ASC 150 Solar

4189341347A

Operator's manual

Improve
Tomorrow

1. Introduction

1.1 Symbols for hazard statements

DANGER!

This shows dangerous situations.

If the guidelines are not followed, these situations will result in death, serious personal injury, and equipment damage or destruction.

WARNING

This shows potentially dangerous situations.

If the guidelines are not followed, these situations could result in death, serious personal injury, and equipment damage or destruction.

CAUTION

This shows low level risk situation.

If the guidelines are not followed, these situations could result in minor or moderate injury.

NOTICE

This shows an important notice

Make sure to read this information.

1.2 About the operator's manual

This document gives the necessary information to operate the controller.

CAUTION

Installation errors

Read this document before working with the controller. Failure to do this may result in human injury or damage to the equipment.

Intended users of the operator's manual

The operator's manual is for the operator that uses the controller regularly.

The manual describes the LEDs, buttons and screens on the controller, alarm handling, and the logs menu.

1.3 Warnings and safety

Factory settings

The controller is delivered pre-programmed from the factory with a set of default settings. These settings are based on typical values and may not be correct for your system. You must therefore check all parameters before using the controller.

Data security

To minimise the risk of data security breaches:

- As far as possible, avoid exposing controllers and controller networks to public networks and the Internet.
- Use additional security layers like a VPN for remote access, and install firewall mechanisms.
- Restrict access to authorised persons.

1.4 Legal information

Third party equipment

DEIF takes no responsibility for the installation or operation of any third party equipment, including the **genset**. Contact the **genset company** if you have any doubt about how to install or operate the genset.

Warranty

NOTICE

Warranty

The controller is not to be opened by unauthorised personnel. If opened anyway, the warranty will be lost.

Disclaimer

DEIF A/S reserves the right to change any of the contents of this document without prior notice.

The English version of this document always contains the most recent and up-to-date information about the product. DEIF does not take responsibility for the accuracy of translations, and translations might not be updated at the same time as the English document. If there is a discrepancy, the English version prevails.

Copyright

Software version

This document is based on the AGC 150 software version 1.15.0.

2. About ASC 150 Solar

2.1 About controller operation

The ASC 150 Solar controller controls and protects a photovoltaic system (PVS) with up to 32 inverters. You can add the controller to an existing plant as a single controller setup, or use it with other DEIF controllers in a power/energy management system.

You can easily control the system from the display. The display can show your configured application with a simple diagram that gives you information about the power sources and breaker feedback.

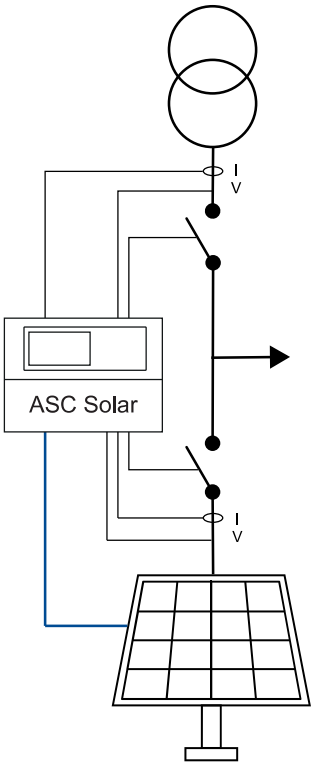
2.2 Typical application examples

2.2.1 Single controller (without power management)

In single-controller applications, one ASC 150 Solar controller can control one photovoltaic system (PVS), one photovoltaic breaker (PVB), and one mains breaker.

Application for one ASC 150 Solar controller

This example shows one ASC 150 Solar controller in a mains power export application. The ASC controls the PVS, the PVB, and the mains breaker. The ASC controller gets power measurements and breaker positions from the mains.



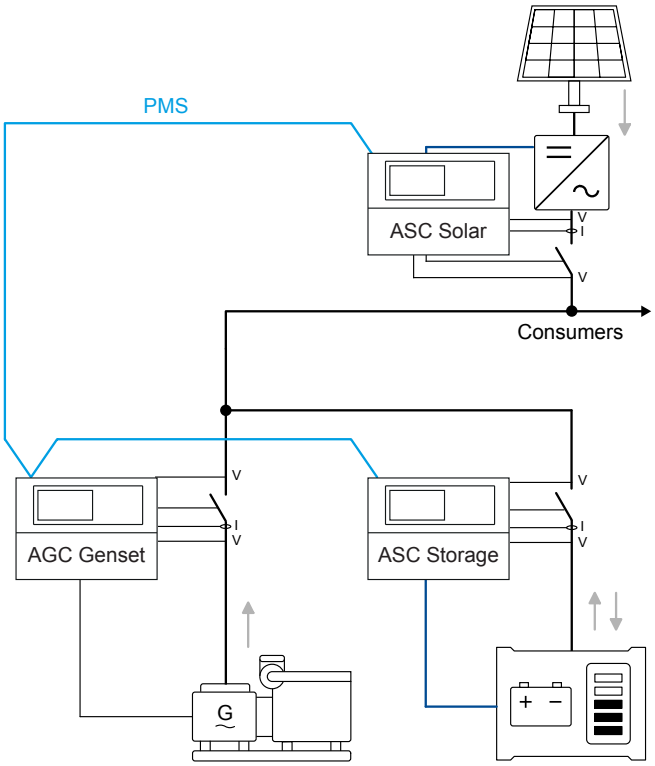
More information
See **Single-controller applications** in the **ASC 150 Solar Designer's handbook** for variations on this controller arrangement.

2.2.2 With power management

The ASC 150 Solar controller also works in DEIF power management applications, where the controller communicates with other DEIF controllers. The ASC 150 Solar controller can control the PV system (PVS) and the PV breaker (PVB) in these applications.

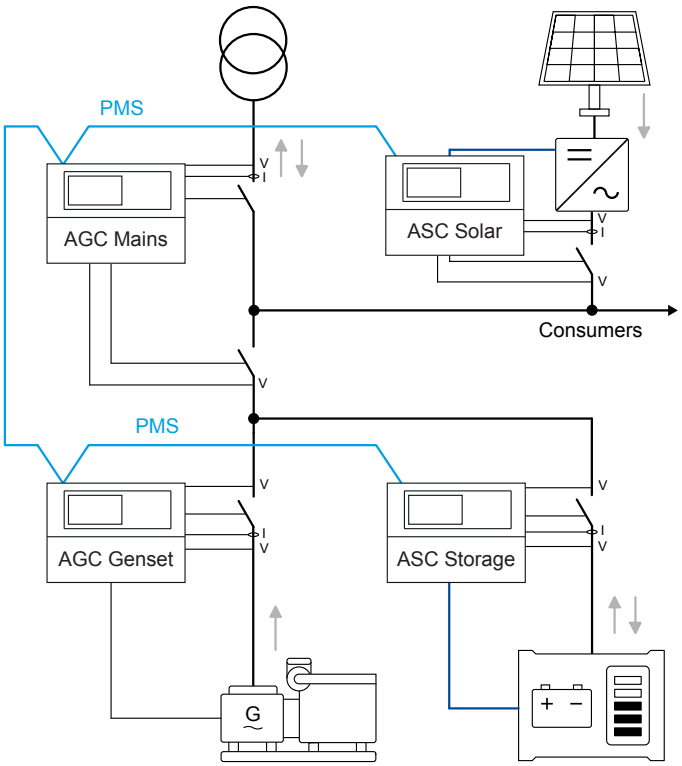
Application for an ASC controller in a power management system with AGC Genset and ASC Storage

This is an example of an off-grid application, where the controllers are in a power management system together. The ASC 150 Solar controller controls the PVS and the PV breaker.



Application for an ASC 150 Solar in a power management system with AGC Mains, AGC Genset and ASC Storage

This is an example of a grid-tied application. The ASC Solar is in a power management system with an AGC Mains, an AGC Genset, and an ASC Storage.



More information
See the **ASC 150 Solar data sheet** for the variations on the grid-tied and off-grid arrangement.

You can select the plant mode for the AGC Mains controller when you have a power management system.

