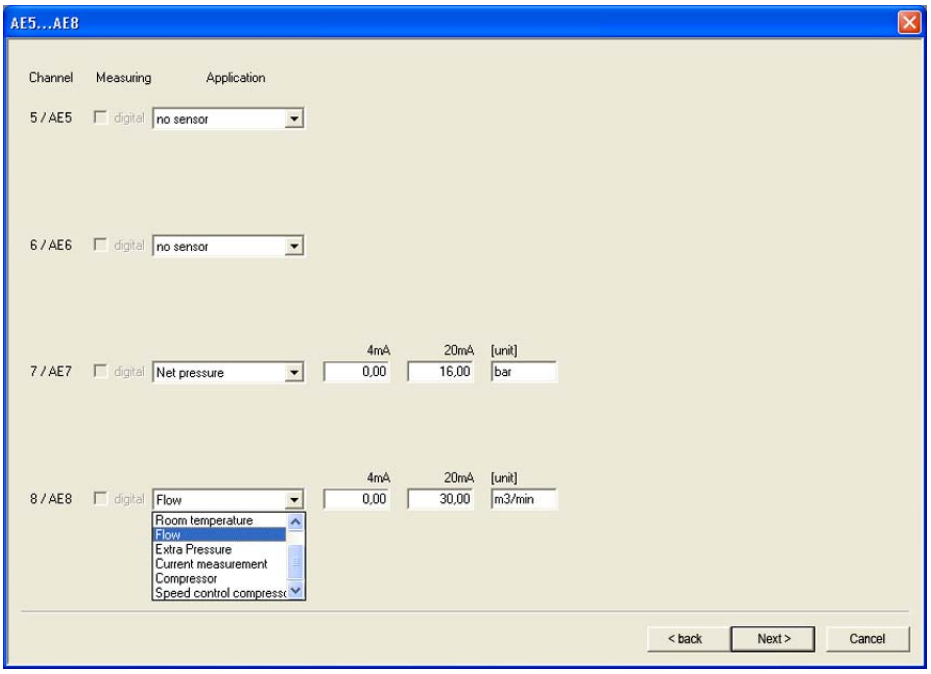


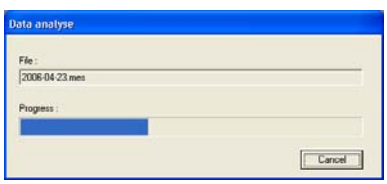
6. fill in from data list

   chanel 7 pressure transducer

   chanel 8 Flow sensor

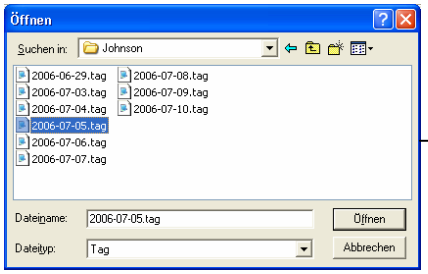
   klick on button Next

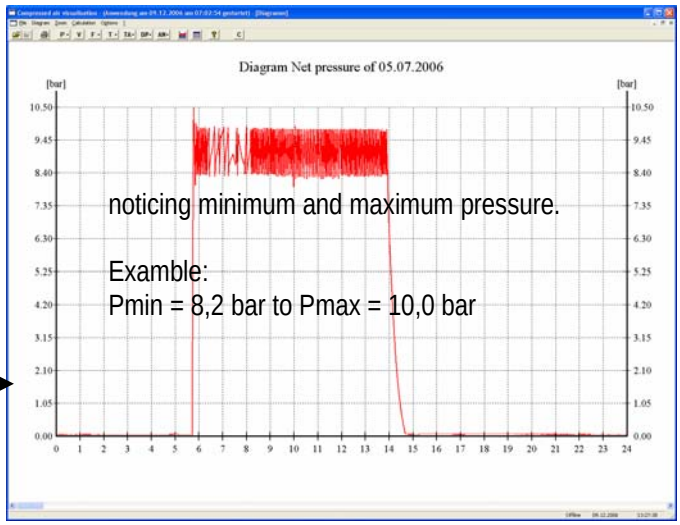


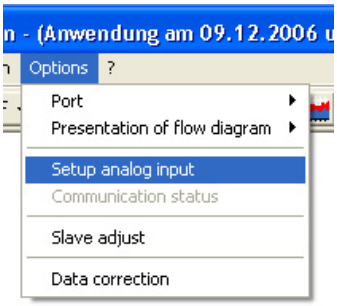


Scaling the pressure diagramm

1. klick on „file“ - than „open“
2. open the file of one day
3. klick on the button P (pressure diagramm)





