

**Fronius Agilo TL:**  
**Explanation of symbols and choice**  
**of location**  
**Notes regarding installation and**  
**connection**

EN

Operating Instructions

Grid-connected inverter





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# Explanation of symbols

## Explanation of safety symbols



**DANGER!** Indicates immediate and real danger. If it is not avoided, death or serious injury will result.



**WARNING!** Indicates a potentially dangerous situation. Death or serious injury may result if appropriate precautions are not taken.



**CAUTION!** Indicates a situation where damage or injury could occur. If it is not avoided, minor injury and/or damage to property may result.



**NOTE!** Indicates a risk of flawed results and possible damage to the equipment.

**IMPORTANT!** Indicates tips for correct operation and other particularly useful information. It does not indicate a potentially damaging or dangerous situation.

If you see any of the symbols depicted in the "Safety rules" chapter, special care is required.

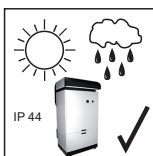
## Explanation of symbols and choice of location



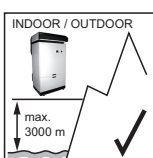
The inverter is suitable for installation indoors.



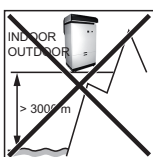
Do not install the indoor device outside without an inlet air attachment or an outlet air unit.



With an inlet air attachment and outlet air unit, the inverter is suitable for installation outdoors.



Can be used at altitudes of up to 3000 m



**IMPORTANT!** The inverter must not be installed or used at altitudes above 3000 m.



Do not open the inverter in wet, humid or rain conditions.



Do not install the inverter:

- in areas where ammonia, corrosive vapours, acids or salts are present  
(e.g. fertiliser stores, ventilation openings from cattle sheds, chemical plants, tanneries, etc.)

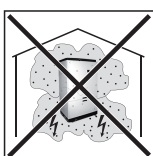


As the inverter generates low levels of noise at certain times, it should not be installed close to living areas.



Do not install the inverter:

- in places where there is an increased risk of damage from farm animals (horses, cattle, sheep, pigs, etc.)
- in stables or adjoining areas
- in storage areas for hay, straw, chaff, animal feed, fertilisers, etc.



Do not install the inverter:

- in places and environments subject to heavy build-up of dust
- in places and environments in which a heavy build-up of dust containing conductive particles (e.g. iron chips) is likely



Do not install the inverter:

- in greenhouses
- in storage or processing areas for fruit, vegetables or winegrowing products
- in places used to prepare grain, green fodder or animal feeds

# Choice of location

## Proper use

The solar inverter is intended exclusively to convert direct current from solar modules into alternating current and to feed this into the public grid.

The inverter is only designed to be used with non-grounded solar modules.

Improper use comprises:

- utilisation for any other purpose or in any other manner
- making any modifications to the inverter that have not been expressly approved by Fronius
- the installation of components that are not distributed or expressly approved by Fronius.

Fronius shall not be liable for any damage resulting from such action.

No warranty claims will be entertained.

Proper use also includes:

- carefully reading and obeying all the instructions and all the safety and danger notices in the operating instructions
- performing all stipulated inspection and maintenance work
- installation as specified in the operating instructions.

When designing the photovoltaic system, ensure that all of its components are operated within their permitted operating ranges at all times.

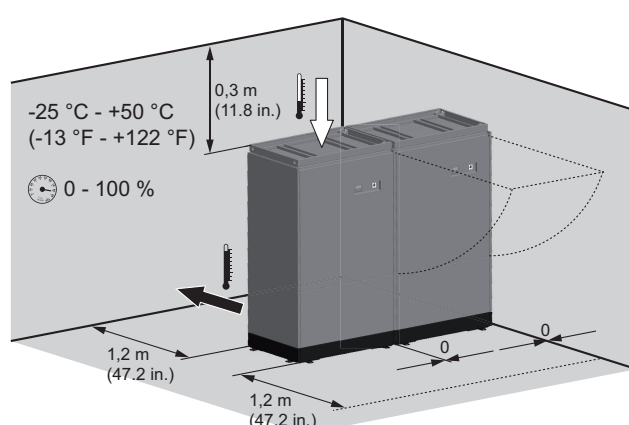
Observe all the measures recommended by the solar module manufacturer to ensure long-term retention of the solar module's properties.

Obey the regulations of the energy supply company regarding feeding energy into the grid.

## General comments regarding choice of location

The following criteria should be taken into account when choosing a location for the inverter:

Install only on a solid surface



Max. ambient temperatures:  
-25°C/+45°C

Relative humidity:  
0 - 100%

The airflow within the inverter is from the top to the rear (cold air taken in from above, hot air dissipated out of the rear).

If the inverter is installed in a switch cabinet or a similar sealed area, then forced-air ventilation must be provided to ensure adequate heat dissipation.

