

**FIMER**



# Solar Inverter

## TRIO-20.0-27.6-TL-OUTD-US (-A)

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### Quick Installation Guide

In addition to what is explained in this quick installation guide, the safety and installation information provided in the product manual must be read and followed. The technical documentation for the product is available at the website.  
The device must be used in the manner described in the manual. If this is not the case the safety devices guaranteed by the inverter might be ineffective.

# 1. Labels and Symbols

The labels on the TRIO inverter carry the markings, main technical data and identification of the equipment and manufacturer. The technical data shown in this quick installation guide does not replace that shown on the labels attached to the equipment.

- PV source conductors must be Listed PV wire rated 1000V minimum per NEC 690.35.
- PV output conductors shall consist of sheathed (jacketed) multi-conductor cables or be installed in an approved raceway and must be isolated from enclosure and system grounding, as required by NEC 690.35 and is responsibility of the installer.
- The TRIO is designed without an isolation transformer and intended to be installed per NFPA 70, 690.35 with an ungrounded PV array and can be used only with PV modules that do not require one of the terminals to be grounded.
- All PV source and output circuit conductors must have disconnects complying with NEC, Section 690, Part III.
- To reduce risk of fire, connect only to circuit provided with 40A for 20kW and 50A for 27.6kW maximum branch circuit overcurrent protection in accordance with NEC (ANSI/NFPA 70). See Maximum AC OCPD requirement in Technical Data table, Section 17.
- For models that do not include AC output overcurrent protection, the end user is responsible for providing protection for AC output circuit.
- Output circuits must be isolated from enclosure and system grounding, required by Articles 690.40 and 690.42 of NEC, ANSI/NFPA 70, and are the responsibility of the installer.

**In the manual and/or in some cases on the equipment, the danger or hazard zones are indicated with signs, labels, symbols or icons.**

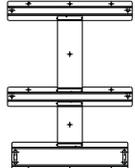
	UL 1741; CSA-C22.2 No. 107.1-01		Grounding (earth)
	General warning - Important safety information		System earth conductor (main grounding protective earth, PE)
	Hazardous voltage		Phase
	Hot surfaces		Direct and alternating currents, respectively

# 2. Frequency disconnect

This inverter has been factory programmed to automatically disconnect from the utility distribution system in compliance with UL 1741 and IEEE 1547 specifications. Default voltage and frequency trip limit and trip time settings to comply with these standards are shown in table below. The Service menu can be used to adjust Voltage and Frequency Trip Limit and Trip Time Parameters according to Grid requirements of installation locale. Refer to technical manual for instructions to use the Service menu.

Simulated Utility Source		Max.time (sec) @60Hz before cessation of current to simulated utility	
Cond.	Voltage (V)	Frequency (Hz)	
A	< 0.50 Vnom (Fixed)	Rated (60 Hz)	0.16 (Fixed)
B	0.50 Vnom ≤ V < 0.88 Vnom (Adj. Set Points 55% to 88%)	Rated (60 Hz)	2 (Default)(Adj. Set Points 0.16 to 5 sec)
C	1.10 Vnom < V < 1.20 Vnom(*) (Adj. Set Points 110% to 115%)	Rated (60 Hz)	1 (Default)(Adj. Set Points 0.16 to 5 sec)
D	(*)1.20 Vnom ≤ V(Fixed)	Rated (60 Hz)	0.16 (Fixed)
E	Rated	f>60.5Hz (Default)(Adj. 60.2 to 63.0 Hz)	0.16 (Default) (Adj. 0.16 to 300 sec)
F	Rated	f<59.3 Hz (Default)(Adj. 59.8 to 57.0 Hz)	0.16 (Default) (Adj. 0.16 to 300 sec)
G	Rated	f < 57.0 Hz	0.16 (Fixed)
H	Rated	f > 63.0 Hz	0.16 (Fixed)

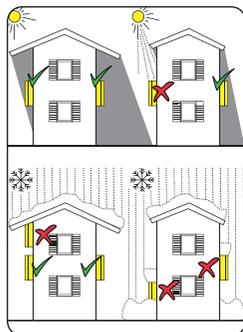
# 3. List of components

Components available for all models		Quantity	Components available for all models		Quantity
	3 pin connector for configurable relay	2		Jumper cables for parallel input. (-S1, -S1A, -S1B models)	1+1
	9 pin connector for communication and control signals	4		Bracket for wall mounting	1
	L-key, TORX TX20	1			
	Jumpers for parallel input mode	2			

# 4. Select installation location

## Installation position -

- Install on a wall or strong structure capable of bearing weight.
- Install vertically with a maximum incline of +/- 5°.
- Maintain minimum clearance measurements shown.
- Ensure sufficient working area in front of inverter for wiring box access.
- Choose a location that allows unobstructed airflow around inverter.
- Position multiple inverters side-by-side, maintaining minimum clearances. Multiple inverters can also be placed in staggered arrangement.
- Minimum clearances for staggered arrangements include width of inverter plus additional allowances for inverters arranged above or below.



