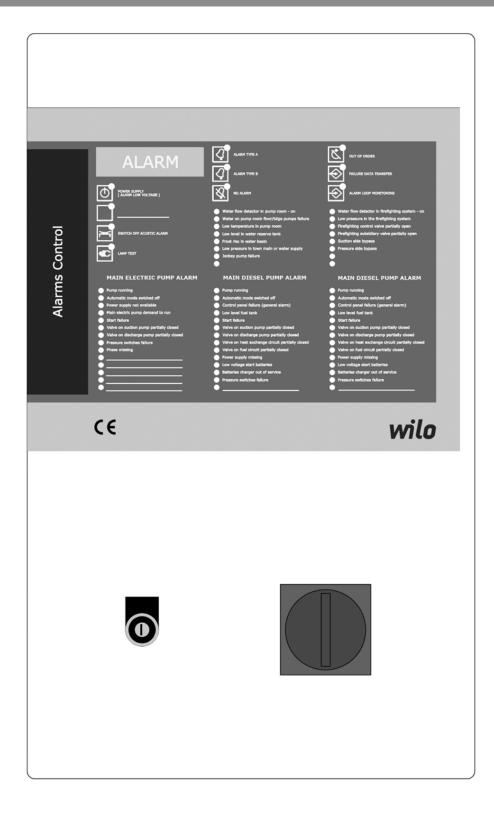


Wilo-Control SiFire Alarm Box



en Installation and operating instructions



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1 General

1.1 About this document

The language of the original operating instructions is Italian. 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 regulations and standards valid at the time of going to print.

EC-Declaration of conformity:

A copy of the EC-Declaration of conformity is a component of these operating instructions. If a technical modification is made on the designs named there without our agreement or the declarations made in the Installation and operating instructions on product/personnel safety are not observed, this declaration loses its validity.

2 Safety

These operating instructions contain basic information which must be adhered to during installation, operation and maintenance. For this reason these operating instructions must, without fail, be read by the service technician and the responsible specialist/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 damaging the system. "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. Information that appears directly on the product must be strictly complied with and kept in legible condition.

2.2 Personnel qualifications

The installation, operating and maintenance personnel must have the appropriate qualifications for this work. Area of responsibility, terms of reference and monitoring of the personnel are to be ensured by the operator. If the personnel are not in possession of the necessary knowledge, they are to be trained and instructed. This can be accomplished if necessary by the manufacturer of the product at the request of the operator.

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 the environment and the product/unit. Non-observance of the safety instructions results in the loss of any claims to damages. In detail, non-observance can, for example, result in the following risks:

- Danger to persons from electrical, mechanical and bacteriological influences
- Damage to the environment due to leakage of hazardous materials
- · Property damage
- Failure of important product/unit functions
- Failure of required maintenance and repair procedures

2.4 Safety consciousness on the job

The safety instructions included in these Installation and operating instructions, the existing national regulations for accident prevention together with any internal working, operating and safety regulations of the operator are to be complied with.

2.5 Safety instructions for the operator

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

- If hot or cold components on the product/unit lead to hazards, then local measures must be taken to quard them against touching.
- Guards protecting against touching moving components (such as the coupling) must not be removed whilst the product is in operation.

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- Leakages (e.g. from the shaft seals) of hazardous fluids (which are explosive, toxic or hot) must be led away so that no danger to persons or to the environment arises. National statutory provisions are to be complied with.
- Highly flammable materials are always to be kept at a safe distance from the product.
- Danger from electrical current must be eliminated. Local directives or general directives [e.g. IEC, VDE etc.] and instructions from local energy supply companies must be adhered to.

2.6 Safety instructions for installation and maintenance work

The operator must ensure that all installation and maintenance 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 must only be carried out when at a standstill. It is mandatory that the procedure described in the Installation and operating instructions for shutting down the product/unit be complied with.

Immediately on conclusion of the work, all safety and protective devices must be put back in position and/or recommissioned.

