

SM 113

Installation and operating instructions



Other languages

<http://net.grundfos.com/qr/i/98332825>

be
think
innovate

GRUNDFOS 

English (GB) Installation and operating instructions

Original installation and operating instructions

These installation and operating instructions describe Grundfos SM 113.

Sections 1-3 give the information necessary to be able to unpack, install and start up the product in a safe way.

Sections 3-8 give important information about the product, as well as information on service, fault finding and disposal of the product.

CONTENTS

	Page
1. General information	2
1.1 Hazard statements	2
1.2 Notes	2
2. Installation	3
2.1 Location	3
2.2 Dimensions	3
2.3 Mounting	3
2.4 EMC-compliant installation	4
2.5 Wiring diagrams	5
3. Starting up the product	6
4. Product introduction	6
4.1 General description	6
4.2 User interface	7
4.3 Identification	7
4.4 Approval	7
4.5 Variants	8
4.6 WIO/WIA sensor	8
5. Technical data	8
6. Maintenance	8
7. Service	8
8. Disposing of the product	8



Read this document before installing the product. Installation and operation must comply with local regulations and accepted codes of good practice.

1. General information

1.1 Hazard statements

The symbols and hazard statements below may appear in Grundfos installation and operating instructions, safety instructions and service instructions.

DANGER



Indicates a hazardous situation which, if not avoided, will result in death or serious personal injury.

WARNING



Indicates a hazardous situation which, if not avoided, could result in death or serious personal injury.

CAUTION



Indicates a hazardous situation which, if not avoided, could result in minor or moderate personal injury.

The hazard statements are structured in the following way:

SIGNAL WORD



Description of hazard

Consequence of ignoring the warning.
- Action to avoid the hazard.

1.2 Notes

The symbols and notes below may appear in Grundfos installation and operating instructions, safety instructions and service instructions.



Observe these instructions for explosion-proof products.



A blue or grey circle with a white graphical symbol indicates that an action must be taken.



A red or grey circle with a diagonal bar, possibly with a black graphical symbol, indicates that an action must not be taken or must be stopped.



If these instructions are not observed, it may result in malfunction or damage to the equipment.



Tips and advice that make the work easier.

2. Installation

Before installation, check that SM 113 has not been damaged during transportation.

CAUTION

Electric shock



Minor or moderate personal injury
- Before installing the SM 113, make sure that the power supply has been switched off and that it cannot be accidentally switched on.

CAUTION

Electric shock



Minor or moderate personal injury
Check that the supply voltage corresponds to the values stated on the nameplate.

2.1 Location

SM 113 must only be installed by Grundfos or an authorised service workshop.

CAUTION

Explosive environment



Minor or moderate personal injury
- Do not install the SM 113 in potentially explosive environments

Safety information

SM 113 belongs to enclosure class IP22.

Ambient temperature

-25 to 65 °C.

SM 113 may not be exposed to direct sunlight.

Installation altitude

Maximum 2000 m above sea level.

Relative humidity

Maximum 95 %.

Warning

ATEX/IEC Ex protection can be activated by means of DIP switch 10 on IO 113. This enables additional alarms. See the section on ATEX/IEC Ex protection in the installation and operating instructions for IO 113.



2.2 Dimensions

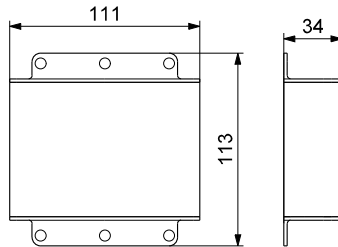


Fig. 1 Dimensions of SM 113

2.3 Mounting

SM 113 is prepared for mounting on a 35 mm DIN rail (EN 50022) with DIN rail adapters.

