# Operation Instructions
DosControl


*Please affix nameplate here!*

**Please completely read through these operating instructions first ! · Do not discard !**
**The warranty will be invalidated by damage caused by operating errors !**

**Publishing details:**
Operating Instructions DosControl


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**Subject to technical alterations.**

## Table of Contents

# 1 General User Information

This operating instructions describe the technical data and functions, give detailed safety informations and are subdivided in clear steps.
Activities to be carried out are marked by means of bold dots (•).

***NOTICE***

***Please take into consideration the parts of this operating instruction which apply for your version of the device! The device identification / identcode show you which it is.***

# 2 Device Identification

Each DosControl will have at one side a type plate:

| | |
|---|---|
| ProMinent Dosiertechnik<br>Im Schuhmachergewann<br>D-69123 Heidelberg<br>Tel. 06221 / 8420<br>Made by ProMinent<br>HEIDELBERG GERMANY | Type dosing control DOS_CONTROL<br>SER.NO./Part No. / 1001306<br>El. Supply 230 V 50/60 Hz<br>Peak current 0.05 A |

In addition to the usual standard technical information the material number and the serial number are also given. These two number are to be used for every consultation, as they enable clear identification.

# 3 Device Overview / Operating Elements


Fig. 1

Menu key START/STOP
to start/stop the function

Menu key CHANGE
to change the displayed image of a function

Menu key ENTER
to initiate the setting of a parameter value (the value displayed flashes)
to confirm or store a displayed value or condition
to acknowledge an alarm

Menu key DOWN
to decrease a displayed numerical value and change the variable

Menu key UP
to increase a displayed numerical value and to change the variable

Menu key START-MANUAL

# 4 Function description

**Short description of function**

The dosing control DosControl is a microprocessor-controlled multi-functional control device for the drives of dosing pumps and solenoid-valves.

From the point of view of design, the device is based on the hardware of a DULCOMETER® D1C W.

The dosing control DosControl in its standard version is designed as follows:

*5 outputs:*
- 2 output relay contacts (make contact) - **R1** (XR1 clamps) for the drive of motor pumps or solenoid-valves **R2** (XR2 clamps) as optional motor brake
- 2 reed relay contact (make contact) - **P1** (X2-3,4 clamps) and **P2** (X2-5,6 clamps) without function
- 1 standard signal output (0/4-20 mA) - **mA** (X2-$1_{(+)}$, clamps, $2_{(-)}$) with galvanically separation without function

*2 inputs:*
- 1 contact input (namur, max. frequency 10 Hz) - (clamps X1-$9_{(+)}$, $10_{(-)}$) for the connection of a digital input signal (e.g. water meter)
- 1 standard signal input (0/4-20 mA) - **mA** (clamps X2-$9_{(V+)}$,$10_{(+)}$,$11_{(-)}$) with galvanically separation.

*2 additional inputs:*
- 1 contact input (Namur, max. frequency 10 Hz) - (clamps X1-$6_{(+)}$,$7_{(-)}$) as stroke feedback input
- 1 contact input - (clamps X2-$7_{(+)}$, $8_{(-)}$) as fault input e.g. level or leakage monitoring

*1 additional output:* 1 power relay contact (change-over contact) - (clamps XR0) for alarm message.

DosControl is a multi-functional device.

***IMPORTANT***

***Only the functions of the output R1 are released ex works, the presetting of the device is made for the function proportional control. The function of the output R1 can be changed (e.g. to predeterminating counter, proportional control with standard signal input, solenoid valve control, etc.)***

***Functions can be allocated to the other outputs (R2, P1, P2, mA) only by means of a hardware key.***

All accessible functions can be selected and parameterized in the configuration menu. In addition, a parameter can be changed (the proportionality factor in most cases) in the parameter setting level.

***IMPORTANT***

***The functions of several ProMinent devices that are being sold currently can be carried out simultaneously by the DosControl. So e.g. the proportional control PLWS, the analog frequency converter AFWE and the counter timer PCWS.***

**Mechanical Assembly**

The DosControl is a device suitable for wall mounting or panel mounting (assembly kit panel installation: part no. 792908.6) . The robust plastic housing is made up of the top and bottom housing parts. The graphic display and a transparent display window are located in the top part of the device. In the bottom part there is the processor, power supply and option board. The connection to the display is made via a flat strip cable. The power supply is made via originally closed break-out cable leadthroughs on the bottom part of the housing.

**Electrical Installation**

The device processes an input signal taking into consideration the disturbance variable and operator entries. The result is displayed and made available to the other devices via a standard signal or a serial interface.
Equipped with actuators, the device undertakes control functions. Provisions are provided for activating metering pumps, solenoid valves, actuator with feedback as well as mA standard signal. This activation variable is recalculated every second.

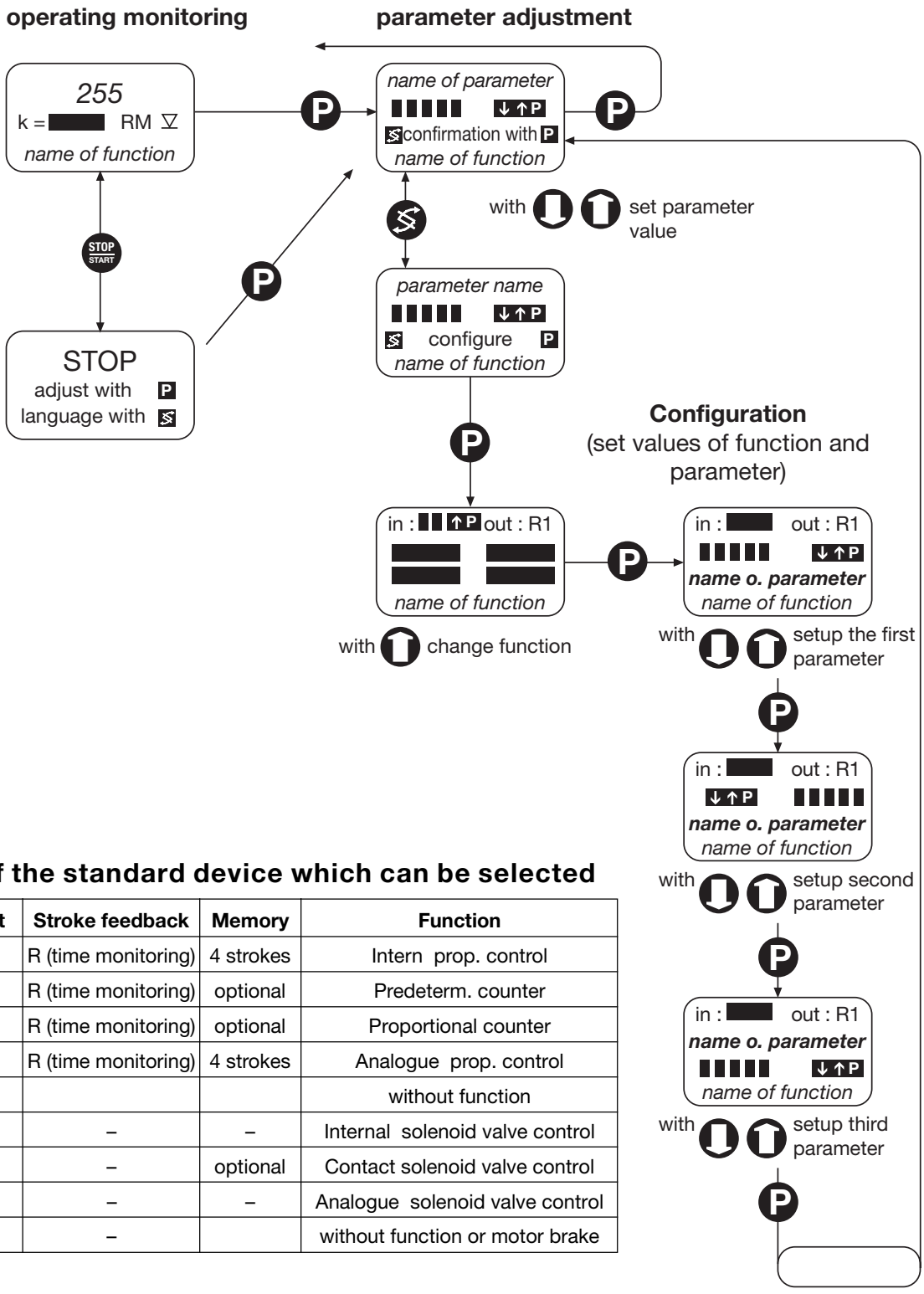
***IMPORTANT***

***The device has no mains power switch. It is immediately ready for operation after being connected to the mains power supply.***