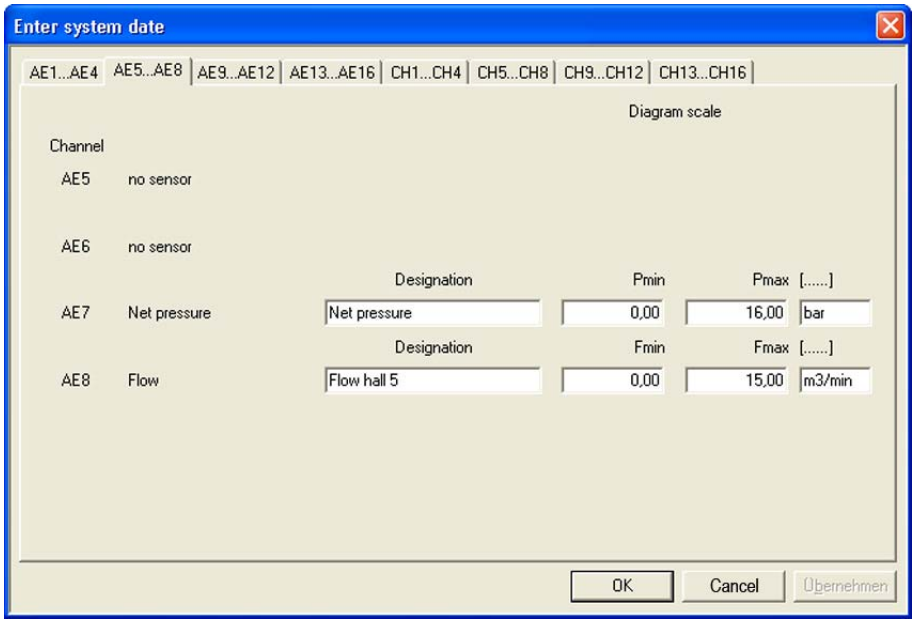


4. definate scale of diagram

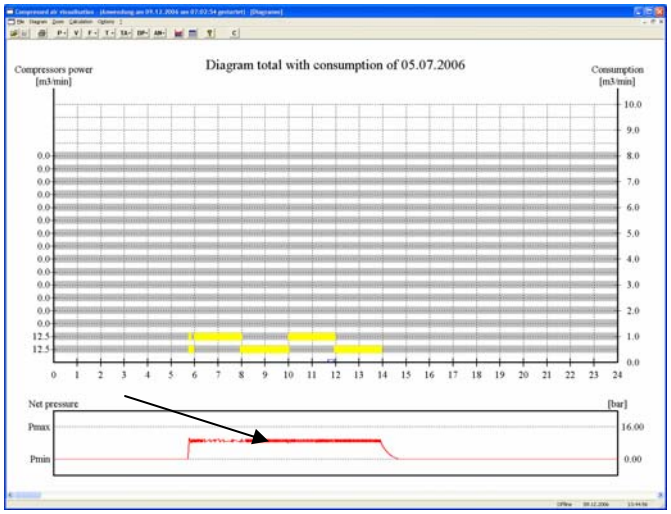
Klick on Option
„Setup analog input

- Change name of analog input 7 to Net pressure

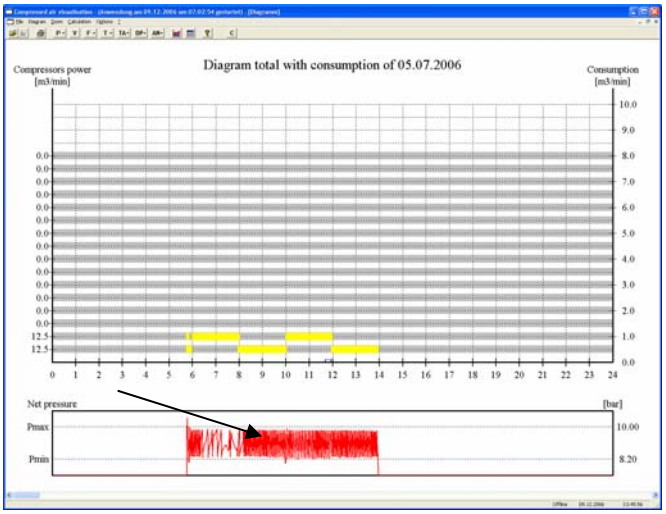
Set pmin to 8,2 an Pmax to 10 bar des Druckdiagramms ändern



