# Grundfos RSI

Renewable Solar Inverter for pump control
1.5 - 250 kW

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# 1. Product introduction

## General description

The Grundfos Renewable Solar Inverter (RSI) is an off-grid solar inverter converting the DC power output from the solar panel to AC power supply for pump operation.

RSI can be used in both new and existing systems as long as the motor specifications are compatible and the motor is suitable for use with a variable frequency drive.

The list below contains the Grundfos pump types for use in applications with RSI:

- CR
- SP
- NB, NK
- MTR
- CM
- TP

## Features and benefits

### Enclosure classes up to IP66

RSI is available in three enclosure classes: IP21, IP54 and IP66.

- IP21: RSI must be installed in a cabinet with sufficient ingress protection.
- IP54: RSI can be installed without a cabinet, but must not be installed outdoors without additional protection against water and sun.
- IP66: RSI can be installed without a cabinet. It can be installed outdoors, but should be shaded from direct sunlight.

### Setup wizard with Grundfos product library

RSI has a built-in Grundfos product library which allows a plug-and-pump experience. The motor library contains all related parameters, which simplifies the setup process to just a few clicks and a setup time of a few minutes.

### Detachable operating panel

The operating panel is mounted on RSI by using a magnet and a communication plug. The inverter can operate without the operating panel and operates with the last saved setup data.

**Jc**RSI is AC and DC compatible. RSI can be connected to the grid or a generator as back-up power during solar panel disruptions.

The AC compatibility also allows the end user to connect the inverter to three-phase power in their workshop for off-site setup, which enables a fast and simple on-site installation.

### Maximum power point tracking (MPPT)

The inverter has built-in electronics with four MPPT algorithms. The inverter continuously optimises the power output according to available solar irradiation as well as various environmental conditions.

### Overvoltage and undervoltage protection

Overvoltage and undervoltage may occur in case of faulty installation. The inverter disconnects the power connection to the motor if the voltage falls outside the allowed voltage limits. The inverter stays in fault mode with the error code displayed until reset.

### Overload protection

Overload may occur if the maximum allowed frequency is set too high or a wrong pump is used. The inverter disconnects the power connection to the motor if overload occurs. The inverter stays in fault mode with the error code displayed until reset.

### Overcurrent protection

Overcurrent may occur if, for example, a wrong cable size is used. The inverter disconnects the power connection to the motor if the current falls outside the allowed current limits. The inverter stays in fault mode with the error code displayed until reset.

Note **that** for the overcurrent protection to function properly, the actual current value must be adjusted according to the maximum current attained at the maximum frequency shortly after the system started operation.

## Overtemperature protection

The inverter may be overheated if appropriate ventilation is not available or the ambient temperature is too high. The inverter disconnects the power connection to the motor if overtemperature occurs in the inverter. The inverter stays in fault mode with the error code displayed until reset.

Note that the inverter does not detect motor temperature or protect the motor against overtemperature.

## No-load protection

No-load situation of the inverter may occur if, for example, the cable to the motor is broken. The inverter disconnects the power connection to the motor if no-load occurs. The inverter stays in fault mode with the error code displayed until reset.

For the no-load protection to function properly, check the RSI installation and operating instructions carefully and follow them during operation.

## Operating history

The inverter stores historical operating data. The data can be retrieved through the menu on the inverter.

# Type key

| Code | Example | RSI 0100 3L 0003 4 X HMGR |
|---|---|---|
| RSI | = Renewable Solar Inverter | |
| 0100 | = Product type | |
| 3L | = Three-phase power | |
| 0003<br>0072 | Rated current [A] | |
| | Voltage | |
| 2 | 208-240 V | |
| 4 | 380-440 V | |
| | Enclosure class | |
| X | IP66 | |
| - | IP21 | |
| IP54 | IP54 | |
| HMGR | Option (HMGR: Operating panel with graphical display) | |

# 2. Applications

RSI is designed for continuous as well as intermittent operation. The system is suitable for various water supply systems, including irrigation.

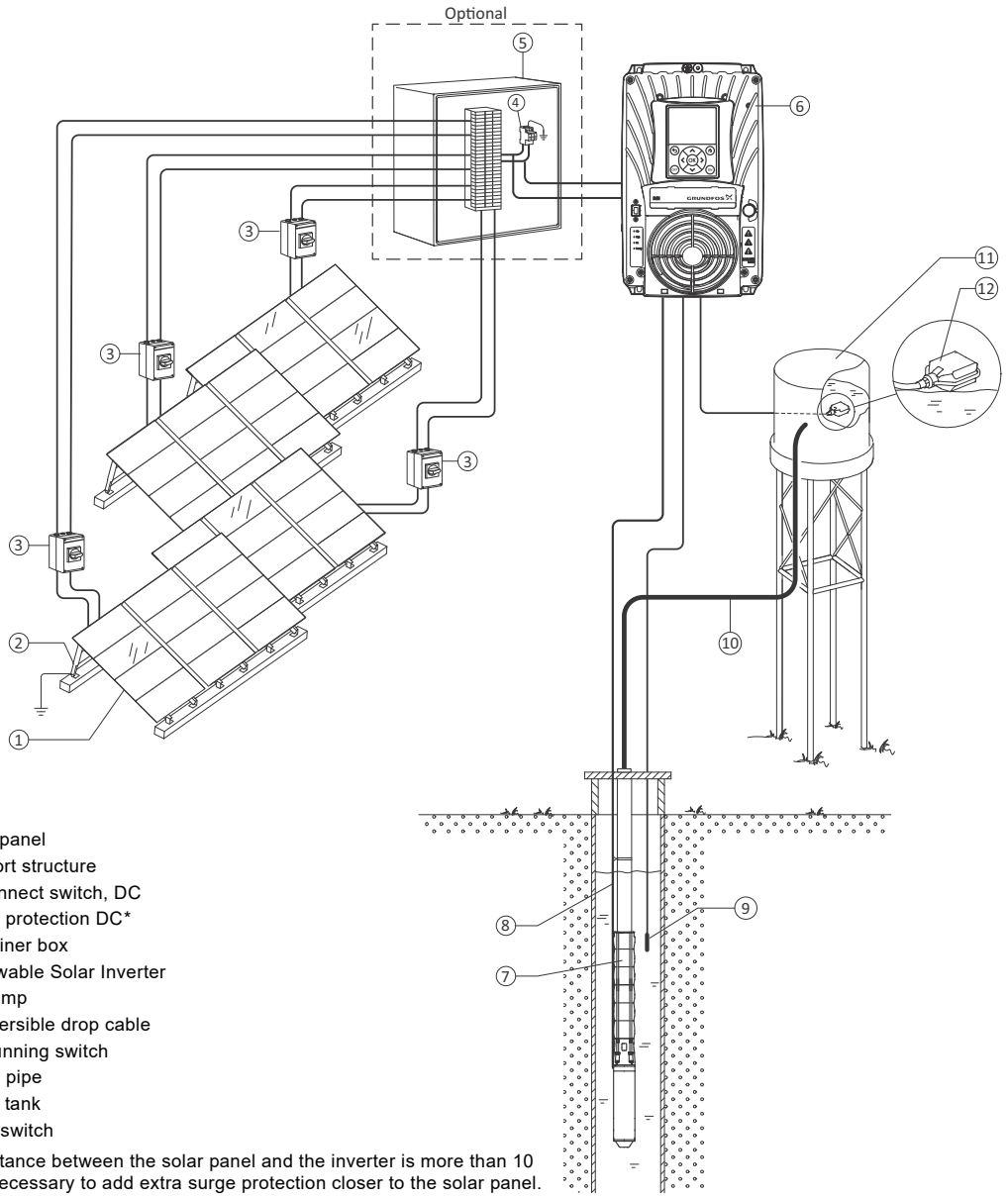
RSI can be used in existing systems with submersible pumps or dry-installed pumps, thus providing a very wide range of applications allowing you to leverage renewable energy sources with the ability to back up the system with grid or generator power.