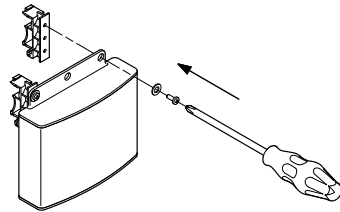


Fig. 2 How to fit the two adapters

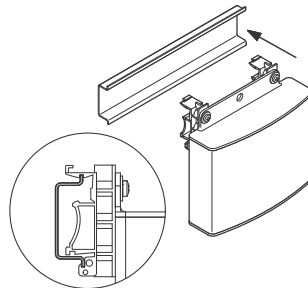


Fig. 3 Mounting SM 113 on DIN rail

TM03 9914 4607

TM03 8039 0307

TM03 8040 0307

SM 113 can be removed by pushing the adapters upwards and free off the DIN rail.

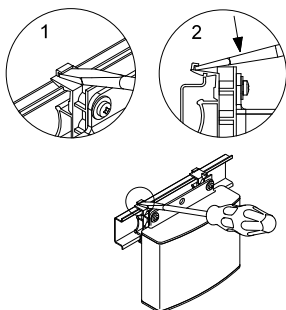


Fig. 4 Dismounting from DIN rail

SM 113 can also be built into the top cover of a pump.

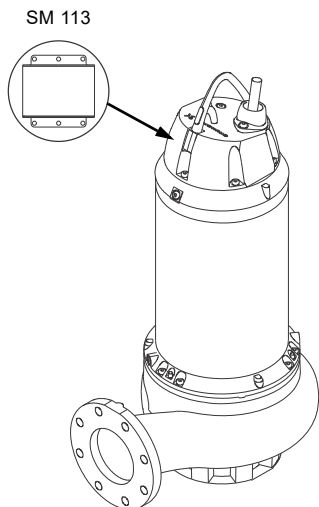


Fig. 5 Built into a pump

2.4 EMC-compliant installation



If the motor cable between the pump and any frequency converter is more than 10 metres long, we recommend that you equip the frequency converter with an output filter to prevent incorrect analog measurements.

It is especially important to ensure an EMC-compliant installation of pumps with a frequency converter or when using more than one pair of IO 113 and SM 113, no matter whether SM 113 is built into a cabinet or the pump.

The following rules must be observed:

- Connect the cable screen to earth.
- Do not twist screen ends as this will destroy the screening effect at high frequencies. Use cable clamps as shown in fig. 6.
- Ensure a good electrical contact from the mounting plate through the mounting screws to the metal cabinet of the frequency converter.
- Use toothed washers and a galvanically conducting mounting plate.

TM03 8041 0307

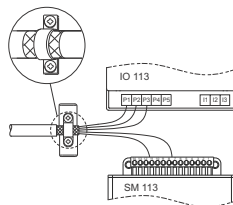


Fig. 6 Screen fixed with cable clamp, and both IO 113 and SM 113 mounted in a cabinet

TM05 4940 2812



We recommend that you fix the screen of the cable between IO 113 and SM 113 with a cable clamp, no matter whether SM 113 is built into a cabinet or the pump.

CAUTION

Electric shock



Minor or moderate personal injury
All sensors in contact with phase voltage must be double insulated according to EN 61010-1.

TM05 4945 2812

2.5 Wiring diagrams

The wiring diagrams below show the regular applications of WIO/WIA sensors, moisture switch, thermal switches, Pt100/Pt1000/PTC sensors, as well as the use of sensor monitoring board SM 113 with vibration sensor and other components. If a WIO/WIA sensor is not mounted in the pump, a resistor of 2.7 kOhm \pm 1%, minimum 0.25 W must be connected between the terminals 3 and 4.

