

4 Troubleshooting

4.1 LED Signals

The LEDs indicate the operating state of the inverter.

LED	Status	Explanation
Green LED	glowing	Feed-in operation If an event occurs during feed-in operation, an event message will be shown on the display (for event messages see the service manual at www.SMA-Solar.com).
	flashing	The conditions for feed-in operation are not yet met. As soon as the conditions are met, the inverter will start feed-in operation.
Red LED	glowing	Error If an error occurs, the error message and the corresponding event number will be shown in the display. The error must be rectified by a qualified person (for troubleshooting, see the service manual at www.SMA-Solar.com).
	flashing	
Blue LED	glowing	BLUETOOTH communication is activated.

4.2 Event Messages

Display message	Cause
Self-test	The self-test is in progress.
Set parameter	The parameter changes are being adopted.
Parameters set successfully	The parameter changes were successfully adopted.
Update file OK	The update file found is valid.
SD memory card is read	The SD memory card is searched for update files and the update file is checked.
No new update SDCard	The SD memory card contains an update file that has already been used.
Update communication	The inverter is performing an update of the communication component.
Update main CPU	The inverter is updating the inverter component.
Update RS485i module	The inverter is updating the corresponding component.
Update Speedwire	The inverter is updating the corresponding component.
Webconnect update	The inverter is updating the corresponding component.
Update Bluetooth	The inverter is updating the corresponding component.

Display message	Cause
Upd. language table	The inverter is updating the corresponding component.
Update completed	The inverter has successfully completed the update.
Grid param. unchanged	The parameters are locked and you cannot change them.
Inst. code valid	The entered Grid Guard code is valid. Protected parameters have now been unlocked and you can adjust the parameters. The parameters will be automatically locked again after ten feed-in hours.

4.3 Error Messages

Event number	Display message, cause and corrective measures
101 to 103	<p>Grid fault</p> <p>The grid voltage or grid impedance at the connection point of the inverter is too high. The inverter has disconnected from the utility grid.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Check whether the grid voltage at the connection point of the inverter is permanently in the permissible range. <p>If the grid voltage is outside the permissible range due to local grid conditions, contact the grid operator. The grid operator must agree with an adjustment of the voltage at the feed-in point or with a change of the monitored operating limits.</p> <p>If the grid voltage is permanently within the permissible range and this message is still displayed, contact the Service (see Section 11, page 30).</p>
202 to 203, 205	<p>Grid fault</p> <p>The utility grid has been disconnected, the AC cable is damaged or the grid voltage at the connection point of the inverter is too low. The inverter has disconnected from the utility grid.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Make sure that the circuit breaker is switched on. • Make sure that the AC cable is not damaged. • Make sure that the AC cable is correctly connected. • Check whether the grid voltage at the connection point of the inverter is permanently in the permissible range. <p>If the grid voltage is outside the permissible range due to local grid conditions, contact the grid operator. The grid operator must agree with an adjustment of the voltage at the feed-in point or with a change of the monitored operating limits.</p> <p>If the grid voltage is permanently within the permissible range and this message is still displayed, contact the Service (see Section 11, page 30).</p>

Event number	Display message, cause and corrective measures
301	<p>Grid fault</p> <p>The ten-minute average value of the grid voltage is no longer within the permissible range. The grid voltage or grid impedance at the connection point is too high. The inverter disconnects from the utility grid to maintain power quality.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Check whether the grid voltage at the connection point of the inverter is permanently in the permissible range. <p>If the grid voltage is outside the permissible range due to local grid conditions, contact the grid operator. The grid operator must agree with an adjustment of the voltage at the feed-in point or with a change of the monitored operating limits.</p> <p>If the grid voltage is permanently within the permissible range and this message is still displayed, contact the Service (see Section 11, page 30).</p>
401	<p>Grid fault</p> <p>The inverter is no longer in grid-parallel operation. The inverter has stopped feeding into the utility grid.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Check the grid connection for significant short-term frequency fluctuations.
501	<p>Grid fault</p> <p>The power frequency is not within the permissible range. The inverter has disconnected from the utility grid.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • If possible, check the power frequency and observe how often fluctuations occur. <p>If fluctuations occur frequently and this message is displayed often, contact the grid operator and request approval to change the operating parameters of the inverter.</p> <p>If the grid operator gives his approval, discuss any changes to the operating parameters with the Service.</p>
601	<p>Grid fault</p> <p>The inverter has detected an excessively high proportion of direct current in the grid current.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Check the grid connection for direct current. • If this message is displayed frequently, contact the grid operator and check whether the monitoring threshold on the inverter can be raised.