2.7 Unauthorised modification and manufacture of spare parts

Unauthorised modification and manufacture of spare parts will impair the safety of the product/personnel and will make void the manufacturer's declarations regarding safety.

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 will absolve us of liability for consequential events.

2.8 Improper use

The operating safety of the supplied product is only guaranteed for conventional use 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 after receiving the product:

- · Check product for transport damage.
- In the event of damage in transit, take the necessary steps with the forwarding agent within the respective time limits.

CAUTION! Risk of property damage! Incorrect transport and interim storage can cause property damage.

- The switchgear is to be protected against moisture and mechanical damage.
- It must not be exposed to temperatures outside the scope of -10 °C to +50 °C.

4 Application (intended use)

The Wilo–Control SiFire Alarm Box switchgear is used to manage the alarms detected by the presure boosting system and the sensors in the technical room of the fire fighting system.

According to EN 12845, all the alarms used in residential and office buildings, hospitals, hotels, administrative and industrial buildings have to be transmitted via the device. The intended use includes complying with these instructions.

Any other use is considered to be outside the intended use.

5 Product information

5.1 Type key

Example:	W-CTRL-F-EDJ-M-ND5-ALARMS
W	W = WILO
CTRL	Control
F	F = fire fighting purposes
EDJ	Configuration group pumps: Electric+Diesel+Jockey
М	m = 1 phase;
ND5	New Design switchgear measuring 300 x 500 x 250 mm
ALARMS	Application

5.2 Technical data (standard version)				
Mains supply voltage [V]:	1~230 V (L, N, PE)			
Frequency [Hz]:	50/60 Hz			
Control voltage [V]:	24 V DC			
Max. current consumption [A]:	See rating plate			
Protection class:	IP 54			
Max. fuse protection on mains side [A]:	See wiring diagram			
Ambient temperature [°C]:	0 to +40 °C			
Electrical safety:	Degree of contamination II			
Alarm/signalling contact	250 V AC, 1 A			
Maximum length for alarm contact line	100 m			
Maximum length for master/slave connection line	800 m			

5.3 Scope of delivery

- Switchgear
- · Wiring diagram
- Installation and operating instructions
- Test report in accordance with EN 60204-1

5.4 Accessories

6 Description and function

6.1 Description of the product

6.1.1 Function description

The alarm switchgear is used to control and display the alarms in a fire fighting pump room, for sprinkler systems and fire hydrants. All of the alarms in the pump room and those related to switchgears on the pressure boosting system for firefighting purposes as well as those from external sensors may merge into the switchgear. The alarm connecting lines are managed electrically. In case there is a line cut or a short-circuit of the line, the switchgear generates an alarm which signals the type of event that occurred.

All alarms can be connected to two types of alarm "A" and "B" according to the requirements of annex "I" of the EN 12845–2009.

If an alarm occurs, the circuit activates the corresponding LED, a general flashing signalling

and an audible alarm (with silenced option). If not silenced, light and sound signals will remain active until an alarm is present and/or has been reset (via selector under locked).

The sound signal, though silenced, should restart in case of a subsequent alarm event and becomes active again.

The panel signal alarm is designed to work in two versions, one that works as master and the other as slave; in master configuration, alarm contacts must be connected to it, while in slave configuration alarms are received through serial communication from the master device.

The fail of the communication between the two equipment master/slave activates an alarm

signal . The switchgear is powered by a lead battery properly buffer loaded by a charger powered by the mains voltage, the switchgear generates an alarm caused by the charger in case of any malfunction of it or breakdown of the battery. Moreover the card has an internal control of the supply voltage that generates an alarm message in the case it drops below 22.5 V.

6.1.2 Switchgear set-up

The set-up of the switchgear consists of the following main components:

 Main switch: to turn On/Off the power line for the battery charger (the power supply for the PCB depends on the power connection / efficiency of the battery).