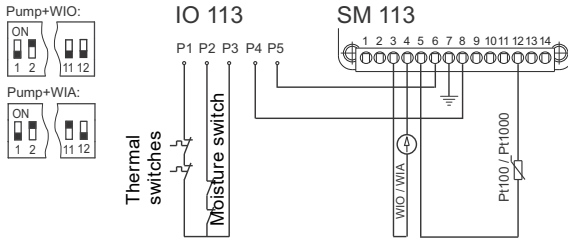


Fig. 7 Thermal switch, moisture switch, WIO/WIA sensor, Pt100/Pt1000 sensor

TM05 2794 0612

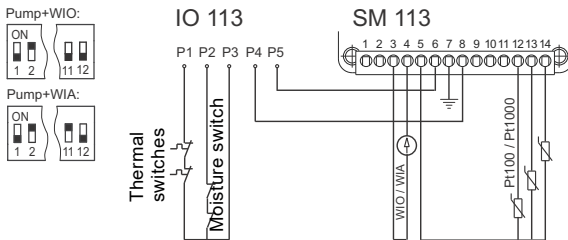


Fig. 8 Thermal switches, moisture switch, WIO/WIA sensor, Pt100/Pt1000 sensors

TM05 2795 0612

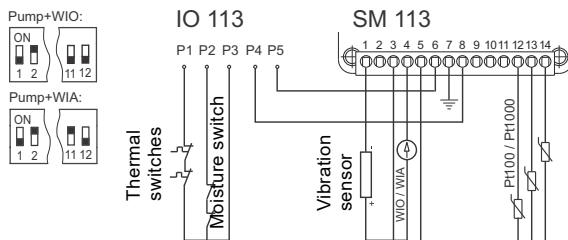


Fig. 9 Thermal switches, moisture switch, WIO/WIA sensor, Pt100/Pt1000 sensors, vibration sensor

TM05 2796 0612

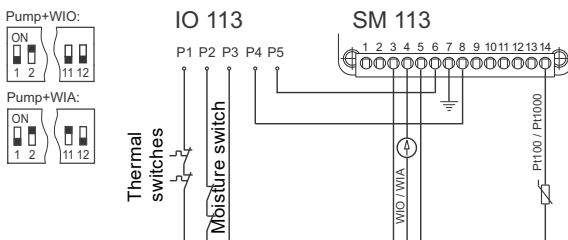


Fig. 10 Thermal switches, moisture switch, WIO/WIA sensor, Pt100/Pt1000 sensors

TM05 2798 0612

3. Starting up the product

Startup must be carried out by authorised staff.

1. Switch on the power supply.
2. Check that the indication on IO 113 is as expected.
If the signal is OK, the system is ready for operation.
If not, check the following:
 - SM 113 is connected correctly to IO 113 (see the installation and operating instructions for IO 113).
 - All sensors are connected correctly.
 - If more than one pair of IO 113 and SM 113 are used in a control system, make sure the address setting is correct. The first time voltage is applied, SM 113 will read all inputs to detect which sensors are connected.

If a valid signal is measured, SM 113 will register that a sensor is present and save the status.

If IO 113 indicates a sensor error or configuration error, the sensor detection must be repeated. Change DIP switch 6 on IO 113 from OFF to ON, then switch from ON to OFF. After approximately 5 seconds, SM 113 will reset and the sensor detection is completed.

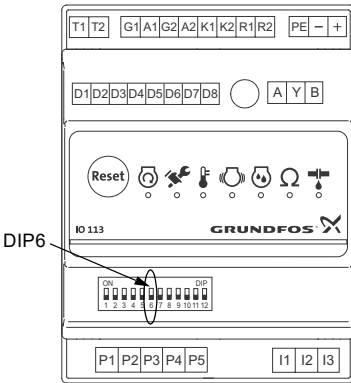


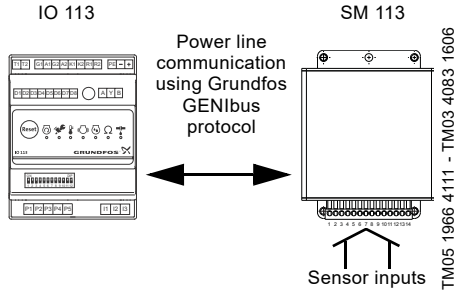
Fig. 11 DIP switches on IO 113

TM05 4946 2812

4. Product introduction

4.1 General description

SM 113 is designed and used for the collection and transfer of additional sensor data. SM 113 works together with IO 113 (with communication module, product number 98097390) as shown below.



TM05 1966 4111 - TM03 4083 1606

Fig. 12 IO 113 and SM 113

SM 113 can be built into a pump, or it can be mounted next to IO 113 in a control cabinet.

SM 113 can collect data from these devices:

- current sensors, 4-20 mA*
- Pt100**/Pt1000*** thermal sensors.

