Fig. 1:

- H max / n max
- H min / n min
- Off / Aus

1 2 3

10 U[V]
Fig. 2:

1. ~15 mm
2. ~15 mm
3. ~15 mm
4a. ~15 mm
1 General

1.1 About this document
The language of the original operating instructions is German. All other languages of these instructions are translations of the original operating instructions.
These installation and operating instructions are an integral part of the product. They must be kept readily available at the place where the product is installed. Strict adherence to these instructions is a precondition for the proper use and correct operation of the product.
These installation and operating instructions correspond to the relevant version of the product and the underlying safety standards valid at the time of going to print.

2 Safety
These operating instructions contain basic information which must be adhered to during installation and operation. For this reason, these operating instructions must, without fail, be read by the service technician and the responsible operator before installation and commissioning.
It is not only the general safety instructions listed under the main point “safety” that must be adhered to but also the special safety instructions with danger symbols included under the following main points.
2.1 Indication of instructions in the operating instructions

Symbols:
General danger symbol

Danger due to electrical voltage

Note

Signal words:

DANGER!
Acutely dangerous situation.
Non-observance results in death or the most serious of injuries.

WARNING!
The user can suffer (serious) injuries. 'Warning' implies that (serious) injury to persons is probable if this information is disregarded.

CAUTION!
There is a risk of damage to the product/unit. 'Caution' implies that damage to the product is likely if this information is disregarded.

NOTE: Useful information on handling the product. It draws attention to possible problems.
2.2 Personnel qualifications
The installation, maintenance and repair personnel must have the necessary qualifications for this work.

2.3 Danger in the event of non-observance of the safety instructions
Non-observance of the safety instructions can result in risk of injury to persons and damage to product/unit. Non-observance of the safety instructions can result in the loss of any claims to damages.
In detail, non-observance can, for example, result in the following risks:
• Failure of important product/unit functions
• Failure of required maintenance and repair procedures
• Danger to persons from electrical, mechanical and bacteriological influences
• Property damage

2.4 Safety instructions for the operator
The existing directives for accident prevention must be adhered to.
Danger from electrical current must be eliminated. Local directives or general directives [e.g. IEC, VDE etc.] and those of local power supply companies must be adhered to.
This device is not intended to be operated by persons (including children) with impaired physical, sensory or mental capacities or lack of experience and/or lack of knowledge, except in cases where they are supervised by a person responsible for their safety or where they receive instructions from such a person as to how the device is to be operated.
Children must be kept under supervision in order to ensure that they do not play with the device.
2.5 **Safety instructions for inspection and installation work**

The operator must ensure that all inspection and installation work is carried out by authorised and qualified personnel, who are sufficiently informed from their own detailed study of the operating instructions. Work on the product/unit should only be carried out when it has been brought to a standstill. It is mandatory that the procedure described in the installation and operating instructions for shutting down the product/unit be complied with.

2.6 **Unauthorised modification and manufacture of spare parts**

Modifications to the product are only permissible after consultation with the manufacturer. Original spare parts and accessories authorised by the manufacturer ensure safety. The use of other parts can nullify the liability from the results of their usage.

2.7 **Improper use**

The operating reliability of the supplied product is only guaranteed if the product is used as intended in accordance with Section 4 of the operating instructions. The limit values must on no account fall under or exceed those specified in the catalogue/data sheet.
3 Transport and interim storage
Immediately check the IF-Module for any transit damage on arrival. If damage is found, the necessary procedure involving the forwarding agent must be taken within the specified period.

CAUTION! Danger of damage to the IF-module!
Danger of damage due to incorrect handling during transportation and storage.
The unit must be protected from moisture, frost and mechanical damage during transport and interim storage.
4 Intended use
The Stratos IF- Modules are designed for external control and operating status signalling of pumps in the Wilo- Stratos series. The IF- Modules are not designed for proper safe deactivation of the pump.

DANGER! Risk of injury and material damage!
Using the control inputs for safety functions can lead to serious damage and injury.