Event number	Display message, cause and corrective measures
701	<p>Freq. not permitted > Check parameter</p> <p>The power frequency is not within the permissible range. The inverter has disconnected from the utility grid.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • If possible, check the power frequency and observe how often fluctuations occur. <p>If fluctuations occur frequently and this message is displayed often, contact the grid operator and request approval to change the operating parameters of the inverter.</p> <p>If the grid operator gives his approval, discuss any changes to the operating parameters with the Service.</p>
801	<p>Waiting for grid voltage > Grid failure > Check AC circuit breaker</p> <p>The AC cable is not correctly connected or the country data set is not correctly configured.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Ensure that the AC cable is correctly connected (see the operating manual of the inverter). • Ensure that the country data set has been configured correctly. • Check the fuse.
901	<p>PE conn. missing > Check connection</p> <p>The grounding conductor is not correctly connected.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Ensure that PE is correctly connected (see operating manual of the inverter).
1001	<p>L/N swapped > Check connection</p> <p>The connection of L and N is swapped.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Ensure that L and N are correctly connected (see operating manual of the inverter).
1501	<p>Reconnection fault grid</p> <p>The changed country data set or the value of a parameter you have set does not correspond to the local requirements. The inverter cannot connect to the utility grid.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Ensure that the country data set has been configured correctly. Check the setting of the rotary switches A and B or select the operating parameter Set country standard and check the value.

Event number	Display message, cause and corrective measures
3301 to 3303	<p>Unstable operation</p> <p>The ten-minute average value of the grid voltage is no longer within the permissible range. The grid voltage or grid impedance at the connection point is too high. The inverter disconnects from the utility grid to maintain power quality.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> <li>• Check whether the grid voltage at the connection point of the inverter is permanently in the permissible range. <p>If the grid voltage is outside the permissible range due to local grid conditions, contact the grid operator. The grid operator must agree with an adjustment of the voltage at the feed-in point or with a change of the monitored operating limits.</p> <p>If the grid voltage is permanently within the permissible range and this message is still displayed, contact the Service (see Section 11, page 30).</p>
3304	<p>Gen. output too low</p> <p>The DC output of the PV array is too low. The inverter cannot connect to the utility grid.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> <li>• Wait for higher irradiation. <li>• If this message is displayed frequently with medium irradiation, ensure that the PV system is correctly rated and the PV array correctly wired.
3401 to 3402	<p>DC overvoltage > Disconnect generator</p> <p>Overvoltage at the DC input. This can destroy the inverter.</p> <p>This message is additionally highlighted by rapid flashing of the backlight.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> <li>• Immediately disconnect the inverter from all voltage sources (see Section 2.2, page 7). <li>• Check whether the DC voltage is below the maximum input voltage of the inverter. If the DC voltage is below the maximum input voltage of the inverter, reconnect the DC connectors to the inverter. <li>• If the DC voltage is above the maximum input voltage of the inverter, ensure that the PV array has been correctly rated or contact the installer of the PV array. <li>• If this message is repeated frequently, contact the Service (see Section 11, page 30).

Event number	Display message, cause and corrective measures
3501	<p>Insulation failure > Check generator</p> <p>The inverter has detected a ground fault in the PV array.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Check the PV system for ground faults (see Section 5, page 19).
3601	<p>High discharge curr. > Check generator</p> <p>The leakage currents of the inverter and the PV array are too high. There is a ground fault, a residual current or a malfunction.</p> <p>The inverter interrupts feed-in operation immediately after exceeding a threshold. When the fault is eliminated, the inverter automatically reconnects to the utility grid.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Check the PV system for ground faults (see Section 5, page 19).
3701	<p>Resid.curr.too.high > Check generator</p> <p>The inverter has detected a residual current due to temporary grounding of the PV array.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Check the PV system for ground faults (see Section 5, page 19).
3801 to 3802	<p>DC overcurrent > Check generator</p> <p>Overcurrent at the DC input. The inverter briefly interrupts feed-in operation.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • If this message is displayed frequently, ensure that the PV array has been correctly rated and wired.
3901 to 3902	<p>Waiting for DC start conditions > Start cond. not met</p> <p>The feed-in conditions for the utility grid are not yet fulfilled.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Wait for higher irradiation. • If this message is displayed frequently in the morning, increase the voltage limit for starting grid feed-in. Change the parameter Critical voltage to start feed-in. • If this message is displayed frequently with medium irradiation, ensure that the PV array is correctly rated.
6001 to 6438	<p>Self-diagnosis > Interference device</p> <p>The cause must be determined by the Service.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Contact the Service (see Section 11, page 30).