* Vibration sensor, water-in-oil or water-in-air sensor (WIO or WIA)

** Maximum three Pt100 sensors

*** Maximum four Pt1000 sensors

4.2 User interface

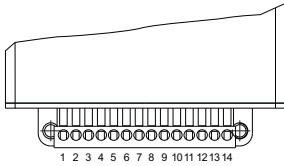


Fig. 13 Connection pins

Pin	Type	Description
1	4-20 mA	Vibration sensor
2	4-20 mA	Spare input
3	13.5 VDC	Supply output for 4-20 mA sensors
4	4-20 mA	Water-in-oil/water-in-air sensor
5	GND	Common ground for sensors
6	P5	Communication signal for IO 113
7	PE	Protective earth
8	P4	Supply input for sensor board from IO 113
9	N/A	-
10	Pt1000	Stator temperature
11	Speed	Reserved
12	Pt100/Pt1000	Main bearing temperature
13	Pt100/Pt1000	Support bearing temperature
14	Pt100/Pt1000	Stator temperature

TM03 4085 1606

4.3 Identification

4.3.1 Type key

Code	Meaning	SM	1	1	3
SM	Sensor board				
11	Controller series				
3	Model number				

4.3.2 Nameplate

The nameplate is fitted on the front of SM 113.

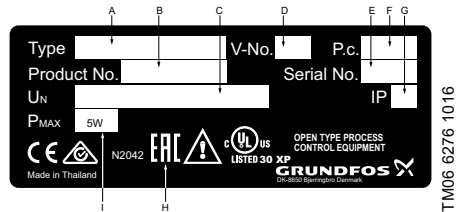


Fig. 14 Nameplate

Pos.	Description
A	Type designation
B	Product number
C	Rated voltage
D	Version number
E	Serial number
F	Production code (year and week)
G	Enclosure class
H	EAC approval logo
I	Power consumption

4.4 Approval



SM 113 is UL listed to US and Canadian safety standards.

TM06 6276 1016

4.5 Variants

SM 113 is only available in one variant.

The product number on the nameplate shows the variant:

- 98711382 = standard variant



SM 113 must be used in combination with IO 113.

4.6 WIO/WIA sensor

In Ex and IEC Ex applications, the maximum current supplied to the sensor may not exceed 350 mA according to EN/IEC 60079-18.



Note: As IO 113 is equipped with this current limitation output to SM 113, no further protection is required when IO 113 is combined with SM 113.

For more information about the WIO/WIA sensor, see the installation and operating instructions at <http://net.grundfos.com/qr/i/96591899>.

5. Technical data

The power supply must be a limited energy supply or Class II.

Supply voltage:	14 VDC + 1 VDC/- 1 VDC
Supply current:	210 mA rms
	Peak power line communication
	Class II power supply or limited energy supply

Power consumption: 5 W

6. Maintenance

SM 113 requires no maintenance.

7. Service

SM 113 cannot be serviced. Replace SM 113 in case of fault.

8. Disposing of the product

This product or parts of it must be disposed of in an environmentally sound way:

1. Use the public or private waste collection service.
2. If this is not possible, contact the nearest Grundfos company or service workshop.

You can look up your product on:

www.grundfos.com/products/product-sustainability/product-recycling.html



Argentina

Bombas GRUNDFOS de Argentina S.A.
Ruta Panamericana km. 37.500 Centro
Industrial Garin
1619 Garin Pcia. de B.A.
Phone: +54-3327 414 444
Telefax: +54-3327 45 3190

Australia

GRUNDFOS Pumps Pty. Ltd.
P.O. Box 2040
Regency Park
South Australia 5942
Phone: +61-8-8461-4611
Telefax: +61-8-8340 0155

Austria

GRUNDFOS Pumpen Vertrieb
Ges.m.b.H.
Grundfosstraße 2
A-5082 Grödig/Salzburg
Tel.: +43-6246-883-0
Telefax: +43-6246-883-30

Belgium

N.V. GRUNDFOS Bellux S.A.
Boomsesteenweg 81-83
B-2630 Aartselaar
Tél.: +32-3-870 7300
Télécopie: +32-3-870 7301