5 Product information
5.1 Type key
Example: IF- Module Stratos SBM

<table>
<thead>
<tr>
<th>Stratos IF- Module</th>
</tr>
</thead>
<tbody>
<tr>
<td>IF- Module</td>
</tr>
<tr>
<td>= Interface module</td>
</tr>
<tr>
<td>Stratos</td>
</tr>
<tr>
<td>= Suitable for these series</td>
</tr>
<tr>
<td>SBM</td>
</tr>
<tr>
<td>Model/function identifier:</td>
</tr>
<tr>
<td>Ext. Off = external off</td>
</tr>
<tr>
<td>Ext. Min = external minimum operation</td>
</tr>
<tr>
<td>SBM = collective run signal</td>
</tr>
<tr>
<td>Ext. Aus/SBM = external off and collective run signal</td>
</tr>
<tr>
<td>DP = double pump interface only</td>
</tr>
</tbody>
</table>
### 5.2 Technical data

#### General data
- **Terminal cross-section**: 1.5 mm² finely stranded
- **Safety in accordance with EN 60950**: Up to mains voltage 230 V, configuration TN or TT

#### Contact input
- **Version**: SELV, isolated
- **Earth reference**: Shared with control input 0-10 V
- **Off-load voltage**: Max. 10 V
- **Loop current**: Approx. 10 mA

#### Contact output
- **Version**: Potential-free
- **Load rating**: 30 V AC/60 V DC: 1 A AC1/DC1
- **Min. load**: 12 V DC, 10 mA

#### Control input 0-10 V
- **Version**: SELV, isolated
- **Earth reference**: Shared with contact input
- **Voltage range**: 0-10 V
- **Input resistance**: >100 kΩ
- **Accuracy**: 5 % absolute
- **Dielectric strength**: 24 V DC
5.2 Technical data

<table>
<thead>
<tr>
<th>Double pump interface (DP)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Interface</td>
<td>Wilo-specific, sustained short circuit protection, cannot be twisted out of place</td>
</tr>
<tr>
<td>Voltage</td>
<td>Max. 10 Vss</td>
</tr>
<tr>
<td>Frequency</td>
<td>Approx. 150 kHz</td>
</tr>
<tr>
<td>Cable length</td>
<td>Max. 3 m</td>
</tr>
</tbody>
</table>

5.3 Scope of delivery

- IF- Module
- Metal EMC cable gland Pg 9 (Pg 9 and Pg 7 in case of DP model)
- Installation and operating instructions
- Connecting cable for double pump interface
  - 2x2x0.22 mm² twisted and shielded pair (DP model)
  - 2x0.5 mm² light plastic-sheathed cable, 670 mm long (other models)

6 Description and function

6.1 Description of the IF- Modules

The Stratos IF- Modules expand the pump to include additional inputs and outputs and provide the connections for the double pump interface. The DP model plays a special role: it is used for through-connection of a BUS line for communication and provides the connections for the double pump interface.
### 6.2 Function

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Collective run signal output (SBM) as a potential-free NO contact</td>
<td>-</td>
<td>-</td>
<td>●</td>
<td>●</td>
<td>-</td>
</tr>
<tr>
<td>Input for potential-free NC contact with the function Ext. Min</td>
<td>-</td>
<td>●</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Input for potential-free NC contact with the function Ext. Off</td>
<td>●</td>
<td>-</td>
<td>-</td>
<td>●</td>
<td>-</td>
</tr>
<tr>
<td>Control input 0-10 V</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remote setpoint adjustment</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Remote speed adjustment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DP interface for dual pump management</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

**Ext. Off**: Input for potential-free NC contact.
- Contact closed: pump operates under auto control.
- Contact open: pump off.

**Ext. Min**: Input for potential-free NC contact.
- Contact closed: pump operates under auto control.
- Contact open: pump operates at a fixed minimum speed.
**SBM:** Output as potential-free NO contact.
- Contact closed: pump operates in the specified operating mode.
- Contact open: pump off.