## Application example

The water production of an RSI system depends on the availability of solar power. The typical result is excess water production in the afternoon and insufficient water production in the morning and evening. A system equipped with a storage water tank enables a stable water supply throughout the day.

In a combiner box, all cables from the solar panels can be connected into one set of power input cables before connecting them to RSI.

## Installation example, submersible pump




1 Solar panel
2 Support structure
3 Disconnect switch, DC
4 Surge protection DC*
5 Combiner box
6 Renewable Solar Inverter
7 SP pump
8 Submersible drop cable
9 Dry-running switch
10 Outlet pipe
11 Water tank
12 Level switch

* If the distance between the solar panel and the inverter is more than 10 m, it is necessary to add extra surge protection closer to the solar panel.

TM06 6677 2014

**Fig. 1** Installation example showing solar panels, solar inverter, submersible pump and water tank

# 3. System components

An RSI system consists of a three-phase Grundfos motor, an RSI solar inverter and various protection accessories.

The RSI system includes the following components:

- Grundfos motor
- RSI
- disconnect switch, AC (optional)
- disconnect switch, DC
- surge protection, DC
- solar panel
- dry-running switch
- level switch (optional)
- sine wave filter (optional)
- combiner box

## Pumps

Pump requirements for an RSI system:

- The rated frequency can be either 50 or 60 Hz.
- The pump must be able to operate with a voltage supply of 3 x 380 VAC or 3 x 220 VAC.

As standard, Grundfos three-phase pumps can only be operated via an AC voltage supply. Therefore, the solar panels must not be connected directly to the pump but must be connected via an RSI.

TM05 7729 1513 - TM06 1253 1914

**Fig. 2** Grundfos pumps suitable for RSI systems

## Renewable Solar Inverter

For a general product description, see section *1. Product introduction* on page 3.

TM06 6678 1416

**Fig. 3** RSI inverter

RSI combined with various sensors can offer the following functions:

- maximum power point tracking (MPPT)
- DC to three-phase AC conversion
- connection to dry-running switch
- connection to level switch
- operating history query.

## Disconnect switch, AC (optional)

An AC disconnect switch is a standard disconnect switch used for normal three-phase power connection between the RSI output and the motor.

## Sine wave filter (optional)

A sine wave filter is primarily used for protecting the motor against overvoltage and increased operating temperature. Output filters can also be used for reduction of motor acoustics.

## Solar panel

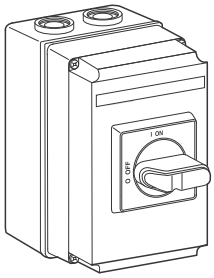
The solar panel offered by Grundfos is specially selected for Grundfos RSI.

All Grundfos solar panels are equipped with plugs and sockets enabling easy connection. The number of solar panels required depends on the water quantity and pressure required, and the installation location.

## Dry-running switch

The dry-running switch is recommended for submersible pump operation. The switch can prevent the risk of the pump operating in a dry well, which could result in damage of the pump.

## Disconnect switch, DC

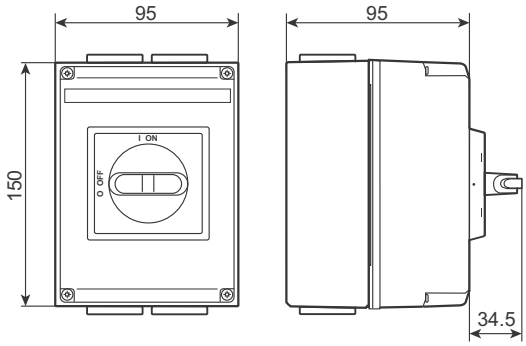



TM05 7581 1213

**Fig. 4** Disconnect switch

The DC disconnect switch is suitable for the solar-powered RSI system.

The disconnect switch enables manual starting and stopping of the system. At least one DC disconnect switch is required for each set of solar panels connected in series to an RSI.



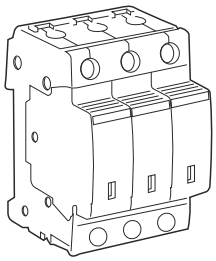

TM05 7585 1213

**Fig. 5** Dimensions, disconnect switch

## Combiner box (optional)

A combiner box combines the output of multiple solar panel arrays for connection to RSI, instead of having an array-to-array cable or exceeding the power range for the cable.

## Surge protection, DC

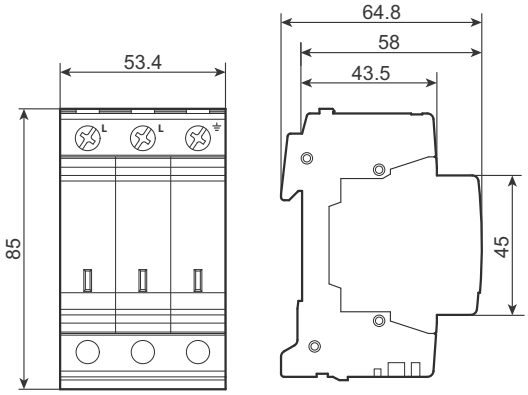


TM05 7582 1213

**Fig. 6** Surge protection

The DC surge protection is suitable for the solar-powered RSI system.