Total diagram bevor changing



Total diagram after changing



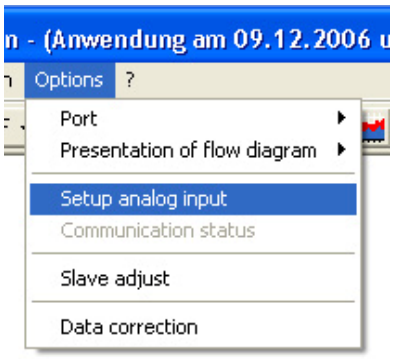
Scaling the Flow diagramm

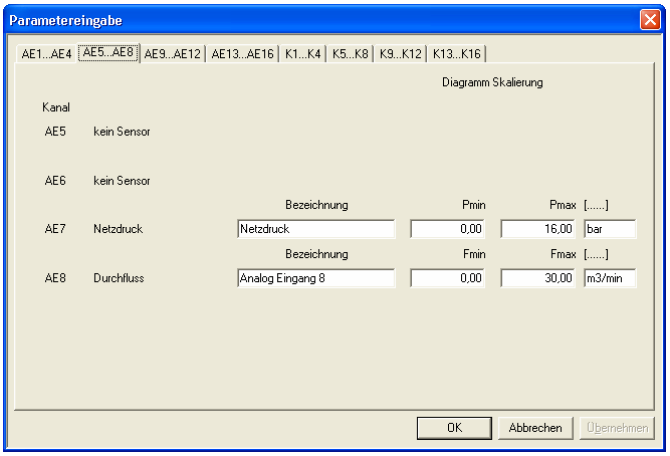
4. Diagrammskala definieren

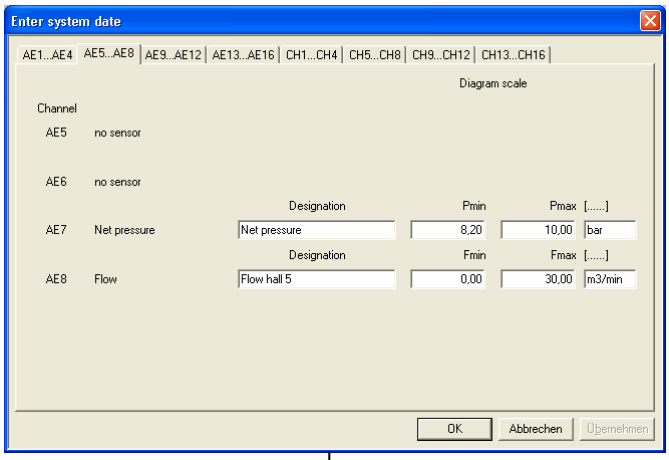
„OPTION“ Analog Eingang kofigurieren

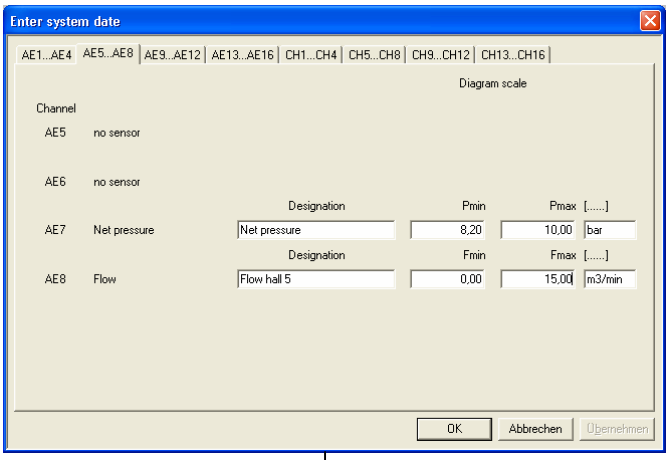
Es kann die Bezeichnung der
Analogeingänge geändert werden