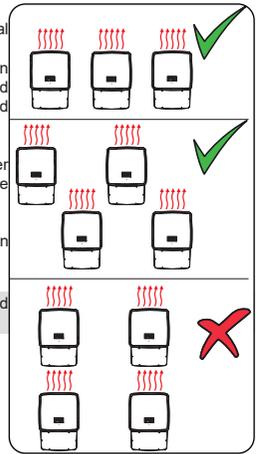
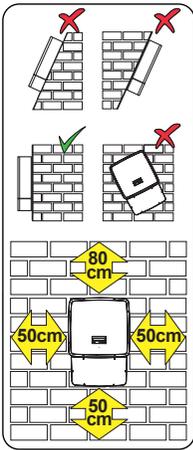
**Environmental checks** - See Technical Data, Section 17, to check environmental parameters.

- Maximum operational ambient air temperature must be considered when choosing location. Installing the inverter where operating temperatures exceed specifications will result in power derating. It is recommended the inverter be installed within specified temperature range.

- Exposure to direct sunlight will increase operational temperature of inverter and may cause output power limiting. It is recommended to use a sun shade to minimize direct sunlight when ambient air temperature around unit exceeds 104°F/40°C.

- Due to acoustical noise (about 50dBA at 1 m) from inverter, do not install in rooms where prolonged presence of people or animals is expected.

**⚠ ATTENTION** – If installed indoors, the inverter must be inaccessible to unqualified persons.



## 5. Wall mounting

When mounting the TRIO, first secure mounting bracket to desired location and then install wiring box followed by inverter unit. When completely tightened wiring box will move up to meet inverter. It is recommended to employ flexible conduit methods to allow for possibility of inverter removal.

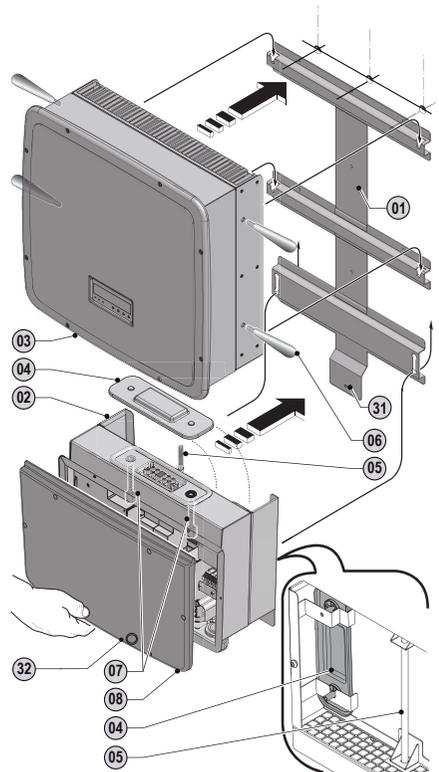
- Using a level, position mounting bracket on wall and use as a drilling template.
- Drill required holes using a drill with 10mm bit.
- Attach bracket to wall with ten wall anchors, 10mm in diameter, found in mounting kit.
- When installed in seismic Zone 3 or higher, the five center wall anchors must be fixed into a wood/steel wall stud or concrete/masonry wall.
- When installing flexible conduit, provide enough conduit to allow for approximately 1"-1½" of vertical movement between inverter and wiring box.
- Prior to making conductor connections in wiring box, provide enough conductor to allow for movement of wiring box in final stages.
- Hook wiring box on bracket by inserting heads of rear screws in bracket slots.
- Remove wiring box front cover 08.
- Loosen connector screws 07 to remove coupling cover 04 and store in pocket at left-rear of wiring box.
- Locate four bolts protruding from rear of inverter chassis; use as mounting studs and insert into four associated slots on mounting bracket as shown at right.
- Lift inverter using two people and orient it to bracket so four studs are just above their associated slots.

**NOTE:** For easier lifting and handling, an optional lifting kit is available containing handles and eyebolts that can be attached to holes in side of inverter unit.