ASC Solar configuration

`Basic settings > Application type > Type`

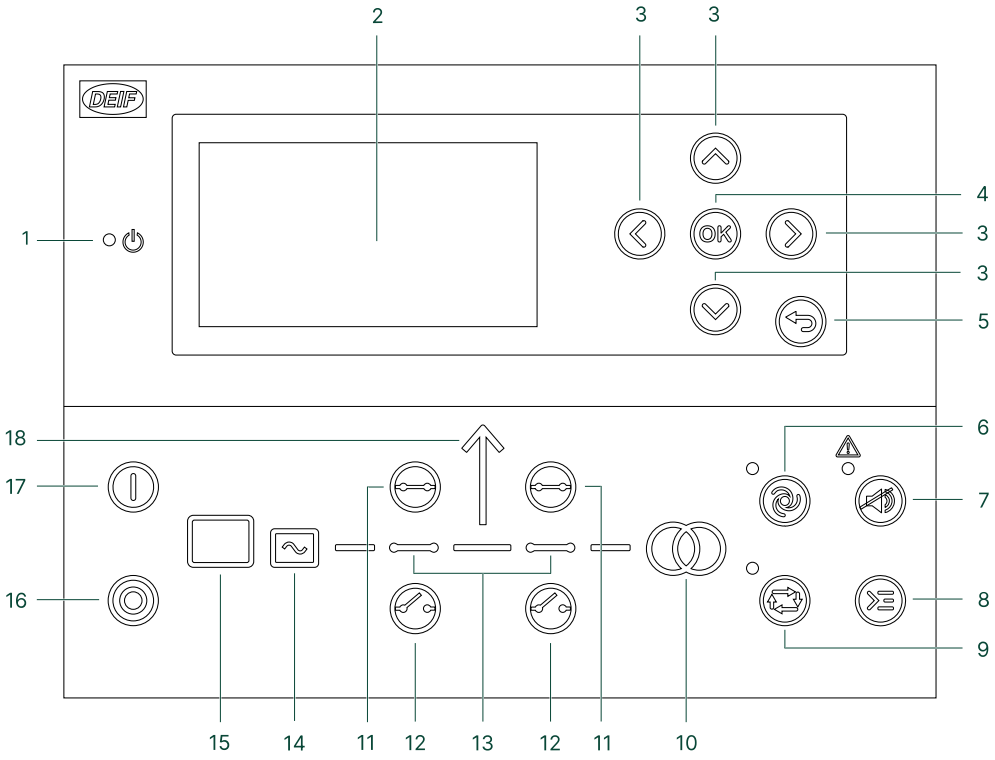
Parameter	Name	Setting
6071	Operation mode	Power management

AGC Mains configuration

`Basic settings > Application type > Plant type > Plant mode`

Parameter	Name	Setting
6070	Plant mode	Select a plant mode (in the AGC mains controller). For example, Mains Power Export.

2.3 Display, buttons and LEDs



No.	Name	Function
1	Power	Green: The controller power is ON. OFF: The controller power is OFF.
2	Display screen*	Resolution: 240 x 128 px. Viewing area: 88.50 x 51.40 mm. Six lines, each with 25 characters.
3	Navigation	Move the selector up, down, left and right on the screen.
4	OK	Enter the Menu system.

No.	Name	Function
		Confirm the selection on the screen.
5	Back	Go to the previous page.
6	AUTO mode	The controller automatically starts and stops (and connects and disconnects) the PV, and automatically controls the power. No operator actions are needed.
7	Silence horn	Turns off an alarm horn (if configured) and enters the Alarm menu.
8	Shortcut menu	Access the Jump menu, General Shortcuts, Mode selection, and Lamp test.
9	SEMI-AUTO mode	The operator or an external signal can also open and close the PV breaker. Automatic controller actions are not possible. The controller automatically synchronises before closing a breaker, and automatically de-loads before opening a breaker.
10	Mains symbol	Green: Mains/busbar voltage and frequency are OK. The controller can synchronise and close the breaker. Red: Mains/busbar voltage failure.
11	Close breaker	Push to close the breaker.
12	Open breaker	Push to open the breaker.
13	Breaker symbols	Green: Breaker is closed. Green flashing: Synchronising or de-loading. Red: Breaker failure.
14	Inverter	Green: Inverter voltage and frequency are OK. The controller can synchronise and close the breaker. Green flashing: The inverter voltage and frequency are OK, but the V&Hz OK timer is still running. The controller cannot close the breaker. Red: The inverter voltage is too low to measure.
15	Photovoltaic	Green: There is solar PV system available feedback. Green flashing: The solar PV system is getting ready. Red: The solar PV system is not running, or there is no availability feedback.
16	Stop	Stops the PV if SEMI-AUTO is selected.
17	Start	Starts the PV if SEMI-AUTO is selected.
18	Load symbol	OFF: Power management application Green: The supply voltage and frequency are OK. Red: Supply voltage/frequency failure.

NOTE * You can use the display to monitor PV operation.

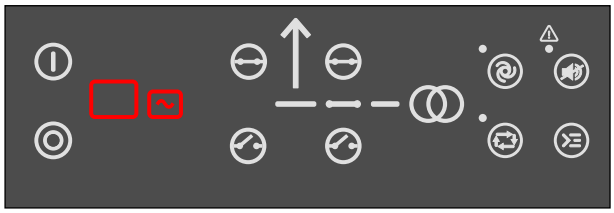
3. Operating the system

3.1 Mimic function

Settings > Basic settings > Controller settings > Display > LED mimic

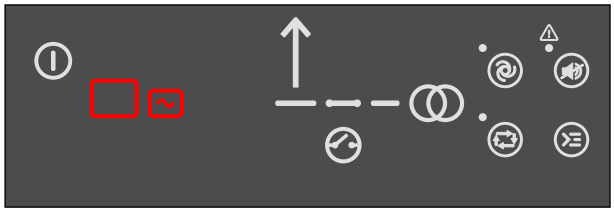
Parameter no.	Item	Range
6082	LED mimic	Standard Guided

Standard
The control buttons and LEDs are shown.
If you the stop the photovoltaic system (PVS), the PVS symbols are shown in red.



Guided
Active control buttons, LEDs, and the PVS symbols are shown, inactive are not shown.

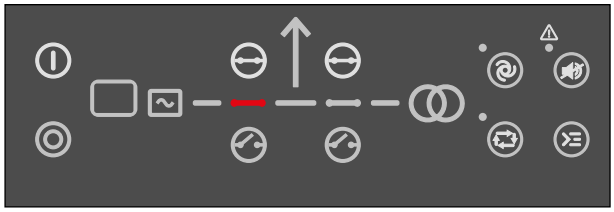
Example: The controller is in SEMI-AUTO mode, and the PVS is not operating. The only possible action is to start the PVS, or open the mains breaker. Therefore, only the start button, the red PVS symbols, and the button to open the mains breaker are shown.



All Mimic settings

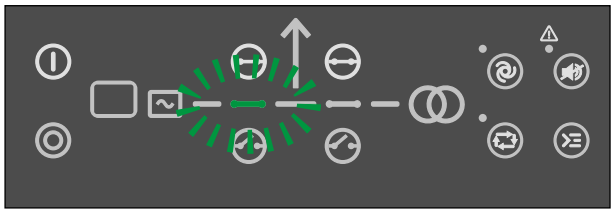
The breaker symbol is shown in red:

- Breaker position failure
- Breaker close failure



The breaker symbol flashes green:

- The controller is synchronising
- The controller is de-loading



3.2 Running modes

The controller has two running modes:

- **AUTO** : The controller operates automatically and the operator cannot start sequences manually.
- **SEMI-AUTO** : The operator must start all sequences. You can do this with the buttons, Modbus commands, or digital inputs.

SEMI-AUTO mode

Use external signals to operate the controller in SEMI-AUTO mode.

Give an external signal with:

1. Buttons on the display
2. Digital inputs*

NOTE * The controller has a limited number of digital inputs. See **Digital inputs** in the **ASC 150 Solar Designer's handbook** for availability.

Commands in SEMI-AUTO mode

Command	Description
Start	The start sequence for the photovoltaic system (PVS) is started. The breaker must be closed before you can start the system.
Stop	The PVS is stopped.
Close the PV breaker (PVB)	The controller closes the PV breaker if there is voltage on the busbar.
Open the PV breaker (PVB)	The controller ramps down and opens the PV breaker at the breaker open point.
Close the mains breaker	In applications with a PV system, a mains, and external gensets, it is only possible to close the mains breaker if: • The genset breaker(s) is open • The PV breaker is closed. The PV breaker must be closed to make sure there is no voltage on the busbar before you close the mains breaker.
Open the mains breaker	The controller opens the mains breaker instantly.

3.3 Display settings

To adjust for ambient lighting, configure the display settings.

`Settings > Basic settings > Controller settings > Display > Display control`

Parameter	Text	Range	Default
9151	Backlight dimmer	0 to 15 *	12
9152	Green LEDs dimmer	1 to 15 *	15
9153	Red LEDs dimmer	1 to 15 *	15
9154	Contrast level	-20 to +20	0
9155	Sleep mode timer	1 to 1800 s	60 s
9156	Enable (Sleep mode timer)	OFF ON	ON
9157	Alarm Jump	OFF ON	ON
9158	Engineering units	Bar/Celcius PSI/Fahrenheit	Bar/Celcius

NOTE * Low numbers are minimum brightness and high numbers are maximum brightness.

3.4 Easy connect

You can use Easy connect in your energy management system if the application consists of only genset or ASC Solar controllers. Easy connect is a fast and easy way to add more controllers to a new or existing application. Easy connect commands normally come from the display, but they can also be sent from M-Logic and Modbus.