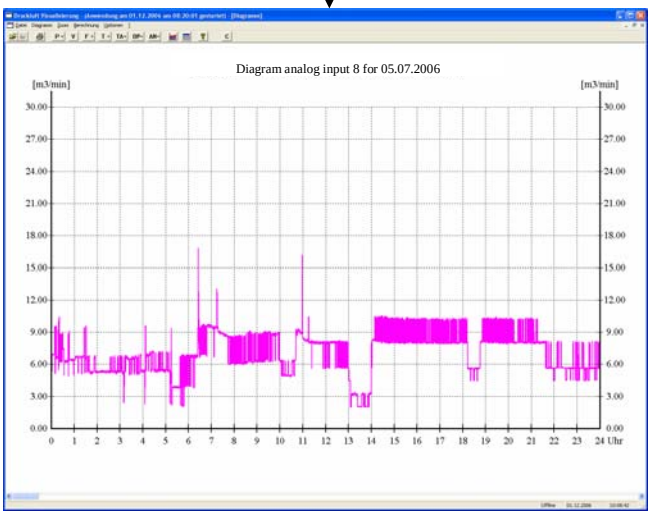
Die Skalierung der Analogeingänge

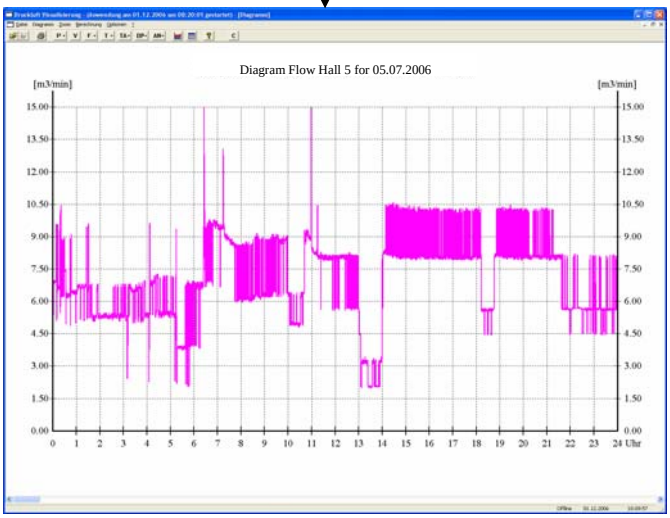






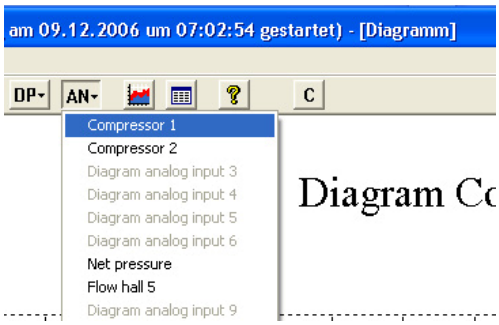


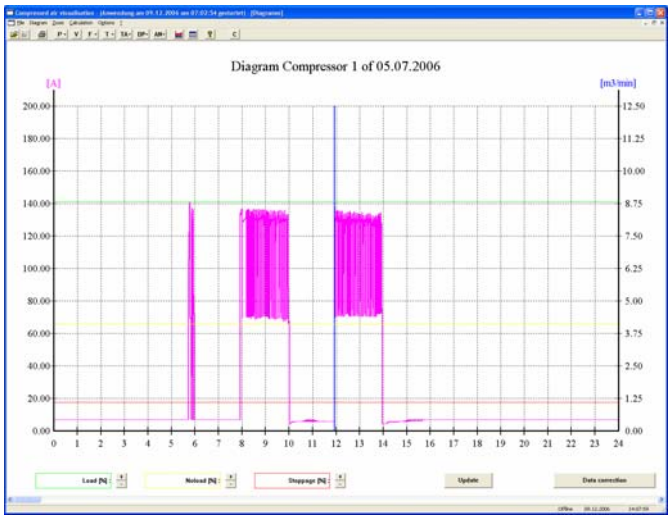




Adjust the Amperé for load and unload

With this cnfiguration will the program separate the load and unload time
and can calculate the air flow, based on compressor running time



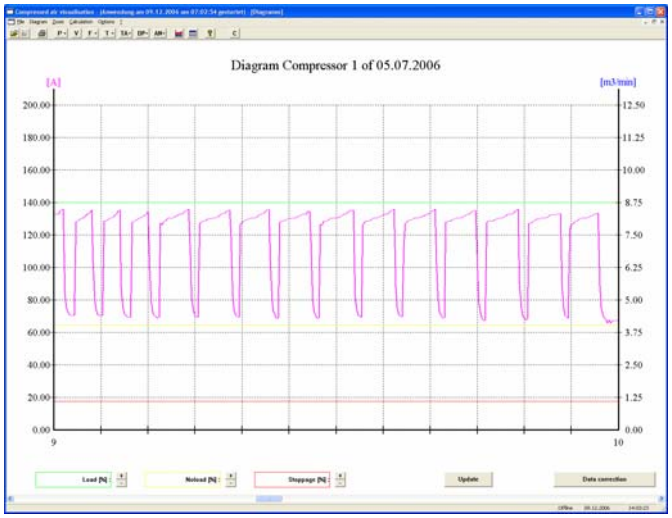


1. Klick Button „AN“
2. Klick on Compressor 1

It shows the Amperé diagram of 24h for compressor 1

Zoom settings

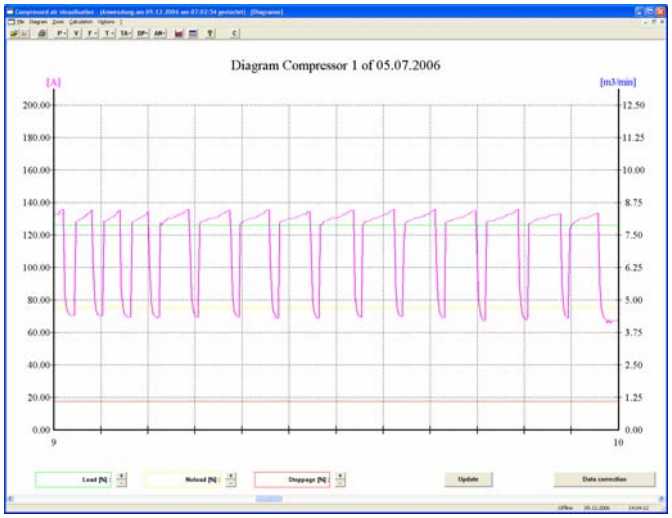
Klick on button „ZOOM“ and go to zoom 1 h



Green Line = Compressor Load
The compressor ist above this line **in load mode**

Yellow Line = Compressor idling
The compressor is below this line in **idling mode**

Red Line = Compressor „OFF“
If it shows some minimal Amperé when compressor is „OFF“ the amperé clamp was dedected the power of the transformer.
Set the red line one klick higher thean this amperé on OFF mode that the program can see when compressor was in „OFF mode“

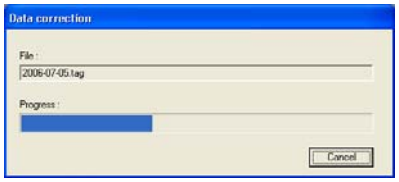


Scaling Load and idling parameters

- Klick on „-“ by load% to set the green line
  as shown for load operation
- Klick on „+“ by noload% to set the yello line
  as shown for unload operation
- Klick on „-“ Stopppage % to set the red line
  as shown for OFF mode of compressor

