PS 5000 / PS 6000

Error List PS 5000 / PS 6000
Technical Information

Edition
101

PS 5000 / PS 6000

Error List PS 5000 / PS 6000
Technical Information

1070 087 001 - 101 (2001.12) GB

Reg. No 16149-03

HELP for messages of the PS5000/PS6000 weld timers

The corresponding Help text may only give an indication of the possible cause.
Due to the large number of different applications, it is not always possible to suggest detailed error correction procedures.
The error texts refer to the BOS5000 GUI.
The right section of the error text contains the error code used by the GUI. The error code displayed when the weld schedule was interrupted will be shown in brackets.

Note:
Some messages are type-specific and not available for all timer types!

After each message, you will find room for your own notes or specific instructions on error correction.

U

V

W

E/Stop open / no 24V= Stop / no 24V	80(1100)
Possible cause	Remedial action
+24V supply at stop circuit input missing	- close stop contact - check +24V supply at the inputs of the stop circuit

Stop circuit closed	140
Possible cause	Remedial action
Stop circuit was closed again (cf. previous message)	

Current passed without command	81(1101)
Possible cause	Remedial action
Voltage is supplied to the primary side of the welding transformer outside the weld time: - defective thyristors - welding transformer improperly connected - feedback from other welding currents	- replace PST - check connection - check: is another timer welding on the same part?

Control stop	82(1102)
Possible cause	Remedial action
Function influenced by the "Ready" input	Customer-specific application

Power unit not ready	83(1103)
Possible cause	Remedial action
Message of the power unit temperature contact	- check cooling - check duty cycle/load - check cables/connectors - for PSU: reset error message

External Temperature too High Temperature too High	92(1112)
Possible cause	Remedial action
Message of an external temperature input: - cable between thermostatic switch and timer interrupted - insufficient cooling - excessive welding heat/%I / duty cycle	 - check cable/connector - check cooling circuit - reduce welding heat/%I

Cooling temperature too high	160
Possible cause	Remedial action
The heat sink is too hot (above 70°C), or the ambient temperature is too high (above 70°C)	- check cooling - check duty cycle/load - air-cooled system: at a heat sink temperature of 55 °C, the external fan set is switched on via X4,13, +24V, and Pin 14, GND. Check the output and the fan set by applying 24V directly to the fan set - check temperature inside the switch cabinet, or check switch cabinet cooling

Transformer temp too high	164(1128)
Possible cause	Remedial action
The temperature of the welding transformer is controlled by thermostatic switches: - cable between thermostatic switch and timer interrupted - insufficient cooling of the transformer - excessive welding heat/%I / duty cycle	- check cable/connector - check cooling circuit of the welding transformer - reduce welding heat/%I

Battery low	84(1104)
Possible cause	Remedial action
- the buffer battery voltage has dropped	- replace battery

Memory deleted	85
Possible cause	Remedial action
All data of this weld timer has been deleted: - new timer firmware was copied to system - battery is low or defective	- copy data (Operation - *Services - Restore/Download*) if the error occurs repeatedly, replace timer

Data Restore started Data download started	86(1106)
Possible cause	Remedial action
Back-up data is being transferred from the programming terminal to the module	- if the Restore/Download function of the GUI is still active, wait until data transmission has been completed - if the Restore/Download function of the GUI has been aborted, cycle power to the timer

No Valid Weld Program	87
No Schedule programmed	
Possible cause	Remedial action
- wrong program selected	- check program selection
- invalid spot selection	- check spot selection
- invalid parameters in started program	- check value range of the following parameters: power unit number, electrode/stepper number, program number

Hardware fault	88(1108)
Possible cause	Remedial action
Defective module	- replace module or timer
When booting, a module is detected which does not match the firmware:	
- a firmware was introduced into the weld timer which is not permitted for the existing hardware	- replace module - load proper firmware to the timer

Additional code for hardware fault:

Bit code	Decimal	Module:
0x0001	1	defective flash
0x0002	2	defective RAM memory
0x0004	4	analog module
0x0008	8	analog additional module
0x0010	16	power unit module
0x0020	32	I/O module
0x0040	64	I/O additional module
0x0080	128	field bus module missing (missing module is not a fault!)
0x0100	256	additional_module_I
0x0200	512	additional_module_II

If several hardware faults are detected, their total number is issued as a message.
For example, error message 132 has the meaning: Field bus module   128
                                                                         Analog board error   4
                                                                                              =   132

With a hardware fault, the timer cannot be returned to Ready state by resetting the error!