**0-10 V:** Control input.
- Remote setpoint adjustment: differential pressure control is active on the pump. The setpoint for differential pressure is given by the analogue voltage 0-10 V (Fig. 1).
- Remote speed adjustment: differential pressure control is de-activated on the pump. The pump operates as an actuator with a constant speed, which is given by the voltage 0-10 V (Fig. 1).

**DP:** Interface between two pumps acting together as a double pump. The roles of the two pumps (master/slave) and the operating mode (main/standby or parallel operation) can be set.

7 **Installation and electrical connection**
Installation and electrical connection must be carried out in accordance with local regulations and only by qualified personnel.

Warning! Risk of personal injury!
The existing directives for accident prevention must be adhered to.

Warning! Risk of fatal electrical shock!
Danger from electrical current must be eliminated. Local directives or general directives [e.g. IEC, VDE etc.] and those of local power supply companies must be adhered to.
7.1 **Installation**

To ensure immunity in industrial environments (EN 61000-6-2) the data and control cables must be shielded cables and must be used with an EMC-compliant cable gland (included with the module).

**WARNING! Danger of electric shock!**

The pump should be electrically isolated and secured against unauthorised switch-on before beginning installation of the IF-Module.

Installation steps in accordance with Fig. 2:

- Remove the lid of the pump's terminal box
- Remove the cover (1)
- Install the IF-Module in the pump's terminal box (2)
- Push the connection plug in all the way (3)
- Remove the existing Pg 9 screwed connections (4a)
- Install the accompanying metal EMC cable glands (4b)
- Strip and prepare the shield and the core wires (4c)
- Insert the cable (4d)
- Screw the cable gland into place (4e)

Electrical connection follows (see section below).
7.2 IF- Module Stratos DP
Installation steps in accordance with Fig. 2:
• Remove the lid of the pump's terminal box
• Remove the cover (1)
• Install the IF- Module in the pump's terminal box (2)
• Push the connection plug in all the way (3)
• Remove the existing Pg 7 / Pg 9 screwed connections (4a)
• Install the accompanying metal Pg 7 and Pg 9 EMC cable glands (4b)
• Strip and prepare the shield and the core wires of the accompanying cable 2x2x0.22 mm², shielded pair (4c)
• Insert the cable (4d)
• Screw the cable gland into place (4e)
Electrical connection follows (see section below).

7.3 Electrical connection
WARNING! Danger of electric shock!
Electrical connection must be carried out by an electrician authorised by the local electricity supply company and in accordance with the applicable local regulations [e.g. VDE regulations].
• Carry out installation as described in the previous section
• Carry out electrical installation of the pump as specified in the relevant installation and operating instructions
• Check the technical specifications of the electric circuits being connected to ensure they are compatible with the electrical specifications of the IF- Module Terminal numbering as shown in Fig. 2, Pos. (3) from bottom to top
### 7.3.1 IF- Module Stratos Ext. Off

<table>
<thead>
<tr>
<th>Terminal No.</th>
<th>Terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ext. Off</td>
</tr>
<tr>
<td>2</td>
<td>Ext. Off</td>
</tr>
<tr>
<td>3</td>
<td>0- 10 V</td>
</tr>
<tr>
<td>4</td>
<td>GND (for 0- 10 V)</td>
</tr>
<tr>
<td>5</td>
<td>DP</td>
</tr>
<tr>
<td>6</td>
<td>DP</td>
</tr>
</tbody>
</table>

- Check that the Ext. Off wires are free of interference voltage
- Connect the Ext. Off wires to external devices
- Connect the 0- 10 V wires (make sure polarity is correct)

### 7.3.2 IF- Module Stratos Ext. Min

<table>
<thead>
<tr>
<th>Terminal No.</th>
<th>Terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ext. Min</td>
</tr>
<tr>
<td>2</td>
<td>Ext. Min</td>
</tr>
<tr>
<td>3</td>
<td>0- 10 V</td>
</tr>
<tr>
<td>4</td>
<td>GND (for 0- 10 V)</td>
</tr>
<tr>
<td>5</td>
<td>DP</td>
</tr>
<tr>
<td>6</td>
<td>DP</td>
</tr>
</tbody>
</table>