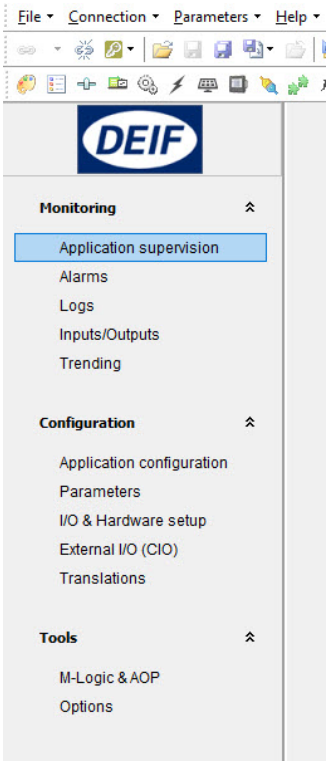
More information
See **Easy connect** in the **ASC 150 Solar Designer's handbook** for how to activate and use Easy connect.

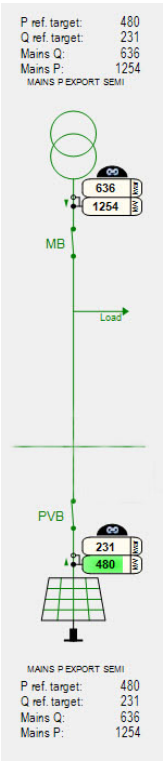
3.5 Utility software

3.5.1 Application supervision

Use the application supervision function in the utility software to see the plant operation. This includes how much power each power source is producing.

You can find *Application supervision* in the vertical menu in the utility software.

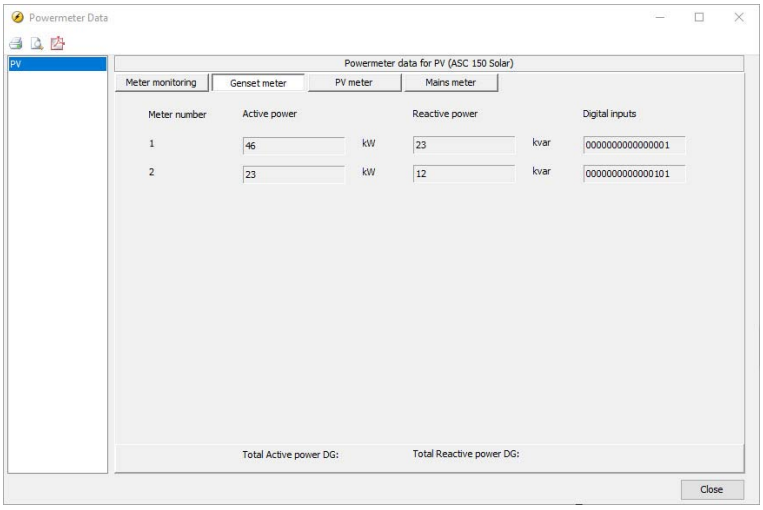




3.5.2 Data monitoring and counters

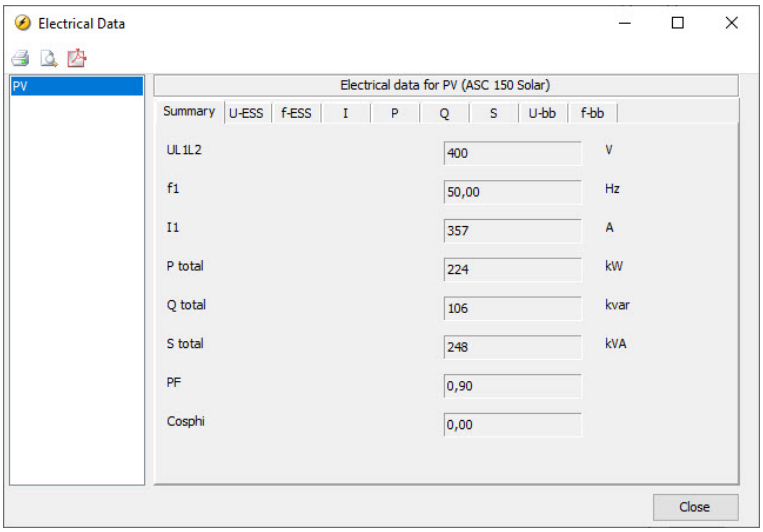
Power meter monitoring

Go to *Application supervision* and select *Power meter Data* to open the *Power meter Data* window.



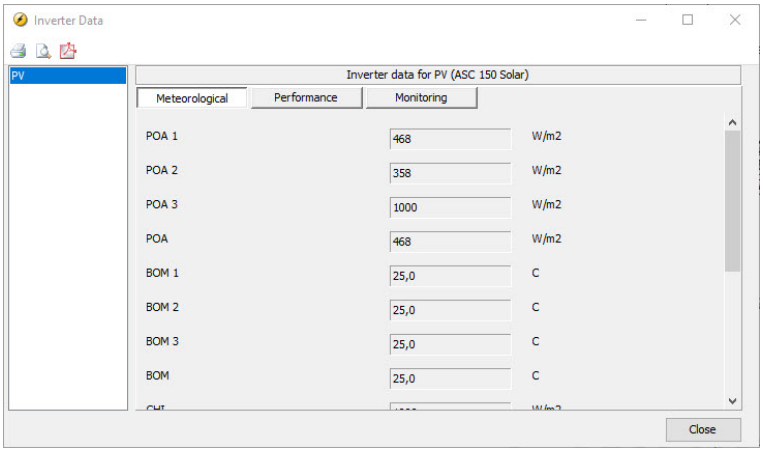
Electrical data monitoring

Go to *Application supervision* and select *Electrical Data* to open the *Electrical Data* window.



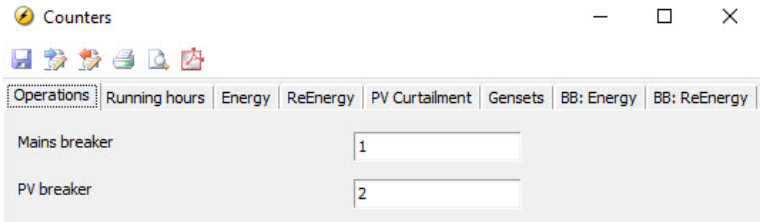
Inverter data

Go to *Application supervision* and select *Inverter data* to open the *Inverter data* window. You can monitor the weather data and performance data as well as individual or shared PV inverter data.



USW counters

You can view and adjust a number of counters using the USW. Click on the *Counters* icon in the upper horizontal menu to open the counters window.



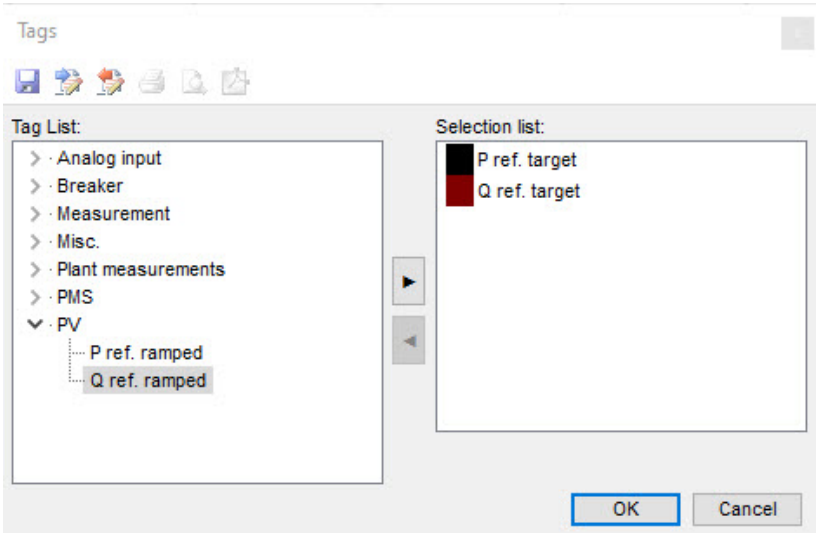
More information
See **General functions** in the **ASC 150 Solar Designer's handbook** for more information about the functions in the utility software.

3.5.3 Trending

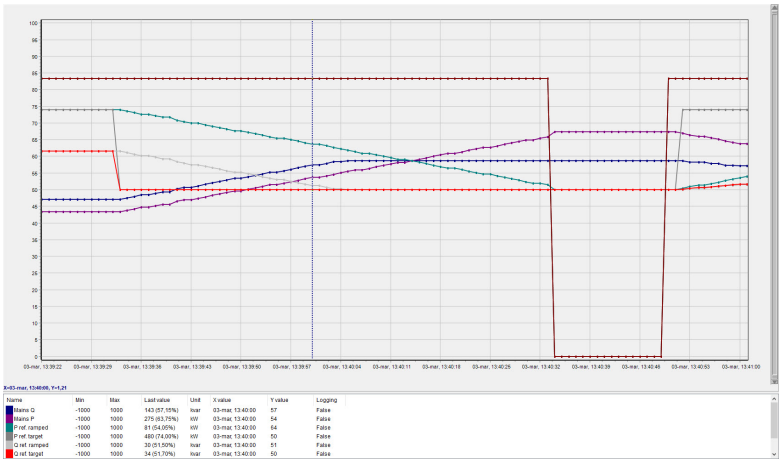
Use the trending function in the utility software to see real-time operation. Trending is possible when a PC is connected to the controller and the trending window is open. It is not possible for the controller to save the data.