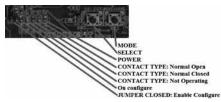
- Lead-acid battery: powers alarms control devices and memory unit.
- **Battery charger:** buffer charging battery and battery check.
- Fuses: protection of power line for battery charger and battery.

Main PCB:



Main PCB has the following characteristics:

1 – Block of 16 alarm inputs on the main card with power control. Each input can be configured with the following procedure:



- a- Insert the jumper.
- b- Use the "select" button to select the input channel to be set.
- c- Use the "mode" button to select the configuration of the input channel (normal open, normal closed, not operating).
- d- The "select" button will select the next channel to be set.
- d- Remove the jumper to store the programming and stop the step of setting-up the inputs.
- 2 Status lights on the alarm switchgear, "SWITCH OFF ACOUSTIC ALARM" and "LAMP TEST" buttons

PCB input alarms



The card representing the block of 14 alarm inputs with power control and with the option of main PCB configuration as described above The board has a set of 14 LEDs on the first 14 inputs, one of which (input 8) is specifically configured to control the starter line of the pressure switch for the electric/diesel pump. It is configured for signalling in case of alarm, short-circuit, or line break. This input has a different setup from the others because of the connection with the PCB SiFire (warning: if the SiFire switch-

gear is not powered, then the LED will be flashing indicating a line break). Inputs 15 and 16 do not have a matching LED. Input 15 is configured with logic "OR" together with input 1 (pump running) to allow connection of the "sensing pump in motion" pressure switch. If input 15 indicates a problem regarding the connecting line of the "sensing pump running" pressure switch (broken line /short-circuit), then this is always signalled by the corresponding LED input 1. In all the alarm inputs: if the continuous LED alarm status is active and flashing, this means that the line may be interrupted or shorted.

· Key switch: to reset active alarms

6.2 Function and operation



DANGER! Risk of fatal injury!

When working on the open switchgear, there is a danger of electric shock from touching the live components. This work must only be carried out by qualified personnel!



NOTE:

After connecting the switchgear to the supply voltage, as well as after every mains interruption, the switchgear will continue to operate through the buffer battery. If the buffer battery is not in place, then the system remains inactive (the internal clock is maintained by a battery placed on the



When reactivating the battery voltage, the circuit reads the situation at the time of interruption (this situation is similar to an alarm reset via the key switch).

6.2.1 Switchgear operating modes (Fig. 1), switching the switchgear On/Off

The switchgear is switched On/Off by plugging and unplugging the battery. The main switch controls the activation of the battery charger. The correct power supply of the card is signalled

by green warning lights ; in case of a lack of power supply from network or battery charger

failure, the signal light will flash yellow i; in case the battery voltage falls below the voltage of

22.5 V, the yellow light will flash steadily.

Alarm activation:

In case of an alarm, all yellow and red LEDs will remain lit until an operator resets the alarm via the key switch. The following LEDs reset themselves, as their activation could be due to a simple tem-

porary interruption of the power supply: . Using the connection Modbus it is possible to check the status of the unit and the alarm history (using date/time as a reference) up to a maximum

of 999 times. Additional recordings are overwritten automatically.

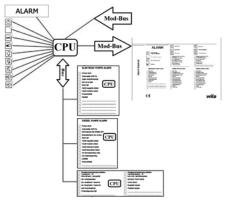
The alarm "SWITCH OFF ACOUSTIC ALARM" but-

ton allows you to stop the buzzer on the switchgear as well as the remote one until the next alarm.

The "lamp test" button allows you to check the operating status of the LEDs on the card and those remotely connected to the output "Alarm A and B" and "no alarm".

6.2.2 General operating logic

The general diagram below indicates the operating logic of the alarm switchgear. This is shown by a CPU that controls the various units of the circuit.



6.2.3 Operation of the switchgear

Main switch

On/Off (lockable in "off" position)

Switch alarm reset

Two positions switch with return spring, turn the switch to reset alarms.

6.2.4 Switchgear display elements

ALARM This shows the presence of one or more

The green LED indicates that the power network is ok.

