Contents

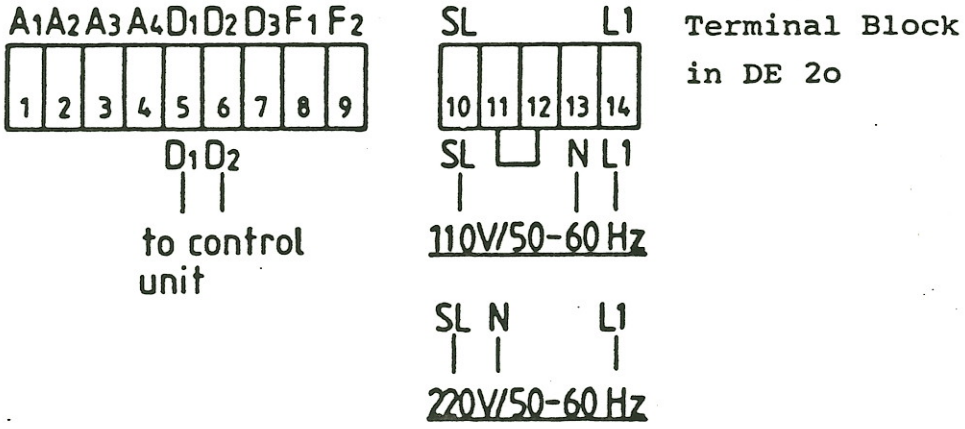
1.) General

The digital differential pressure unit DE 2o employs a pressure sensor which monitors the differential pressure states of the filtration plant and displays it in digital form.
The DE 2o works in conjunction with a control unit to effect filter cleaning according to differential pressure.
Cleaning is controlled between two switching levels. When the differential pressure reaches the upper switching level cleaning is started and it is terminated when the pressure reaches the lower switching level.
If the differential pressure exceeds the set value an alarm is generated.
This type of controlled cleaning offers economic and reliabel filtration operation.

2.) Technical Data

Operating voltage	: 11o V AC / 22o V AC 5o - 6o Hz
Hose connectors	: for 6 mm tube
Alarm contacts	: floating, max. 24o V AC, 4 Amp.
Differential pressure contact	: floating, max. 24o V AC, 1 Amp.
Fuse	: T o,4 Amp. 25o V, Type Wickmann
Ambient temperature range	: - 2o° C. to + 6o° C.
Casing	: Makrolon IP 65, clear lid, 25o x 16o x 9o mm
Cable fittings	: 2 x PG 16, 1 x PG 21
Display facility	: to approx. 4o mbar
Pressure limit	: 1,3 bar
Number of switch points	: 2
Number of alarm points	: 2
Pressure sensor	: measuring error, reproducibility and hysteresis +/- o,3 % of range

3.) Connections



Terminal Block in DE 2o

The voltage supply is to terminals N and L 1 .

Earth is to terminal SL .

For examples of connections see page 3 .

For 22o V AC supply:

Neutral is connected to terminal 11 and live to terminal 14.

Terminals 11 and 12 remain unbridged.

For 11o V AC supply:

Neutral is connected to terminal 13 and live to terminal 14.

Terminals 11 and 12 must be bridged.

Terminals D 1 - D 2 (5 and 6) are connected to the start-stop terminals of the control unit.

D 1 - D 2 are make contacts.
D 1 - D 3 are break contacts.

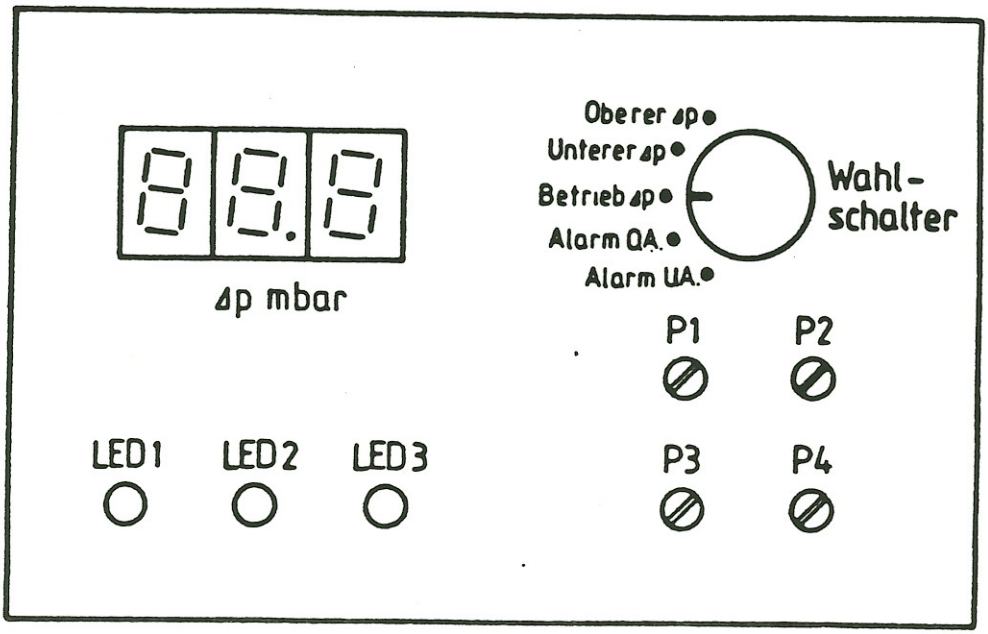
Hose connectors

Two hose connectors are placed on the upper side of the casing. Use 6 mm pressure hose to connect them with the filter installation.