These devices fulfil relevant requirements for electrical equipment. The following standards are complied with for this purpose:

- Supply voltage in accordance with - DIN IEC 38
- Electrical safety in accordance with - EN 61010-1
- Electromagnetic emitted interference in accordance with - EN 55011 Gr. 1/Cl. A

### 4.1 Operating structure

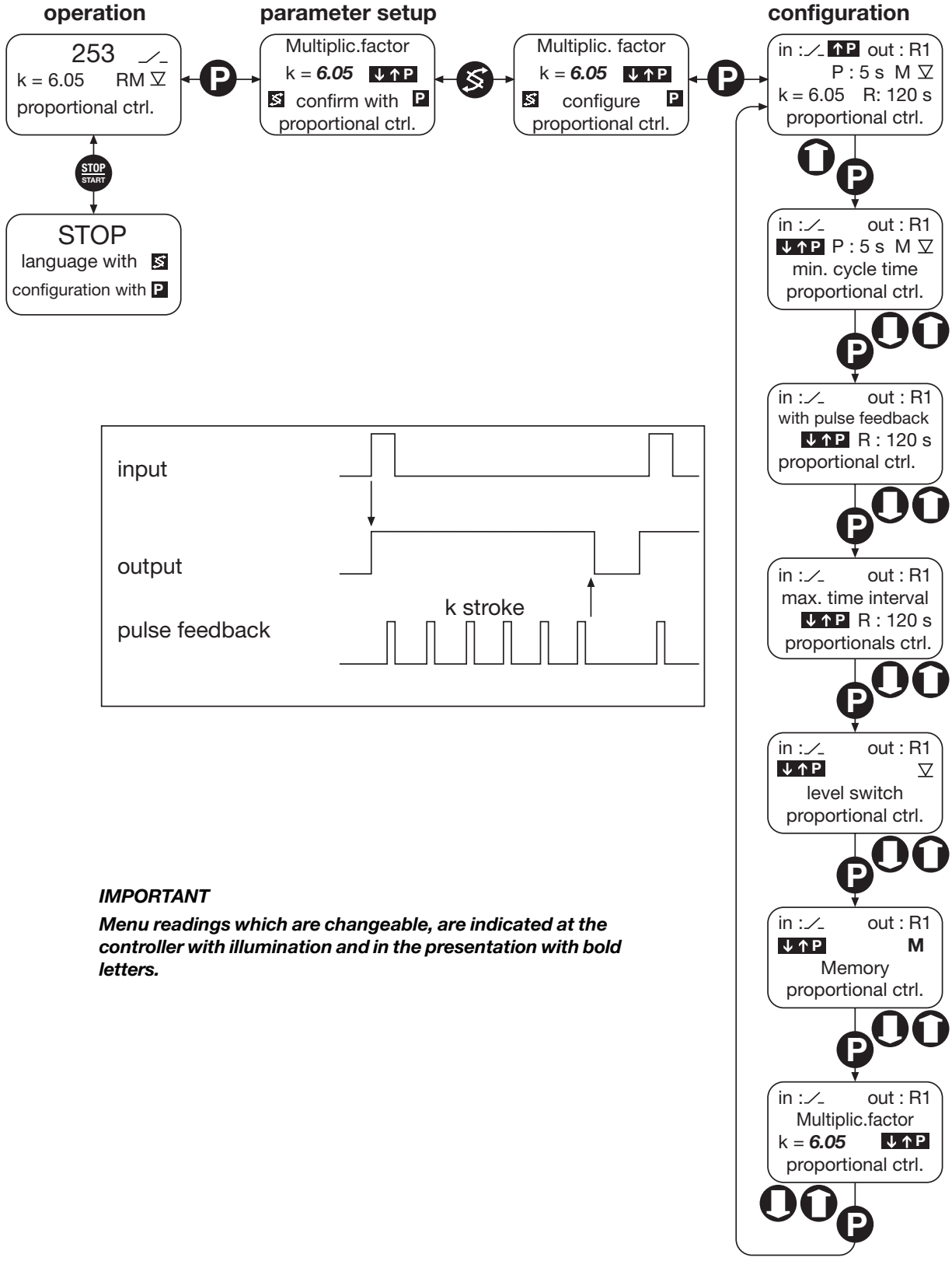



## Functions of the standard device which can be selected

| Input | Output | Stroke feedback | Memory | Function |
|---|---|---|---|---|
| IN | R1 | R (time monitoring) | 4 strokes | Intern prop. control |
| ⎍ | R1 | R (time monitoring) | optional | Predeterm. counter |
| ⎍ | R1 | R (time monitoring) | optional | Proportional counter |
| mA | R1 | R (time monitoring) | 4 strokes | Analogue prop. control |
| | R1 | | | without function |
| IN | R1 | – | – | Internal solenoid valve control |
| ⎍ | R1 | – | optional | Contact solenoid valve control |
| mA | R1 | – | – | Analogue solenoid valve control |
| | R2 | – | | without function or motor brake |

Fig. 2

**Example: Proportional control with pulse feedback**




***IMPORTANT***

***Menu readings which are changeable, are indicated at the controller with illumination and in the presentation with bold letters.***

Fig. 3

## 4.2 Proportional Control

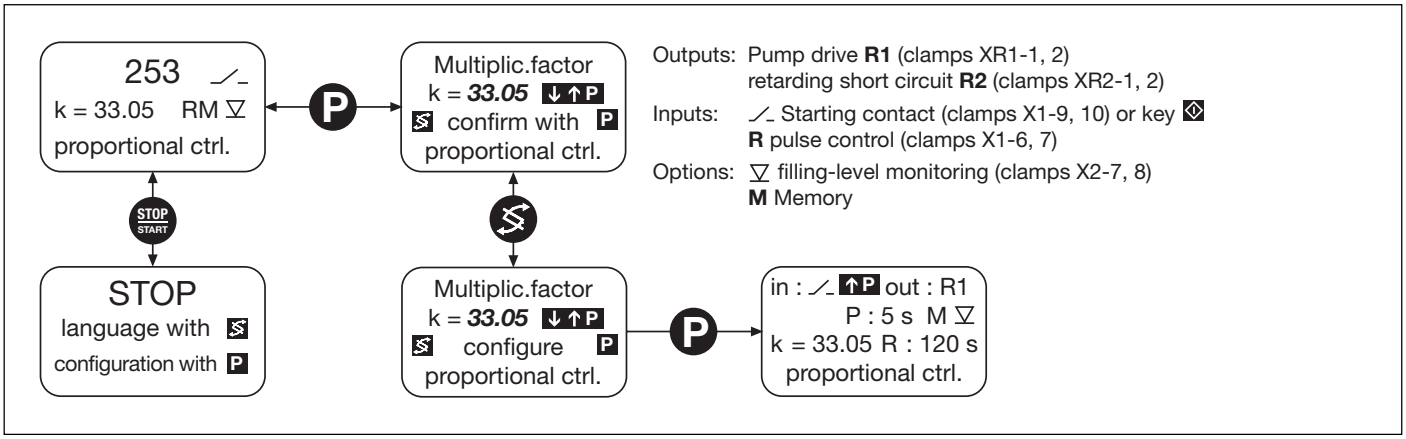



Fig. 4

**Description of the function**

For each incoming impulse (contact input or Start-Manual key) the content of the pulse memory (amount of the pulses to be executed) is incremented with the value of the multiplication factor k. When this content exceeds 1, the pump drive relay R1 closes. With each incoming stroke feedback impulse the content of the pulse memory decrements. When this falls below 1, the pump drive relay R1 switches over.

**Options**

If the option filling-level monitoring is setup, an alarm will start when opening the level switch contact. When the memory option is not set up, the content of the pulse memory is limited to the value of the multiplication factor.

**Display**

During operation the executed pulses (counter counts up to 30,000) and the multiplication factor are displayed. The starting contact and the Start-key represented symbolically flash when activated. The pulse control is represented by the character **R**, which also flashes in case of incoming impulses. The symbol for the level control shows that this option has been chosen, and flashes in case of error. The active memory option is represented by the character **M**. The drive of the pump is represented by a contact symbol in the first line on the right.