If the LED is blinking yellow, then there is a lack of power supply or a battery charger failure. If the LED is yellow and lit continuously, then the power supply board is < 22.5 V

Predisposition

"SWITCH OFF ACOUSTIC ALARM" button, the LED lights up when the alarm has switched off.

"Test" button for lamps, the LED lights up when the test is active.

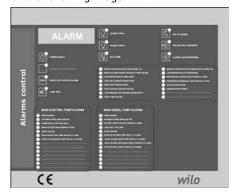
This LED shows an alarm activation in the group "A" and "B".

The LED shows no alarm and the switchgear operates properly.

The LED shows that the switchgear is out of order due to a low voltage of the power supply,

below the minimum level.

The LED shows that there is a failure to communicate with the "block alarm inputs" and/or remote switchgear (optional). The "block alarm inputs" are viewable on a sticker in the red boxes of the following image:



This signal refers to the state of the alarm inputs: green if no alarm is present and yellow if there is a fault in the line of an alarm input, which may be short-circuited or interrupted.





This "block alarm inputs"

shows the activation of a general alarm of the fire fighting pump unit. A flashing LED shows that the input has a broken line or short-circuit.

MAIN ELECTRIC PUMP ALARM Pump noving Administrative standard off Pumper regally not evaluated in Note industry pump demand in an Start fallow Water on existing pump partially closed Water on existing pump partially closed Pressures smith-as fallows Pressures smith-as fallows

The group of LEDs indicates the activation of an alarm relative to a main pump of the fire fighting pump unit. A blinking LED shows that the input has a broken line or short-circuit.

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



WARNING! Risk of injury!

The existing directives for accident prevention must be adhered to.



8

WARNING! Danger of electric shock! Danger from electrical current must be eliminated.

Local directives or general directives [e.g. IEC] and instructions from local energy supply companies must be adhered to.

7.1 Installation

Install the switchgear/system at a dry location. Protect the place of installation from direct exposure to sunlight.

7.2 Electrical connection



DANGER! Risk of fatal injury!

Improper electrical connections can lead to fatal electric shocks.

- Have the electrical connection established by an electrician approved by the local electricity supplier only and in accordance with local regulations.
- Observe the Installation and operating instructions for the pumps and accessories.
- Disconnect the power supply before carrying out any work.



WARNING! Danger of electric shock! There is a potentially fatal voltage on the supply side, even when the main switch is turned off.

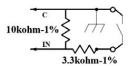
• The type of mains, current and voltage of the mains connection must match the details on the rating plate of the control device.



NOTE:

- Fuse on mains side in accordance with the information in the wiring diagram
- Feed the ends of the mains cable through the threaded cable connections and cable inlets and wire them according to the markings on the terminal strips.
- Earth in accordance with the regulations.

Each alarm contact must have two terminating resistors as shown in the diagram here below:



7.2.1 Power supply connection

Connect the onsite 4-wire cable (L1, L2, L3, PE) for the supplying network to the main switch, in accordance with the circuit diagram.

7.2.2 Pump connection



Observe the Installation and operating instructions for the pumps!

The pump is connected to the terminal strips in accordance with the circuit diagram. The pump is operated via direct starting.

7.2.3 Pressure switch connection

The pressure switch is connected to the terminal strips in accordance with the circuit diagram. The pressure switch contact closes when there is a pressure drop and switches on the pump.

7.2.4 Fault signal connection

At the fault signal terminal strip, a signal indicating a fault can be transferred to a potential–free contact (see circuit diagram).

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8 Commissioning



WARNING! Risk of fatal injury!

Commissioning by qualified personnel only! Improper commissioning poses a risk of fatal injury. Have commissioning performed by qualified personnel only.



DANGER! Risk of fatal injury!

When working on the open switchgear, there's a danger of electric shock from touching the live components.

This work must only be carried out by qualified personnel!