The surge protection gives a very safe and reliable protection of the system by having a quick response. At least one DC surge protection is required for the DC input of RSI. We recommend also to have one DC surge protection for each solar array connected to RSI.




TM05 7586 1213

**Fig. 7** Dimensions, surge protection

## Level switch (optional)

A level switch serves as a start/stop control that depends on the water level in the water tank.

TM02 2407 4201

**Fig. 8** Level switch

# 4. Operating panel

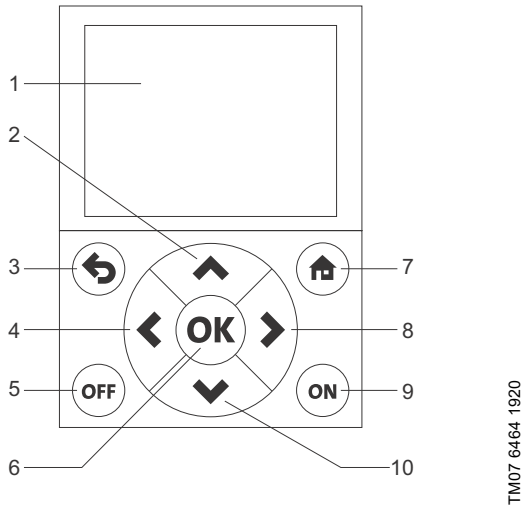



**Fig. 9** Operating panel

| Pos. | Description |
|---|---|
| 1 | • Display |
| 2 | • Scroll menu up<br>• Increase value |
| 3 | • Move backward in menu<br>• Exit edit mode<br>• eset faults with long press |
| 4 | • Move cursor left |
| 5 | • Stop button |
| 6 | • Enter active level/item<br>• Confirm selection |
| 7 | • Change control place<br>• Access control page<br>• Change direction |
| 8 | • Move cursor right |
| 9 | • Start button |
| 10 | • Scroll menu down<br>• Decrease value |

## Advanced password

RSI is designed to fit into solar applications, and some parameters are hidden by a password (681400). It can be entered in the quick setup under "Advanced password". Then you get full access to all the parameters.

***Changing the parameters can influence the MPPT and may cause it to malfunction.***

# 5. Technical data

## Dimensions, frame A

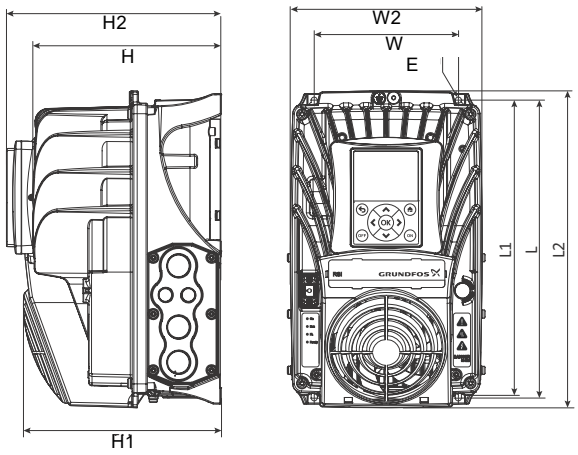



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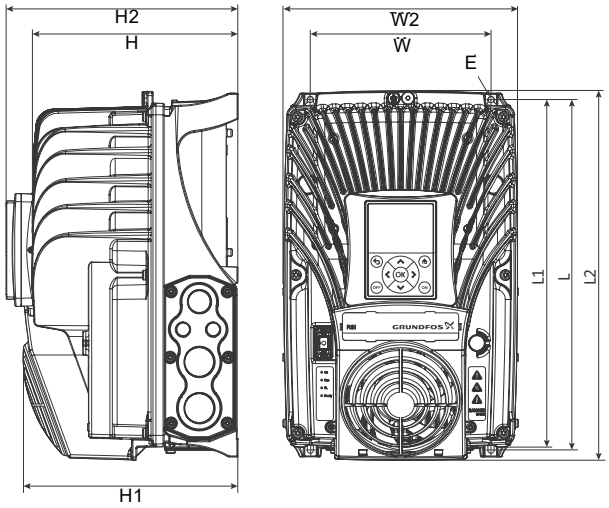
**Fig. 10** Frame A, 1.5 - 5.5 kW

| Product | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Net weight [kg (lb)]** | **E [mm (in)]** | **W [mm (in)]** | **W2 [mm (in)]** | **L [mm (in)]** | **L1 [mm (in)]** | **L2 [mm (in)]** | **H [mm (in)]** | **H1 [mm (in)]** | **H2 [mm (in)]** |
| 8.8 (19.40) | ∅5.9 (0.23) | 143.5 (5.65) | 191.0 (7.52) | 297.0 (11.69) | 293.0 (11.54) | 315.0 (12.40) | 188.0 (7.40) | 197.0 (7.76) | 214.0 (8.43) |

| Packaging | | | |
|---|---|---|---|
| **Gross weight** [kg (lb)] | **Length** [mm (in)] | **Width** [mm (in)] | **Height** [mm (in)] |
| 310 (683.43) | 250 (9.84) | 200 (7.87) | 295 (11.61) |

## Dimensions, frame B




TM06 6527 1813

**Fig. 11** Frame B, 7.5 - 15 kW

| Product | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Net weight [kg (lb)]** | **E [mm (in)]** | **W [mm (in)]** | **W2 [mm (in)]** | **L [mm (in)]** | **L1 [mm (in)]** | **L2 [mm (in)]** | **H [mm (in)]** | **H1 [mm (in)]** | **H2 [mm (in)]** |
| 14.9 (32.85) | ∅6.1 (0.24) | 180.0 (7.09) | 233.0 (9.17) | 349.0 (13.74) | 345.2 (13.59) | 368.0 (14.49) | 204.0 (8.03) | 214.0 (8.43) | 231.0 (9.10) |

| Packaging | | | |
|---|---|---|---|
| **Gross weight** [kg (lb)] | **Length [mm (in)]** | **Width** [mm (in)] | **Height** [mm (in)] |
| 310 (683.43) | 250 (9.84) | 200 (7.87) | 295 (11.61) |