Belarus

Представительство ГРУНДФОС в
Минске
220125, Минск
ул. Шафарнянская, 11, оф. 56, БЦ
«Порт»
Тел.: +7 (375 17) 286 39 72/73
Факс: +7 (375 17) 286 39 71
E-mail: minsk@grundfos.com

Bosnia and Herzegovina

GRUNDFOS Sarajevo
Zmaja od Bosne 7-7A,
BH-71000 Sarajevo
Phone: +387 33 592 480
Telefax: +387 33 590 465
www.ba.grundfos.com
e-mail: grundfos@bih.net.ba

Brazil

BOMBAS GRUNDFOS DO BRASIL
Av. Humberto de Alencar Castelo
Branco, 630
CEP 09850 - 300
São Bernardo do Campo - SP
Phone: +55-11 4393 5533
Telefax: +55-11 4343 5015

Bulgaria

Grundfos Bulgaria EOOD
Slatina District
Iztochna Tangenta street no. 100
BG - 1592 Sofia
Tel. +359 2 49 22 200
Fax. +359 2 49 22 201
email: bulgaria@grundfos.bg

Canada

GRUNDFOS Canada Inc.
2941 Brighton Road
Oakville, Ontario
L6H 6C9
Phone: +1-905 829 9533
Telefax: +1-905 829 9512

China

GRUNDFOS Pumps (Shanghai) Co. Ltd.
10F The Hub, No. 33 Suhong Road
Minhang District
Shanghai 201106
PRC
Phone: +86 21 612 252 22
Telefax: +86 21 612 253 33

COLOMBIA

GRUNDFOS Colombia S.A.S.
Km 1.5 vía Siberia-Cota Conj. Potrero
Chico,
Parque Empresarial Arcos de Cota Bod.
1A.
Cota, Cundinamarca
Phone: +57(1)-2913444
Telefax: +57(1)-8764586

Croatia

GRUNDFOS CROATIA d.o.o.
Buzinski prilaz 38, Buzin
HR-10010 Zagreb
Phone: +385 1 6595 400
Telefax: +385 1 6595 499
www.hr.grundfos.com

GRUNDFOS Sales Czechia and Slovakia s.r.o.

Čajkovského 21
779 00 Olomouc
Phone: +420-585-716 111

Denmark

GRUNDFOS DK A/S
Martin Bachs Vej 3
DK-8850 Bjerringbro
Tlf.: +45-87 50 50 50
Telefax: +45-87 50 51 51
E-mail: info_GDK@grundfos.com
www.grundfos.com/DK

Estonia

GRUNDFOS Pumps Eesti OÜ
Peterburi tee 92G
11415 Tallinn
Tel: + 372 606 1690
Fax: + 372 606 1691

Finland

OY GRUNDFOS Pumput AB
Trukkikuja 1
FI-01360 Vantaa
Phone: +358-(0) 207 889 500

France

Pompes GRUNDFOS Distribution S.A.
Parc d'Activités de Chesnes
57, rue de Malacombe
F-38290 St. Quentin Fallavier (Lyon)
Tél.: +33-4 74 82 15 15
Télécopie: +33-4 74 94 10 51

Germany

GRUNDFOS GMBH
Schlüterstr. 33
40699 Erkrath
Tel.: +49-(0) 211 929 69-0
Telefax: +49-(0) 211 929 69-3799
e-mail: infoservice@grundfos.de
Service in Deutschland:
e-mail: kundendienst@grundfos.de

Greece

GRUNDFOS Hellas A.E.B.E.
20th km. Athinon-Markopoulou Av.
P.O. Box 71
GR-19002 Peania
Phone: +0030-210-66 83 400
Telefax: +0030-210-66 46 273

Hong Kong

GRUNDFOS Pumps (Hong Kong) Ltd.
Unit 1, Ground floor
Siu Wai Industrial Centre
29-33 Wing Hong Street &
68 King Lam Street, Cheung Sha Wan
Kowloon
Phone: +852-27861706 / 27861741
Telefax: +852-27858664

Hungary

GRUNDFOS Hungária Kft.
Tópark u. 8
H-2045 Törökbálint,
Phone: +36-23 511 110
Telefax: +36-23 511 111