- Clamp screw 05 is accessed externally at bottom of wiring box and used to physically secure wiring box to inverter chassis.
- Push screw 05 upwards until it mates with inverter chassis and thread initially by hand.
- Using a 20mm socket, tighten clamp screw 05 to lift wiring box toward inverter until mating connectors of wiring box and inverter chassis seat fully.

### DO NOT COMPLETELY TIGHTEN AT THIS TIME.

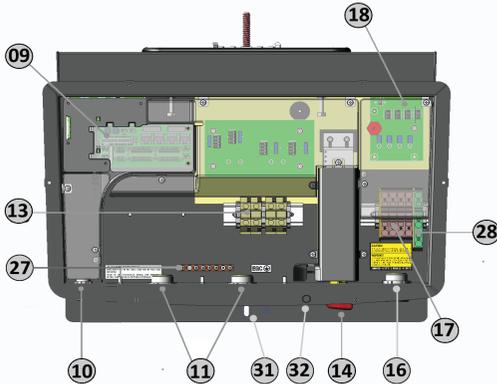
- Once wiring box and inverter are connected via screw 05, push screws 07 upward to mate with inverter and initially thread by hand.
- Use a 13mm socket wrench to tighten connector screws 07 to at least 13.3-14.75 ft-lbs (18-20Nm) torque.
- Finish tightening clamp screw 05 to a torque of 13.3 ft-lbs (18Nm).
- Secure bottom of wiring box to wall bracket by tightening machine screw through bottom locking tab 31 and into bottom hole of mounting bracket.
- If using rigid conduit, secure the conduit to the inverter using the knockouts.



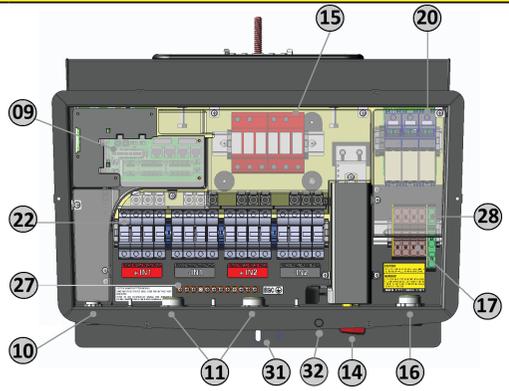
01 Mounting bracket	06 Handles (optional)
02 Wiring box	07 Connector screws
03 Inverter	08 Wiring box cover
04 Coupling connector cover	31 Bottom locking tab
05 Clamp screw	