**Retarding short circuit**

When no other function is configured on the output R2, the contact R2 can be used as a brake for the one-phase pump. Therefore the clamps XR2-1 and XR 2-2 have to be connected direct to the motor clamps. The contact closes for a moment (for max. 0.5 s), 2/100 sec. after opening the contact R1.

***IMPORTANT***

***The function coincides with the proportional drive type PLWS.***

*Parameters*

**Multiplication factor** presetting k: 1 min. value: 0.01 max. value: 9999.99

Step-down or transfer factor - also adjustable during operation.

**min. cycle time** presetting P: 10.0 s min. value: 2.0 max. value: 600.0

Idle period for the subsequent relay control. This value is determined by the type of the respective pump: **P** = 3600 / max. Connecting frequency of the pump motor in imp/h.

**max. time intervall** presetting T: 20 s min. value: 0.2 max. value: 600.0

Delay time of the fault message in case of lack of pulse feedback.

## 4.3 Predeterminating Counter

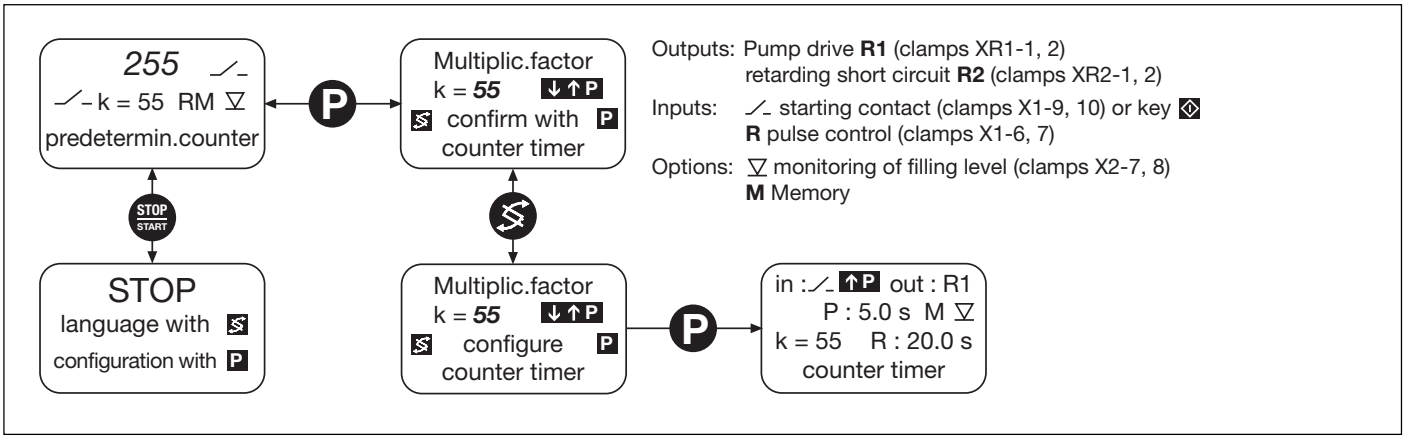



Fig. 5

**Description of function**

When pressing the Start-Manual key or closing the starting contact, the pre-set impulse figure will be added to the pulse memory (max. content 30,000). If the pulse memory is not empty, the pump drive relay R1 is closed. The entering impulses of the pulse feedback have to be substracted from the pre-set impuls figure (multiplication factor). After running off the memorized strokes, the pump drive relay R1 turnes out.

**Options**

As soon as the option filling-level control is set, an alarm will be released when opening the level-switch contact.

**Display**

During operation the value of the stroke memory and the predetermination is displayed. The start contact and the start key are represented symbolically and flash when activated. The pulse control is represented by the character **R**, which also flashes in case of incoming impulses. The symbol for the level control shows that this option has been activated, and flashes in case of system error. The drive of the pump is represented by a contact symbol in the first line on the right.

**Retarding short circuit**

When no other function is configured on output R2, the contact R2 can be used as a brake for the one-phase pump. Therefore the clamps XR2-1 and XR2-2 have to be connected direct to the motor clamps. The contact closes for a moment (for max. 0.5 s), 2/100 s. after opening the contact R1.

***IMPORTANT***

***The function coincides with that of the predeterminating counter electronic type PCWS.***

*Parameters*

**Multiplication factor** presetting k: 1 min. value: 1 max. value: 29999

can be adjusted during operation.

**min. cycle time** presetting P: 10.0 s min. value: 2.0 max. value: 600.0

Idle period for the subsequent relay control. This value is determined by the type of the respective pump: **P** = 3600 / max. Connecting frequency of the pump motor in imp/h.

**max. time interval** presetting R: 20.0 s min. value: 0.2 max. value: 600.0

Delay time of the fault message in case of lack of pulse feedback.

Function of the Standard Device:

## 4.4 Internal Proportional Control

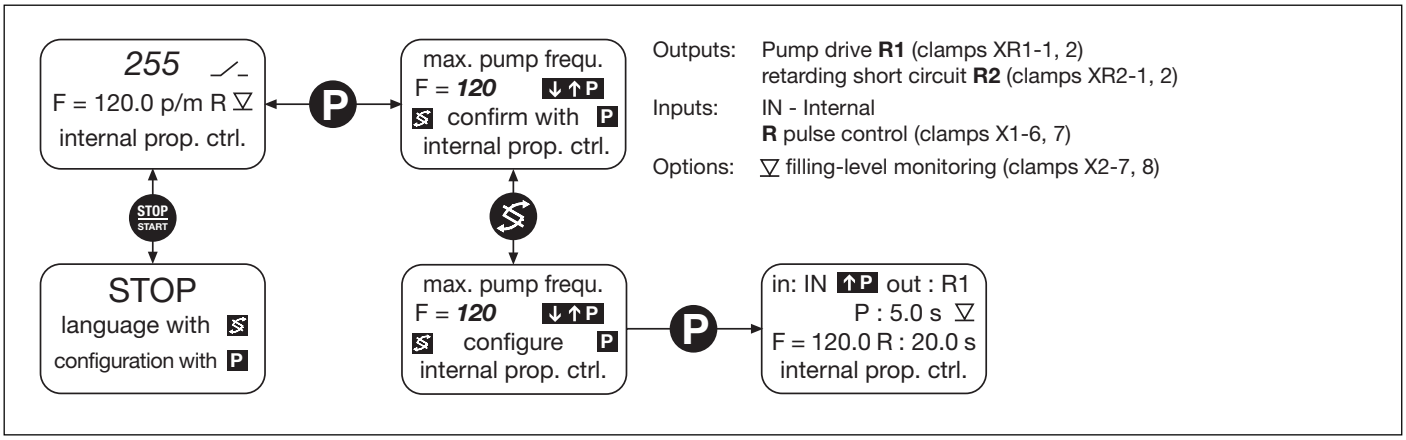



Fig. 6

**Description of the function**

The stroke memory (number of strokes to be effected) is to be incremented by 1 with the adjusted frequency (e.g. F = 120 p/m: in a 0.5 second tact). As long as the capacity of the stroke memory is not 0, the output contact will be closed. With each entering impulse of the stroke remote indication, the capacity of the stroke memory is decremented. When it becomes 0, the output contact will be opened. The maximum value of the stroke memory is set to 4.

**Display**

During operation there are displayed the effected strokes (the stroke-counter counts up to 30.000) and the set frequency. The stroke remote reply is indicated by the character **R**, which flashes too with each entering impulse. The symbol for the filling-level monitoring indicates that this option has been activated, and flashes in case of a faulty message. The drive of the pump is indicated by a contact symbol in the first line at the right.

**Options**

If the option filling-level monitoring is set, when opening the level switch contact, an alarm will be triggered.

**Retarding short circuit**

When at output R2 no other function is configured, the contact R2 can be used to retard when stopping the one-phase pump. Therefore the clamps XR2-1 and XR2-2 must be connected direct to the motor clamps. The contact closes for a short time (up to max. 0.5 s), 2/100 s. after opening the contact R1.

*Parameters*

**max. frequency of pumps** presetting F: 120.0 p/m min. value: 0.1 max. value: 240.0

Adjustable stroke frequency of the controlled pump can be adjusted during operation in the parameter menu.