If the inverter is to be installed on the outer wall of a cattle shed, maintain a minimum all-round clearance of 2 m between the inverter and all ventilation and other openings in the building.

The installation location must not be exposed to ammonia, corrosive vapours, salts or acids.

# Cabling and max. cable cross sections

## Cabling and max. cable cross sections



AC cables, DC cables, cables for the external supply of the inverter and, where applicable, data communication cables, must be fed in from below the inverter (e.g. via a cable duct or a false floor).

**IMPORTANT!** If AC cables, DC cables and data communication cables are fed together into the inverter, ensure adequate insulation is provided between the AC/DC cables and the data communication cables.

The maximum cable cross section for AC and DC cables is 240 mm<sup>2</sup>.

In total, 6 DC+ cables, 6 DC- cables and 6 AC cables (2x L1, 2x L2, 2x L3) can be fed into the inverter.

If it is not possible to feed the cables into the inverter after it has been positioned, then - before positioning the inverter - all AC, DC and data communication cables to be connected must

- be dimensioned accordingly,
- protrude far enough away out of the ground:
  - AC cable... 0.75 m
  - DC cable... 0.60 m
  - External supply... 0.40 m
  - Data communication cable... 2.50 m



# Notes regarding positioning the inverter

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## Positioning the inverter

**IMPORTANT!** Ensure that any covers which were removed previously are refitted before the inverter is moved to its final position (e.g. fit the side cover before positioning the inverter up against a wall).

**IMPORTANT!** To prevent the inverter from toppling over, the inverter must be securely fixed to the base after placing it in the final position.

Fix the inverter in place on the base, using at least 4 screws.

The fixing materials needed for this, such as screws or wall plugs, are not included in the inverter's scope of supply. The installer is responsible for selecting the right type of fixing.

## Air supply and connecting an exhaust duct

The air supply to the inverter must be at least 1200 m<sup>3</sup>/h (approx. 20 m<sup>3</sup>/min).

When connecting an exhaust duct, the back pressure it generates must not exceed 150 Pa.

This results in a volumetric flow of about 15 m<sup>3</sup>/min.

# Notes regarding grid connection

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## Monitoring the Grid

**IMPORTANT!** The resistance in the leads to the AC-side connection terminals must be as low as possible for optimal functioning of grid monitoring.

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## AC connection area



The AC connection area is located on the rear of the inverter.



**NOTE!** After removing the rear cover, unplug the grounding cable from the cover.

The AC cable is connected via an M12 cable lug.

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## Connecting aluminium cables

Aluminium cables can be connected to the mains connections.



**NOTE!** When connecting aluminium cables:

- observe national and international guidelines regarding the connection of aluminium cables
  - follow the instructions of the cable manufacturer
  - check every year that the cables are securely attached in accordance with the specified torque.
- 

## Max. cross-section of AC cables

The max. cable cross-section of AC cables when feeding them in from below is 240 mm<sup>2</sup>.

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## Fuse protection on alternating current side

The fuse protection of the alternating current on the medium-voltage side depends on the transformer available and is to be designed accordingly by the installation engineer.

# Notes regarding DC connection

## General comments regarding solar modules

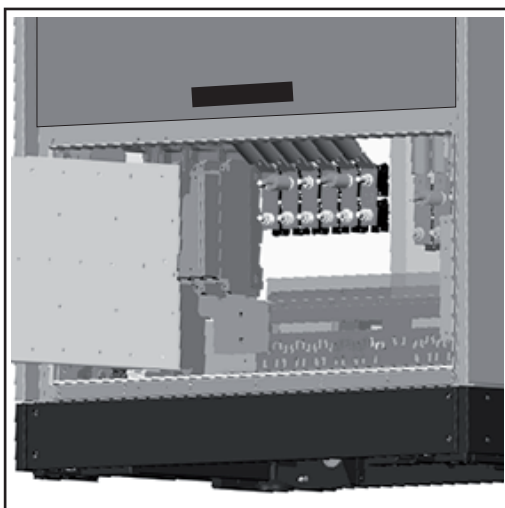
To enable suitable solar modules to be chosen and to use the inverter as efficiently as possible, it is important to bear the following points in mind:

- If insolation is constant and the temperature is falling, the open circuit voltage of the solar modules will increase. The open circuit voltage must not exceed 950 V. If the open circuit voltage exceeds 950 V, the inverter will be destroyed and no warranty claims will be entertained.
- More exact values for dimensioning the solar modules can be provided by suitable calculation programs, like the Fronius Solar.configurator (which can be downloaded from [www.fronius.com](http://www.fronius.com)).



**NOTE!** Before connecting up the solar modules, check that the voltage for the solar modules specified by the manufacturer corresponds to the actual measured voltage.

