

## Fault and Warning Messages

- Unless stated otherwise, all faults will cause the PVS unit to stop running.
- Unless stated otherwise, faults can be cleared by a fault reset command from the estop switch, the HMI, or an external Modbus device.
- Numerical values given are factory default settings and may have been changed.

### General Faults

Table 28 lists and describes the general faults.

**Table 28 General Faults**

| NO. | MESSAGE            | MEANING   | ACTION  |
|-----|--------------------|---|---|
| 1   | dc in not ready    | DC input voltage not ready. The dc input voltage has not reached and exceeded the value specified by a parameter.             | None. When the dc input voltage reaches the correct value, the unit will automatically start. |
| 2   | line not ready     | AC line voltage not ready. The ac line voltage has not exceeded the required level for the required time (default 5 minutes). | None. When the ac line voltage reaches the correct value, the unit will automatically start.  |
| 3   | stop command       | The unit has stopped because it has received a software stop command.   | This command is automatically cleared by a start command.                                     |
| 4   | shutdown cmd       | The unit has stopped because it has received a software shutdown command.   |   |
| 5   | estop              | The unit has stopped because the hardware estop switch is open. Cleared by closing the estop switch.                          | n/a   |
| 6   | low power stop     | The unit has stopped because the power output has remained at zero for more than 10 minutes.                                  | None. This message is automatically cleared when the unit stops.                              |
| 7   | lo current stop    | The unit has stopped because the dc link current has remained at zero for more than 10 minutes.                               | None. This message is automatically cleared when the unit stops.                              |
| 8   |                    | Reserved  |   |
| 9   | door open          | One of the doors is open. The unit will not run unless all doors are closed.  | Close door(s).  |
| 10  | disconnect open    | The dc input disconnect DS1 is open.  | Close DS1.  |
| 11  | breaker open       | The ac line circuit breaker is open.  | Close CB1.  |
| 12  | DPCB fault         | Digital Power Control Board fault (faults 33-48)  | Refer to DPCB Faults in this section.   |
| 13  | hardware fault     | Hardware fault (faults 49-64)   | Refer to Hardware Faults in this section.   |
| 14  | inverter fault     | Inverter fault (faults 65-80)   | Refer to Inverter Faults in this section.   |
| 15  | temperature fit    | Temperature fault (faults 81-96)  | Refer to Temperature Faults in this section.  |
| 16  |                    | Reserved  |   |
| 17  | dc in overvoltage  | DC input overvoltage. DC input voltage above 660V for more than 100 ms.   | Contact Satcon Service  |
| 18  | dc in undervoltage | DC input undervoltage. DC input voltage below 250V for more than 100ms.   | Contact Satcon Service  |
| 19  | dc overvoltage     | DC link overvoltage. DC link voltage above 700V for more than 100 ms.   | Contact Satcon Service  |

**Table 30 General Faults (2 of 2)**

|    |                 |   |   |
|----|-----------------|---|---|
| 20 | dc undervolt    | DC link undervoltage. DC link voltage below 250V for more than 1 second.  | Contact Satcon Service  |
| 21 | dc ground fault | DC ground overcurrent detected by ground impedance monitoring device.   | Contact Satcon Service  |
| 22 | In overvlt slow | Line overvoltage slow. Line voltage above 120% of rated for more than 1 second.   | None. This fault is automatically cleared when the line voltage drops below the trip level. |
| 23 | In overvlt fast | Line overvoltage fast. Line voltage above 110 % of rated for more than 0.16 second. Automatically cleared when the line voltage drops below the trip level.           | None. This fault is automatically cleared when the line voltage drops below the trip level. |
| 24 | In undrvlt slow | Line undervoltage slow. Line voltage below 88% of rated for more than 1 second. Automatically cleared when the line voltage rises above the trip level.               | None. This fault is automatically cleared when the line voltage rises above the trip level. |
| 25 | In undrvlt fast | Line undervoltage fast. Line voltage below 50% of rated for more than 0.16 second. Automatically cleared when the line voltage rises above the trip level.            | None. This fault is automatically cleared when the line voltage rises above the trip level. |
| 26 | volt unbalance  | Line voltage unbalance (IEC unbalance)  | Contact Satcon Service  |
| 27 | line over freq  | Line over frequency. Line frequency more than 0.5 Hz above rated for more than 0.16 second. Automatically cleared when the frequency drops below the trip level.      | None. This fault is automatically cleared when the frequency drops below the trip level.    |
| 28 | under freq slow | Line under frequency slow. Line frequency more than 0.7 Hz below rated for more than 0.16 second. Automatically cleared when the frequency rises above the trip level | None. This fault is automatically cleared when the frequency rises above the trip level.    |
| 29 | under freq fast | Line under frequency fast. Line frequency more than 3.0 Hz below rated. Automatically cleared when the frequency rises above the trip level.                          | None. This fault is automatically cleared when the frequency rises above the trip level.    |
| 30 |                 | Not used  |   |
| 31 |                 | Reserved  |   |
| 32 |                 | Reserved  |   |

## DPCB Faults

Table 29 lists and describes the Digital Processing Circuit Board (DPCB) faults.