Press the UPDATE button
- same for compressor 2

After updating all compressors press the buton
Data correction

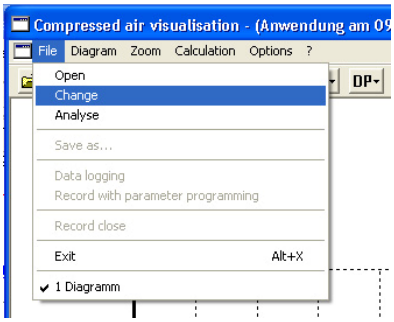


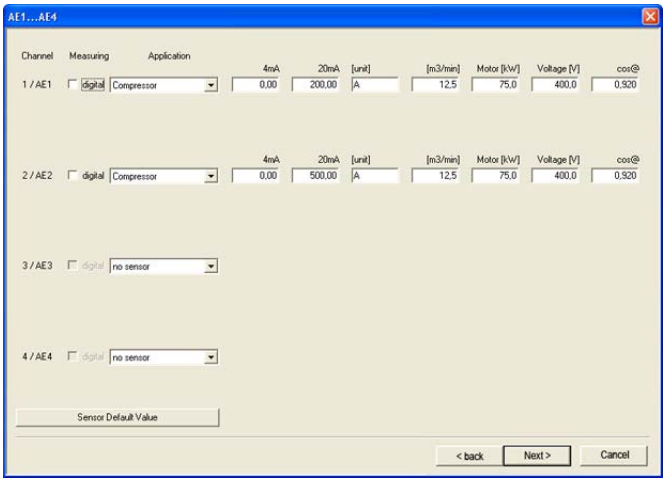
Changing the average of compressed air consumption diagram

If compressor go not more than 2-4 cycles per hour in on load mode
it is possible to change the calculation time of compressed air diagram

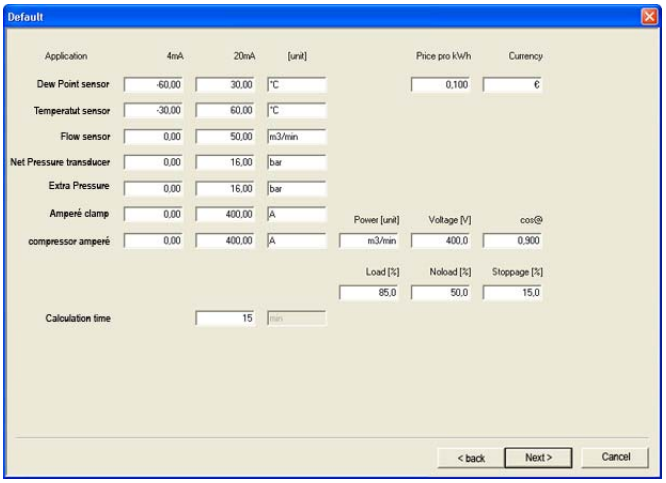
This Mask shows also the default settings of different sensors

1. Klick on „FILE - change
2. than klick on „Sensor Default value
3. set calculation time to auf 60 min
4. klick than on NEXT than OK
5. correct data with klick on button „C“