I/O bus fault	89(1109)
Possible cause	Remedial action
The serial I/O module has signalled a bus fault to the timer module	- replace I/O module or timer

Half-cycle monitoring	90(1110)
Possible cause	Remedial action
	-

Main Switch Tripped Circuit Breaker Off	91(1111)
Possible cause	Remedial action
The timer module has activated the main switch relay: the related main switch/circuit breaker is tripped	

27V~ Synchronisation/Power Fault Synchronisation/Power-Fault		93(1113)
Possible cause		Remedial action
- Welding network has been switched off, or is outside the range of 50 to 60 Hz ±5%		- switch on and check welding network
- disturbance in the welding network		- reset error, check all line phases
- fuse in welding network tripped		- check synchronisation voltage
- fuse in power unit defective		- check fuses in power unit or replace power unit

27V~ Synchronisation Ok/ Synchronisation Ok		153
Possible cause		Remedial action
- welding network has been reconnected Refer to previous message		

Sequence inhibited Weld scheduled stopped	94
Possible cause	Remedial action
The started program was inhibited for the sequence/schedule	- enable program at the programming terminal at *Operation - Modify - Programming - Sequence Setup* Inhibit Sequence (S)/Start-Inhibit (T) for all programs or Inhibit Sequence (P)/Start-Inhibit (P) for one program - check program selection, select proper program

Program parity fault	95
Possible cause	Remedial action
The parity bit does not match the started program	- check parity settings at the programming terminal at *Operation - Modify - Programming - I/O Parameters* - check program selection, select proper program

The parity bit is used as a control mechanism for program selection. The timer adds up the number of activated address signals.

If the horizontal checksum results in an even number with even parity programmed, the parity bit must be low.

Example: Program 85 = Value 1+4+16+64 $\longrightarrow$ 4 address signals ON, therefore, the parity bit must be low if even parity has been programmed..

24V off/too low (only PSI/PST)	166
Possible cause	Remedial action
The 24V supply for the internal logic is too low (approx. 19V): - 24 supply is too low - connection fault in the area of the 24V supply - 24V supply was switched off for operational reasons	- check the 24V supply - check the connections

no 24V= Supply (only PS5000) Supply Voltage Fault (only PS5000))	100
Possible cause	Remedial action
- The 24VDC supply to the internal logic was missing, or was switched off	- check the 24V supply - check the connections

Timer switched on	101
Possible cause	Remedial action
- 24 supply was switched back on. - Control reset was triggered from the GUI	-

Power voltage too high (only PSI)	161(1124)
Possible cause	Remedial action
An excessively high mains voltage was measured at the DC link level. The mains voltage was above approx. 680 V for units PSI 6xxx.1xx, or above 870V with the high-voltage version PSI 6xxx.2xx: - mains overvoltage or mains transients	 - check line voltage supply

Power voltage off/too low (only PSI)	162(1125)
Possible cause	Remedial action
The mains voltage is too low or inexistent. The mains voltage is monitored at the DC link level. For a mains voltage of 380V or more, the next 10 mains periods are measured. If the voltage values drop steadily (which indicates a steady discharge of the DC link capacitors), this error is generated in order to avoid welding without mains power. No phase failure will be detected. The DC link capacitors store sufficient energy to bridge the missing phase.	 - check line voltage supply

Power voltage off/too low reset (only PSI)	217
Possible cause	Remedial action
Resets the previous message	

No weld external	102
Possible cause	Remedial action
External weld signal was deactivated	- check signal at weld external input

Weld on external Weld external	104
Possible cause	Remedial action
Weld on external was switched on	See previous message

No weld internal		103
Possible cause		Remedial action
Weld signal switched off at programming terminal	-	check programming unit setting in *Operating mode* for Weld on/off, int.(S)/Weld/No weld (T)

Weld on internal Weld internal	105
Possible cause	Remedial action
Weld on external was switched on	See previous message