The left hand connector is to be joined to the dirty gas side and the right hand connector to the clean gas side.

Attention must be given to gas tight fitting of the hoses.

4.) Alignment of switching levels



On supplying mains power, the display illuminates and shows 0 mbar if the fan of the filtering plant is not in operation.
The zero adjustments have been made at operating temperatur. During warm up time the display corrects the value to zero.
At the same time the LED 3 lights up to indicate that the control unit is switched off.

Example of setting up switching points for the following selected values:

Lower switching point - 7 mbar
Upper switching point - 12 mbar

a. Lower switching point

Selector switch is set from position "Betrieb" (operate) to position "Unterer Δ P" (lower switching level, Δ P min.)
The control P 3 is then turned until the display shows 7 mbar.

b. Upper switching point

Selector switch is set to the position "Oberer ⊿ P" (upper switching level, ⊿ p max.). The control P 2 is then turned until the display shows 12 mbar.

c. Upper alarm level

The selector switch is set to the position "Alarm O.A." (Alarm max.). Then turn control P 1 until the display shows the desired value e.g. 2o mbar.
Each time the pressure exceeds this set value the LED 2 lights and the alarm relay is activated.

d. Lower alarm level

Selector switch is set to the position "Alarm U.A." (Alarm min.). The control P 4 is turned until the desired value e.g. 4 mbar is displayed.
Each time the pressure drops below the set value the LED 1 lights and the alarm relay is activated.
It is advisable to set up the lower alarm when the installation has reached working pressure.

After the adjustments have been completed the selector switch is set back to position "Betrieb" (Operate).
The switch remains in this position during normal filter operation in order to display the differential pressure continuously.
The adjustments, described above, can also be made while the filter plant is running.

5.) Operating and checking the system

After starting up the filter plant the diff. pressure builds slowly until the upper set point is reached.

LED 3 is lit, indicating that the control unit is switched off. During the build up phase no cleaning is to take place.

On reaching the upper set point LED 3 turns off. The DE 2o switches on the control unit and cleaning is effected. Due to the cleaning Δ P drops and arrives at the lower set point. LED 3 illuminates and again shows that the control unit has been switched off.