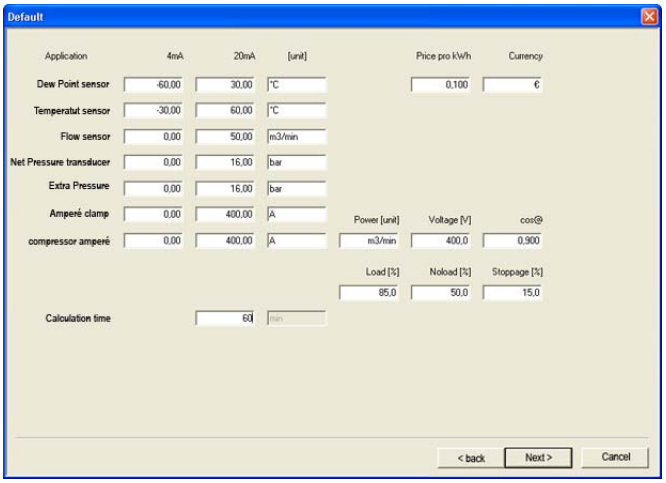




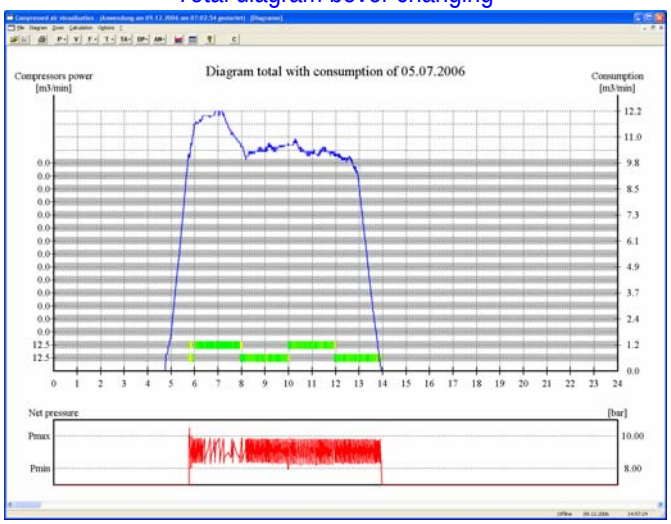
Mask bevor changing



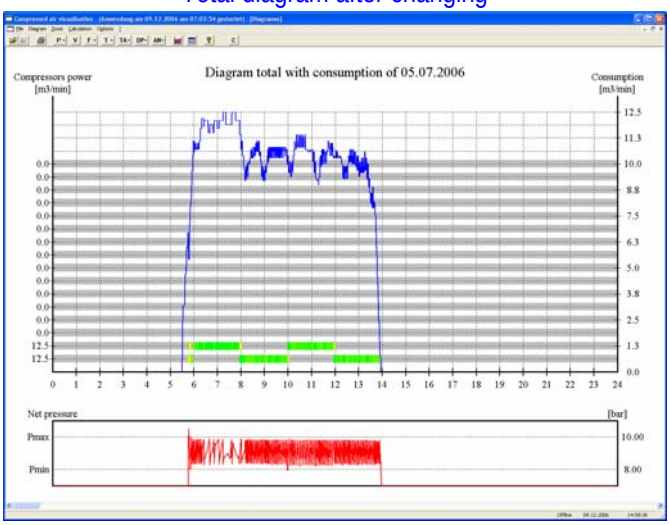
Mask after changing



Total diagram bevor changing

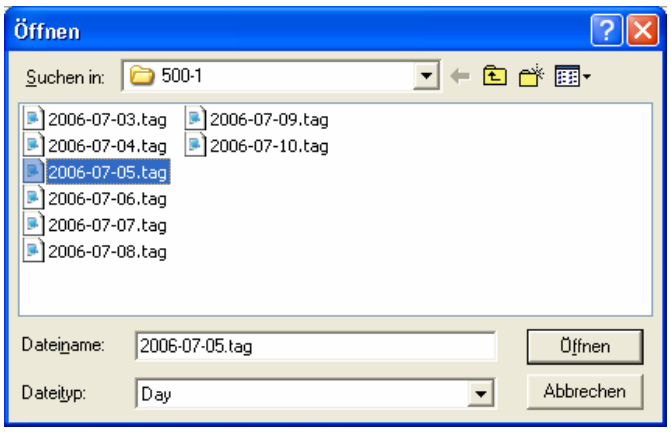


Total diagram after changing



Daily diagrams

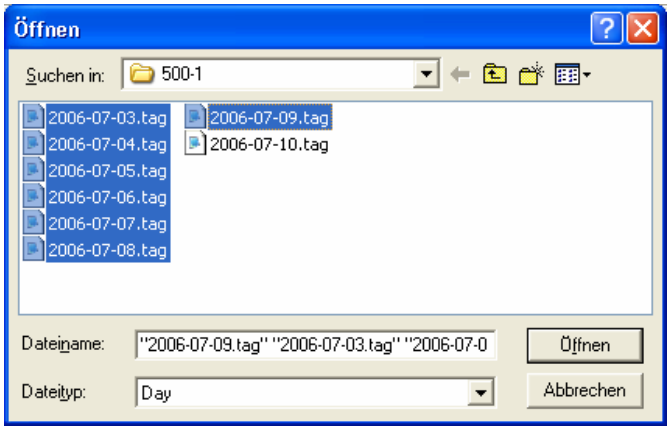
Klick on FILE „open“
Selekt the disk drive and the directory.
Double klick on a day file



Weekly diagrams

Up to 7 day can be selected.
The compressed air consumption of each day
is presented in a different colour.

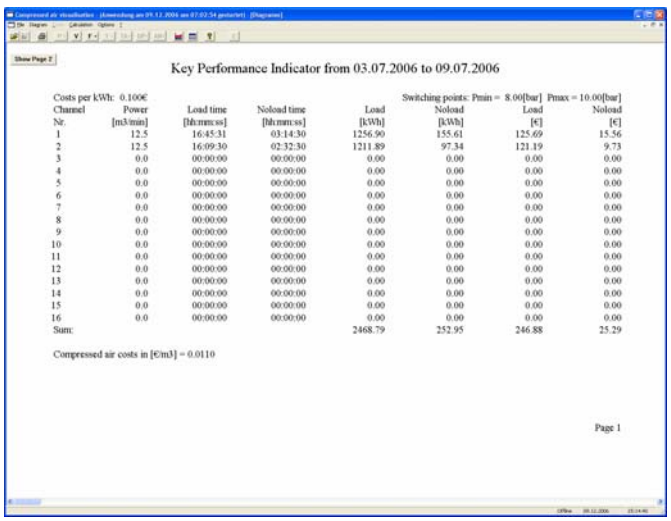
The enrgy consumption table automatically
adds up all days to one week