**Table 29 DPCB Faults**

| NO. | MESSAGE        | MEANING   | ACTION   |
|-----|----------------|---|--|
| 33  | program chksum | Program checksum error. .   | If fault cannot be cleared contact Satcon Service. |
| 34  | FPGA version   | FPGA version not compatible with firmware.  | If fault cannot be cleared contact Satcon Service. |
| 35  | data copy 1    | Checksum error for saved data copy 1. Saved data includes fault log and energy production data.   | Contact Satcon Service                             |
| 36  | data copy 2    | Checksum error for saved data copy 2  | Contact Satcon Service                             |
| 37  | param A copy 1 | Checksum error for parameter set A copy 1   | Contact Satcon Service                             |
| 38  | param A copy 2 | Checksum error for parameter set A copy 2   | Contact Satcon Service                             |
| 39  | param B copy 1 | Checksum error for parameter set B copy 1   | Contact Satcon Service                             |
| 40  | param B copy 2 | Checksum error for parameter set B copy 2   | Contact Satcon Service                             |
| 41  | v fdbk scaling | Voltage feedback scaling error.   | Contact Satcon Service.                            |
| 42  | i fdbk scaling | Current feedback scaling error. Check and adjust current feedback ratio and burden parameters. Save parameters and cycle control power.   | Contact Satcon Service.                            |
| 43  | i difference   | Difference between inverter input and output current feedback is too large. Check and adjust current feedback ratio and burden parameters. Save parameters and cycle control power. | Contact Satcon Service.                            |
| 44  | ratings change | A ratings parameter has been changed. Internal scaling parameters must be recalculated. Save parameters and cycle control power.  | Contact Satcon Service.                            |
| 45  | stack fault    | DSP stack overflow. If fault cannot be cleared replace DPCB board.  | If fault cannot be cleared contact Satcon Service. |
| 46  | adc fault      | Analog to digital converter fault. If fault cannot be cleared replace DPCB board.   | If fault cannot be cleared contact Satcon Service. |
| 47  | NVRAM fault    | Non-volatile memory fault. If fault cannot be cleared replace DPCB board.   | If fault cannot be cleared contact Satcon Service. |
| 48  | FPGA fault     | FPGA bus interface fault. If fault cannot be cleared replace DPCB board.  | If fault cannot be cleared contact Satcon Service. |

## Hardware Faults

Table 30 lists and describes the hardware faults.

**Table 30 Hardware Faults**

| <b>NO.</b> | <b>MESSAGE</b>   | <b>MEANING</b>   | <b>ACTION</b>                                      |
|------------|------------------|--|--|
| 49         | DPCB iso +5V     | DPCB isolated +5V power supply fault. If fault cannot be cleared replace DPCB board. | If fault cannot be cleared contact Satcon Service. |
| 50         | DPCB +5V         | DPCB +5V power supply fault. If fault cannot be cleared replace DPCB board.          | If fault cannot be cleared contact Satcon Service. |
| 51         | DPCB +15V        | DPCB +15V power supply fault. If fault cannot be cleared replace DPCB board.         | If fault cannot be cleared contact Satcon Service. |
| 52         | DPCB -15V        | DPCB -15V power supply fault. If fault cannot be cleared replace DPCB board.         | If fault cannot be cleared contact Satcon Service. |
| 53         | FPGA watchdog    | FPGA watchdog timer fault. If fault cannot be cleared replace DPCB board.            | If fault cannot be cleared contact Satcon Service. |
| 54         | surge suppressor | AC or DC surge suppressor fault  | Contact Satcon Service.                            |
| 55         | inverter fuse 1  | Inverter fuse 1 open   | Contact Satcon Service                             |
| 56         | inverter fuse 2  | Inverter fuse 2 open   | Contact Satcon Service                             |
| 57         | inv overtemp 1   | Inverter hardware overtemperature 1  | Contact Satcon Service.                            |
| 58         | inv overtemp 2   | Inverter hardware overtemperature 2  | Contact Satcon Service.                            |
| 59         | xrfmr overtemp   | Isolation transformer overtemperature  | Contact Satcon Service.                            |
| 60         | reactor overtmp  | AC filter reactor overtemperature  | Contact Satcon Service.                            |
| 61         | precharge fault  | Precharge circuit fault  | Contact Satcon Service.                            |
| 62         | test mode fault  | Test mode fault  | Contact Satcon Service.                            |
| 63         | open cct test    | Open circuit test mode fault   | Contact Satcon Service.                            |
| 64         | short cct test   | Short circuit test mode fault  | Contact Satcon Service.                            |

## Inverter Faults

Table 31 lists and describes the inverter faults.