6.) Associated indicators

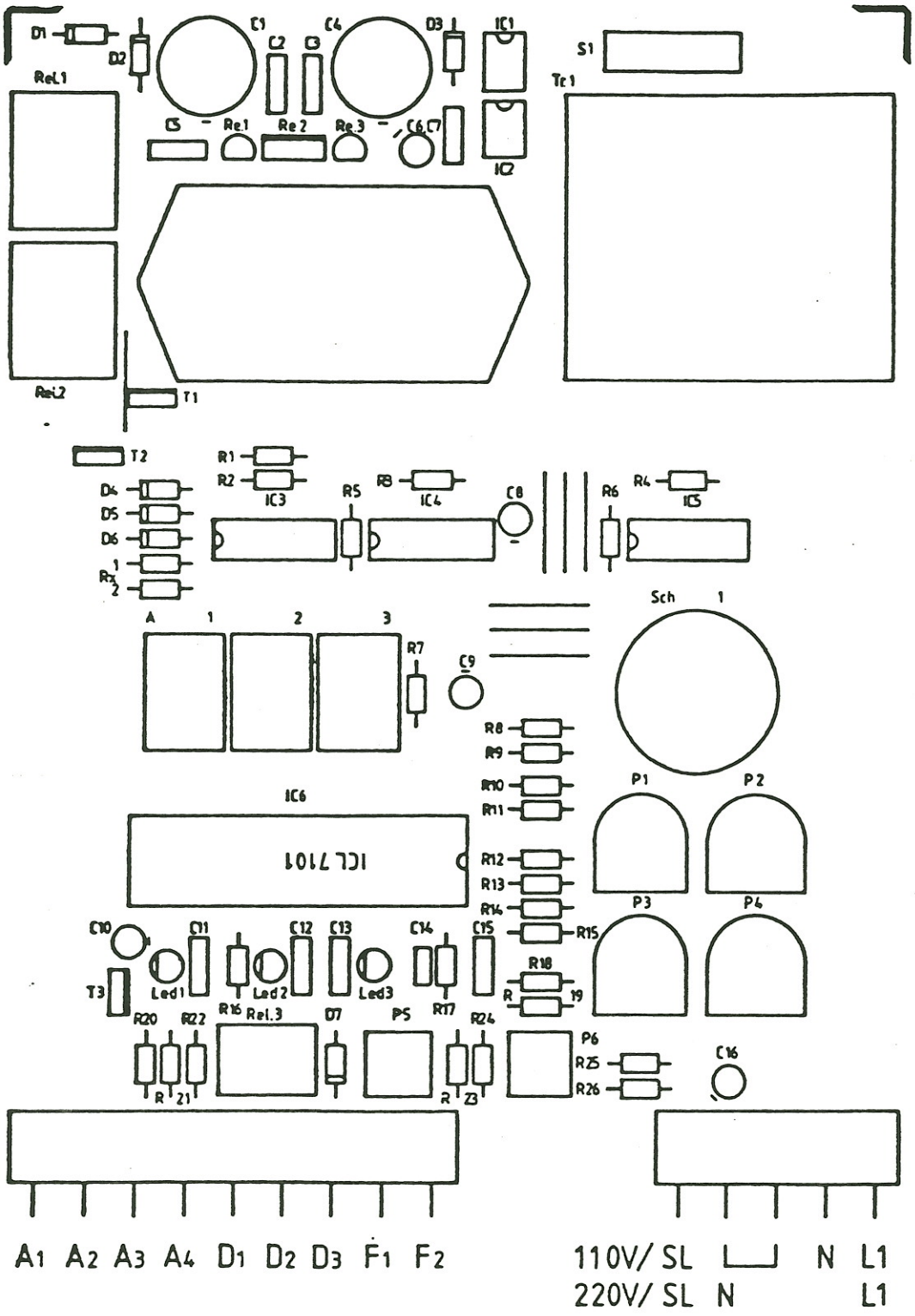
a. The floating terminals A 1 - A 2 may be used for additional optical or acoustic alarm equipment for the lower alarm point.
Maximum contact load: 24o V AC, 3o V DC, 4 Amp.

b. The floating terminals A 3 - A 4 may be used for additional optical or acoustic alarm equipment for the upper alarm point.
Maximum contact load: 24o V AC, 3o V DC, 4 Amp.

Relay contacts are N. O. contacts and close on alarm.

c. Outlet terminals F 1 - F 2 can be used to connect a suitable remote display.

7.) Lay out


D1
D2
C1
C2
C3
C4
D3
IC1
IC2
S1
Rel.1
Tr1
C5
Re1
Re2
Re3
C6
C7
Rel.2
T1
T2
R1
R2
IC3
R5
R3
IC4
C8
R6
R4
IC5
D4
D5
D6
Rx
A
1
2
3
R7
C9
Sch
R8
R9
R10
R11
P1
P2
IC6
ICL 7101
R12
R13
R14
R15
P3
P4
C10
C11
C12
C13
C14
C15
R18
T3
Led1
Led2
Led3
R20
R22
R16
Rel.3
D7
PS
R17
R24
P6
R25
R26
C16
A1 A2 A3 A4 D1 D2 D3 F1 F2
110V/ SL
N
L1
220V/ SL
N
L1

8.) Part list

IC 1, 2	A o512
IC 3	HCF 4o93 BE
IC 4, 5	TCA 965
IC 6	ICL 71o7
Re 1	IC MC 78 L o8 CP
Re 2	IC TDB 78o5 T
Re 3	IC MC 79 L o5 CT
Rel. 1, 2	Relay 12 V DC, 4 Amp.
Rel. 3	Relay 12 V DC, 1 Amp.
Sch 1	Selector switch
S 1	Fuse T o,4 A.
T 1 - 3	BD 677
LED 1 - 3	LED,s
D 1, 2, 7	1 N 4oo2
D 3	BZY 97/C 3 V 6
D 4, 5, 6	1 N 4148
P 1 - 4	1o K
P 5	47o Ω
P 6	1oo Ω
Tr.	11o/22o V - 8/12 V
A 1 - 3	HD 1131 R
C 1	1oo uF/4o V
C 2, 3, 5, 7, 11, 13	1oo nF
C 4	47o uF/25 V
C 6, 8, 16	6,8 uF/35 V
C 9, 1o	1o uF/16 V
C 12	47 nF
C 14	1oo p
C 15	1o nF
R 1, 2	5,6 K
R 3, 4, 5, 6, 12,14,15,18	12 K
R 7	56o Ω
R 8, 9, 11	3,3 K
R 1o, 19	7,5 K
R 13	33 K
R 16	47o K
R 17	1oo K
R 2o, 21, 22	56o Ω
R 23	1,2 K
R 24	22o Ω
R 25	1 M 1 %
R 26	221 K 1 %
RX 1	5,6 K