How to configure trending

1. Click on *Trending* in the vertical menu on the left to see the trending page.
2. Click on *Edit the trending tags* .
3. In the pop-up window, select the data you want to trend.



4. Click *OK* to confirm your selection.
5. Click on the *Save a views file* button if you want to save the trending data to a .trend file.
6. The trending begins automatically when you have selected the data to trend.
7. You can see the trending data at the bottom of the page. The numerical values are also shown here.



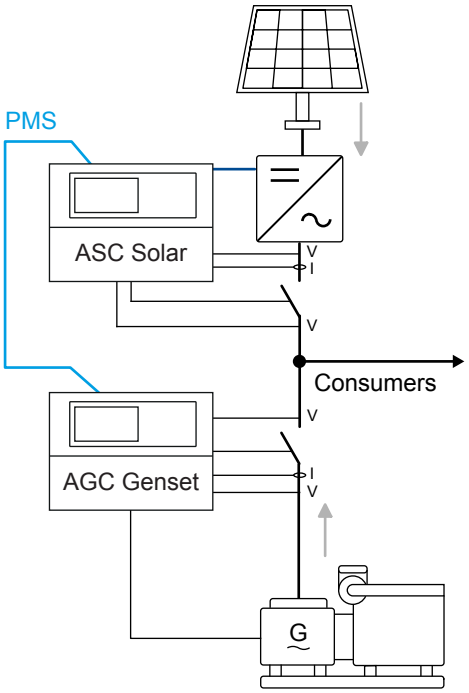
8. Click on the pause button to pause the update of the trending window. The trending continues in the background.
9. When the trending is paused, you can use the zoom buttons and the scroll buttons to navigate the trending graph.

4. Modes of operation

Operate the ASC Solar controller in AUTO mode or SEMI-AUTO mode. In AUTO mode, the controller automatically starts and stops the PV, and controls the power automatically. In SEMI-AUTO mode, the operator or an external signal can open and close the PV breaker, and start the system.

4.1 Island operation

The PV system (PVS) is non-grid forming. The system can supply the load in island mode if there is a grid-forming source in the application, for example, a genset. Use the ASC Solar controller to maintain a minimum genset load and support the generator with reactive load when needed.



AUTO mode

1. Select AUTO mode.
2. The PV breaker closes automatically when the voltage and frequency are OK.
3. Activate a start signal for the PV:
   - Use a digital input or
   - Use a time-dependent start command.
4. The PV system starts.
5. When the PVS is ready, the grid-forming source ramps down to the minimum load. The PVS supplies the remaining load.
6. If the PVS cannot supply the load, the genset supplies the extra load.
7. To stop the PVS, activate a stop signal.
   - Use a digital input or
   - Use a time-dependent stop command.
8. The PVS stops.

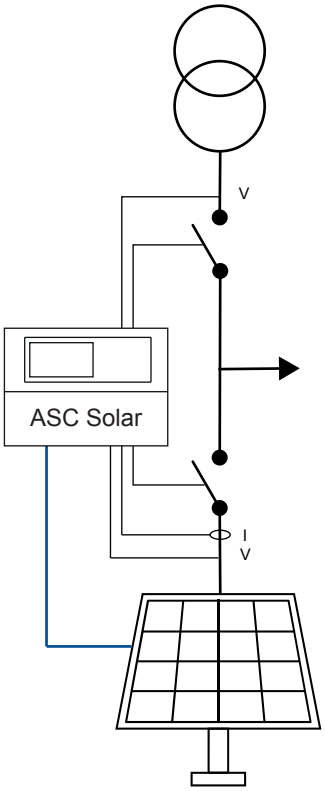
SEMI-AUTO mode

1. Push the *Close breaker* button to close the PV breaker.
2. Push the *Start* button on the controller to start the PVS.
3. To stop the PVS, push the *Open breaker* button to open the breaker and stop the PVS.

4.2 Fixed power

In AUTO and SEMI-AUTO mode, the PV system (PVS) supplies the amount of power configured in the set point for fixed power.

The controller does not need power measurements from other power sources in fixed power applications.



Start sequence

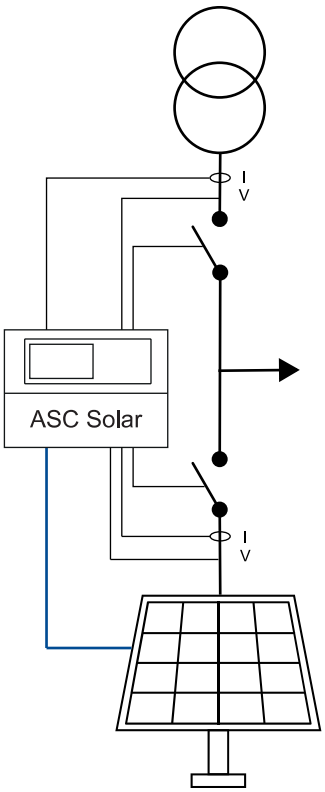
1. Activate a start signal.
   - AUTO mode:
     - The PV breaker closes automatically when you select AUTO mode, and the voltage and frequency are OK.
     - Activate a start signal with digital or time-dependent inputs.
   - SEMI-AUTO mode:
     - Push the *Close breaker* button to close the PV breaker.
     - Push the *Start* button on the controller.
2. The PVS supplies the load configured in the set point for PV fixed power (parameter 7051).
3. If the load increases to more than the set point, the mains supplies the extra load.

`Settings > Power set points > Fixed Power > Set point`

Parameter	Text	Range	Default
7051	Set point	-20000 to 2000 kW	500 kW

4.3 Mains power export (MPE)

In this mode a constant level of power through the mains breaker is maintained. The power can be exported to the mains or imported from the mains, but always at a constant level. The set point can be 0 kW for zero export applications.



Start sequence

1. Activate a start signal for the PV.
   - AUTO mode:
     - The PV breaker closes automatically when you select AUTO mode, and the voltage and frequency are OK.
     - Activate a start signal with digital or time-dependent inputs.
   - SEMI-AUTO mode:
     - Push the *Close breaker* button to close the PV breaker.
     - Push the *Start* button on the controller.
2. The PVS ramps up to reach the MPE kW set point (parameters 7001 and 7002).
3. If the PVS cannot supply this load, the mains supplies the remaining load.

`Settings > Power set point > Mains power export and peak shaving > Day/night power set point`

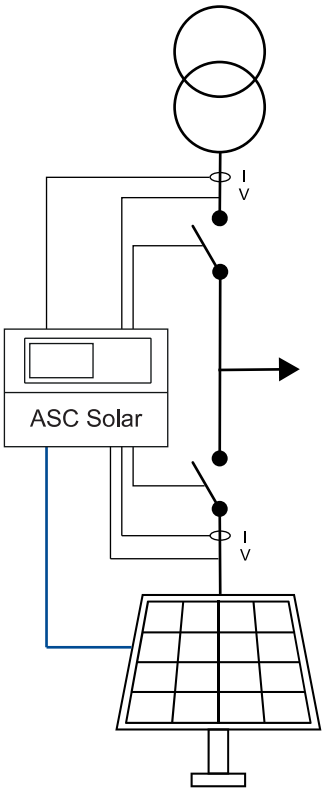
Parameter	Text	Range	Default
7001	Mains power, Day	-20000 to 20000 kW	750 kW
7002	Mains power, Night	-20000 to 20000kW	1000 kW
7006	MPE/PS scale	1kW:1kW 1kW:10kW 1kW:100kW 1kW:1000kW	1kW:1kW

Settings > Power set point > Mains power export and peak shaving > Day/night settings

Parameter	Text	Range	Default
7011	Daytime period, start hour	0 to 23	8
7012	Daytime period, start min.	0 to 59	0
7013	Daytime period, stop hour	0 to 23	16
7014	Daytime period, stop min.	0 to 59	0

4.4 Peak shaving

The PV system (PVS) supplies the extra load when the mains import increases to more than the maximum import set point. The system runs parallel to the mains.



AUTO mode

1. Select AUTO mode.
2. The PV breaker closes automatically.
3. Activate a start signal.
   - Use a digital input or
   - Use a time-dependent start command.
4. The PVS supplies the extra load when the mains import is more than the maximum set point for mains import.

SEMI-AUTO mode

1. Push the *Close breaker* button to close the PV breaker, then push the *Start* button on the controller.
2. When the PVS is parallel to the mains, the PVS is controlled by the peak shaving set point.