# 6. Switchbox components

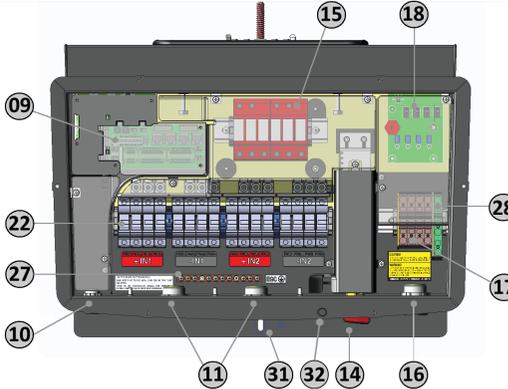
TRIO-XX.X-TL-OUTD-S-US-480



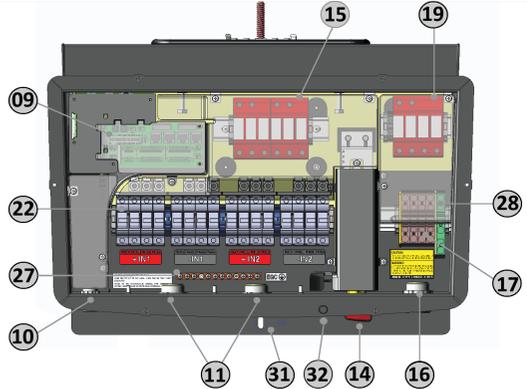
TRIO-XX.X-TL-OUTD-S1B-US-480



TRIO-XX.X-TL-OUTD-S1-US-480



TRIO-XX.X-TL-OUTD-S1A-US-480



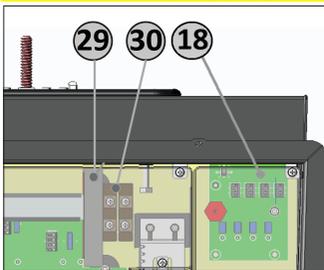
## SWITCHBOX COMPONENTS

09	Communication card	17	AC terminal block
10	Service cable opening with plastic threaded plug, trade size 1/2"	18	AC board (behind 19 in -S1A and behind 20 in -S1B)
11	DC cable openings with plastic threaded plug*, trade size 1", 1 1/2"	19	Class II AC surge protection (-S1A version)
13	DC terminal block (-S version)	20	Fused AC disconnect switch (-S1B version)
14	DC disconnect switch handle	22	DC fuse holders (-S1, -S1A, -S1B versions)
15	Class II DC surge protection (-S1, -S1A, -S1B versions)	27	Equipment ground conductor (EGC) busbar
16	AC cable opening, plastic threaded plug, trade size 1"	28	AC ground (The DC EGC is common with the AC side and no other interconnecting jumpers are required.)

\* If a 2" conduit is needed for DC cable, DC cable entries can be punched to accommodate using a knockout hole punch in location of existing knockouts.

# 7. List of supplied components

TRIO version -S with AFD

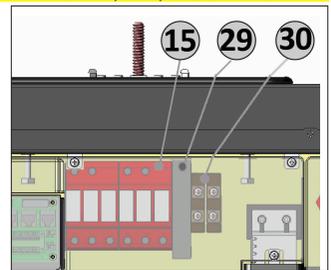


Switchbox components with AFD

All -A versions include the arc fault detection board 29 and paralleling terminal block 30 mounted on rail in wiring box, in addition to components listed above.

Unless specified, wiring instructions for versions with AFD are the same as versions without AFD, although 29 and 30 may not be shown.

TRIO -S1, -S1A, -S1B with AFD

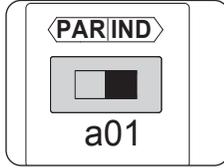


# 8. DC input mode configuration

**ATTENTION** – To operate in parallel mode from a common array, use jumpers provided to connect input channels in parallel as shown below. In addition, input mode switch a01 located on communication card 09 must also be set to correct input mode. See section 11 for location of switch a01 on communication card 09 in order to change default.

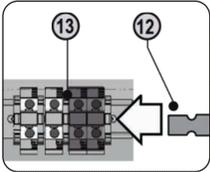
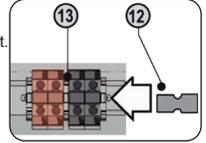
## Setting input mode switch a01

- TRIO is shipped with input mode switch in independent configuration.
- Switch a01 will be in right most position (default INDEPENDENT mode).
- Move switch a01 to left-most position to select PAR (parallel) mode.



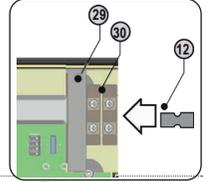
## Parallel mode -S version without AFD

- Parallel two channels by inserting solid copper jumpers 12 into DC terminal blocks 13 between both channels as shown at right.
- One jumper connects POSITIVE input (red) and second jumper connects NEGATIVE input (black).
- Tighten in place with at least 53 in-lbs (6Nm) torque.



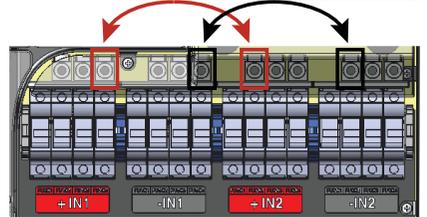
## Parallel mode -S version with AFD

- Connect NEGATIVE input (black) in DC terminal block 13 as shown at left using one copper jumper 12.
- Parallel POSITIVE inputs by inserting second jumper 12 into positive input paralleling terminal block 30 (located next to AFD board 29), as shown at right.
- Tighten in place with at least 53 in-lbs (6Nm) torque to ensure a low resistance connection.



## Parallel Mode -S1, -S1A, -S1B versions without AFD

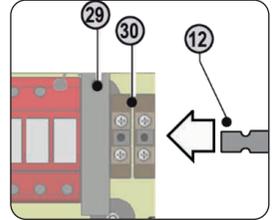
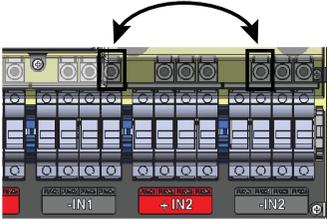
- Use red jumper cable to interconnect positive terminals (+IN1, +IN2).
- Use black jumper cable to interconnect negative terminals (-IN1, -IN2).
- Plug jumper wires into feeder terminals in positions shown at right.
- Tighten screw on top of each feeder terminal to 53 in-lbs (6 Nm) torque, pull on wire to confirm it is secure.