## DC connection area



The DC connection area is located on the lower area at the front of the inverter.



**NOTE!** After removing the lower cover, unplug the grounding cable from the cover.

The DC cable is connected via a V-type terminal or alternatively using an M12 cable lug.

**IMPORTANT!** Only the following cables may be connected to V-type terminals:

- RE (round single-wire)
- RM (round multi-strand)
- SE (sector-shaped single-wire)
- SM (sector-shaped multi-strand)
- Fine-core cables, in conjunction with ferrules only

When connecting the DC cable using an M12 cable lug, fine-core cables are permitted.

## Connecting aluminium cables

Aluminium cables can also be connected to the DC connections.



**NOTE!** When connecting aluminium cables:

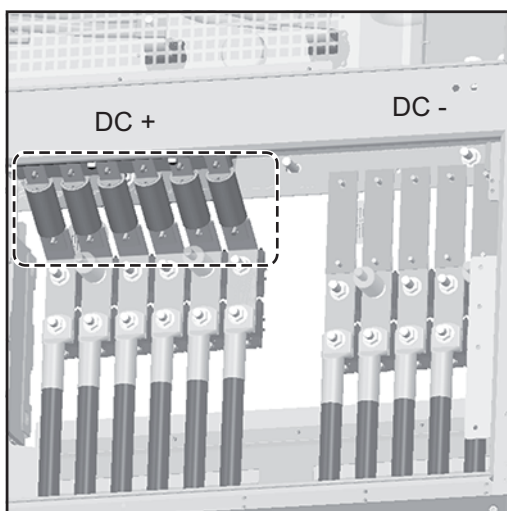
- observe national and international guidelines regarding the connection of aluminium cables
- follow the instructions of the cable manufacturer
- Once a year, make sure that the cables are securely connected according to the specified torque.

## Max. cross-section of DC cables

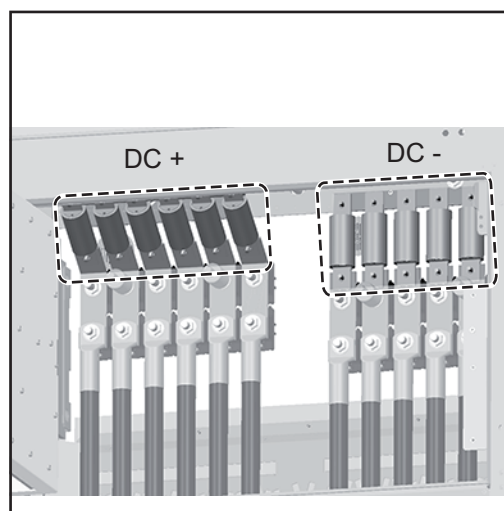
When cabling from below, the max. cable cross-section of DC cables is 240 mm<sup>2</sup>.

## DC fuses

Depending on the model, the inverter may be equipped with DC fuses:



*DC fuses in the DC+ string*



*DC fuses in the DC+ string and in the DC- string*

Fronius uses the following DC fuses:  
Littelfuse SPFJ 125 / 160 / 200 A, 1000 V

According to national guidelines and standards, the DC fuses can only be fitted in the DC-string.

Tightening torque of the DC fuses:  
7 Nm

# Overvoltage protection

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## Overvoltage protection

The inverter is equipped with an overvoltage protection for the AC side and the DC side as standard.

### AC side

3 x Raycap Strikesorb® 40-C + 1 x Raycap Strikesorb® 40-F in a Y-circuit  
SPD Class I according to IEC 61643-1  
SPD Type 2 according to UL 1449 3rd Edition