- Check that the Ext. Min wires are free of interference voltage
- Connect the Ext. Min wires to external devices
- Connect the wires to 0-10 V (make sure polarity is correct)

### 7.3.3 IF-Module SBM

<table>
<thead>
<tr>
<th>Terminal No.</th>
<th>Terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SBM</td>
</tr>
<tr>
<td>2</td>
<td>SBM</td>
</tr>
<tr>
<td>3</td>
<td>0-10 V</td>
</tr>
<tr>
<td>4</td>
<td>GND (for 0-10 V)</td>
</tr>
<tr>
<td>5</td>
<td>DP</td>
</tr>
<tr>
<td>6</td>
<td>DP</td>
</tr>
</tbody>
</table>

- Connect the SBM wires to external devices
- Connect the wires to 0-10 V (make sure polarity is correct)

### 7.3.4 IF-Module Stratos Ext. Off/SBM

<table>
<thead>
<tr>
<th>Terminal No.</th>
<th>Terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ext. Off</td>
</tr>
<tr>
<td>2</td>
<td>Ext. Off</td>
</tr>
<tr>
<td>3</td>
<td>SBM</td>
</tr>
<tr>
<td>4</td>
<td>SBM</td>
</tr>
<tr>
<td>5</td>
<td>DP</td>
</tr>
<tr>
<td>6</td>
<td>DP</td>
</tr>
</tbody>
</table>
• Check that the Ext. Off wires are free of interference voltage
• Connect the Ext. Off and SBM wires to external devices

### 7.3.5 IF- Module Stratos DP

<table>
<thead>
<tr>
<th>Terminal No.</th>
<th>Terminal</th>
<th>Wire</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BUS (joined with 3)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>BUS (joined with 4)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>BUS (joined with 1)</td>
<td>White (WH)</td>
</tr>
<tr>
<td>4</td>
<td>BUS (joined with 2)</td>
<td>Blue (BU)</td>
</tr>
<tr>
<td>5</td>
<td>DP</td>
<td>Red (RD)</td>
</tr>
<tr>
<td>6</td>
<td>DP</td>
<td>Black (BK)</td>
</tr>
</tbody>
</table>

• Connect the wires as shown in the table
• Connect the wires in the same order for the partner pump
• The BUS lines are connected in the partner pump, on terminals 1 and 2 (make sure polarity is correct)

### 7.4 Final work (all modules)

• Connect the DP wires to the partner pump (double pump only)
• Check the terminal box seal for any visible damage
• Close the terminal box lid with the screws provided so that the seal is tight all around
• Carry out commissioning / functional test in accordance with the following main section
8 Commissioning / functional test
The following sections describe testing the functioning of the inputs/outputs. It is recommended to test together with the connected system. The pump's installation and operating instructions are needed for some settings.

8.1 Ext. Off input
• Contact via Ext. Off terminals is closed
• Switch on the pump via the menu: symbol for “On” appears
• Contact via Ext. Off terminals is opened: pump switches off, symbol disappears

8.2 Ext. Min input
• Contact via Ext. Min terminals is closed
• Switch on the pump via the menu: symbol \( \text{\ding{281}} \) appears, symbol \( \text{\ding{282}} \) indicating setback operation is not visible (may need to increase setpoint/speed via menu or de-activate the “Auto Night” function)
• Contact via Ext. Min terminals is opened: symbol \( \text{\ding{281}} \) appears “Pump is at min. speed”

8.3 0-10 V input
• Pump in “Manual control mode”, symbol \( 10V \) visible
• Input voltage to 10 V: pump runs; the displayed speed is the maximum speed
• Input voltage to 2 V: pump runs; the displayed speed is the minimum speed
• Input voltage < 1 V: pump does not run
• Input voltage to 2 V: pump runs; the displayed speed is the minimum speed