Event number	Display message, cause and corrective measures
6501 to 6502	<p>Self-diagnosis > Overtemperature</p> <p>The inverter has switched off due to excessive temperature.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Clean the cooling fins on the rear of the enclosure and the air ducts on the top using a soft brush. • Ensure that the inverter has sufficient ventilation.
7008	<p>Disturbance sensor display temperature</p> <p>The cause must be determined by the Service.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Contact the Service (see Section 11, page 30).
7101	<p>SD card defective</p> <p>The SD memory card is not formatted.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Re-format the SD memory card. • Re-save the files to the SD memory card.
7102	<p>Parameter file not found or defective</p> <p>The parameter file was not found or is defective. The update failed. The inverter continues feeding power into the grid.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Copy the parameter file \PARASET into the card drive directory.
7105	<p>Param. setting failed</p> <p>It was not possible to set the parameter via the SD memory card. The inverter continues feeding power into the grid.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Check the parameters for valid values. • Ensure change rights via SMA Grid Guard code.
7106	<p>Update file defect.</p> <p>Update file on the SD memory card is faulty.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Re-format the SD memory card. • Re-save the files to the SD memory card.
7110	<p>No update file found</p> <p>No update file has been found.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Copy the update file in the SD memory card folder. Select the folder \UPDATE.

Event number	Display message, cause and corrective measures
7201 to 7202	<p>Data stor. not poss.. Internal error. The inverter continues to feed into the utility grid.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Contact the Service (see Section 11, page 30).
7303	<p>Update main CPU failed The cause must be determined by the Service.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Contact the Service (see Section 11, page 30).
7305	<p>Update RS485I module failed Internal error. The inverter continues to feed into the utility grid.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Retry update. • If this message is displayed again, contact the Service (see Section 11, page 30).
7307	<p>Update BT failed Internal error. The inverter continues to feed into the utility grid.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Retry update. • If this message is displayed again, contact the Service (see Section 11, page 30).
7311	<p>Update language table failed Internal error. The inverter continues to feed into the utility grid.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Retry update. • If this message is displayed again, contact the Service (see Section 11, page 30).
7401	<p>Varistor defective At least one of the thermally monitored varistors is defective.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Check the function of the varistors (see Section 6, page 22).
7508	<p>External fan fault The external fan is defective or blocked.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Ensure that the fan is clean. • Ensure that the external fan is correctly connected.

Event number	Display message, cause and corrective measures
8001	<p>Derating occurred</p> <p>The inverter has reduced its power output for more than ten minutes due to excessive temperature.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Clean the cooling fins on the rear of the enclosure and the air ducts on the top using a soft brush. • Ensure that the inverter has sufficient ventilation.
8801 to 8803	<p>No display</p> <p>The cause must be determined by the Service.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Contact the Service (see Section 11, page 30).
9002	<p>Inst. code invalid</p> <p>The SMA Grid Guard code entered is incorrect. The operating parameters are still protected and cannot be changed.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Enter the correct SMA Grid Guard code.
9003	<p>Grid param. locked</p> <p>The parameters are now locked. You cannot change the parameters.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Unlock the parameters with the SMA Grid Guard code.
9005	<p>Changing grid param. not possible > Ensure DC supply</p> <p>This error can have the following causes:</p> <ul style="list-style-type: none"> • The selected rotary switch setting for the country configuration is not programmed. • The parameters to be changed are protected. • The DC voltage at the DC input is not sufficient to run the main CPU. <p>Corrective measures:</p> <ul style="list-style-type: none"> • Ensure that the country data set has been configured correctly. • Enter the SMA Grid Guard code. • Ensure that sufficient DC voltage is available (green LED is glowing or flashing).