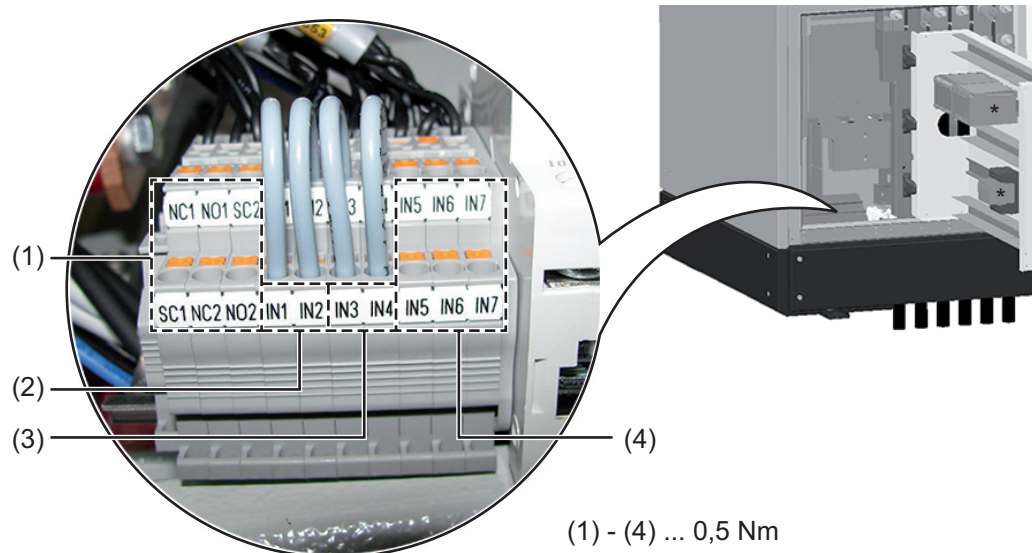
### DC side

1 x Dehn DCB YPV SCI 1500 FM  
SPD Type 1 + Type 2 according to EN 50539-11

# Notes on the relay contacts and on the monitoring and protection contacts

## Overview

## Relay Contacts, Monitoring & Protection



(1) - (4) ... 0,5 Nm

Cable cross-section: 0.14 - 4 mm<sup>2</sup>

Tightening torque of terminals: 0.5 Nm

Max. continuous current: 16 A

Min. switching load: 500 mW (10 V / 5 mA)

Switching capacity: 16 A / 250 V (AC1) and 16 A / 30 V (DC1)

### (1) Relay contacts

NC1 NC for relay contact 1  
SC1 Relay contact 1  
NO1 NO for relay contact 1

NC2 NC for relay contact 2  
SC2 Relay contact 2  
NO2 NO for relay contact 2

The relay outputs are not fuse-protected.

Relay contacts can be assigned different functions in the Basic service menu.

The access code 22742 must be entered to access the Basic service menu:

- Press the 'Menu' key
- Select 'Setup' mode
- Press the unassigned 'Esc' button five times
- Enter the access code 22742
- Select the 'Switch contact 1' or 'Switch contact 2' parameter
- Set the desired relay contact function

**Possible relay contact functions**

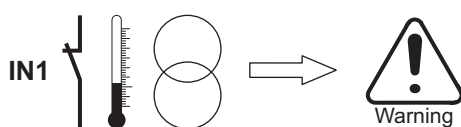
Function	Switch contact activation criterion <sup>1)</sup>	Switch contact deactivation criterion <sup>2)</sup>	Description
Off	-	Permanently OFF	Function switched off
On	Permanently ON	-	Test function for NO/ alarm contact
AC Open	AC contactor is open	AC contactor is closed	No contactor error signal or AC grid
Fan On	Cabinet fan in operation	Cabinet fan not working	External ventilation / air conditioning can be activated
> 40 °C	max. internal temperature $\geq 40$ °C	max. internal temperature $\leq 30$ °C	
> 50 °C	max. internal temperature $\geq 50$ °C	max. internal temperature $\leq 40$ °C	
Sig. Rel.	NO/alarm contact trips	Error confirmation at the touch of a button / by Solar Net command	Status indicator / relay contact switches
Running	Inverter feeding energy into the grid	Inverter not feeding energy into the grid	Control of powered non-return valve
Warning	Defined warning status codes	Error confirmation at the touch of a button / by Solar Net command	NO/alarm contact activation, when certain warning status codes occur at a specific frequency according to the 'Error-Counter' Service menu
Error	Defined error status codes	Error confirmation at the touch of a button / by Solar Net command	NO/alarm contact activation, when certain error status codes occur at a specific frequency according to the 'Error-Counter' Service menu

1) Activation = the NC for the relay contact opens, the NO closes

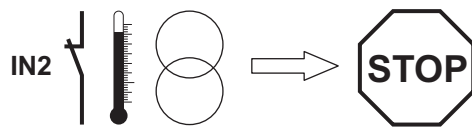
2) Deactivation = the NC for the relay contact closes, the NO opens

**(2) Transformer connections IN1 / IN2**

The temperature of the external medium-voltage transformer can be monitored and evaluated via the IN1 and IN2 connections. The inverter then adjusts the power of feeding in according to the temperature of the medium-voltage transformer.



If a specific temperature is exceeded, the inverter reduces the power of feeding in and a warning message is shown on the display. The grid power feed operation is not interrupted.



If a specific temperature is exceeded, the inverter interrupts the grid power feed operation.

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**(3)**  
**External switches**  
**IN3 / IN4**

24 V / 10 mA

IN3 ... STANDBY (AC contactor is activated)

IN4 ... TOTAL SHUT DOWN (AC- and DC-side shut down)

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**(4)**  
**Contact monitoring**  
**IN5 / IN6 / IN7**

External auxiliary contacts, 24 V / 10 mA

IN5     Pre-wired (for DC overvoltage protection)

IN6     External auxiliary contact, for evaluating a floating alarm contact

IN7     External auxiliary contact, for evaluating a floating alarm contact





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