**min. cycle time** presetting P: 10.0 s min. value: 2.0 max. value: 600.0

Time out for the following relay drive. This value is determined by the type of the controlled pump:
**P** = 3600 / maximum admissible cut-in frequency of the pump motor in imp/h.

**max. time interval** presetting T: 20.0 s min. value: 0.2 max. value: 600.0

Delay time of the fault message in case of pulse control error.

## 4.5 Analogue Proportional Control

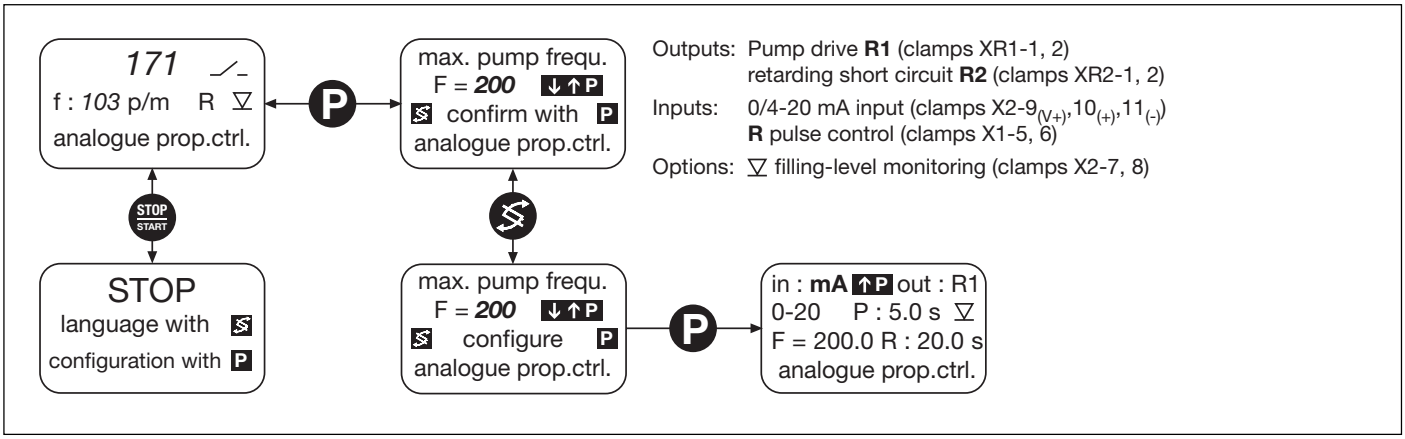



Fig. 7

**Description of the function**

The incoming power supply value is changed linearly in a pulse sequence frequency, that is incrementing the contents of the stroke memory (number of strokes to be effected) (e.g. at 20 mA with the max. frequency set). If the content is exceeding 1 the pump drive relay R1 closes. With each entering impulse of the stroke remote indication, the capacity of the stroke memory is decremented. If it becomes less than 1 the pump drive relay R1 switches over.

**Options**

If the option filling-level monitoring is set, when opening the level switch contact, an alarm will be triggered.

**Display**

During operation there are displayed the effected strokes (the stroke counter counts up to 30.000) and the on-state frequency. The stroke remote reply is indicated by the character **R** which flashes too with each entering impulse. The symbol of the filling-level monitoring indicates that this option has been activated, and flashes in case of a fault message. The drive of the pump is indicated by a contact symbol in the first line at the right.

**Retarding short circuit**

When at output R2 no other function is configured, the contact R2 can be used to retard when stopping the one-phase pump. Therefore the clamps XR2-1 and XR2-2 must be connected direct to the motor clamps. The contact closes for a short time (up to max. 0.5 s), 2/100 s. after opening the contact R1.

***IMPORTANT***

***The function coincides with the proportional control type PLWS in connection with the analogue-freqency converter type AFWE-720.***

*Parameters*

**max. pump frequency** presetting Fmax: 100.0 p/m min. value: 0.1 max. value: 240.0

Max. stroke frequency of the controlled pump - can also be set during operation.

**Standard current** presetting 0 - 20 mA alternative-value: 4 - 20 mA

Limit values of the analog input.

**min. cycle time** presetting P: 10.0 s min. value: 2.0 max. value: 600.0

Time out for the following relay drive. This value is determined by the type of the controlled pump: **P** = 3600 / max. cut-in frequency of the pump motor in imp/h.

**max. time interval** presetting P: 20.0 s min. value: 0.2 max. value: 600.0

Delay time of the fault message in case of pulse control error.

## 4.6 Internal solenoid valve controller

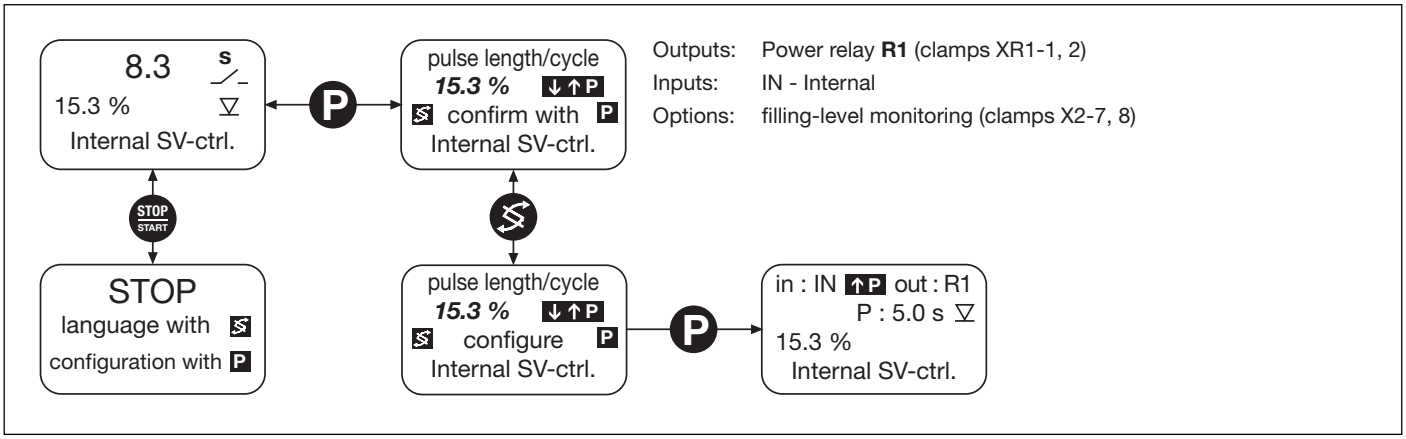



Fig. 8

**Function description**

The power relay is cyclically controlled.

**Display**

During operation the cycle time counter and the pre-set switch on/cycle relationship is displayed.

**Options**

When the liquid level monitor option is set an alarm is set off when the float switch contact opens.

*Parameters*

**Cycle time** presetting P: 10.0 s min. value: 10.0 max. value: 600.0

Duration of a control period.
The display frequency can be calculated with the equation f = 3600/P (imp/h).

**Pulse length/cycle** presetting 50.0 % min. value: 10/P max. value: 100.0-10/P

Adjustable switch on/cycle relationship.
Can be adjusted during operation in the parameter menu.

## 4.7 Contact solenoid valve controller

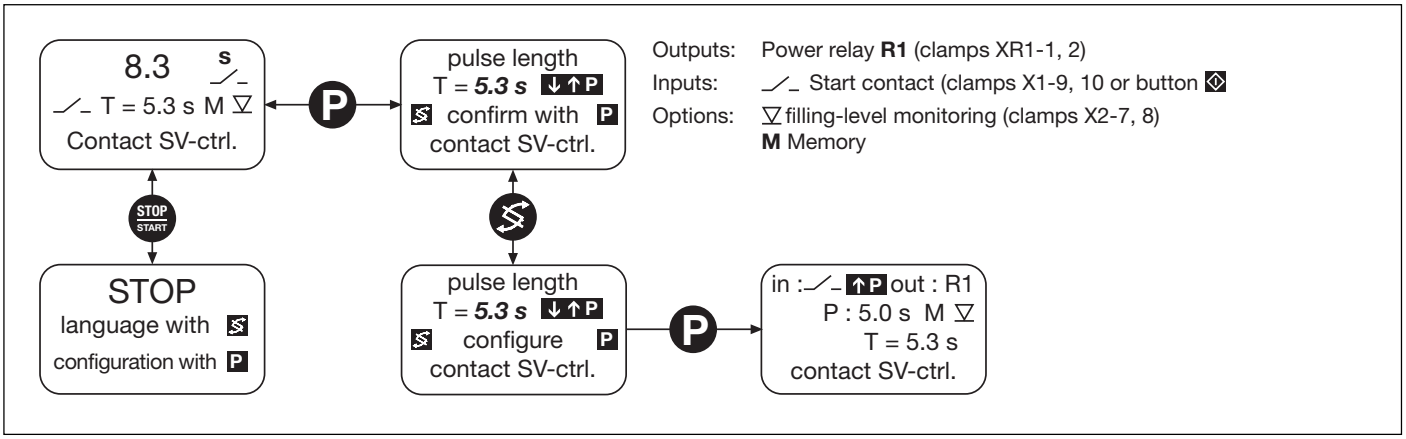



Fig. 9

**Function description**

When the Start-Manual button is pressed or the start contact opens the contents of the time buffer (on-time of power relay) is incremented with the value of the pre-set time interval. Every 0.1 s the contents of the time buffer are decremented by 0.1. When this value reaches 0 the output contact opens. When the memory flag is not set the contents of the time buffer are limited to the value of the time interval T.