`Settings > Power set point > MPE/Peak shaving > Day/night power set point`

Parameter	Text	Range	Default
7001	Mains power, Day	-20000 to 20000 kW	750 kW
7002	Mains power, Night	-20000 to 20000kW	1000 kW
7006	MPE/PS scale	1kW:1kW 1kW:10kW 1kW:100kW 1kW:1000kW	1kW:1kW

Settings > Power set point > MPE/peak shaving > Day/night settings

Parameter	Text	Range	Default
7011	Daytime period, start hour	0 to 23	8
7012	Daytime period, start min.	0 to 59	0
7013	Daytime period, stop hour	0 to 23	16
7014	Daytime period, stop min.	0 to 59	0

5. Menus

5.1 Menu structure

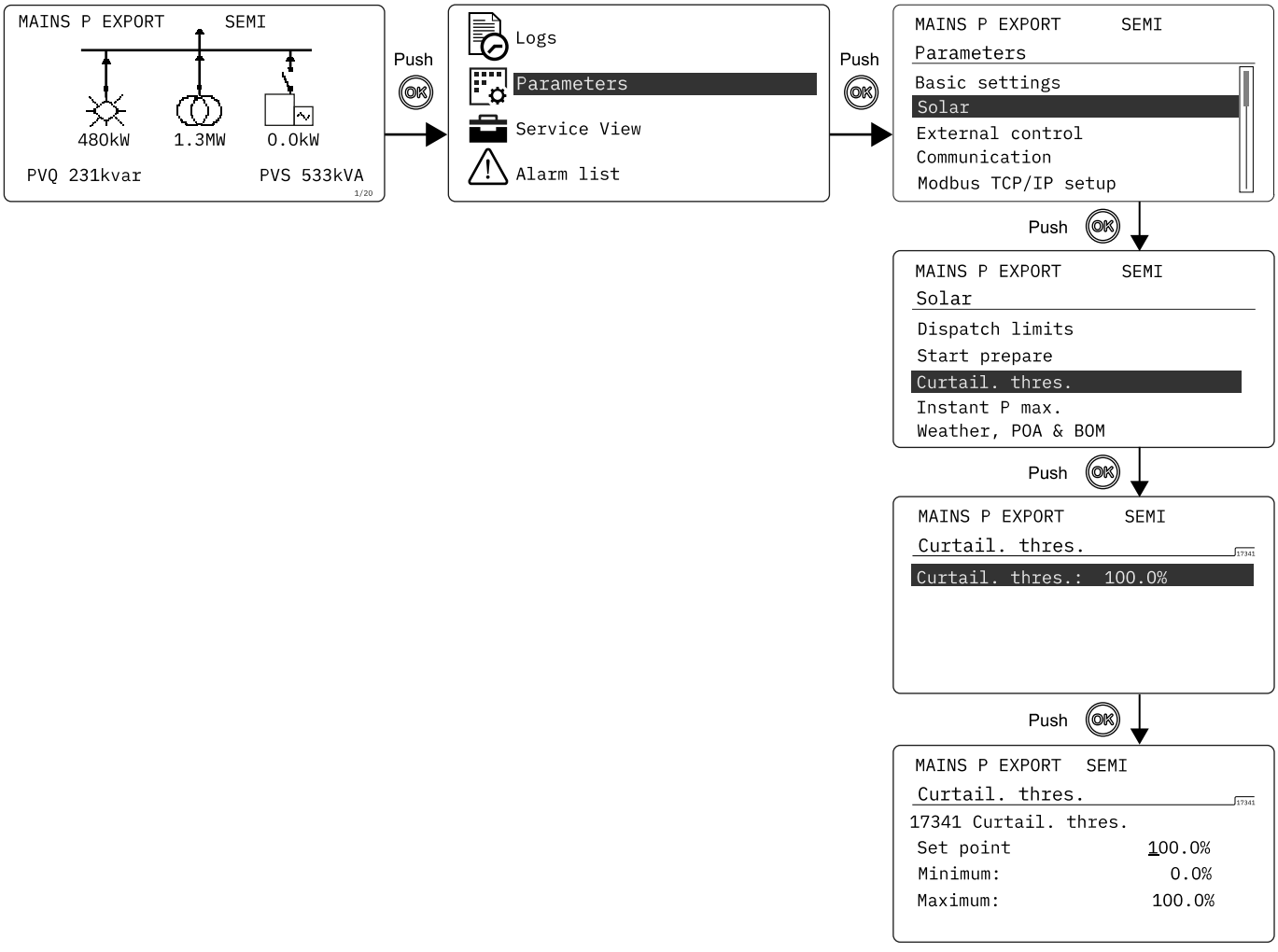
The controller has two menu systems, which can be used without password entry:

- **The View menu system**: Shows the operating status and values. The system has 20 configurable windows, that can be entered with the arrow buttons.
- **The Settings menu system**: The operator can see the controller's parameters. A password is necessary to change the parameter settings.

5.2 Settings menu

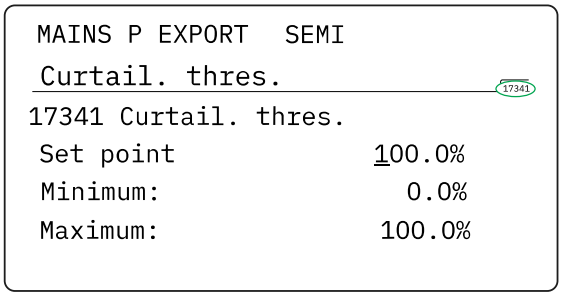
You can configure the controller in the settings menu and you can also find information, which is not available in the view menu. From the view menu, push the OK button to find the settings menu. Use the ▼ and ▲ buttons to find the different settings parameter and select with the OK button.

Settings menu example



5.2.1 Menu numbers

Each parameter has a menu number. You can find the number in the upper right corner on the display screen.



You can also find the menu number with the utility software:

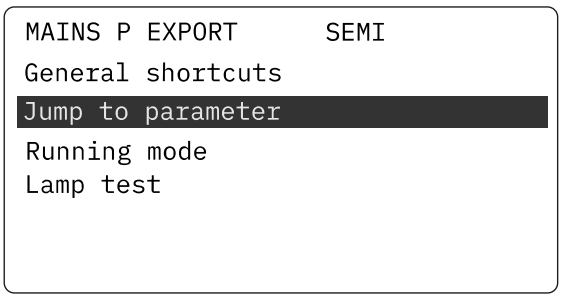
1. Select *Parameters* from the vertical toolbar on the left.
2. Set the view mode to list. The view mode can be found in the left corner of the screen.
3. The menu numbers are in the *Channel* column.

5.2.2 The jump to parameter function

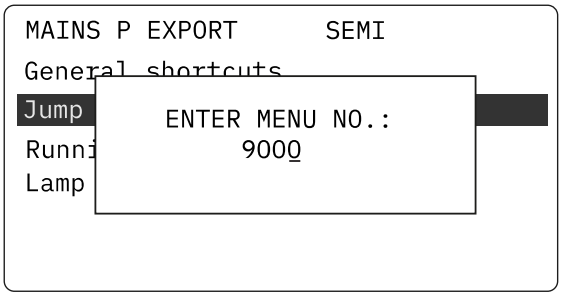
If you know the menu number for a parameter, you can use the jump to parameter function to go directly to the parameter.

On the controller

1. From the view menu, push the *Shortcut* button to see the jump to parameter function:



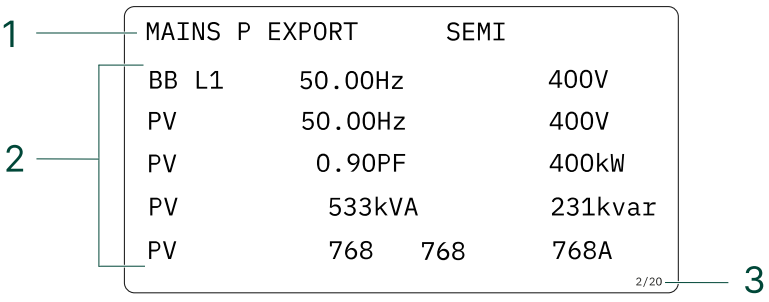
2. Use the and buttons to go to *Jump to parameter* and push the button.



3. Use the and buttons to change the numbers, and push the button to save. Use the and buttons to move to the next number.

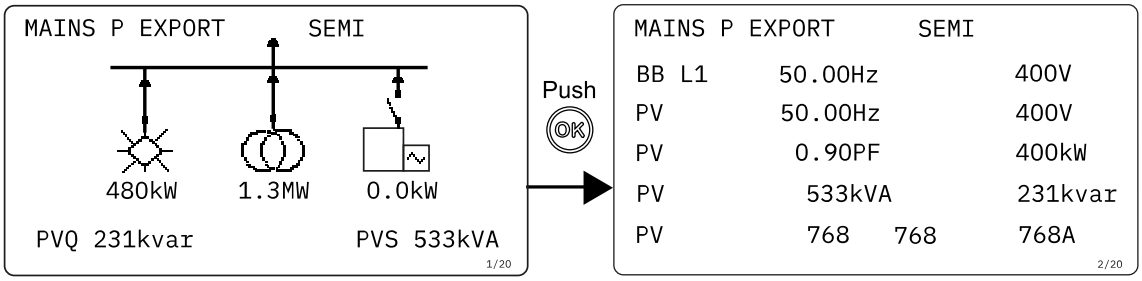
5.3 View menu

The view menu is shown when the controller is turned on, and you can see the operating status and values. The event and alarms list will also be shown if an alarm is on.