**ATTENTION** – A removable transparent cover prevents access to live parts on upper DC side of wiring box. Remove four screws in place and remove cover to connect jumpers.

## Parallel Mode -S1, -S1A, -S1B versions with AFD

- Use black jumper cable to interconnect negative terminals -IN1, -IN2.
- **DO NOT CONNECT RED JUMPER CABLE.**
- Plug jumper wire into feeder terminals in position shown at left for -IN1, -IN2.
- Tighten screw on top of each feeder terminal to 53 in-lbs (6 Nm) torque, pull on wire to confirm it is secure
- Insert one solid copper jumper 12 into positive input paralleling terminal block 30 (located next to AFD board) as shown at right.
- Tighten in place with at least 53 in-lbs (6Nm) torque.



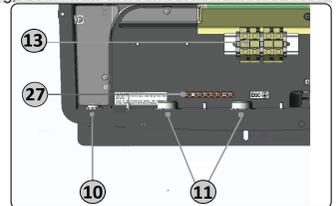
# 9. DC input connections

**WARNING** – WHEN CONNECTING THE DC CONDUCTORS VERIFY POLARITY PRIOR TO TERMINATING. CONFIRM MAXIMUM SYSTEM VOLTAGE WILL NEVER EXCEED 1000V PER NEC REQUIREMENTS. FAILURE TO PERFORM THESE CHECKS MAY CAUSE ARCING AND POTENTIAL FIRE.

For suitable wire size (AWG), refer to NFPA National Electrical Code, Table 310.15(B). Use only Copper (Cu) wire rated for 75°C or 90°C (167°F or 194°F), solid or with type B or type C stranding (19 strands maximum). For conductors with finer stranding, a suitable UL listed wire ferrule must be used.

## -S DC input connections - versions with and without AFD

- Remove threaded plastic plug and nut from DC cable opening 11 and insert conduit connector.
- Tighten to chassis to maintain NEMA 4X compliance.
- Connect raceway to chassis, pulling conductors through raceway and DC cable openings 11.
- Connect to DC terminal block 13.
- Acceptable conductor cross-section ranges from #12 AWG to #2AWG, copper conductors only.
- Tighten with at least 53 in-lbs (6Nm) torque.
- Connect any Equipment Grounding conductors in raceway to EGC busbar 27.



## - Connection of inputs on the S2F / S2X model

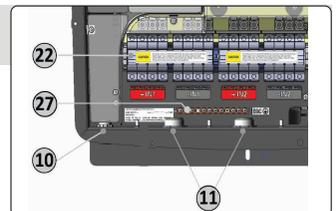
**WARNING** – Reversing polarity may result in serious damage. Always check the polarity before connecting up each string! Each input is equipped with protection fuses: check that the fuse current rating is properly sized for the photovoltaic modules installed.

For string connections using the S2F / S2X wiring box, the quick fit connectors (multicontact or weidmuller) situated at the bottom of the mechanics are used.

For each input channel, there are two groups of connectors:

- Input connectors (MPPT1) (19) with codes 1A, 1B, 1C, ...
- Input connectors (MPPT2) (20) with codes 2A, 2B, 2C, ...

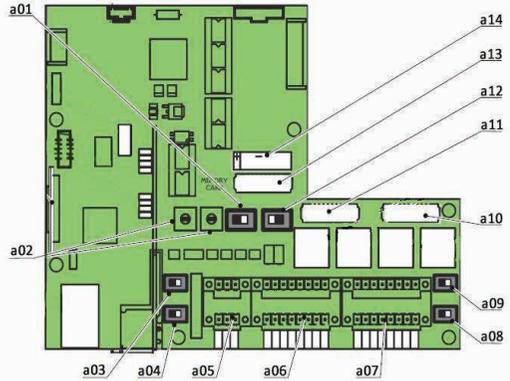
Connect all the strings included in the design of the system and always check the tightness of the connectors.



# 10. Communication card

**⚠ ATTENTION** – A removeable transparent cover prevents access to the communication card in the wiring box; remove four screws in place and remove cover to connect wiring. \*Refer to technical manual for connections to a03, a04, a05, a06 and Remote a07.