**Display**

During operation the time buffer contents and the time interval are displayed in s.

**Options**

When the liquid level monitor option is set an alarm is set off when the level switch contact opens.

*Parameters*

**Pulse length** presetting T: 20.0 s min. value: 0.2 max. value: 3000.0

Time measurement for the operating time of the output relay.
Can be adjusted during operation in the parameter menu.

**Min. cycle time** presetting P: 10.0 s min. value: 10.0 max. value: 600.0

Disable time for subsequent relay control.

## 4.8 Analogue solenoid valve controller

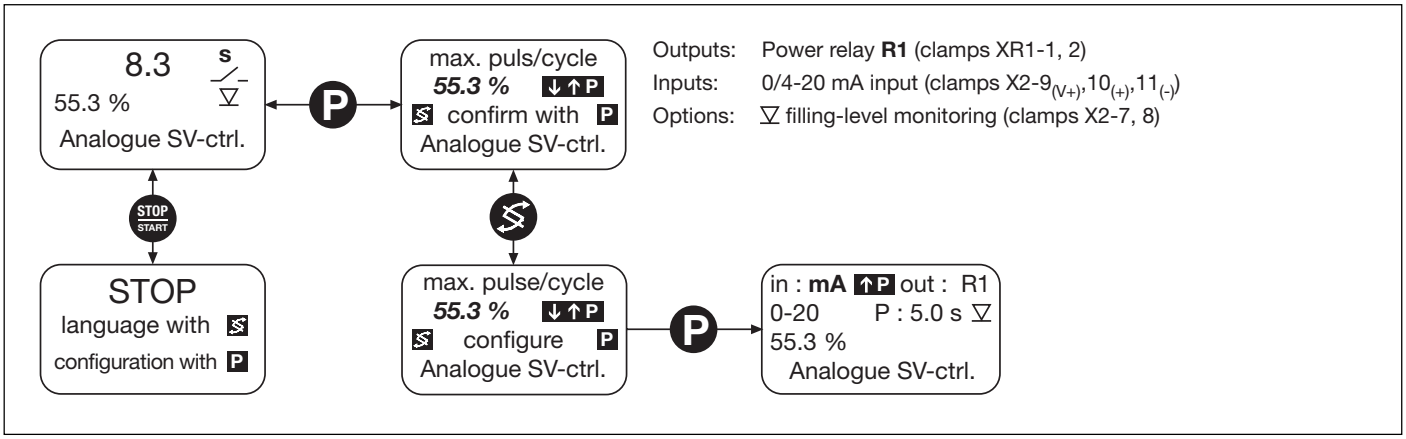



Fig. 10

**Function description**

The power relay is cyclically controlled. The input current value is converted into a linear percentage which corresponds to the on/off relationship.

**Display**

During operation the input current value is displayed in %, the cycle time counter in s and pre-set on/off relationship in %.

**Options**

When the liquid level monitor option is set an alarm is set off when the float switch contact opens.

*Parameters*

**Cycle time** presetting P: 10.0 s min. value: 10.0 max. value: 600.0

Duration of a control period.
The display frequency can be calculated with the equation f = 3600/P (imp/h).

**Max. pulse/cycle** presetting 50.0 % min. value: 10/P max. value: 100.0-10/P

Adjustable maximum on/off relationship (at 20 mA input).
Can be adjusted during operation in the parameter menu.

**Standard current** presetting 0 - 20 mA alternative value: 4 - 20 mA

Limit value of analogue input.

# 5 Mounting / Installation

## 5.1 Safety Notes

***NOTICE***

- ***With regard to its design, the device is only suitable for wall mounting or installation in a control panel. The device must not be operated without being mounted/installed in this way.***
- ***Generally applicable safety precautions for installation must be observed! The corresponding national regulations must be observed for installation abroad!***
- ***The operating instructions must be carefully read through before starting installation and initial operation.***
- ***Only qualified personnel with corresponding qualifications are permitted to carry out electrical installation of the device!***
- ***The mains power connection ratings specified on the device must match the mains power supply!***
- ***The power connection line and the signal lines must not be laid together with lines prone to interference. In particular, the control lines for inductive loads such as solenoid valves, contactors or actuators should be routed in special cable ducts and wherever possible not parallel with signal lines over longer distances. Excessively large disturbance and interference can lead to malfunctions or even destruction of the device. Special interference suppression measures must be taken wherever low-interference electrical conditions cannot be maintained - e.g. additional mains filters.***
- ***Voltage carrying cables should only be freed from their insulation to such an extent that the free end of the cable connot come in contact with low voltage components when a screw connection is released.***

## 5.2 Mounting description, mechanical

***NOTICE***

***The device should be located in a favourable position for reading off the display and operation at eye level.***

### 5.2.1 Wall Mounting

The device can be screwed directly to the wall with the aid of the wall mounting bracket provided (hole drilling template provided).

Material for wall mounting:

- Item 1 3 round head screws 5 x 45
- Item 2 3 U-washers 5.3
- Item 3 3 plastic wall plugs d8

The wall mounting bracket **(4)** can also be used as a drilling aid. For this purpose, align the mounting bracket in the chosen positon on the wall.

***NOTICE***

***Take particular care when aligning the bracket to ensure that there is sufficient clearance for installing the cables. A clearance of approx. 120 mm must be left at the top for the "park position".***

Mark the holes and drill. Press in wall plugs **(3)** and secure the mounting bracket with screws **(1)** and U-washers **(2)**. Fit device at top of wall mounting bracket, press lightly against wall and push up by approx. 4 mm until it is distinctly heard to lock in position.