India

GRUNDFOS Pumps India Private
Limited
118 Old Mahabalipuram Road
Thoraipakkam
Chennai 600 096
Phone: +91-44 2496 6800

Indonesia

PT. GRUNDFOS POMPA
Graha Intirub Lt. 2 & 3
Jln. Cililitan Besar No.454. Makasar,
Jakarta Timur
ID-Jakarta 13650
Phone: +62 21-469-51900
Telefax: +62 21-460 6910 / 460 6901

Ireland

GRUNDFOS (Ireland) Ltd.
Unit A, Merrywell Business Park
Ballymount Road Lower
Dublin 12
Phone: +353-1-4089 800
Telefax: +353-1-4089 830

Italy

GRUNDFOS Pompe Italia S.r.l.
Via Gran Sasso 4
I-20060 Truccazzano (Milano)
Tel.: +39-02-95838112
Telefax: +39-02-95309290 / 95838461

Japan

GRUNDFOS Pumps K.K.
1-2-3, Shin-Miyakoda, Kita-ku,
Hamamatsu
431-2103 Japan
Phone: +81 53 428 4760
Telefax: +81 53 428 5005

Korea

GRUNDFOS Pumps Korea Ltd.
6th Floor, Aju Building 679-5
Yeoksam-dong, Kangnam-ku, 135-916
Seoul, Korea
Phone: +82-2-5317 600
Telefax: +82-2-5633 725

Latvia

SIA GRUNDFOS Pumps Latvia
Deglava biznesa centrs
Augusta Deglava ielā 60, LV-1035, Rīga,
Tālr.: + 371 714 9640, 7 149 641
Faks: + 371 914 9646

Lithuania

GRUNDFOS Pumps UAB
Smolensko g. 6
LT-03201 Vilnius
Tel: + 370 52 395 430
Fax: + 370 52 395 431

Malaysia

GRUNDFOS Pumps Sdn. Bhd.
7 Jalan Peguam U1/25
Glenmarie Industrial Park
40150 Shah Alam
Selangor
Phone: +60-3-5569 2922
Telefax: +60-3-5569 2866

Mexico

Bombas GRUNDFOS de México S.A. de
C.V.
Boulevard TLC No. 15
Parque Industrial Stiva Aeropuerto
Apodaca, N.L. 66600
Phone: +52-81-8144 4000
Telefax: +52-81-8144 4010

Netherlands

GRUNDFOS Netherlands
Veluwezoom 35
1326 AE Almere
Postbus 22015
1302 CA ALMERE
Tel.: +31-88-478 6336
Telefax: +31-88-478 6332
E-mail: info_gnl@grundfos.com

New Zealand

GRUNDFOS Pumps NZ Ltd.
17 Beatrice Tinsley Crescent
North Harbour Industrial Estate
Auckland
Phone: +64-9-415 3240
Telefax: +64-9-415 3250

Norway

GRUNDFOS Pumper A/S
Strømsveien 344
Postboks 235, Leirdal
N-1011 Oslo
Tlf.: +47-22 90 47 00
Telefax: +47-22 32 21 50

Poland

GRUNDFOS Pompy Sp. z o.o.
ul. Klonowa 23
Baranowo k. Poznania
PL-62-081 Przeźmierowo
Tel: (+48-61) 650 13 00
Fax: (+48-61) 650 13 50

Portugal

Bombas GRUNDFOS Portugal, S.A.
Rua Calvet de Magalhães, 241
Apartado 1079
P-2770-153 Paço de Arcos
Tel.: +351-21-440 76 00
Telefax: +351-21-440 76 90

Romania

GRUNDFOS Pompe România SRL
Bd. Biruintei, nr 103
Pantelimon county Ilfov
Phone: +40 21 200 4100
Telefax: +40 21 200 4101
E-mail: romanian@grundfos.ro

Russia

ООО Грундфос Россия
ул. Школьная, 39-41
Москва, RU-109544, Russia
Тел. (+7) 495 564-88-00 (495)
737-30-00
Факс (+7) 495 564 8811
E-mail grundfos.moscow@grundfos.com