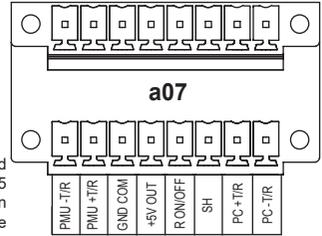
- a01 Input mode switch for selecting parallel or independent input (default = INDEPENDENT , right most position)
- a02 Rotary switches for setting country and language of display
- a03 Switch for setting analog sensor 1 to Volts or mA \*
- a04 Switch for setting analog sensor 2 to Volts or mA \*
- a05 Connection to multi-function relay\*
- a06 Connection of environmental sensors: AN1,AN2,PT100, PT1000, and auxiliary 24V service output \*
- a07 Connection for RS-485 PC line (SERVICE), RS-485 PMU line (MODBUS), auxiliary 5V output, and remote ON/OFF\*
- a08 Termination resistance switch for RS-485 PMU line (MODBUS)
- a09 Termination resistance switch for RS-485 PC line (SERVICE)
- a10 RS-485 PC communication card housing (SERVICE)
- a11 RS-485 PMU communication card housing (MODBUS)
- a12 NA; for factory use only (default = left most position)
- a12 Inverter data memory card housing
- a14 CR2032 battery housing



# 11. Serial communications

Two RS-485 communication lines are available:

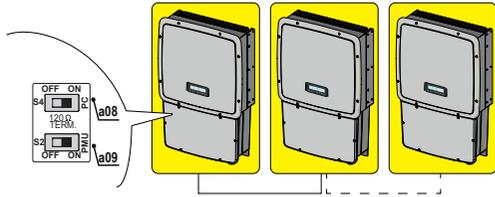
- 1) SERVICE/PC - dedicated line using AURORA Protocol,
  - 2) MODBUS/PMU - dedicated line for MODBUS RTU
- Remove threaded plastic plugs from service cable opening 10 and replace with conduit connector.
  - RS-485 cables must be connected to terminal block a07 on communication card 09.
  - Connect either communication port using terminal block a07 (PC+T/R, PC-T/R and GND).



- Use cable designed for use with RS-485 communications (ie Belden 3106A), which is a data cable wire with one twisted pair, one ground conductor, and a shield with drain wire (or equivalent).

On the last inverter in a daisy chain, or on single inverter, activate termination resistance of communication line by moving switch **a08** or **a09** to ON position.

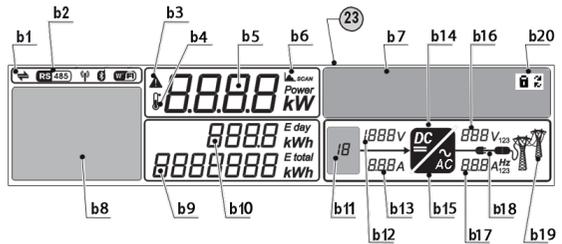
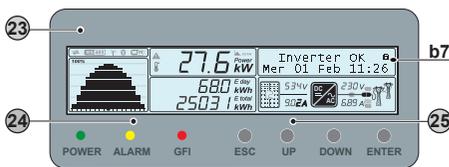
- Address on inverter is set through user interface on display panel area **b7** (section 13). Default address is set at 2.



**⚠ ATTENTION** – A removeable transparent cover prevents access to the communication card in the wiring box; remove four screws in place and remove cover to connect wiring. \*Refer to technical manual for connections to a03, a04, a05, a06 and Remote a07.

# 12. Display and keypad

- Operating parameters are displayed on LCD 23.
- LEDs 24 indicate operating state of inverter.
- Keypad 25 is used to review data on cyclical display b7.



- GREEN POWER LED - On if inverter is working correctly. Flashes when checking grid or if there is insufficient sunlight.
- YELLOW ALARM LED - Inverter has detected an anomaly. Anomaly is shown in area **b7**.
- RED GFI LED - Ground fault on DC side of PV array. Error is shown in area **b7**.
- ESC - Used to access main menu, go to previous menu or go to previous digit to be edited.
- UP - Used to scroll up menu options or move numerical scale in ascending order.
- DOWN - Used to scroll down menu options or move numerical scale in descending order.
- ENTER - Used to confirm an action, access submenu for selected option (indicated by > arrow symbol) or move to next digit to be edited.

### Description of symbols and display fields on LCD 23

b1 RS485 data transmission	b8 Power graph	b15 DC/AC circuit part
b2 RS485 line present	b9 Total energy	b16 AC voltage
b3 Warning	b10 Daily energy produced	b17 AC current
b4 Temperature derating	b11 PV voltage > Vstart	b18 Connection to grid
b5 Instantaneous power	b12 DC voltage	b19 Grid status
b6 MPP scan running	b13 DC current	b20 Cyclic view on/off
b7 Graphic display	b14 DC/DC circuit part	

# 13. Configure display settings

Before commissioning, it may be necessary to set inverter configurations prior to grid connection by accessing the SETTINGS menu from the display.