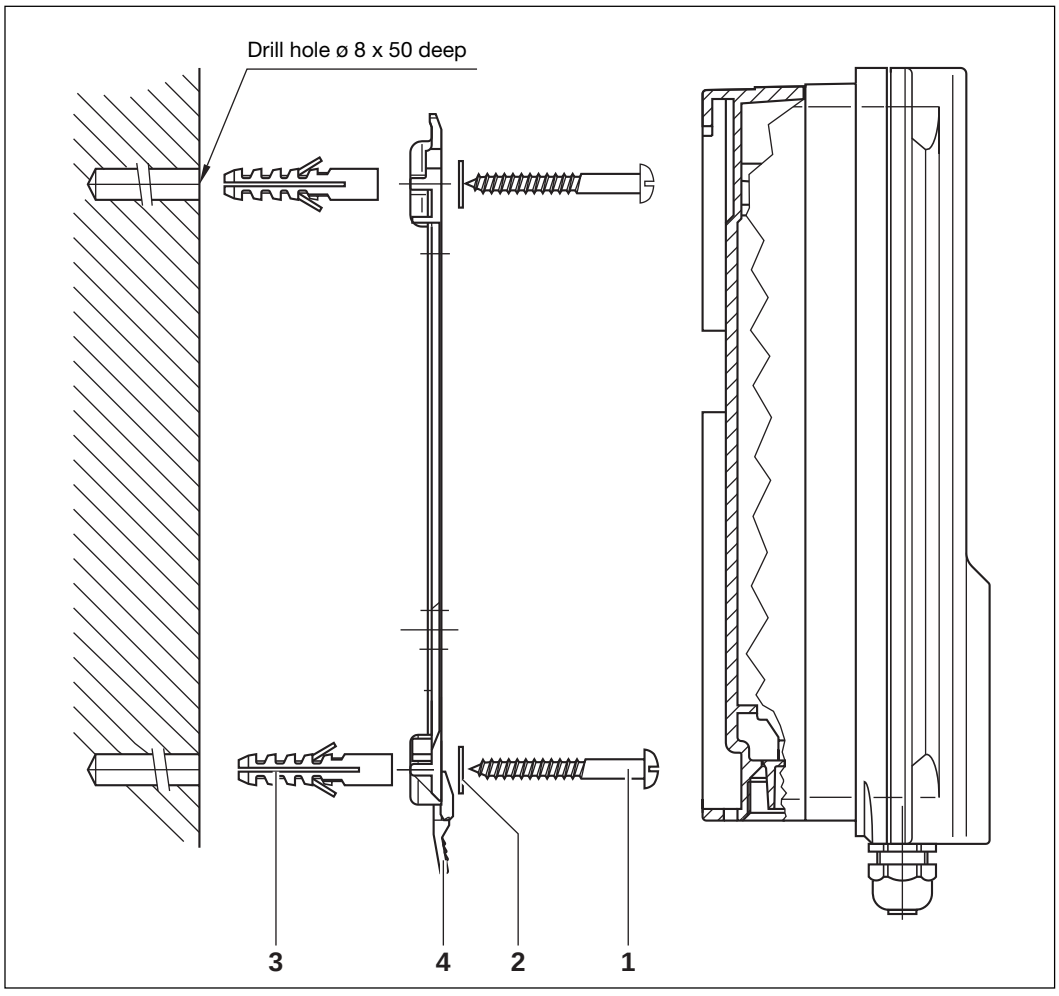



Fig. 11

### 5.2.2 Control panel installation

The perimeter of the housing features a 4 mm wide flange to act as a stop for the control panel, with an additional groove to accept a rubber seal. When mounted in the control panel, the entire front plane protrudes by approx. 35 mm out of the control panel. This device is mounted from the outside in an aperture provided in the control panel for this purpose. The device can be secured from the inside to the control panel with the securing material.

Material for control panel installation:

- Item **(1)** 1 cellular rubber seal d3
- Item **(2)** 6 galvanized steel retaining brackets
- Item **(3)** 6 galvanized PT self-tapping screws

**Procedure**

With the aid of the punch template provided, first set up the exact position of the device on the control panel. If possible, this position should be at eye level. Also ensure that there is sufficient clearance at the top for the "parking position". Mark the corners and drill. Drill diameter 12–13 mm.

***NOTICE***

***Dimensions can deviate by photocopying the punch template.***

Then cut out the aperture as shown in the drawing with the aid of a punch or compass saw. The thickness of the control panel should be 2–3 mm. Before fitting the device in the aperture, evenly press the seal into the groove on the outside of the device. The controller can now be secured in the control panel from behind, if necessary with the aid of a second person, with the retaining brackets and screws.

## 5.3 Electrical Installation

***NOTICE***

- ***Electrical connection must only be carried out after the device has been mounted/installed!***
- ***The mains power supply must be switched off when working on the connection cables!***

*Opening the device*

- Generally the device must only be opened by qualified personnel.
- Particular care must be taken before opening the device for any service work to ensure that no voltage is applied to the device and voltage cannot be connected while carrying out this work.
- The device should only be opened when wall mounted or installed in a control panel.
- To open the device, first release the four captive countersunk screws.
- In addition, the upper section is locked to the lower section by means of snap hooks. The device can be opened by pulling the upper section forward to release the snap hooks.
- With the aid of the two guide tracks, the upper section can be moved into the approx. 100 mm higher slide -in position- the "parking position". The fuse and all connection terminals are freely accessible in this parking position.

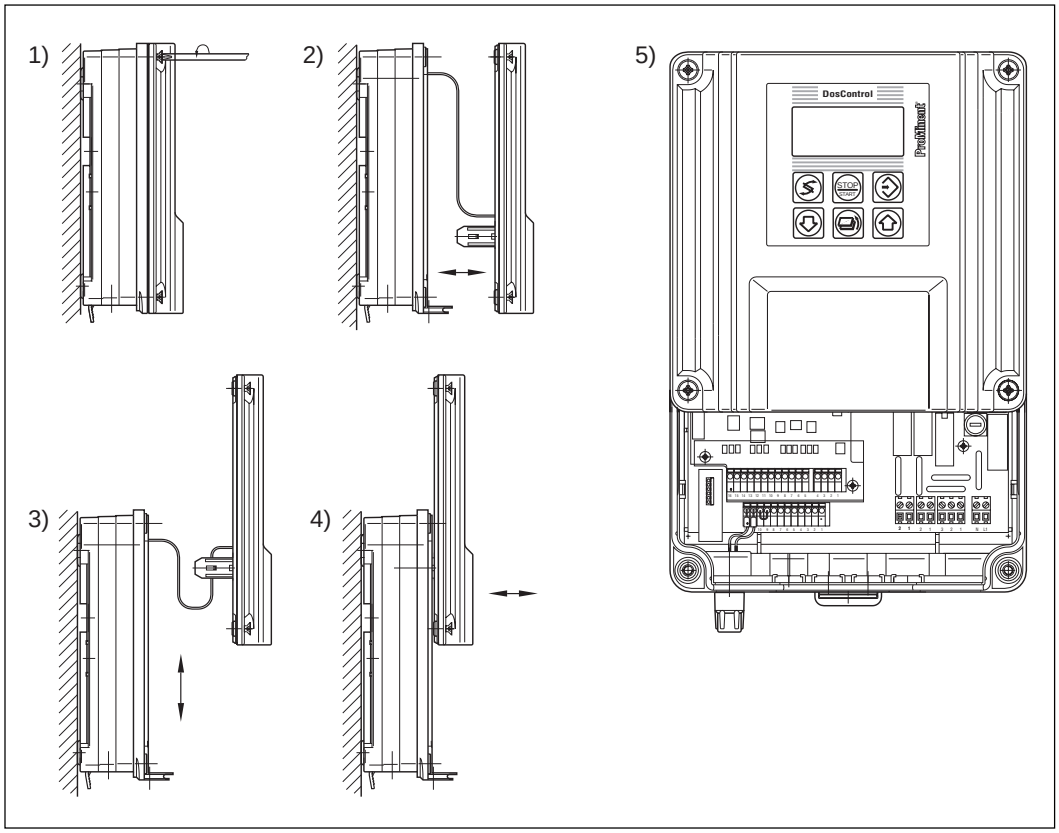



Fig. 12

### 5.3.1 Electrical installation for wall mounting

Initially, the threaded holes corresponding to the number of cables must be broken out.

- Break-out tools are provided to break out the individual threads.
- The following tools are used for this purpose:
  Rear row (fig. 13): Screwdriver DIN 5262-B, size1 (ø 4,5 mm)
  Front row (fig. 14): Screwdriver DIN 5265-B, size 0 (ø 3,0 mm)