1. Operating status
2. Values and information
3. Page number

The view menu has 20 display views. Use the and buttons to select a view.

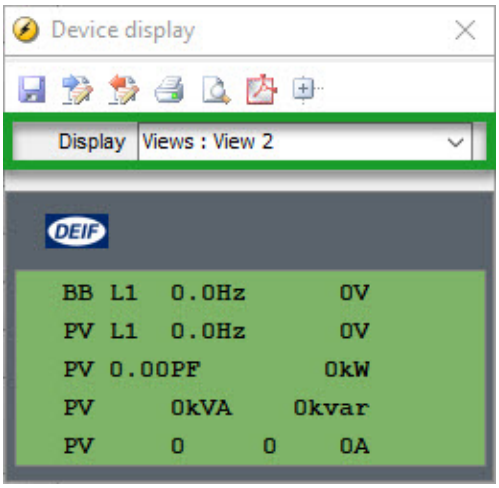


5.3.1 Display text

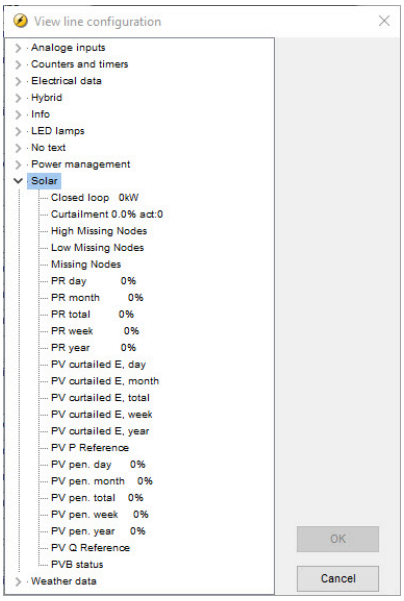
Configure the display views

You can configure the display views with the utility software:

1. Select the *Configuration of the user views* button in the toolbar.
2. In the pop-up window, select the display view to be changed.



3. Select the display line you want to change.
4. In the pop-up window, select the text you want and click OK.



Display text

You can select five of the display texts for each display view.

5.3.2 Display views

The controller has 20 display views, and 18 of the views are pre-configured. You can configure the views with the utility software.

Line	View 1	View 2	View 3	View 4	View 5
1	Supervision Drawing	BB L1 0.0Hz 0V	BB L1 0.0Hz	PV U-L1L2 0V	PV I-L1 0A
2	-	PV L1 0.0Hz 0V	PV 0.00PF 0kW	PV U-L2L3 0V	PV I-L2 0A
3	-	PV 0.00PF 0kW	PV 0kVA 0kvar	PV U-L3L1 0V	PV I-L3 0A
4	-	PV 0kVA 0kvar	PV 0 0 0A	PV U-Max 0V	Low Missing Nodes
5	Supervision	PV 0 0 0A	PV L1 0.0Hz 0V	PV U-Min 0V	High Missing Nodes

Line	View 6	View 7	View 8	View 9	View 10
1	PV f-L1 0.00Hz	PV P 0kW	P 0kW 0%	PV U-L1N 0V	BB U-L1L2 0V
2	PV f-L2 0.00Hz	PV Q 0kvar	PV P Reference	PV U-L2N 0V	BB U-L2L3 0V
3	PV f-L3 0.00Hz	PV S 0kVA	PV actual nom. P	PV U-L3N 0V	BB U-L3L1 0V
4	Ext. DG Pkw Qkvar	PV PF 0.00	-	Energy Total 0kWh	BB U-Max 0V
5	-	PV Q Reference	-	Running time - hour	BB U-Min 0V

Line	View 11	View 12	View 13	View 14	View 15
1	PV Angle L1L2 0deg	Running time - hour	Energy Total 0kWh	Energy Total 0kvarh	PV curtailed E, total
2	PV Angle L2L3 0deg	PVB Operations 0	Energy Month 0kWh	Energy Month 0kbarh	PV curtailed E, year
3	PV Angle L3L1 0deg	PVB Operations 0	Energy Week 0kWh	Energy Week 0kvarh	PV curtailed E, month

Line	View 11	View 12	View 13	View 14	View 15
4	Angle BB-PV 0deg	PVB status	Energy Day 0kWh	Energy Day 0kvarh	PV curtailed E, week
5	-	-	-	-	PV curtailed E, day

Line	View 16	View 17	View 18	View 19	View 20
1	PVB Operations 0	Multi Input 20 0	PV 0.00PF 0%P	P 0kW 0%	Curtailment 0.0% act: 0
2	MB Operations	Multi Input 21 0	BB f-L1 0.00Hz	Q 0kVAR 0%	Closed loop 0kW
3	U-Supply	Multi Input 22 0	BB Angle L1L2 0deg	S 0kVA	-
4	Date and Time	Multi Input 23 0	-	BB Angle L2L3 0deg	-
5	-	-	-	Angle BB-PV 0deg	-

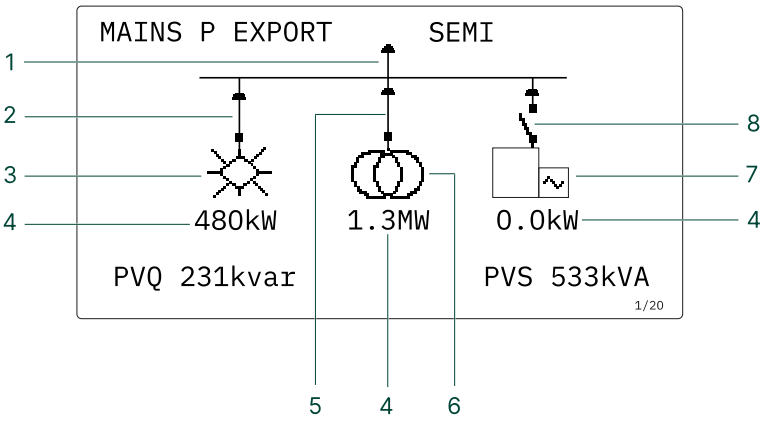
5.4 Supervision page

Display view 1 shows an active image and is therefore different from the other views.

5.4.1 Single controller

For single controller applications, the image shows the power values, the direction of the power flow, and the image also provides breaker feedback.

The view gives an overview of all the sources the controller is connected to and is useful for supervising the single controller application.



1. Load
2. Photovoltaic breaker (PVB)
3. Photovoltaic system (PVS) symbol.
   - If the symbol has no fill, then the PVS is operating.
   - If the symbol has a dark fill, then the PVS is not operating.
4. Power values
5. Mains breaker
6. Mains symbol
7. Generator symbol.
8. Generator breaker

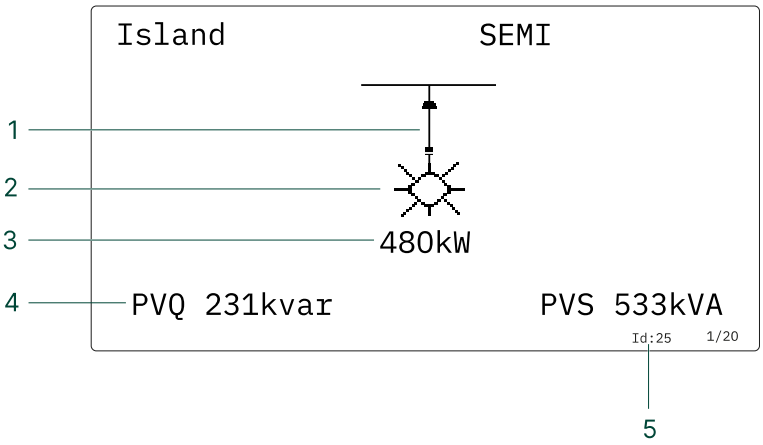
You can select three different options for the bottom view line on the supervision page:

- Option 1: Energy produced today (EDay) in kWh and the number of missing inverters (InvMis)
- Option 2: Reactive power (PVQ) in kVAR and apparent power (PVS) in kVA
- Option 3: Energy produced today (Eday) in kWh and the number of minutes the PV system operated today (OP-D)

It is possible to move the supervision page and the values to another view page.

5.4.2 Power management system

In a power management system, the image shows the power flow, and the power value for the solar symbol only. The image also provides PV breaker feedback.



1. Photovoltaic breaker (PVB).
2. Photovoltaic system (PVS) symbol.
   - If the symbol has no fill, then the PVS is operating.
   - If the symbol has a dark fill, then the PVS is not operating.
3. Power value.
4. Supervision view line 5.
   - You can select three options for this view line.
5. Identification number (ID) for the power management system (PMS).