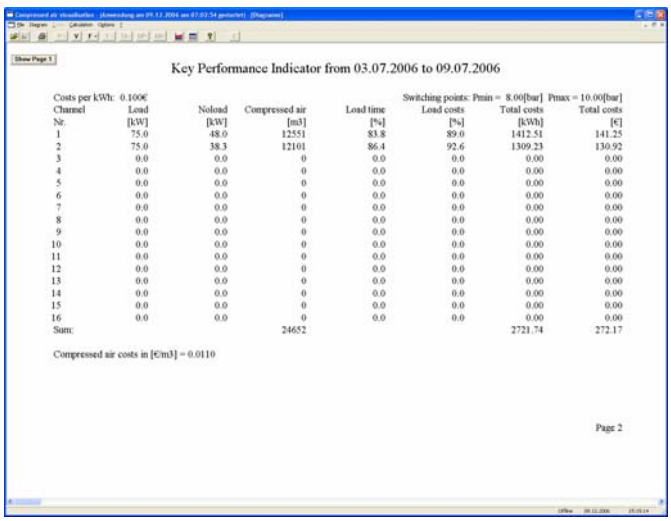


Set currency

Over menu File cange and than

Sensor default value you can change
the curreny of kWh costs

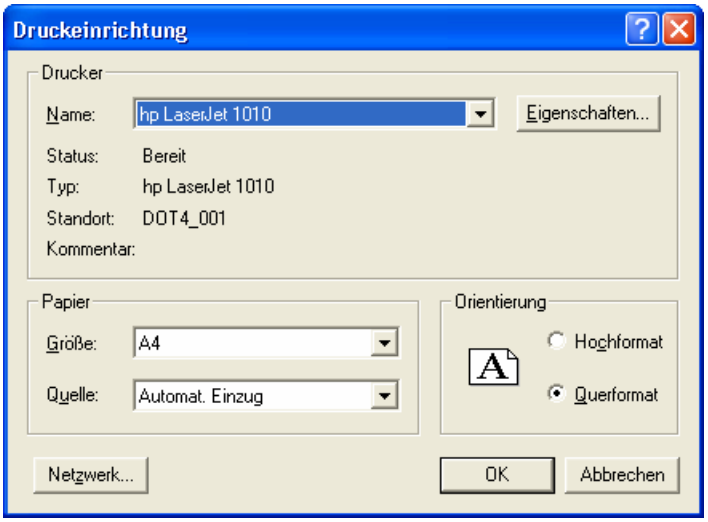




SETUP PRINTER

Klick with mouse on **diagram printer setup**

Select your previous printer

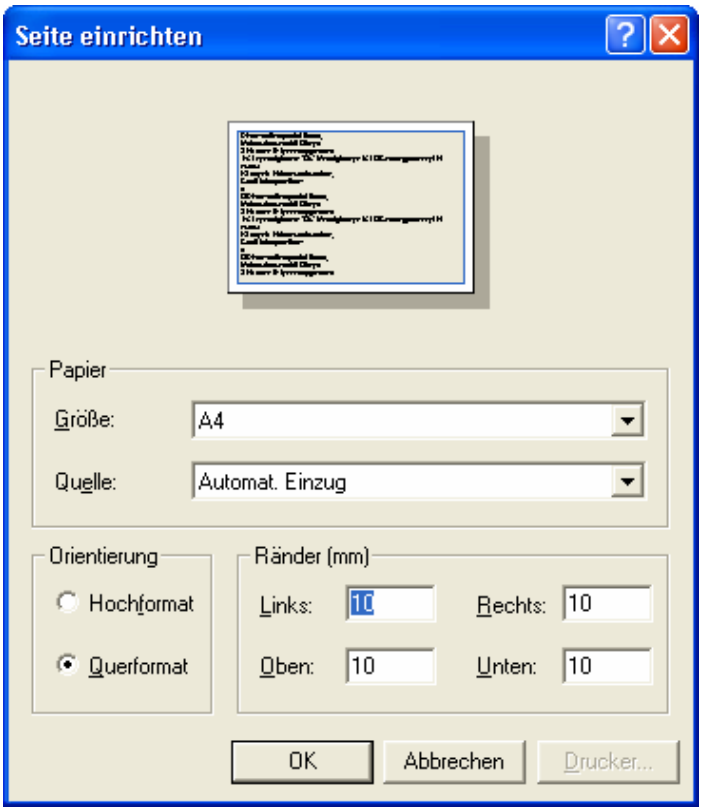


PAGE SETUP

Klick with mouse on **diagram page setup**

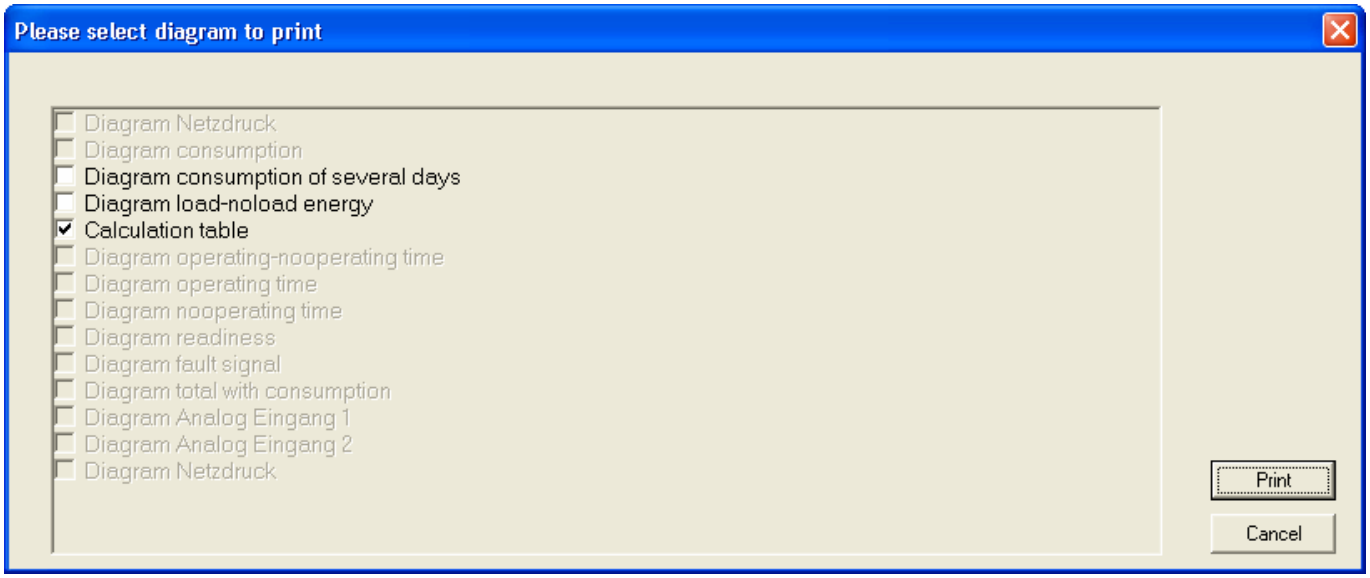
Set the edge of the page to 10 mm

Default is 25 mm



PRINT DIAGRAMS

Klick on printer and mark the diagrams for printing



Diameter and m³/min list for Flowsensor TA-10

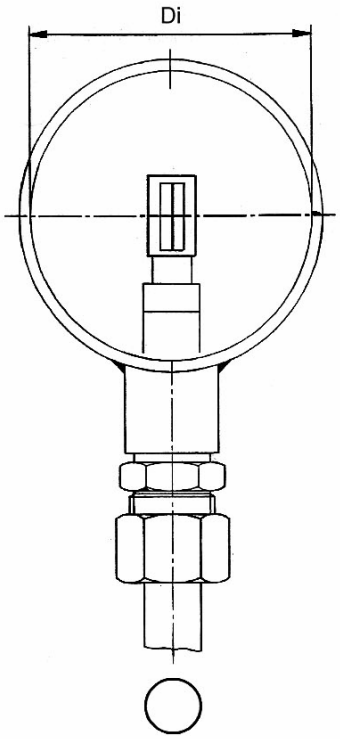
Diameter	Flow m³/min
30	3,85
31	4,14
32	4,44
33	4,86
34	5,01
35	5,43
36	5,79
37	6,15
38	6,53
39	6,94
40	7,32
41	7,75
42	8,18
43	8,60
44	9,03
45	9,48
46	9,93
47	10,40
48	10,88
49	11,37
50	11,87
51	12,35
52	12,84
53	13,34
54	13,85
55	14,37
56	14,89
57	15,43
58	15,98
59	16,53
60	17,10
61	17,67
62	18,26
63	18,85
64	19,45
65	20,07
66	20,70
67	21,32
68	21,96
69	22,61