Serbia

Grundfos Srbija d.o.o.
Omladinskih brigada 90b
11070 Novi Beograd
Phone: +381 11 2258 740
Telefax: +381 11 2281 769
www.rs.grundfos.com

Singapore

GRUNDFOS (Singapore) Pte. Ltd.
25 Jalan Tukang
Singapore 619264
Phone: +65-6681 9688
Telefax: +65-6681 9689

Slovakia

GRUNDFOS s.r.o.
Prievozská 4D
821 09 BRATISLAVA
Phona: +421 2 5020 1426
sk.grundfos.com

Slovenia

GRUNDFOS LJUBLJANA, d.o.o.
Leskovoška 9e, 1122 Ljubljana
Phone: +386 (0) 1 568 06 10
Telefax: +386 (0) 1 568 06 19
E-mail: tehnika-si@grundfos.com

South Africa

Grundfos (PTY) Ltd.
16 Lascelles Drive, Meadowbrook Estate
1609 Germiston, Johannesburg
Tel.: (+27) 10 248 6000
Fax: (+27) 10 248 6002
E-mail: lgradidge@grundfos.com

Spain

Bombas GRUNDFOS España S.A.
Camino de la Fuentecilla, s/n
E-28110 Algete (Madrid)
Tel.: +34-91-848 8800
Telefax: +34-91-628 0465

Sweden

GRUNDFOS AB
Box 333 (Lunnagårdsgatan 6)
431 24 Mölndal
Tel.: +46 31 332 23 000
Telefax: +46 31 331 94 60

Switzerland

GRUNDFOS Pumpen AG
Bruggacherstrasse 10
CH-8117 Fällanden/ZH
Tel.: +41-44-806 8111
Telefax: +41-44-806 8115

Taiwan

GRUNDFOS Pumps (Taiwan) Ltd.
7 Floor, 219 Min-Chuan Road
Taichung, Taiwan, R.O.C.
Phone: +886-4-2305 0868
Telefax: +886-4-2305 0878

Thailand

GRUNDFOS (Thailand) Ltd.
92 Chaloein Phrakiat Rama 9 Road,
Dokmai, Pravej, Bangkok 10250
Phone: +66-2-725 8999
Telefax: +66-2-725 8998

Turkey

GRUNDFOS POMPA San. ve Tic. Ltd.
Sti.
Gebze Organize Sanayi Bölgesi
İhsan dede Caddesi,
2. yol 200. Sokak No. 204
41490 Gebze/ Kocaeli
Phone: +90 - 262-679 7979
Telefax: +90 - 262-679 7905
E-mail: satis@grundfos.com

Ukraine

Бізнес Центр Європа
Столичне шосе, 103
м. Київ, 03131, Україна
Телефон: (+38 044) 237 04 00
Факс.: (+38 044) 237 04 01
E-mail: ukraine@grundfos.com

United Arab Emirates

GRUNDFOS Gulf Distribution
P.O. Box 16768
Jebel Ali Free Zone
Dubai
Phone: +971 4 8815 166
Telefax: +971 4 8815 136

United Kingdom

GRUNDFOS Pumps Ltd.
Grovebury Road
Leighton Buzzard/Beds. LU7 4TL
Phone: +44-1525-850000
Telefax: +44-1525-850011

U.S.A.

GRUNDFOS Pumps Corporation
9300 Loiret Blvd.
Lenexa, Kansas 66219
Phone: +1-913-227-3400
Telefax: +1-913-227-3500

Uzbekistan

Grundfos Tashkent, Uzbekistan The
Representative Office of Grundfos
Kazakhstan in Uzbekistan
38a, Oybek street, Tashkent
Телефон: (+998) 71 150 3290 / 71 150
3291
Факс: (+998) 71 150 3292

Addresses Revised 15.01.2019

98332825 0120

ECM: 1275918

Trademarks displayed in this material, including but not limited to Grundfos, the Grundfos logo and "be think innovate" are registered trademarks owned by The Grundfos Group. All rights reserved. © 2020 Grundfos Holding A/S, all rights reserved.