5.5 Status texts

Status text	Condition
ACCESS LOCK	The configurable input is activated, and the operator tries to activate one of the blocked keys.
ADAPT IN PROGRESS	The controller is receiving the application that it has just connected to.
ADD PV TO CAN PMS?	Easy connect: Add PV to PMS plant.
Aux. test ##.#V ####s	The controller power supply test is activated.
AUX TEST ST. SEQ.	Genset battery test.
AUX TEST START SEQ.	Genset battery test.
AWAITING MODE INFO	The selected mode is not supported by the configured application. Select another application mode.
BB BLOCKED BY GB	Power management: GB has a position failure.
BB BLOCKED BY MB	Power management: MB has a position failure.
BB BLOCKED BY TB	Power management: TB has a position failure.

Status text	Condition
BB V/Hz OK IN	The voltage and frequency will be okay in ###s.
BB VOLTAGE DETECTED	Voltage detected on the busbar.
BLACKOUT ENABLE	Blackout close when there is a CAN failure.
BLOCKED FOR CLOSING	The breaker is unable to close.
BLOCKED FOR START	There are active alarms.
BROADCAST ABORTED	Power management: Broadcast terminated.
BROADCAST COMPLETED	Power management: Successful broadcast of application.
BROADCASTING APPL.	Power management: Broadcast one of the four applications from one controller to the other controllers in the power management system, through the CAN line.
CHECKING CAN PMS	Easy connect: Checking for other units on the PMS CAN line.
CLOSE DELAY	PV breaker close delay.
COMPENSATION FREQ.	Compensation is active. The frequency is not at the nominal setting.
DELAY REG.	Regulation is delayed until after start.
DELOAD	The controller is decreasing the load of the genset in order to open the breaker.
DELOAD ERROR	There is an error when deloading.
DELOADING MB	The PVS controller (without power management application) is increasing the load to de-load MB XX.
DERATED TO	Displays the ramp-down set point.
EASY CONNECT ERROR	Easy connect failure.
EXT. MB OPEN FAILURE	External MB open failure.
EXT. STOP TIMER	Extended stop timer.
FIXED POWER ACTIVE	The controller is in auto mode and supplying fixed power.
FIXED POWER AUTO	The controller is in auto mode and ready to respond.
FIXED POWER SEMI	The controller is in semi-auto mode and waiting for operator input.
FULL TEST	Test mode is activated.
ID 1-16 SUPPORT ONLY	Only IDs 1 to 16 are supported.
ISLAND ACTIVE	The controller is in auto mode and supplying power while not connected to a mains supply.
ISLAND AUTO	The controller is in auto mode and ready to respond.
ISLAND SEMI	The controller is in semi-auto mode and waiting for operator input.
LOAD TAKE OVER AUTO	The controller is in auto mode and ready to respond.
LOAD TAKE OVER SEMI	The controller is in semi-auto mode and waiting for operator input.
LOAD TEST	Test mode is activated.
LTO ACTIVE	The controller is in auto mode and taking over the load.
MAIN BB FAILURE	Phase is missing.
MAIN BB U OK IN	The mains BB voltage is OK after mains failure. The timer shown is the mains OK delay.
MAIN BB F OK IN	The mains BB frequency is OK after mains failure. The timer shown is the mains OK delay.
MAIN BUSBAR OK	The mains busbar is OK after mains failure. The timer shown is the mains OK delay.
MAINS FAILURE	Mains failure and mains failure timer expired.
MAINS FAILURE IN ###s	The frequency or voltage measurement is outside the limits. The timer shown is the mains failure delay.

Status text	Condition
MAINS FAILURE TIMER	Mains failure present timer.
MAINS f OK DEL ####s	Mains frequency is OK after a mains failure. The timer shown is the mains OK delay.
MAINS P EXPORT AUTO	The controller is in auto mode and ready to respond.
MAINS P EXPORT SEMI	The controller is in semi-auto mode and waiting for operator input.
MAINS U OK DEL ####s	The mains voltage is OK after a mains failure. The timer shown is the mains OK delay.
MB CLOSED INHIBITED	MB closing inhibited.
MB EXT. TRIPPED	The mains breaker is tripped externally.
MB IS CLOSED	The mains breaker is already closed.
MB IS OPEN	The mains breaker is already open.
MB SYNCHRONISING	Synchronising the mains breaker.
MB RACKED OUT	The *Breaker racked out* digital input is activated. Position failure and external trip alarms from the racked out breaker will not interfere with the rest of the system.
MOUNT CAN CONNECTOR	Quick setup.
MPE ACTIVE	The controller is in auto mode and exporting power to the mains.
NOT IN MAN OR SEMI	The controller tried to open or close the mains breaker in auto mode.
NOT POSSIBLE	Unable to do the requested command.
PEAK SHAVING ACTIVE	The controller is in auto mode and doing peak shaving.
PEAK SHAVING AUTO	The controller is in auto mode and ready to respond.
PEAK SHAVING SEMI	The controller is in semi-auto mode and waiting for operator input.
POWER DERATE	Power derate is active.
PROGRAMMING LANGUAGE	Downloading the language file, using the PC utility software.
QUICK SETUP ERROR	Quick setup of the application failed.
RAMP FREEZED	Stopped ramping (ramping frozen).
RAMP TO #####kW	The power ramp is ramping in steps. The next step that is reached after the timer has expired is displayed.
RAMPING	Ramping up to the set point.
PV NOT READY	The PV system is not ready for operation.
PV PREPARE	The start prepare relay for the PV is activated.
PV STARTING UP	PV is reconnecting to the grid.
PV TRIP EXTERNALLY	The PV breaker is tripped externally.
READY AUTO OPERATION	The controller in auto mode and ready for breaker operation (no active BTB trip alarm).
READY FIXED P AUTO	The controller is in auto mode and the PVS is stopped.
READY ISLAND AUTO	The controller is in auto mode and the PVS is stopped.
READY LTO AUTO	The controller is in auto mode and the PVS is stopped.
READY MPE AUTO	The controller is in auto mode and the PVS is stopped.
READY PEAKSHAV AUTO	The controller is in auto mode and the PVS is stopped.
READY TO BE ADDED	Easy connect: Controller is ready to be added.
RECEIVE COMPLETED	The broadcast application has been received.
RECEIVE ERROR	There was an error receiving the broadcast application.
RECEIVING APPL.	Receiving the broadcast application on the CAN line.

Status text	Condition
REM. FROM PMS PV	Easy connect: Remove PV from PMS plant.
REMOVE CAN CONNECTOR	Remove the power management CAN lines.
SELECT OPERATION MO	An operation mode has not been selected.
SELECT PLANT MODE	A plant mode has not been selected.
SETUP COMPLETED	Successful update of the application in all the controllers.
SETUP IN PROGRESS	A new controller is being added to the existing application.
SETUP STAND ALONE?	Easy connect: Configure the controller in a stand-alone application.
SIMPLE TEST	Test mode is activated.
SOC STOP LIM > THR2	Warning: The SOC genset stop limit is more than the SOC threshold 2.
START DG(s) IN ###s	Genset start timer: Load dependent start/stop.
START NEW PLANT	Easy connect: Configure a new PMS plant.
START PREPARE	The start prepare relay is activated.
START RELAY OFF	The start relay is deactivated during the start sequence.
START RELAY ON	The start relay is activated.
STOP DG(s) IN ###s	Genset stop timer: Load dependent start/stop.
SUNSPEC GOT ID	SunSpec ID information.
SUNSPEC IDENTIFYING	Connecting to a PV inverter.
SUNSPEC INITIALIZED	PV is initialising.
SUNSPEC N/A RETRY	PV not available. Try to connect again.
SUNSPEC TIMED OUT	Unsuccessful initialisation.
SYNCRHONIZING MB	MB is synchronising.
TOO SLOW 00←----------|	PV frequency is less than the BB frequency.
--------→| 00 TOO F	PV frequency is more than the BB frequency.
UNEXPECTED GB ON BB	A stopped genset has a closed GB.
VOLT/FREQ OK IN	BB Hz/V OK timer.
VOLTAGE/FREQUENCY OK	The voltage and frequency are okay, and the timer has run out.
WARM UP RAMP	Warm up ramp is active. The available power is limited until the pre-defined temperature is reached, or when the input that activated warm up ramp is deactivated.
---xx-------- >00< ----------	Generator is synchronising. The "xx" marks the actual generator phase angle position in the synchronisation. When the "xx" is aligned over the 00 centre, the generator is synchronised.