## Dimensions, frame C

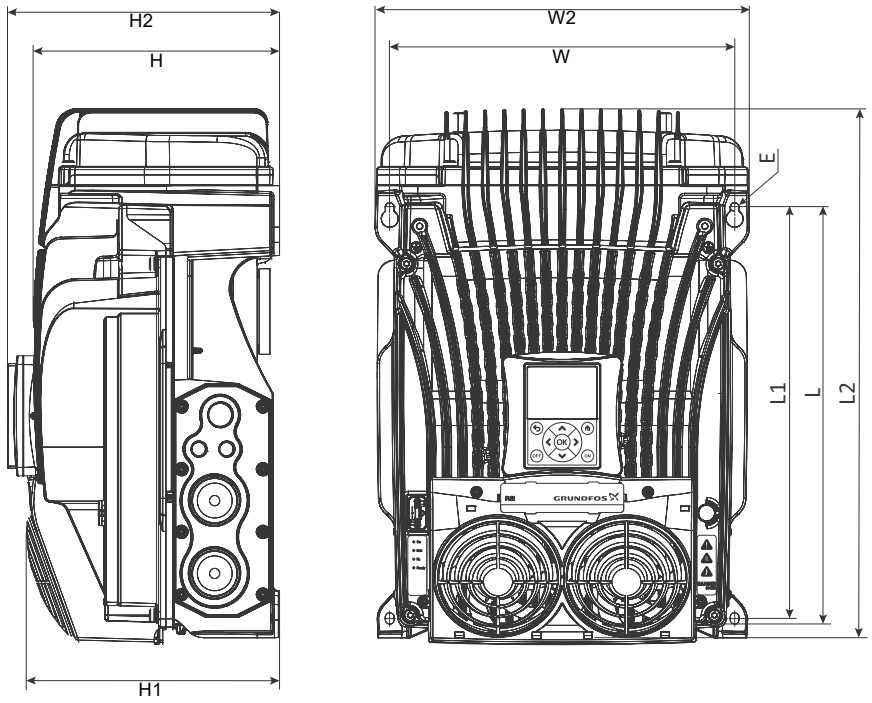
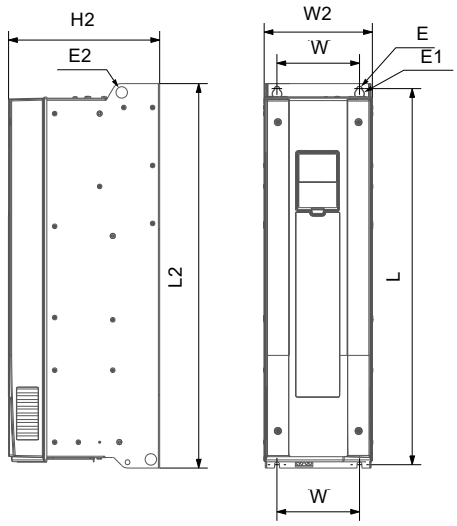



**Fig. 12** Frame C, 18.5 - 37 kW

| Product | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Net weight [kg (lb)] | E [mm (in)] | W [mm (in)] | W2 [mm (in)] | L [mm (in)] | L1 [mm (in)] | L2 [mm (in)] | H [mm (in)] | H1 [mm (in)] | H2 [mm (in)] |
| 31.5 (69.45) | ∅8.2 (0.32) | 322.0 (12.68) | 350.0 (13.78) | 385.0 (15.16) | 382.5 (15.06) | 500.0 (19.69) | 230.0 (9.06) | 236.0 (9.29) | 254.0 (10) |

| Packaging | | | |
|---|---|---|---|
| Gross weight [kg] | Length [mm (in)] | Width [mm (in)] | Height [mm (in)] |
| 310 (683.43) | 250 (9.84) | 200 (7.87) | 295 (11.61) |

## Dimensions, frame MR7



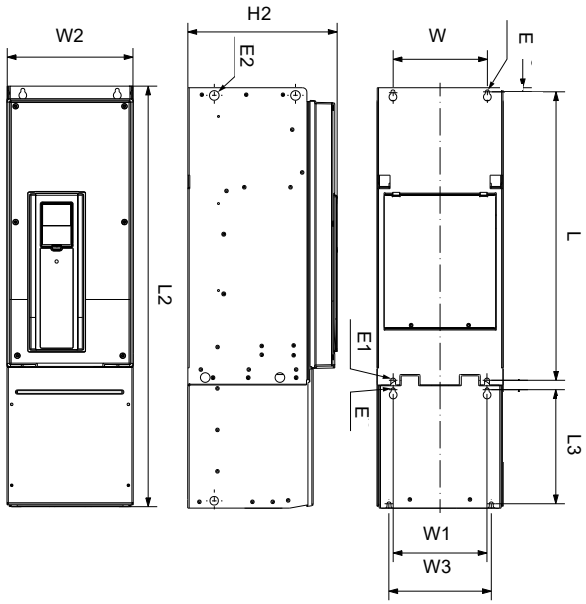

TM07 5444 4119

**Fig. 13** Frame MR7, 45-55 kW

| Product | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Net weight [kg (lb)]** | **E [mm (in)]** | **E1 [mm (in)]** | **E2 [mm (in)]** | **W [mm (in)]** | **W2 [mm (in)]** | **L [mm (in)]** | **L2 [mm (in)]** | **H2 [mm (in)]** |
| 37.5 (82.67) | ∅9 (0.35) | ∅16 (0.63) | ∅20 (0.79) | 190 (7.48) | 237 (9.33) | 645 (25.39) | 660 (25.98) | 259 (10.20) |

| Packaging | | | |
|---|---|---|---|
| **Gross weight** [kg (lb)] | **Length [mm (in)]** | **Width [mm (in)]** | **Height [mm (in)]** |
| 40.5 (89.29) | 320 (12.60) | 330 (12.99) | 750 (29.53) |