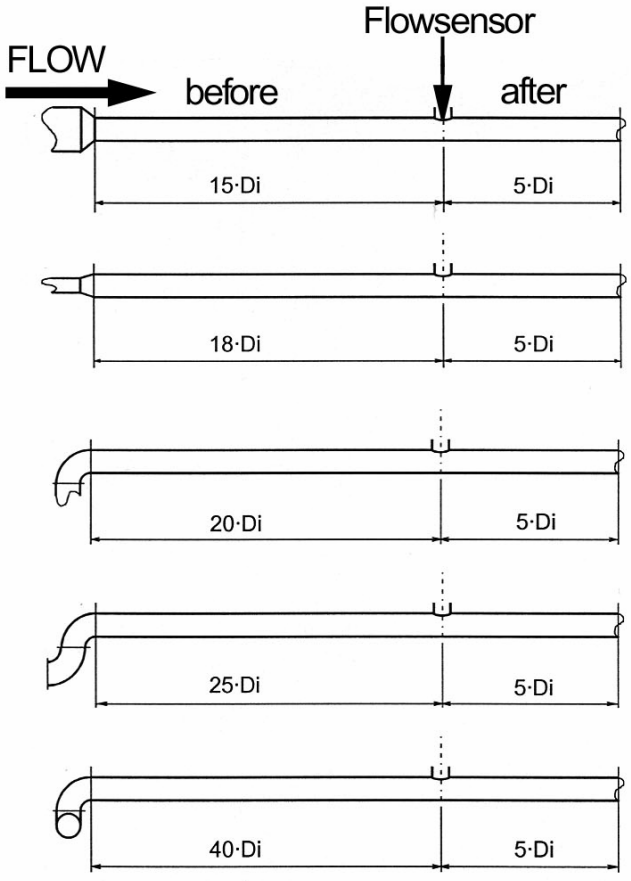
Diameter	Flow m³/min
70	23,27
71	23,94
72	24,62
73	25,13
74	26,00
75	26,72
76	27,40
77	27,16
78	28,90
79	29,65
80	30,40
81	31,16
82	31,94
83	32,72
84	33,52
85	34,32
86	35,13
87	35,95
88	36,78
89	37,63
90	38,47
91	39,33
92	40,20
93	41,10
94	41,97
95	42,87
96	43,77
97	44,70
98	45,62
99	46,55
100	47,50
101	48,45
102	49,40
103	50,40
104	51,40
105	52,40
106	53,40
107	54,40
108	55,40
109	56,40
110	57,50

ATTENTION:

Flowsensor must be mounted after dryer and Filter

Mounting the Flowsensor





Data list for measuring without System data programming (data logging with PDA)

Input	Compressor Typ	variable speed Y/N	m³/min - Minimal	m³/min - Maximal	Motor kW	Cos phi	Amperé clamp Net pressure sensor Flowsensor Dewpoint sensor Temperature sensor Extra pressure sensor Amperé measuring	data at 4 mA	data at 20 mA	Input
1										1
2										2
3										3
4										4
5										5
6										6
7										7
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16										16

CUSTOMERS NAME		DATE	