It is recommended that you have the switchgear commissioned by Wilo customer service. Before switching the device on for the first time, the onsite wiring must be checked, in particular the earthing.



Tighten all connection terminals prior to commissioning!

8.1 Checking the motor direction of rotation

By briefly switching on the pump in "manual" operating mode (see 6.2.3), check that the direction of rotation of the pump in mains operation is correct. When the pump motor runs out, compare the direction of rotation of the fan wheel and the direction specified on the pump housing. If the direction of rotation of the pump is wrong in the mains operation, then swap any two phases of the power cable.

8.2 Setting the excess current protection

In the case of direct starting, the motor protection switch must be set to rated current IN for the

pump. The rated current IN is specified on the pump's rating plate.

9 Maintenance



Have maintenance and repair work carried out by qualified skilled personnel only! DANGER! RISK OF FATAL INJURY!

There is a risk of fatal injury from electric shock when working on electrical equipment.

- The switchgear should be electrically isolated and secured against any unauthorised activation during any maintenance or repair work.
- Any damage to the connection cable should only ever be eradicated by a qualified electrician.
- · The switchgear must be kept clean.
- Visual inspection of the electric system parts in the switchgear.

10 Faults, causes and remedies



DANGER! Risk of fatal injury!

There is a risk of fatal injury from electric shock when working on electrical equipment.

Have faults remedied by qualified skilled personnel only! Follow the safety instructions in Section 2: "Safety".

Before carrying out any work to faults, disconnect the unit from the power supply, and make sure it cannot be switched back on by unauthorised persons.

10.1 Fault indication

If a fault occurs, then the signal lamp for the fault

signal lights up yellow. The fault signal can be transferred to the potential–free contact.

Faults	Causes	Remedy
Flashing yellow signal	No mains voltage	Restore the mains voltage.
Continuous yellow signal	Battery voltage < 22.5 VBreakdown / alarm charger	Restore the battery.Replace the battery charger.
Yellow signal	• Battery voltage < 20.7 V	Restore the battery.Replace the battery charger.
Yellow signal	 No connection to "block alarm input" No connection to "slave" remote switchgear 	 Check the connection surface. Check the connection line to the alarm switchgear. Failure of the block alarm inputs
Yellow signal	 Failure of line connection to the alarm contact: line break or short-circuit Lowering of the insulation resistance of the cable Increased contact resistance in the joints present in the connection line alarm Cable not suitable for the type of installation Line length > 800 m Section line inadequate 	 Restore the line connection of the alarm contact panel. Inspect and clean manholes / cable chambers. Replace connecting line alarm contact. Check terminal tightening.
No LED on	Dead battery or not connected	Connect the battery.Replace the battery.Check the battery charger.

Argentina

WILO SALMSON
Argentina S.A.
C1295ABI Ciudad
Autónoma de Buenos Aires
T +54 11 4361 5929
carlos.musich@wilo.com.ar

Australia

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

Austria

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

Azerbaijan

WILO Caspian LLC 1065 Baku T +994 12 5962372 info@wilo.az

Belarus

WILO Bel IOOO 220035 Minsk T +375 17 3963446 wilo@wilo.by

Belgium

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

Bulgaria

WILO Bulgaria EOOD 1125 Sofia T +359 2 9701970 info@wilo.bq

Brazil

WILO Comercio e Importacao Ltda Jundiaí – São Paulo – Brasil 13.213–105 T +55 11 2923 9456 wilo@wilo-brasil.com.br

Canada

WILO Canada Inc. Calgary, Alberta T2A 5L7 T +1 403 2769456 info@wilo-canada.com

China

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

Croatia

WILO Hrvatska d.o.o. 10430 Samobor T +38 51 3430914 wilo-hrvatska@wilo.hr

Cuba

WILO SE Oficina Comercial Edificio Simona Apto 105 Siboney. La Habana. Cuba T +53 5 2795135 T +53 7 272 2330 raul.rodriguez@wilo-cuba.