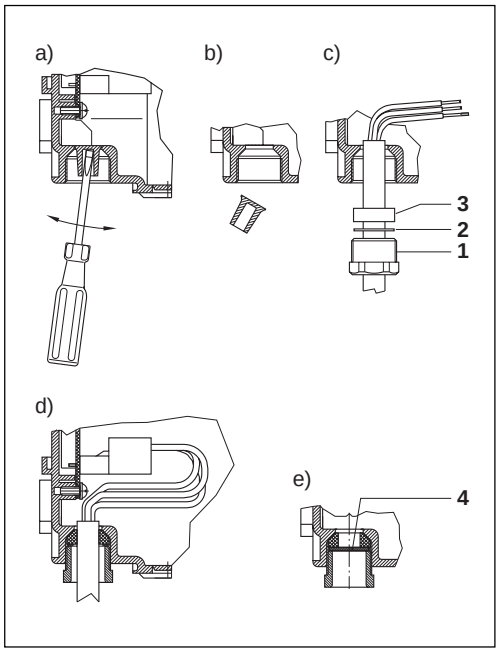



Fig. 13: Rear row

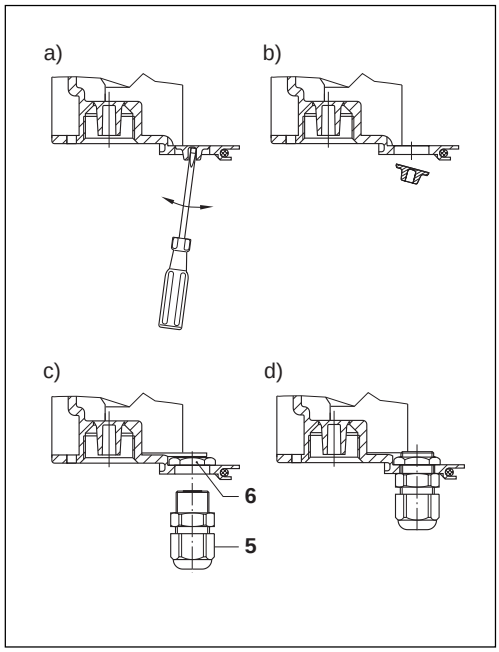



Fig. 14: Front row

- Strip cable insulation sleeve to a sufficient length (depending on position of terminals). Fit screwed glands **(1)**, thrust ring **(2)** and seal **(3)** over cable and insert in threaded hole.
- Screw in screwed glands and tighten with WAF 19 spanner. Shorten stranded wires to exact total length then strip insulation by approx. 7 mm and route to the terminals corresponding to the electrical connection diagram.
- Core end sleeves must be used for the stranded wires. If too many threaded holes are broken out, they can be closed off again with the dummy discs PG11 **(4)** provided.

**Packing list cable screwed gland**

| | | |
|---|---|---|
| 5 screwed gland | PG11 | Item **(1)** |
| 5 thrust rings | PG11 | Item **(2)** |
| 5 seals | PG11 inside Ø 9 mm | Item **(3)** |
| 3 seals | PG11 inside Ø 7 mm | Item **(3)** |
| 3 seals | PG11 inside Ø 5 mm | Item **(3)** |
| 2 seals | PG11 inside Ø 4 mm | Item **(3)** |
| 5 seals | PG11 2 x Ø 5 mm | Item **(3)** |
| 2 seals | PG11 2 x Ø 4 mm | Item **(3)** |
| 3 dummy discs | PG11 | Item **(4)** |

**additionally for expansion version only**

| | | |
|---|---|---|
| 4 screwed glands | PG7 | Item **(5)** |
| 4 lock nuts | PG7 nickel plated brass | Item **(6)** |

The four additonal apertures in the front row can be used for PG7 screwed glands. All commercially available PG7 screwed glands (suitable for type of protection IP65) with lock nuts (nickel plated brass) can be used as the cable glands.

Available from ProMinent:

- 1 cable gland PG7, black Part No. 703896.1
- 1 lock nut PG7, nickel plated brass Part No. 703819.3
- Fit lock nut PG7 **(6)** on inside and mount PG7 screwed gland **(5)** from outside and firmly tighten (WAF15).

### 5.3.2 Electrical installation for Control Panel installation

Normally, only the rear row of threaded holes should be used for electrical installation in a control panel. The front row (PG7 apertures) is located outside the control panel. The cable glands supplied with the device are not required for control panel installation. In this case, the individual stranded wires (without pull relief and seal) are passed directly through the holes and routed to the terminals corresponding to the electrical connection diagram. The holes are broken out as described in section 5.3.1.

## 5.4 Connecting plan

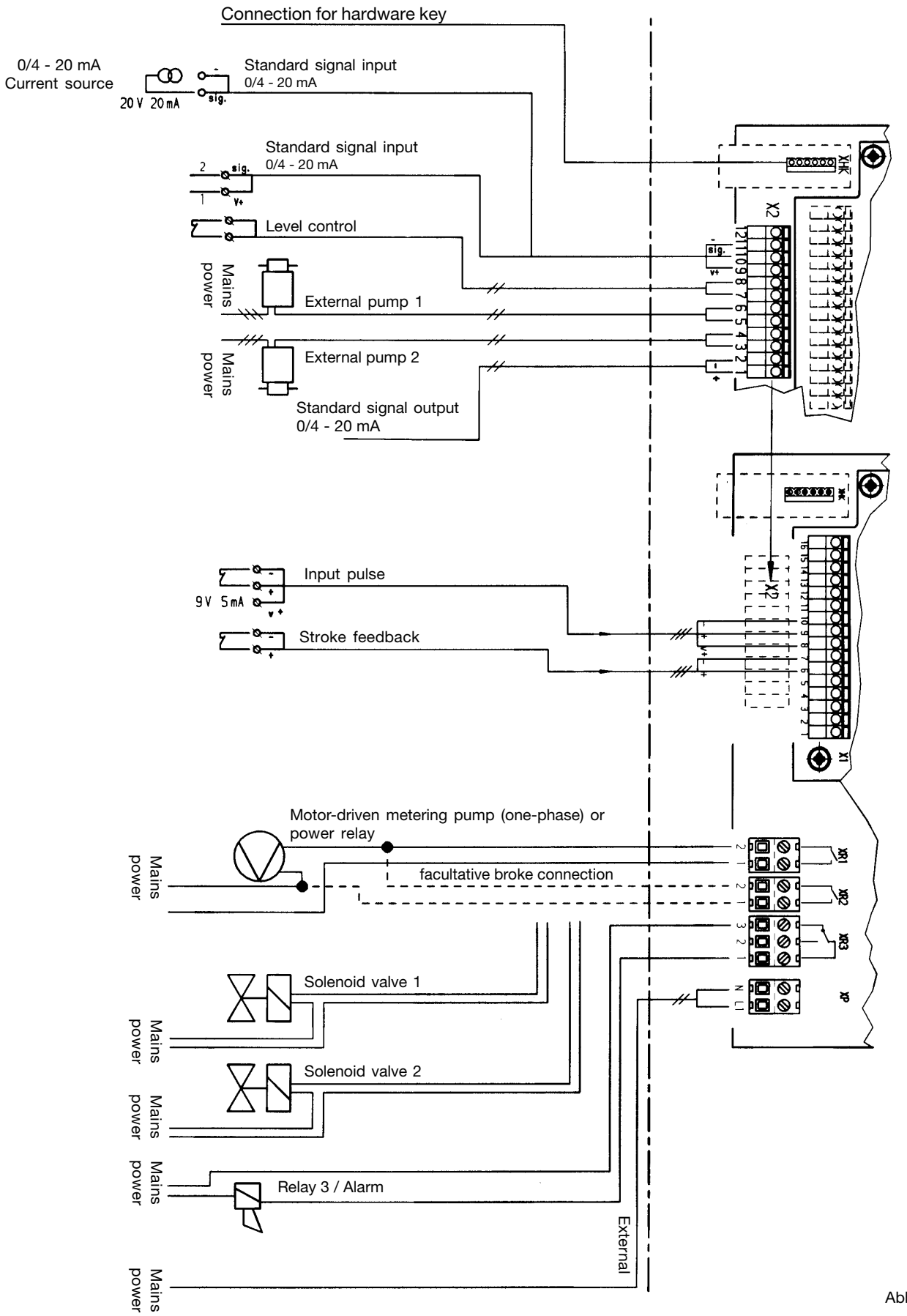



Abb. 15

# 6 Technical Data

**Capacity data**

*Reproducibilities:* The reproducibilities, resolutions and tolerances of the in/output signals are specified in the “Electrical data” section.

*Material information/ chemical resistances:*

| Part | Material |
|---|---|
| Housing | Luranyl PPE-GF 10/blue RAL 5003 |
| Membrane keyboard | Polyester film PET |
| Housing seal | Foam rubber CR |
| Continuous seal, external | Foam rubber CR |
| Screws M5 | A2 |

*Chemical resistance:* The device is resistant to normal atmospheres in technical areas.