**ATTENTION** – The man adjustable parameters and instructions for accessing the SETTINGS menu are explained below. With only array connected, set DC disconnect switch to ON. GREEN POWER LED will flash and YELLOW ALARM LED will be steady. LCD will read "Missing Grid". Press ESC to open menus. Use DOWN key to scroll to Settings, and press ENTER. SETTINGS menu requires an access password.

Default password is 0000, pressing ENTER four times loads four zeroes on the display and opens the submenu.

- Area b7 has two visible text lines and the UP and DOWN keys are used to scroll through the menu items.
- Arrow (>) on the left side of the display highlights the current selection.
- Press UP or DOWN keys to move the arrow to the desired selection and press ENTER to open the associated submenu.
- To return to the preceding menu, press the ESC key.

0\*\*\*

**Address:** the RS485 address may need to be changed or assigned; DEFAULT address is set at 2 for a single inverter.

- Scroll to **Address** and press ENTER to open submenu. Address values are assigned manually using any value in the range [2 to 63]. Scroll DOWN to number (2) and press ENTER.
- Press UP and DOWN keys to scroll through numbers and press ENTER to select, ESC to cancel.

>Address  
Display settings

Address  
>2

Language  
>Vstart

>Vstart1  
Vstart2

**Vstart:** Vstart Parameter may need to be adjusted when short strings are used in PV array.

**Change activation voltage only if necessary.**

- Scroll DOWN to Vstart and press ENTER; Voltage range can be 250V to 500V ; (Default setting is 360V.)
- If more than one input, select Vstart 1 or 2
- Use DOWN key to move arrow to desired selection and press ENTER.
- Second display screen will open; press ENTER to confirm or ESC to cancel.

# 14. Commissioning

The inverter commissioning procedure is as follows:

1. Turn the DC disconnect switch in the ON position. If there are two separate external disconnect switches (one for DC and the other for AC), first close the AC disconnect switch and then the DC disconnect switch.

Waiting Sun . . . .

2. Once powered, icon b11 comes on to indicate that the voltage from the PV array has reached the Vstart threshold.

For input voltages lower than Vstart, icon b11 remains off, "Waiting Sun" is shown in display area b7 and voltage and current are present (icons b12 and b13).

3. As soon as "Waiting Sun" conditions are met, the inverter shows the AFD board self-test running. The results are shown in display area b7.

If a problem on the AFD board is detected, the self-test will result in an error. Refer to section 16 below.

4. If there are no irregularities, the grid connection sequence starts. Once all the checks are completed, icon b19 comes on. During these checks, icon b19 is flashing.



5. Icon b14 flashes to indicate the start-up phase; at the same time icon b15 will come on.

6. Immediately following the grid connection will start. Icon b18 will be displayed in steps until the connection is complete. After the inverter is connected, the icon b18 will stay "plugged in".

If there is not sufficient sunlight to connect to the grid, the unit will repeat the procedure until all the parameters controlling connection to the grid (grid voltage and frequency, confirmation of no ground fault) are within range. During this procedure, the green LED flashes ON and OFF.

# 15. Arc fault detection

For –A models only, the AFD performs a self-test when the system is started. The inverter display shows the results of the self-test in area b7.

- If the self-test results are OK, the inverter will continue to AC grid connection.
- If a potential problem on the AFD board is detected, the self-test will result in error E053.

Test Arc Sensor  
OK

Arc Self Test  
E053

Refer to the technical manual online for possible solutions to clear the error. During normal operation the input current is continually measured and analyzed.

- If a DC arc fault is detected during operation, the inverter is disconnected from AC grid and error E050 will be shown on display.

Arc Fault  
E050

- Press and hold the ESC key for three seconds to clear the E050 error which will start the self-test.

- If self-test results are OK, the inverter will reconnect to the AC grid; if the DC arc fault is still present, the self-test will result in error E053. Refer to the technical manual online for solutions. The AFD self-test can be manually started anytime using the following procedure:

1. Turn off the inverter (switching off both DC and AC switches).
2. Turn on both the DC and AC switches and wait for display communication of the self-test result.