Czech Republic

WILO CS, s.r.o. 25101 Cestlice T +420 234 098711 info@wilo.cz

Denmark

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

Estonia

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

Finland

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

France

Wilo Salmson France S.A.S. 53005 Laval Cedex T +33 2435 95400 info@wilo.fr

Great Britain

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

Greece

WILO Hellas SA 4569 Anixi (Attika) T +302 10 6248300 wilo.info@wilo.gr

Hungary

WILO Magyarország Kft 2045 Törökbálint (Budapest) T +36 23 889500 wilo@wilo.hu

India

Wilo Mather and Platt Pumps Private Limited Pune 411019 T +91 20 27442100 services@matherplatt.com

Indonesia

PT. WILO Pumps Indonesia Jakarta Timur, 13950 T +62 21 7247676 citrawilo@cbn.net.id

Ireland

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

Italy

WILO Italia s.r.l.
Via Novegro, 1/A20090
Segrate MI
T +39 25538351
wilo.italia@wilo.it

Kazakhstan

WILO Central Asia 050002 Almaty T +7 727 312 40 10 info@wilo.kz

Korea

WILO Pumps Ltd. 20 Gangseo, Busan T +82 51 950 8000 wilo@wilo.co.kr

Latvia

WILO Baltic SIA 1019 Riga T +371 6714-5229 info@wilo.lv

Lebanon

WILO LEBANON SARL Jdeideh 1202 2030 Lebanon T +961 1 888910 info@wilo.com.lb

Lithuania

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

Morocco

WILO Maroc SARL 20250 Casablanca T +212 (0) 5 22 66 09 24 contact@wilo.ma

The Netherlands

WILO Nederland B.V. 1551 NA Westzaan T +31 88 9456 000 info@wilo.nl

Norway

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

Poland

WILO Polska Sp. z.o.o. 5-506 Lesznowola T +48 22 7026161 wilo@wilo.pl

Portugal

Bombas Wilo-Salmson Sistemas Hidraulicos Lda. 4475-330 Maia T +351 22 2080350 bombas@wilo.pt

Romania

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

Russia

WILO Rus 000 123592Moscow T +7 495 7810690 wilo@wilo.ru

Saudi Arabia

WILO Middle East KSA Riyadh 11465 T +966 1 4624430 wshoula@wataniaind.com

Serbia and Montenegro

WILO Beograd d.o.o. 11000 Beograd T +381 11 2851278 office@wilo.rs

Slovakia

WILO CS s.r.o., org. Zložka 83106 Bratislava T +421 2 33014511 info@wilo.sk

Slovenia

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

South Africa

Wilo Pumps SA Pty LTD 1685 Midrand T +27 11 6082780 patrick.hulley@salmson.co.za

Spain

WILO Ibérica S.A. 8806 Alcalá de Henares (Madrid) T +34 91 8797100 wilo.iberica@wilo.es

Sweden

WILO NORDIC AB 35033 Växjö T +46 470 727600 wilo@wilo.se

Switzerland

Wilo Schweiz AG 4310 Rheinfelden T +41 61 836 80 20 info@wilo.ch

Taiwan

WILO Taiwan CO., Ltd. 24159 New Taipei City T +886 2 2999 8676 nelson.wu@wilo.com.tw

Turkey

WILO Pompa Sistemleri San. ve Tic. A.S, 34956 İstanbul T +90 216 2509400 wilo@wilo.com.tr

Ukraina

WILO Ukraina t.o.w. 08130 Kiew T +38 044 3937384 wilo@wilo.ua

United Arab Emirates

WILO Middle East FZE Jebel Ali Free zone – South PO Box 262720 Dubai T +971 4 880 91 77 info@wilo.ae

USA

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

Vietnam

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



WILO SE
Nortkirchenstraße 100
D-44263 Dortmund
Germany
T +49(0)231 4102-0
F +49(0)231 4102-7363
wilo@wilo.com
www.wilo.com