8.4 SBM output
• Contact via Ext. Off terminals is closed (if installed)
• Switch on the pump via the menu: symbol \( \text{\ding{280}} \) appears
• SBM contact is closed
• Switch off the pump via the menu: symbol changes to  
• SBM contact is opened

8.5 DP interface
• Set dual pump operation in accordance with the pump's installation and operating instructions: function is as described

9 Maintenance
The modules described in these instructions are maintenance-free.

10 Faults, causes and remedies
Have repairs done by qualified skilled personnel only!
WARNING! Danger of electric shock!

⚠️ Any danger from electrical current should be ruled out.
• The pump should be electrically isolated and secured against unauthorised switch-on prior to any repair work.
• Damage to the mains connection cables should always be rectified by a qualified electrician only.

WARNING! Risk of scalding!

⚠️ At high fluid temperatures and system pressures, allow the pump to cool down first and then depressurise the system.
If the operating fault cannot be remedied, please consult a specialist technician or the nearest Wilo after-sales service point or representative.

11  **Spare parts**
Spare parts may be ordered via a local specialist retailer and/or Wilo customer service.
To avoid queries and incorrect orders, all data on the name plate should be submitted with each order.
Wilo – International (Subsidiaries)

Argentina
WILLO SALMSON
Argentina S.A.
C1295ABI Ciudad Autónoma de Buenos Aires
T + 54 11 4361 5929
info@salmon.com.ar

Australia
WILLO Australia Pty Limited
Murrarie, Queensland, 4172
T +61 7 3907 6900
chris.dayton@wilo.com.au

Austria
WILLO Pumpen
Österreich GmbH
2351 Wiener Neudorf
T +43 507 507-0
office@wilo.at

Azerbaijan
WILLO Caspian LLC
1014 Baku
T +994 12 5962372
info@wilo.az

Belarus
WILLO Bel OOO
220035 Minsk
T +375 17 2535363
wilo@wilo.by

Belgium
WILLO SA/NV
1083 Ganshoren
T +32 2 4823333
info@wilo.be

Bulgaria
WILLO Bulgaria Ltd.
1125 Sofia
T +359 2 9701970
info@wilo.bg

Brazil
WILLO Brasil Ltda
Jundiaí – São Paulo – Brasil
ZIP Code: 13.213–105
T + 55 11 2923 (WILLO) 9456
wilo@wilo-brasil.com.br

Canada
WILLO Canada Inc.
Calgary, Alberta T2A 5L4
T +1 403 2769456
bill.lowe@wilo-na.com

China
WILLO China Ltd.
101300 Beijing
T +86 10 58041888
wilobj@wilo.com.cn

Croatia
WILLO Hrvatska d.o.o.
10430 Samobor
T +38 51 3430914
wilo.hr@wilo.hr

Czech Republic
WILLO CZ, s.r.o.
25101 Cestlice
T +420 234 098711
sales@wilo.cz

Denmark
WILLO Danmark A/S
2690 Karlslunde
T +45 70 253312
wilo@wilo.dk

Estonia
WILLO Eesti OÜ
12618 Tallinn
T +372 6 509780
info@wilo.ee

Finland
WILLO Finland OY
02330 Espoo
T +358 207401540
wilo@wilo.fi

France
WILLO S.A.S.
78390 Bois d’Arcy
T +33 1 30050930
info@wilo.fr

Great Britain
WILLO (U.K.) Ltd.
Burton Upon Trent
DE14 2WJ
T +44 1283 523000
sales@wilo.co.uk

Greece
WILLO Hellas AG
14569 Anixi (Attika)
T +302 10 6248300
info@wilo.gr

Hungary
WILLO Magyarország Kft
2045 Törökbláint (Budapest)
T +36 23 889500
wilo@wilo.hu

India
WILLO India Mather and Platt
Pumps Ltd.
Pune 411019
T +91 20 27642100
services@matherplatt.com