**Dimensions and weights**

Dimensions see drawing no.: 3138-3, 3139-3
Weight of device without packing: approx. 1.2 kg
Gross weight of device with packing: approx. 2.0 kg

| | |
|---|---|
| Dimensions: | 198 x 200 x 76 (BxHxD) |
| Connections: | 3 x PG11 (cable Ø 8-10 mm resp. Ø 6-8 mm)<br>2 x PG9 (cable Ø 6-8 mm 3) resp. Ø 3.5-5 mm)<br>4 x Bohr. Ø 12.5 for PG7 (cable Ø 3-6.5 mm) |

**Electrical Data**

*Operating voltage:*

| | |
|---|---|
| Rated voltage: | 115/230 V~, 50/60 Hz |
| (voltage diverted by jumpers inside the device) | |
| Test voltage: | 103 … 127 V~ / 207 … 253 V~ |
| Overload category: | III |
| Maximum power draw: | 140 mA at 115 V<br>70 mA at 230 V |
| Internal fuse protection: | Fine-wire fuse 5 x 20 mm<br>160 mA, 250 V, slow-blow |

*Standard signal input (analogue input):*

| | |
|---|---|
| Input range: | 0/4 … 20 mA (programmable) |
| Input resistance: | 50 Ω |
| Accuracy: | 0.5 % of input range |
| Resolution: | 0.014 / 0.012 mA |
| Supply voltage and current for external electronics: | 19 V ±1.5 V, 20 mA |

*Digital inputs (start contact and stroke return signal):*

Combined reference potential but electrically isolated from other in/outputs

| | |
|---|---|
| Insulation voltage : | 500 V |
| Supply voltage and current for external electronics: | 9 V ±0.5 V, 2x5 mA or 1x10 mA |
| Idle voltage: | 9 V ±0.5 V |
| Short circuit control current: | 8 mA |
| Limit frequency channel 1: | 10 Hz (start contact) |
| Limit frequency channel 2: | 500 Hz (stroke return signal) |
| Switching points: | switch from low to high resistance: 1.6 mA<br>switch from high to low resistance: 1.3 mA |

| | | |
|---|---|---|
| *Current output (analogue output):* | Galvanically isolated from remaining inputs and outputs | |
| | Isolation voltage: | 500 V |
| | Output range: | 0/4 … 20 mA (programmable) |
| | Max. load: | 600 Ω |
| | Accuracy: | 0.5 % of output range with respect to displayed value |
| *Power relay output:* | Type of contact: | Changeover contact interference suppressed with varistors |
| | Load bearing cacacity: | 250 V~ / 3 A / 700 VA |
| | Contact service life: | > 20 x $10^6$ switching operations |
| *Frequency outputs (Reed relay) for pump activation:* | | |
| | Type of contact: | Changeover contact interference suppressed with varistors |
| | Load bearing cacacity: | 25 V Spitze, 0.5 A switching current |
| | Contact service life: | > 50 x $10^6$ switching operations at contact load 10 V, 10 mA |
| | Max. frequency: | 8.33 Hz (500 imp/min) |
| | Closing time: | 100 ms |
| *Power relay output for alarm signalling:* | | |
| | Type of contact: | Changeover contact interference suppressed with varistors |
| | Load bearing cacacity: | 25 V~ / 3 A / 700 VA |
| | Contact service life: | > 20 x $10^6$ switching operations |
| *Temperature specifications:* | Permissible ambient temperature: | -5 °C … +40 °C |
| | Permissible storage temperature: | -10 °C … +70 °C |
| *Climate:* | Humid-changeable climate according to FW DIN 50016 | |

# 7 Maintenance / Repair

***NOTICE***

***The device or the system must be disconnected from the power supply before starting any maintenance work! The DosConrol has no separate mains power switch! The power supply must therefore be disconnected by means of an external master switch or by the main fuse! All standard safety regulations apply!***

***Mains voltage can be applied at terminals XR 1–3 even when the voltage supply is switched off!***

***Only use a corresponding original fuse to replace the fuse!***

- ***Only use fuses supplied by the manufacturer!***
- ***Only use a 5 x 20 mm fine-wire fuse!***
- ***Fuse rating at mains voltage***
  ***100 … 240 V: 0.160 A slow-blow, Part No. 71.20.48.8***
  ***24 V: 0.315 A slow-blow, Part No. 71.20.26.4***

**Changing fuse**

- The safety measures as specified above must be implemented (disconnection from mains power supply) before replacing the device fuse.
  The mains fuse is located in a closed fuse holder **(6)** in the terminal compartment.
- Open device and set in "park position"
- Release bayonet catches of fuse holder
- Remove fuse and insert new fuse
- Lock bayonet catch and close housing.

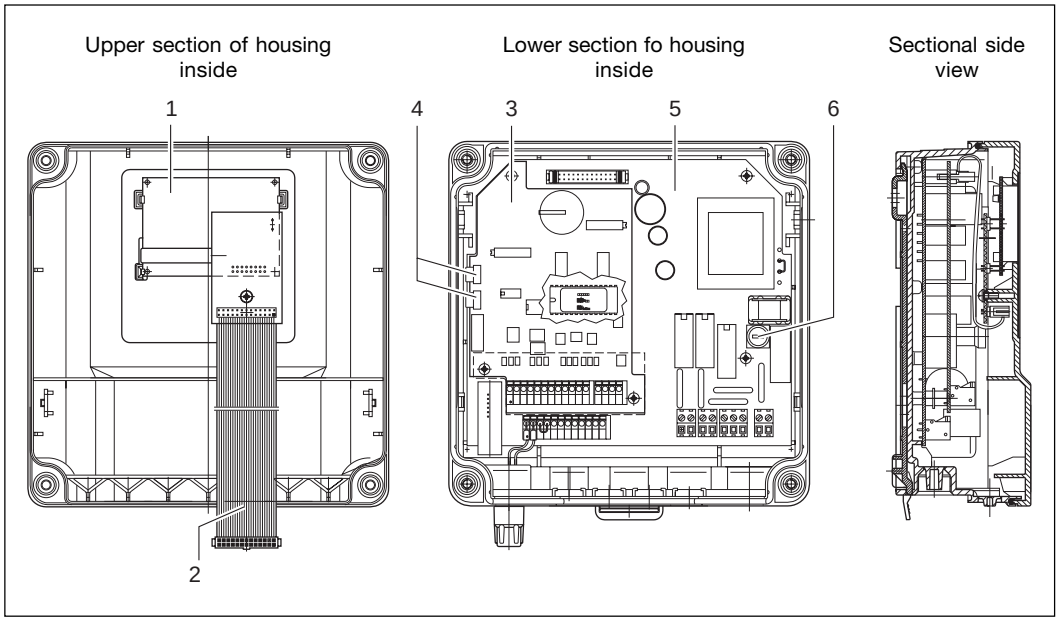



Fig. 16

Item **(1)** Electrical display assembly
Item **(2)** Ribbon cable
Item **(3)** Electrical I/O/S assembly
Item **(4)** Ribbon cable
Item **(5)** Electrical processor assembly
Item **(6)** Fuse holder

# 8 Enclosure Ratings/Standards

## 8.1 Contact and moisture protection (IP)

Device with housing closed, type of enclosure IP 65 in accordance with DIN VDE 0470 corresponding to EN 60529 and IEC 529 outer seal (control panel installation) type of enclosure IP 54 in accordance with DIN VDE 0470 corresponding to EN 60529 and IEC 529.

## 8.2 Electrotechnical Safety / Radio Interference Protection

EC low voltage directive (73/23/EEC) subsequently 93/44/EEC
EC EMC directive (89/336/EEC) subsequently 92/31/EEC

Supply voltage in accordance with DIN IEC 38
Electrical safety in accordance with EN 61010-1
Electromagnetic emitted interference in accordance with EN 55011 Gr. 1 / Cl.B
Noise immunity in accordance with IEC 801-2, -3, -4 or DIN VDE 0843, Part 2, Part 3, Part 4 or EN 50082-2

| | |
|---|---|
| EN 60335-1 | Safety of electrical device for domestic use |
| EN 50081-1 | EMC, emitted interference, residential |
| EN 50082-2 | EMC, noise immunity, industrial |
| EN 60555-2 | EMC, reactions in power supply networks, harmonics |
| EN 60555-3 | EMC, reactions in power supply networks, voltage fluctuations |

## 8.3 Load in moist changeable climate

Moist changeable climate in accordance with FW DIN 50016

# 9 Spare Parts/Accessories

- Installation kit for control panel installation
- Sensors, measuring transducer
- Sensor cable

# 10 Part Disposal

***IMPORTANT***

***Plastics and electronic scrap are special waste and must be recycled!***
***Used parts are taken back by municipal collection points or at all ProMinent branches !***
***With the exception of the electrical assemblies, the device design has few individual mechanical parts. These parts are relatively simple to separate and sort. With the exception of the membrane keypad, these parts can be recycled (refer to chapter 6, Material Specifications)!***
***The membrane keypad must be classified and disposed of in accordance with minicipal guidelines!***

**Addresses and delivery information from the manufacturer:**

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