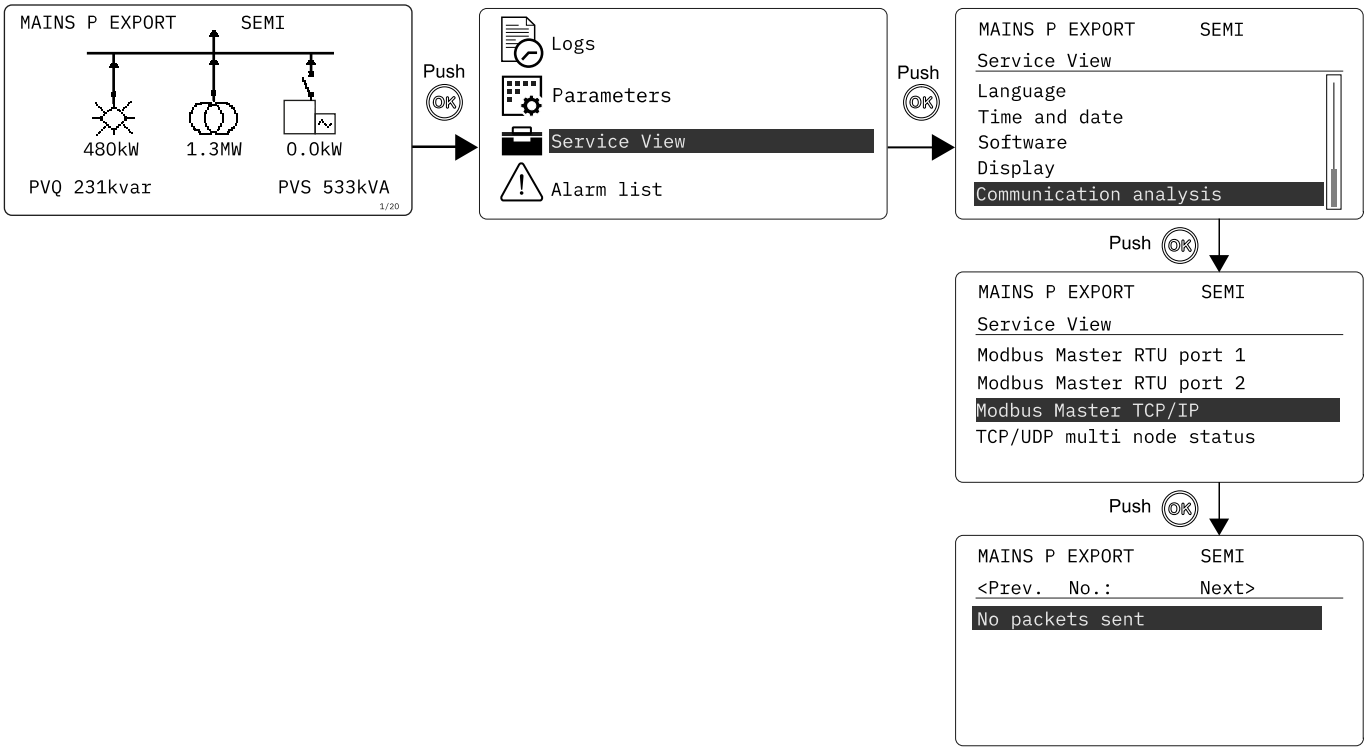
5.6 Service view

You can use the service view to see the status of the controller. You can change the passwords in the service menu, but not the other controller settings.

From the view menu, push the OK button and select *Service View* . Use the ⌄ and ⌃ buttons to go through the parameters in the service view, and use the OK button to select the parameters.

Service view example

This is an example of how to find the configuration and operating details for *Modbus Master TCP/IP* in `Communication analysis`.



5.6.1 Communication troubleshooting

In `Service View > Communication analysis` you can see:

- Modbus Master RTU port 1
- Modbus Master RTU port 2
- Modbus Master TCP/IP
- TCP/UDP multi mode status

For each selection, you can see configuration and operating details. For example, for Modbus Master TCP/IP you can see:

- Details for each connected device (use <Prev. and Next> to navigate)
- IDs, Rx and Tx info, IP address, connected (true or false), and so on.

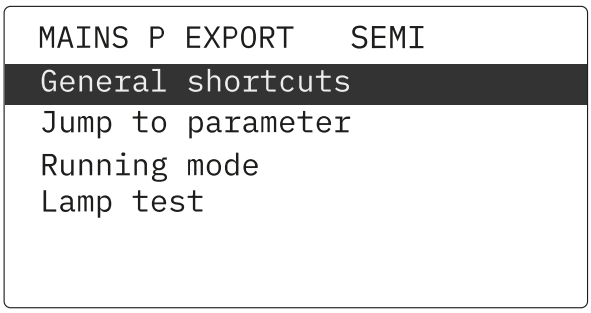
5.7 General shortcuts

You can see your configured shortcuts in the General shortcuts menu. If you have not configured a shortcut, then the menu is empty. Use the shortcuts when the controller is in SEMI-AUTO mode.

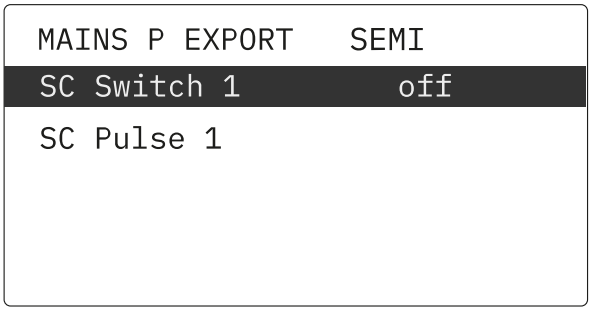
More information
See **General shortcuts** in the **ASC 150 Solar Designer's handbook** for how to configure the general shortcuts.

On the controller

1. From the view menu, push the *Shortcut* button to see the menu.



2. Use the *Up* and *Down* buttons to go to *General shortcuts* , and push the OK button.



3. Use the *Up* and *Down* buttons to go to select a shortcut.

6. Alarm handling and log list

6.1 Alarm handling

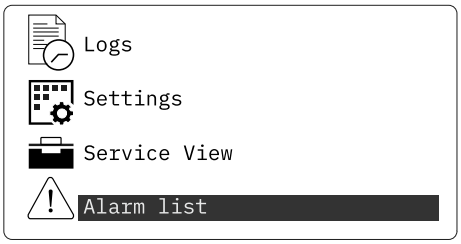
If the function *Alarm Jump* is on, the controller will automatically show the alarm list on the display screen when an alarm occurs.

`Service View > Display > Alarm Jump`

Parameter	Text	Range	Default
9157	Alarm Jump	OFF ON	ON

Access the alarm list from the display unit

1. From the view menu, push the OK button.
2. Use the ^ and v buttons to go to the *Alarm list*.

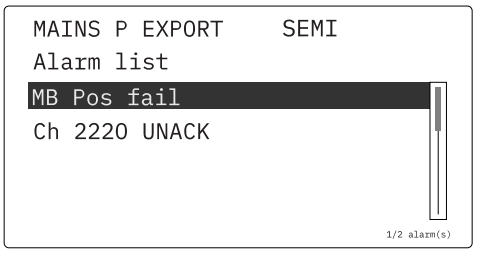


3. Push the OK button to view the *Alarm list*.

The alarm list contains both acknowledged and unacknowledged alarms that are active. An alarm is active, if you have not cleared the alarm condition, which started the alarm. Once an alarm is acknowledged and you have cleared the alarm condition, the alarm is removed from the alarm list. If there are no alarms, then the alarm list will show *No alarms*.

The display screen can show only one alarm at a time. The number of alarms is shown on the right at the bottom of the screen.

Example of an unacknowledged alarm



To see the other alarms, use the ^ and v buttons to go through the list. To acknowledge an alarm, select the alarm and push the OK button.

Access the alarm list with the utility software

Select *Alarms* on the vertical panel on the left.

CAUTION

Caution

If an alarm is blocking the photovoltaic system (PVS) in AUTO mode from starting, the PVS starts automatically if the condition that triggered the alarm has gone and the alarm has been acknowledged.

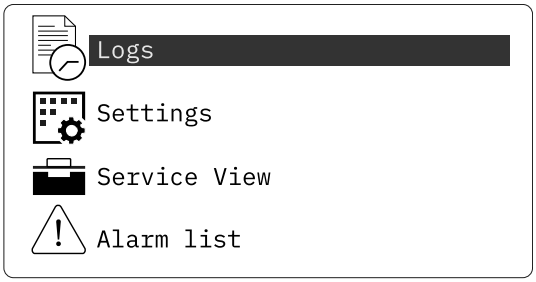
6.2 Logs menu

These are the log sub-menus:

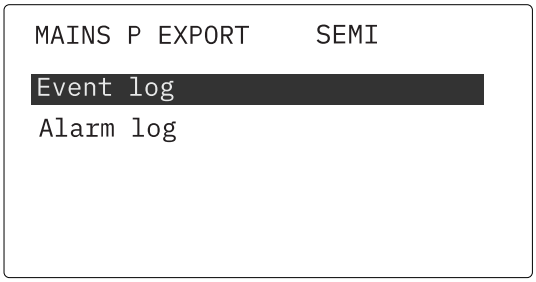
1. Event log: Shows up to 500 events.
2. Alarm log: Shows up to 500 alarms. Only the latest 100 alarms are shown on the display unit, while the remaining alarms are shown in the utility software.

Access the log menu from the controller

1. From the view menu, push the OK button.
2. Use the ^ and v buttons to go to *Logs*.



3. Push the OK button to select *Logs*.
4. Select the log you want to see and push the OK button.



5. To leave the *Log* , push the ← button.

Access the log list with the utility software

1. In the vertical panel on the left, select *Logs*.
2. In the task bar, select *Get logs* .
3. Select the *Log list* you want to see.