**Table 31 Inverter Faults**

| NO. | MESSAGE        | MEANING                                | ACTION                  |
|-----|----------------|--|-------------------------|
| 65  | gate fdbk A    | Gate feedback fault phase A inverter 1 | Contact Satcon Service. |
| 66  | gate fdbk B    | Gate feedback fault phase B inverter 1 | Contact Satcon Service. |
| 67  | gate fdbk C    | Gate feedback fault phase C inverter 1 | Contact Satcon Service. |
| 68  | gate fdbk A2   | Gate feedback fault phase A inverter 2 | Contact Satcon Service. |
| 69  | gate fdbk B2   | Gate feedback fault phase B inverter 2 | Contact Satcon Service. |
| 70  | gate fdbk C2   | Gate feedback fault phase C inverter 2 | Contact Satcon Service. |
| 71  | dc in overcurr | DC input timed overcurrent             | Contact Satcon Service. |
| 72  | dc in oc inst  | DC input instantaneous overcurrent     | Contact Satcon Service. |
| 73  | dc uv inst     | DC link instantaneous undervoltage     | Contact Satcon Service. |
| 74  | dc ov inst     | DC link instantaneous overvoltage      | Contact Satcon Service. |
| 75  | inv sw overcur | Inverter software overcurrent          | Contact Satcon Service. |
| 76  | inv hw oc 1    | Hardware overcurrent inverter 1        | Contact Satcon Service. |
| 77  | inv hw oc 2    | Hardware overcurrent inverter 2        | Contact Satcon Service. |
| 78  | line overcurr  | AC line overcurrent                    | Contact Satcon Service. |
| 79  | i unbalance    | AC line current unbalance              | Contact Satcon Service. |
| 80  |                | Reserved                               |                         |

## Temperature faults

Table 32 lists and describes the temperature faults.

**Table 32 Temperature Faults**

| NO. | MESSAGE         | MEANING                             | ACTION                  |
|-----|-----------------|-------------------------------------|-------------------------|
| 81  | int air hi temp | Internal air high temperature fault | Contact Satcon Service. |
| 82  | Inv air hi temp | Inverter air high temperature fault | Contact Satcon Service. |
| 83  | htsnk hi temp 1 | Heatsink 1 high temperature fault   | Contact Satcon Service. |
| 84  | htsnk hi temp 2 | Heatsink 2 high temperature fault   | Contact Satcon Service. |
| 85  | htsnk hi temp 3 | Heatsink 3 high temperature fault   | Contact Satcon Service. |
| 86  | htsnk hi temp 4 | Heatsink 4 high temperature fault   | Contact Satcon Service. |
| 87  | htsnk hi temp 5 | Heatsink 5 high temperature fault   | Contact Satcon Service. |
| 88  | htsnk hi temp 6 | Heatsink 6 high temperature fault   | Contact Satcon Service. |
| 89  | int air lo temp | Internal air low temperature fault  | Contact Satcon Service. |
| 90  | Inv air lo temp | Inverter air low temperature fault  | Contact Satcon Service. |
| 91  | htsnk lo temp 1 | Heatsink 1 low temperature fault    | Contact Satcon Service. |
| 92  | htsnk lo temp 2 | Heatsink 2 low temperature fault    | Contact Satcon Service. |
| 93  | htsnk lo temp 3 | Heatsink 3 low temperature fault    | Contact Satcon Service. |
| 94  | htsnk lo temp 4 | Heatsink 4 low temperature fault    | Contact Satcon Service. |
| 95  | htsnk lo temp 5 | Heatsink 5 low temperature fault    | Contact Satcon Service. |
| 96  | htsnk lo temp 6 | Heatsink 6 low temperature fault    | Contact Satcon Service. |

## Warning Messages

Table 33 lists and describes the warning messages.

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### NOTE



Warning messages do NOT cause the PVS unit to shut down.

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**Table 33 Warning Messages**

| <b>NO.</b> | <b>MESSAGE</b>   | <b>DESCRIPTION</b>                                | <b>ACTION</b>           |
|------------|------------------|---|-------------------------|
| 97         | fan fault 1      | Variable speed fan fault inverter 1               | Contact Satcon Service. |
| 98         | fan fault 2      | Variable speed fan fault inverter 2               | Contact Satcon Service. |
| 99         | dc input open    | DC input contactor open when it should be closed  | Contact Satcon Service. |
| 100        | dc input closed  | DC input contactor closed when it should be open  | Contact Satcon Service. |
| 101        | ac output open   | AC output contactor open when it should be closed | Contact Satcon Service. |
| 102        | ac output closed | AC output contactor closed when it should be open | Contact Satcon Service. |