Indonesia
WILLO Pumps Indonesia
Jakarta Selatan 12140
T +62 21 7247676
criwilo@cbn.net.id

Ireland
WILLO Ireland
Limerick
T +353 61 227566
sales@wilo.ie

Italy
WILLO Italia s.r.l.
20068 Peschiera Borromeo
(Milano)
T +39 25538351
wilo.italia@wilo.it

Kazakhstan
WILLO Central Asia
050002 Almaty
T +7 727 2785961
info@wilo.kz

Korea
WILLO Pumps Ltd.
618–220 Gangseo, Busan
T +82 51 950 8000
wilo@wilo.co.kr

Latvia
WILLO Baltic SIA
1019 Riga
T +371 6714–5229
info@wilo.lv

Lebanon
WILLO LEBANON SARL
Jodeideh 1202 2030
Lebanon
T +961 3 888910
info@wilo.com.lb

Lithuania
WILLO Lietuva UAB
03202 Vilnius
T +370 5 2136495
mail@wilo.lt

Morocco
WILLO MAROC SARL
20600 CASABLANCA
T +212 (0) 5 22 66 09 26/28
contact@wilo.ma

The Netherlands
WILLO Nederland b.v.
1531 NA Westzaan
T +31 88 9456000
info@wilo.nl

Norway
WILLO Norge AS
0975 Oslo
T +47 22 804570
wilo@wilo.no

Poland
WILLO Polska Sp. z.o.o.
05–506 Leszno
T +48 22 7026161
wilo@wilo.pl

Portugal
WILLO Portugal
Bombas Wilo–Salomon
Portugal Lda.
4050–040 Porto
T +351 22 2080350
bombas@wilo.pt

Romania
WILLO Romania s.r.l.
077040 Com. Chiajna
Jud. Ilfov
T +40 21 3170164
wilo@wilo.ro

Russia
WILLO Rus ooo
123592 Moscow
T +7 495 7810690
wilo@wilo.ru

Saudi Arabia
WILLO ME – Riyadh
Riyadh 11465
T +966 1 4624430
wshoula@wataniand.com

Serbia and Montenegro
WILLO Beograd d.o.o.
11000 Beograd
T +381 11 2851278
office@wilo.rs

Slovakia
WILLO CS s.r.o., org.
Zložka 83106 Bratislava
T +421 3 30314511
info@wilo.sk

Slovenia
WILLO Adriatic d.o.o.
1000 Ljubljana
T +386 1 5838130
wilo.adriatic@wilo.si

South Africa
WILLO South Africa
1610 Edenvale
T +27 11 6082780
enrol.cornelius@salmon.co.za

Spain
WILLO Ibérica S.A.
28806 Alcalá de Henares
(Madrid)
T +34 91 8797100
wilo.iberica@wilo.es

Sweden
WILLO Sverige AB
35246 Växjö
T +46 470 727600
wilo@wilo.se

Switzerland
WILLO Pumps AG
4310 Rheinfelden
T +41 61 83680–20
info@emb-pumpen.ch

Taiwan
WILLO Taiwan Company Ltd.
Sanchong Dist., New Taipei City
24159
T +886 2 2999 8676
nelson.wu@wilo.com.tw

Turkey
WILLO Pompa Sistemleri
San. ve Tic. A.S.,
34956 Istanbul
T +90 216 2509400
wilo@wilo.com.tr

Ukraine
WILLO Ukraine t.o.w.
01033 Kiew
T +38 044 2011870
wilo@wilo.ua

United Arab Emirates
WILLO Middle East FZE
Jebel Ali Free Zone–South
PO Box 262720 Dubai
T +971 4 880 91 77
info@wilo.ae

USA
WILLO USA LLC
Rosemont, IL 60018
T +1 866 945 6872
info@wilo-usa.com

Vietnam
WILLO Vietnam Co Ltd.
Ho Chi Minh City, Vietnam
T +84 8 38109975
nkminh@wilo.vn

Further subsidiaries, representation and sales offices on www.wilo.com

May 2013