## Dimensions, frame MR8



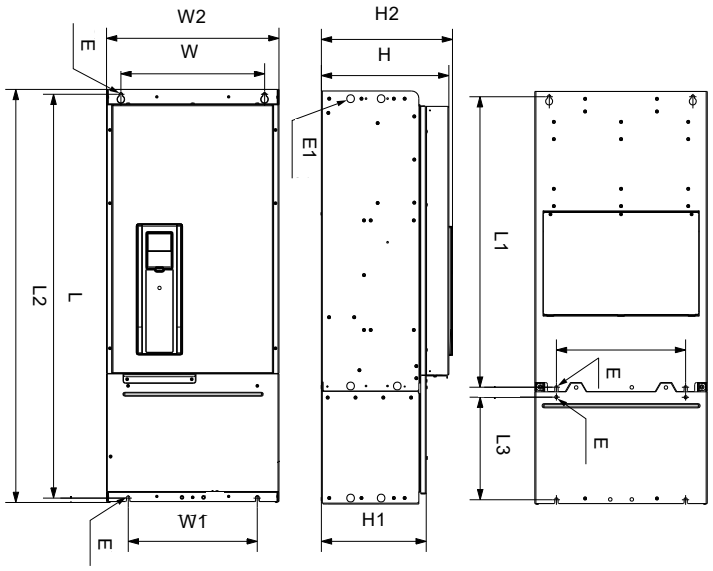

TM07 5445 4119

**Fig. 14** Frame MR8, 110 kW

| Product | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Net weight [kg (lb)]** | **E [mm (in)]** | **E1 [mm (in)]** | **E2 [mm (in)]** | **W [mm (in)]** | **W1 [mm (in)]** | **W2 [mm (in)]** | **W3 [mm (in)]** | **L [mm (in)]** | **L2 [mm (in)]** | **L3 [mm (in)]** | **H2 [mm (in)]** |
| 66 (145.50) | ∅9 (0.35) | ∅11 (0.43) | ∅22 (0.87) | 217 (8.54) | 216 (8.50) | 290 (11.42) | 235 (9.25) | 663 (26.10) | 996 (39.21) | 262 (10.31) | 343 (13.50) |

| Packaging | | | |
|---|---|---|---|
| **Gross weight [kg (lb)]** | **Length [mm (in)]** | **Width [mm (in)]** | **Height [mm (in)]** |
| 80.5 (177.47) | 540 (21.26) | 430 (16.93) | 1140 (44.88) |

## Dimensions, frame MR9




TM07 5446 4119

**Fig. 15** Frame MR9, 132- 160 kW

| Product | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Net weight [kg (lb)] | E [mm (in)] | E1 [mm (in)] | W [mm (in)] | W1 [mm (in)] | W2 [mm (in)] | L [mm (in)] | L1 [mm (in)] | L2 [mm (in)] | L3 [mm (in)] | H [mm (in)] | H1 [mm (in)] | H2 [mm (in)] |
| 119.50 (263.45) | ∅9 (0.35) | ∅22 (0.87) | 400 (15.75) | 360 (14.17) | 480 (18.90) | 1122 (44.17) | 810 (31.89) | 1150 (45.28) | 284 (11.18) | 355 (13.98) | 292 (11.50) | 365 (14.37) |

| Packaging | | | |
|---|---|---|---|
| Gross weight [kg (lb)] | Length [mm (in)] | Width [mm (in)] | Height [mm (in)] |
| 148.00 (326.28) | 570 (22.44) | 730 (28.74) | 1300 (51.18) |

## Dimensions, frame ED

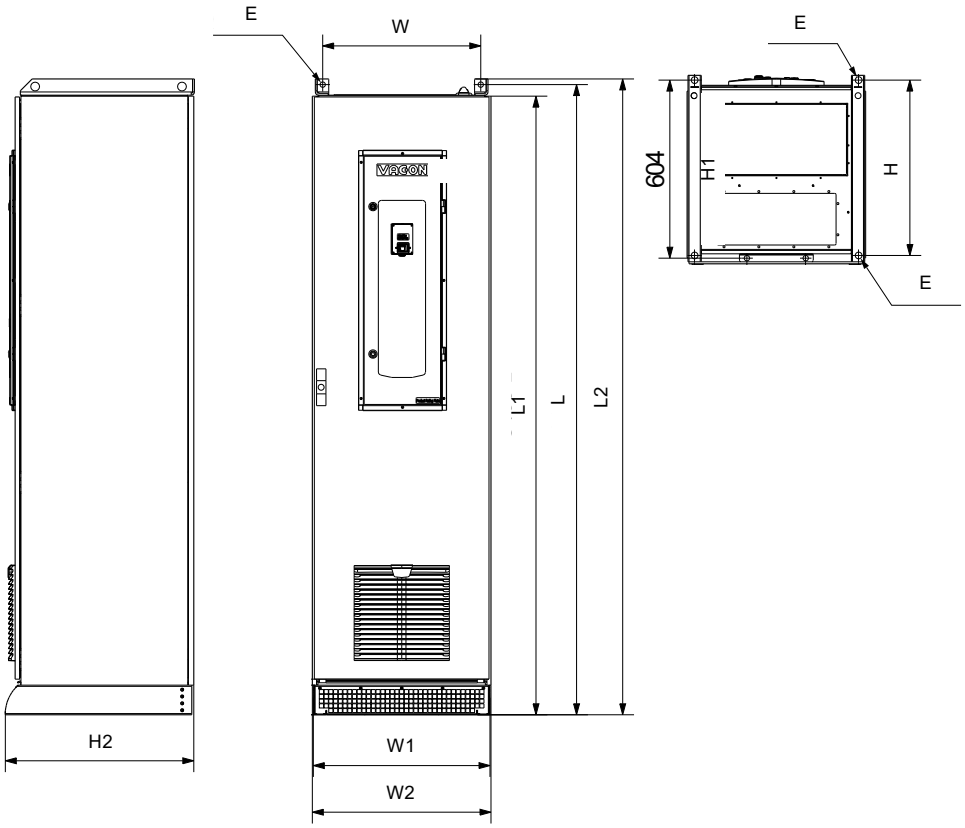



**Fig. 16** Frame ED, 200-250 kW

| Product | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Net weight [kg (lb)]** | **E [mm (in)]** | **W [mm (in)]** | **W1 [mm (in)]** | **W2 [mm (in)]** | **L [mm (in)]** | **L1 [mm (in)]** | **L2 [mm (in)]** | **H [mm (in)]** | **H1 [mm (in)]** | **H2 [mm (in)]** |
| 200 kW: 280 (617.29)<br>250 kW: 420 (925.94) | ∅13<br>(0.51) | 535<br>(21.06) | 599<br>(23.58) | 606<br>(23.86) | 2135.5<br>(84.07) | 2100.5<br>(82.70) | 2155.5<br>(84.86) | 600<br>(23.62) | 604<br>(23.78) | 639<br>(25.16) |

| Packaging | | | |
|---|---|---|---|
| **Gross weight [kg (lb)]** | **Length [mm (in)]** | **Width [mm (in)]** | **Height [mm (in)]** |
| 200 kW: 351 (773.82)<br>250 kW: 491 (1082.47) | 880<br>(34.65) | 800<br>(31.50) | 200 kW: 1300 (51.18)<br>250 kW: 2450 (96.46) |