# 16. Characteristics and technical data

Technical Data	Values	TRIO-20.0-TL-OUTD	TRIO-27.6-TL-OUTD
Nominal Output Power	W	20000	27600
Maximum Output Power	W	22000*	30000*
Rated Grid AC Voltage	V	480	480
Number of Independent MPPT Channels		2	2
Maximum Usable Power for Each MPPT Channel	W	12000	16000
Absolute Maximum Voltage (Vmax)	V	1000	1000
Start-Up Voltage (Vstart)	V	360 (adj. 250-500)	360 (adj. 250-500)
Full Power MPPT Voltage Range	V	450-800	520-800
Operating MPPT Voltage Range	V	200-950	200-950
Maximum Usable Current (I <sub>dc</sub> max) for both MPPT in Parallel	A	50.0	61.8
Maximum Usable Current (I <sub>dc</sub> max) per MPPT Channel	A	25.0	30.9
Maximum Short Circuit Current (I <sub>sc</sub> max) per MPPT Channel	A	30.0	36.0
Max. Short Circuit Current (I <sub>sc</sub> max) for both MPPT in Parallel	A	60.0	72.0
Number of Wire Landing Terminals per MPPT Channel		-S version: 2, -S1, -S1A, -S1B version: 8	
Array Wiring Termination Type		-S version: Terminal Block, Screw Terminal, Copper Only 12AWG-2AWG, type B or C stranding 19 strand max per conductor S1, -S1A, -S1B version: Touch-safe fuse holder, Screw Terminal, Copper Only 12AWG-6AWG, type B or C stranding (19 strand max per conductor) 3Ø/3W or 4W+Ground	
Grid Connection Type		3Ø/3W or 4W+Ground	
Default Voltage Range	V	422-528	422-528
Adjustable Voltage Range	V	240-552	240-552
Nominal Grid Frequency	Hz	60	60
Adjustable Grid Frequency Range	Hz	57-63	57-63
Maximum Current (I <sub>ac</sub> max/phase)	ARMS	27.0	36.0
Power Factor		> 0.995	> 0.995
Total Harmonic Distortion At Rated Power	%	<3	<3
Grid Wiring Termination Type		Spring Tension Clamp Terminal, Copper wiring only, 6AWG-4AWG, type B or C stranding	
(19 strand max per conductor)			
Fault Current	ARMS	35.0	46.0
Reverse Polarity Protection		Yes. Passive inverter protection only.**	
Supplementary Over-Voltage Protection Type For Each MPPT		-S1, -S1A, -S1B versions only: Plug-in Class II Modular Surge Arrester	
PV Array Ground Fault Detection		Meets UL1741/NEC 690.5 requirements	
Anti-Islanding Protection		Meets UL1741/IEEE1547 requirements	
Supplementary Over-Voltage Protection Type		-S1A version: Plug-in Class II Modular Surge Arrester	
Maximum Efficiency	%	98.2	98.2
CEC Efficiency	%	97.5	97.5
Feed-In Power Threshold	WRMS	65	70
Stand-by Consumption	WRMS	<8	<8
User-Interface (Display)		5.5" x 1.25" Graphic Display	
Standard Communication Interfaces		(1) RS485 Connection can be configured for AURORA Protocol or Modbus RTU	
Optional Remote Monitoring Logger		AURORA Logger Commercial (optional)	
Ambient Operating Temperature Range	F(°C)	-22 to +140 (-30 to +60), Derating above +113 (45)	
Ambient Storage Temperature Range	F(°C)	-40 to +185 (-40 to +85)	
Relative Humidity	%RH	0-100 condensing	
Acoustic Noise Emission Level	dB@1m	<50	<50
Maximum Operating Altitude without Derating	ft(m)	6560 (2000)	6560 (2000)
Enclosure rating		NEMA 4X	
Conduit Connections		Bottom: (2) Concentric EKOs 1", 1½", (2) ½" plugged openings, (1) 1" plugged opening	
Optional PV String Combiner Fuse Size/Type	A/V mm	15/1000 10x38	15/1000 10x38
DC Switch Current Rating (Per Contact)	A	36	36
Optional AC Fused Disconnect Current Rating (Per Contact)	A	35	45
Isolation Level		Transformerless. Floating Array Required	
Safety and EMC Standard		UL 1741, IEEE 1547, IEEE1547.1, CSA C22.2 107.1-01-2001, FCC Part 15	
Safety Approval		Sub-part B Class B Limits cCSAus	

## All data is subject to change without notice.

\*Capability enabled with maximum input current, maximum input power, maximum output current, and ambient operating temperature limits.

\*\*In -S1, -S1A and -S1B models, string polarity must be verified before connection. Please refer to installation manual for correct installation procedure.



For more information please contact your local FIMER representative or visit:

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