## Electrical and enclosure data

| Voltage | | | 3 x 208-240 V | 3 x 380-440 V |
|---|---|---|---|---|
| Installation environment | Minimum ambient temperature | [°C (°F)] | -10 (14) | -10 (14) |
| | Maximum ambient temperature | [°C (°F)] | 60 (140) | 60 (140) |
| | Maximum relative humidity | [%] | 100 | 100 |
| Electrical data | Minimum MPP voltage | [VDC] | 230 | 450 |
| | Recommended MPP voltage | [VDC] | 290-336 | 530-615 |
| | Maximum input voltage | [VDC] | 400 | 800 |
| | Input voltage | [VAC] | 208-240 | 380-480 |
| | Rated output voltage | [VAC] | 208-240 | 380-440 |
| | Minimum frequency | [Hz] | 5 | 5 |
| | Maximum frequency | [Hz] | 160 | 160 |
| | Phases | | 3 | 3 |
| | Enclosure class | | IP66 | IP54, IP66 |

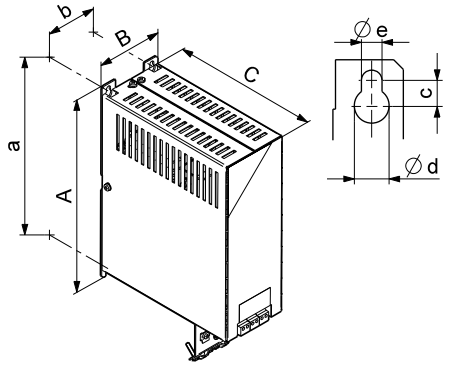
## Technical data for disconnect switch, DC

| | |
|---|---|
| Voltage, DC [V] | 1000 |
| Current [A] | 16 |
| Weight [kg] | 1.05 |
| Marking | IEC 60047 |

## Technical data for surge protection, DC

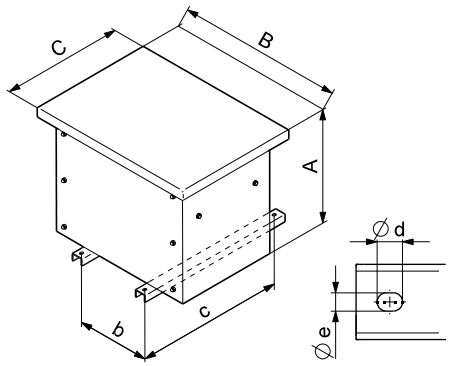
| | |
|---|---|
| Voltage, DC [V] | 1000 |
| Current [A] | 40.000 |
| Weight [kg] | 0.375 |
| Marking | CE |

## Dimensions and weights of output filters




TM04 0625 0908

**Fig. 17** Wall mounting




TM04 0624 0908

**Fig. 18** Floor mounting

| Product number | Mounting | Height [mm (in)] | | Width [mm (in)] | | Depth [mm (in)] | | Screw holes [mm (in)] | | | Weight [kg] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | a | B | b | C | c | Ød | Øe | f | |
| **Sine wave filters** | | | | | | | | | | | |
| 96754973 | Wall | 268 (10.55) | 257 (10.12) | 90 (3.54) | 70 (2.76) | 205 (8.07) | - | 11 (0.43) | 6.5 (0.26) | 8 (0.31) | 7.1 (15.65) |
| 96754974 | Wall | 268 (10.55) | 257 (10.12) | 130 (5.12) | 90 (3.54) | 205 (8.07) | - | 11 (0.43) | 6.5 (0.26) | 8 (0.31) | 9.1 (20.06) |
| 96754976 | Wall | 330 (12.99) | 312 (12.28) | 150 (5.90) | 120 (4.72) | 260 (10.24) | - | 19 (0.75) | 9 (0.35) | 12 (0.47) | 16.9 (37.26) |
| 96754977 | Wall | 430 (16.93) | 412 (16.22) | 150 (5.90) | 120 (4.72) | 260 (10.24) | - | 19 (0.75) | 9 (0.35) | 12 (0.47) | 19.9 (43.87) |
| 96754978 | Wall | 530 (20.86) | 500 (19.69) | 170 (6.69) | 125 (4.92) | 260 (10.24) | - | 19 (0.75) | 9 (0.35) | 12 (0.47) | 39 (85.98) |
| 96755019 | Wall | 610 (24.02) | 580 (22.83) | 170 (6.69) | 125 (4.92) | 260 (10.24) | - | 19 (0.75) | 9 (0.35) | 12 (0.47) | 41 (90.39) |
| 96755021 | Wall | 200 (7.87) | 190 (7.48) | 75 (2.95) | 60 (2.36) | 205 (8.07) | - | 8 (0.31) | 4.5 (0.18) | 7 (0.28) | 3.3 (7.28) |
| 96755032 | Wall | 610 (24.02) | 580 (22.83) | 170 (6.69) | 135 (5.31) | 260 (10.24) | - | 19 (0.75) | 9 (0.35) | 12 (0.47) | 54 (119.05) |
| 97774436 | Floor | 918 (36.14) | - | 940 (37.00) | 779 (30.67) | 792 (31.18) | 660 (25.98) | 11 (0.43) | 22 (0.87) | - | 205.0 (451.95) |
| 97775142 | Floor | 918 (36.14) | - | 940 (37.00) | 779 (30.67) | 792 (31.18) | 660 (25.98) | 11 (0.43) | 22 (0.87) | - | 237.0 (522.50) |
| 97775146 | Floor | 918 (36.14) | - | 940 (37.00) | 779 (30.67) | 792 (31.18) | 660 (25.98) | 11 (0.43) | 22 (0.87) | - | 307.0 (678.82) |
| 97775148 | Floor | 918 (36.14) | - | 940 (37.00) | 779 (30.67) | 792 (31.18) | 660 (25.98) | 11 (0.43) | 22 (0.87) | - | 370.0 (815.71) |
| 97775149 | Floor | 1161 (45.71 | - | 1260 (49.61) | 1099 (43.27) | 991 (39.02) | 860 (33.86) | 11 (0.43) | 22 (0.87) | - | 425.0 (936.96) |

# 6. Product numbers

## Renewable Solar Inverter

### Low voltage range (3 x 208-240 V)

| Power [kW] | Product number | Electrical data | | Frame size |
|---|---|---|---|---|
| | | Max. P2 [kW] | Rated output current [A] | |
| 1.5 | 99090622 | 1.5 | 8 | A |
| 2.2 | 99090633 | 2.2 | 11 | A |
| 3.0 | 99090634 | 3.0 | 12.5 | A |
| 4.0 | 99090635 | 4.0 | 18 | B |
| 5.5 | 99090636 | 5.5 | 24.2 | B |
| 7.5 | 99090637 | 7.5 | 31 | B |
| 11 | 99090638 | 11 | 48 | C |
| 15 | 99090639 | 15 | 62 | C |

### High voltage range (3 x 380-440 V)

| Power [kW] | Product number | Electrical data | | Frame size |
|---|---|---|---|---|
| | | Max. P2 [kW] | Rated output current [A] | |
| 2.2 | 99044348 | 2.2 | 5.6 | A |
| 3.0 | 99044349 | 3.0 | 8 | A |
| 4.0 | 99044350 | 4.0 | 9.6 | A |
| 5.5 | 99044351 | 5.5 | 12 | A |
| 7.5 | 99044352 | 7.5 | 16 | B |
| 11 | 99044363 | 11 | 23 | B |
| 15 | 99044364 | 15 | 31 | B |
| 18.5 | 99044365 | 18.5 | 38 | C |
| 22 | 99044366 | 22 | 46 | C |
| 30 | 99044367 | 30 | 61 | C |
| 37 | 99044368 | 37 | 72 | C |
| 45 | 99648886 | 45 | 87 | MR7 |
| 55 | 99648887 | 55 | 105 | MR7 |
| 110 | 99648888 | 110 | 205 | MR8 |
| 132 | 99648889 | 132 | 261 | MR9 |
| 160 | 99648890 | 160 | 310 | MR9 |
| 200 | 99648891 | 200 | 385 | ED |
| 250 | 99648892 | 250 | 460 | ED |

## Sine wave filter

| Voltage | Max. P2 to motor | Product number |
|---|---|---|
| 3 x 380 VAC | 2.2 kW | 96754973 |
| | 3 kW | |
| | 4 kW | 96754974 |
| | 5.5 kW | 96754976 |
| | 7.5 kW | |
| | 11 kW | 96754977 |
| | 15 kW | 96754978 |
| | 18.5 kW | |
| | 22 kW | 96755019 |
| | 30 kW | 96755021 |
| | 37 kW | 96755032 |
| | 55 kW | 97774436 |
| | 90 kW | 97775142 |
| | 132 kW | 97775146 |
| | 200 kW | 97775148 |
| | 250 kW | 97775149 |
| 3 x 220 VAC | 1.5 kW | 96754973 |
| | 2.2 kW | 96754976 |
| | 3 kW | |
| | 4 kW | 96754977 |
| | 5.5 kW | |
| | 7.5 kW | 96754978 |
| | 11 kW | 96755021 |
| | 15 kW | 96755032 |

## Real-time clock (RTC)

| Description | Product number |
|---|---|
| Battery pack | 99240261 |

## Cable glands

| Description | Product number |
|---|---|
| Cable gland kit, RSI frame A | 99240259 |
| Cable gland kit, RSI frame B | 99297480 |
| Cable gland kit, RSI frame C | 99297483 |

## Option boards

| Description | Product number |
|---|---|
| Digital | 99295565 |
| Analog | 99295551 |
| Pt100 | 99295525 |

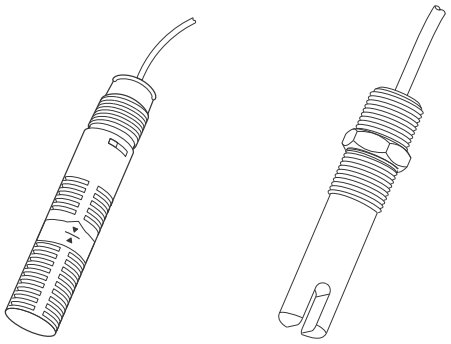
## Disconnect switch, DC

| Description | Product number |
|---|---|
| Disconnect switch, DC | 98341686 |

## Surge protection, DC

| Description | Product number |
|---|---|
| Surge protection, DC | 98341687 |

## Dry-running switch



A B

TM05 7457 1013 - TM06 1270 2014

| Description | Product number |
|---|---|
| Dry-running switch for submersible pumps (A) | 98347579 |
| Dry-running switch for dry-installed pumps (B) | 97911215 |

## Level switch (optional)

TM02 2407 4201

| Description | Product number |
|---|---|
| Level switch | 010748 |

High water level: Contact is closed.
Low water level: Contact is open.

## PC tool (RS-485)

| Description | Product number |
|---|---|
| Grundfos PC Tool | 99240260 |

## Solar cables

| Description | Product number |
|---|---|
| Array to controller (MC4) 10 | 98257868 |
| Array to array (MC4) 0.5 | 98257892 |

## Service kits, wear parts

| Description | Product number |
|---|---|
| Fan (A/B) | 99297481 |
| Fan (C) | 99396484 |
| Protective ventilation GORE-tex (A/B/C) | 99297482 |
| Fan internal (A/B) | 99297484 |
| Fan internal (C) | 99297485 |
| Keypad including cable (A/B/C) | 99297486 |
| HMI cable (A/B/C) | 99297487 |
| Control board (A/B/C) | 99297488 |
| HMI cap (ABC) | 99297489 |

# 7. Appendix

The tables below show the recommended cable size to be used between solar panel and RSI in order to keep the power loss lower than 2 % at 20 °C (68 °F).

**High voltage range (3 x 380 VAC)**

| Current in cable [A] | Distance between solar panel and RSI [m (ft)] | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 30 (98) | 60 (197) | 90 (295) | 120 (394) | 150 (492) | 180 (591) | 210 (689) | 240 (787) | 270 (886) | 300 (984) | 330 (1083) | 360 (1181) | 390 (1280) |
| | Recommended cable size [$mm^2$ (AWG)] | | | | | | | | | | | | |
| 3 | 1.5 (16) | 1.5 (16) | 1.5 (16) | 1.5 (16) | 1.5 (16) | 1.5 (16) | 2.5 (14) | 2.5 (14) | 2.5 (14) | 2.5 (14) | 4 (12) | 4 (12) | 6 (10) |
| 6 | 1.5 (16) | 1.5 (16) | 1.5 (16) | 2.5 (14) | 2.5 (14) | 4 (12) | 4 (12) | 4 (12) | 6 (10) | 6 (10) | 6 (10) | 6 (10) | 10 (8) |
| 9 | 1.5 (16) | 1.5 (16) | 2.5 (14) | 4 (12) | 4 (12) | 6 (10) | 6 (10) | 6 (10) | 10 (8) | 10 (8) | 10 (8) | 10 (8) | 16 (6) |
| 12 | 1.5 (16) | 2.5 (14) | 4 (12) | 4 (12) | 6 (10) | 6 (10) | 10 (8) | 10 (8) | 10 (8) | 10 (8) | 16 (6) | 16 (6) | 16 (6) |
| 15 | 1.5 (16) | 2.5 (14) | 4 (12) | 6 (10) | 6 (10) | 10 (8) | 10 (8) | 10 (8) | 16 (6) | 16 (6) | 16 (6) | 16 (6) | 16 (6) |

**Low voltage range (3 x 240 VAC)**

| Current in cable [A] | Distance between solar panel and RSI [m (ft)] | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 30 (98) | 60 (197) | 90 (295) | 120 (394) | 150 (492) | 180 (591) | 210 (689) | 240 (787) | 270 (886) | 300 (984) | 330 (1083) | 360 (1181) | 390 (1280) |
| | Recommended cable size [$mm^2$] | | | | | | | | | | | | |
| 3 | 1.5 (16) | 1.5 (16) | 1.5 (16) | 2.5 (14) | 2.5 (14) | 2.5 (14) | 4 (12) | 4 (12) | 4 (12) | 4 (12) | 6 (10) | 6 (10) | 6 (10) |
| 6 | 1.5 (16) | 2.5 (14) | 2.5 (14) | 4 (12) | 4 (12) | 6 (10) | 6 (10) | 6 (10) | 10 (8) | 10 (8) | 10 (8) | 10 (8) | 16 (6) |
| 9 | 1.5 (16) | 2.5 (14) | 4 (12) | 6 (10) | 6 (10) | 10 (8) | 10 (8) | 10 (8) | 16 (6) | 16 (6) | 16 (6) | 16 (6) | 16 (6) |
| 12 | 2.5 (14) | 4 (12) | 6 (10) | 6 (10) | 10 (8) | 10 (8) | 16 (6) | 16 (6) | 16 (6) | 16 (6) | 25 (4) | 25 (4) | 25 (4) |
| 15 | 2.5 (14) | 4 (12) | 6 (10) | 10 (8) | 10 (8) | 16 (6) | 16 (6) | 16 (6) | 25 (4) | 25 (4) | 25 (4) | 25 (4) | 25 (4) |

# 8. Grundfos Product Center

Online search and sizing tool to help you make the right choice.
*http://product-selection.grundfos.com*

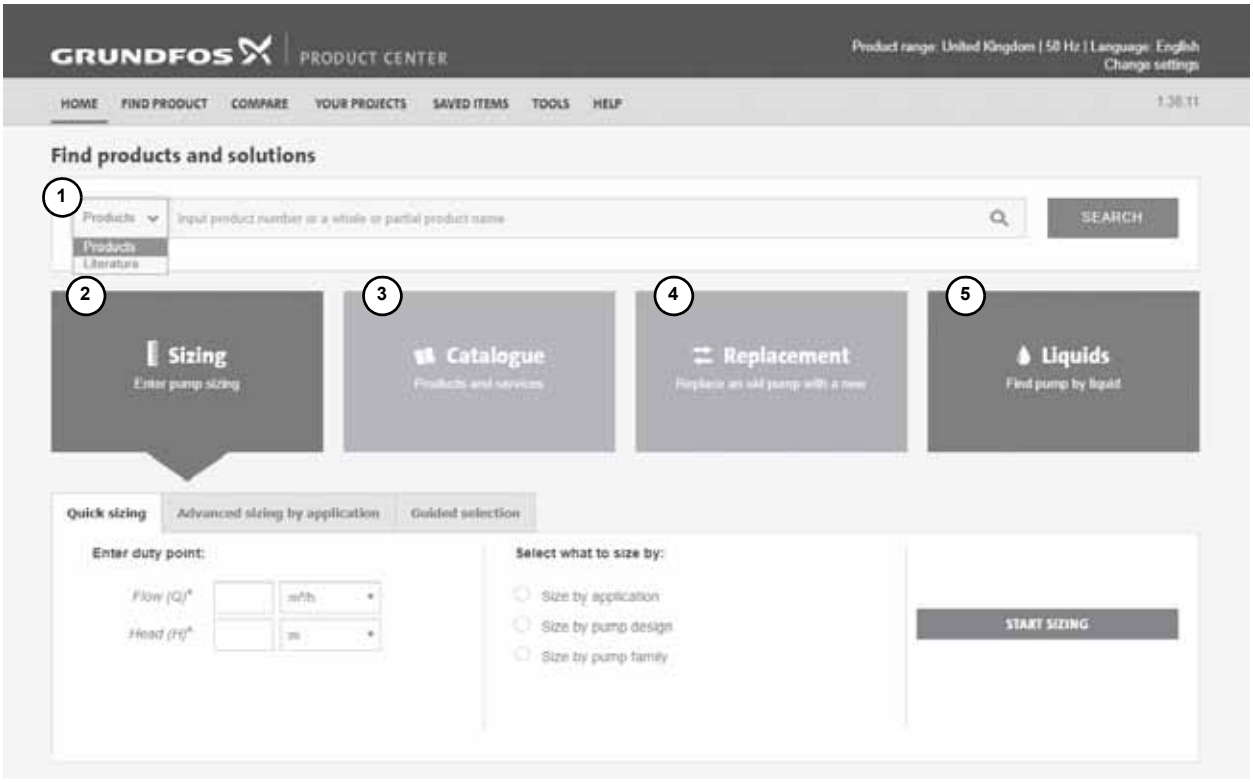
**All the information you need in one place**

Performance curves, technical specifications, pictures, dimensional drawings, motor curves, wiring diagrams, spare parts, service kits, 3D drawings, documents, system parts. The Product Center displays any recent and saved items - including complete projects - right on the main page.

**Downloads**

On the product pages, you can download installation and operating instructions, data booklets, service instructions, etc. in PDF format.

TM07 2384




TM07 2383

| Pos. | Description |
|---|---|
| 1 | This drop-down menu enables you to set the search function to "Products" or "Literature". |
| 2 | **SIZING** enables you to size a pump based on entered data and selection choices. |
| 3 | **CATALOGUE** gives you access to the Grundfos product catalogue. |
| 4 | **REPLACEMENT** enables you to find a replacement product.<br>Search results will include information on<br>the lowest purchase price<br>the lowest energy consumption<br>the lowest total life cycle cost. |
| 5 | **LIQUIDS** enables you to find pumps designed for aggressive, flammable or other special liquids. |

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**98462976** 07.2020
ECM: 1289946

**GRUNDFOS A/S**
DK-8850 Bjerringbro . Denmark
Telephone: +45 87 50 14 00
www.grundfos.com

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