Weld on, valve on With stroke, with weld		109
Possible cause		Remedial action
Schedule with ignition and solenoid (electrode gun closes)	-	input "Weld on, valve on"/"With stroke, with weld" is active

Weld off, valve off No stroke, no weld		106
Possible cause		Remedial action
Schedule without ignition or solenoid (electrode gun does not close)	-	input signal "Weld on, valve on"/"With stroke, with weld" is low

Comm. Heat too large (Prog. value)	98(1118)
%I too large (Prog. value)	
Possible cause	Remedial action
The value programmed for heat or pressure is too high (including heat/pressure compensation and stepping)	- modify programmed values, compensation, stepping or max. value

Extended Ht/Step Request	30
Extended Stepping Request	
Possible cause	Remedial action
The specified electrode has reached the **Extended H/Stp/Waiting** condition - The wear counter has exceeded the programmed max. tip life	- replace electrode because maximum tip life has already been exceeded.

Extended H/Stp	130
Waiting	
Possible cause	Remedial action
The specified electrode was set to the **Extended H/Stp/Waiting** condition: - the wear counter may exceed the programmed max. tip life by a specified number of spots	- replace electrode soon, because the max. tip life may be exceeded by a specified number of spots only

Electrode Life Expired End of stepper	31
Possible cause	Remedial action
The specified electrode has reached the **Electrode life expired/End of stepper** condition - the wear counter has reached the wear programmed for Electrode life expired/End of stepper	- the electrode must be replaced.

Note:
Depending on the setting of "Stop when Tip-Life expired"/"Stop at end of stepper", menu options *Operation - Modify - Programming - Basic Setup - Global Electrode/Stepper Setup*, welding can or cannot be continued.

Electrode changed	131
Possible cause	Remedial action
The electrode change was reset externally	

Electrode Life Exceeded	**133**
Stepper Exceeded	
Possible cause	Remedial action
An external request was made to exceed the electrode life/stepper	- the electrode must be replaced.

Tip life warning	**32**
Prewarning reached	
Possible cause	Remedial action
The specified electrode has reached the **warning/prewarning** condition - the wear counter has reached the wear programmed for warning/prewarning	 - The electrode will soon reach the Electrode life expired/End of stepper condition

Tip dress request Tip dress inq.	33
Possible cause	**Remedial action**
The specified electrode has reached the **Tip dress request/Tip dress inq.** condition - the wear counter has reached the wear programmed for Tip dress request/Tip dress inq.	- the electrode tip must be dressed

Tip dress necessary Dressing	34
Possible cause	**Remedial action**
The specified electrode has exceeded the **Tip dress request/Tip dress inq.** condition - the wear counter has exceeded the wear programmed for Tip dress request/Tip dress inq.	- the electrode must be replaced or the tip must be dressed

Note:
Depending on the setting of "Stop when Tip-Life expired"/"Stop at end of stepper", menu options *Operation - Modify - Programming - Basic Setup - Global Electrode/Stepper Setup*, welding can or cannot be continued.

Electrode dressed	132
Possible cause	**Remedial action**
The electrode tip dressing process was reset externally	

Tip dresser prewarning	35
Possible cause	Remedial action
- The specified electrode has reached the **Tip dresser prewarning** condition	- replace dresser blade soon.

Tip dresser life	36
Possible cause	Remedial action
The specified electrode has reached the **Tip dresser life** condition	- replace dresser blade.

Phase Shift Warning Level	40
Phase Angle prewarning reached	
Possible cause	Remedial action
The specified electrode has reached the Phase shift warning level/Phase angle prewarning condition -	- check the selected phase angle in menu *Operation - Modify - Basic Setup - Electrode/Stepper Setup*

The Phase shift warning level/Phase angle prewarning parameter indicates the phase angle where an imminent current limitation is to be detected. The input is made as scale value and is electrode-specific.

Maximum phase shift	41
Maximum phase angle reached	
Possible cause	Remedial action
The specified electrode has reached the Maximum phase shift/Maximum phase angle reached condition	- check secondary circuit/wiring for wear. - check the selected phase angle in menu *Operation - Modify - Basic Setup - Electrode/Stepper Setup* - mains voltage dip - insufficient size of welding transformer/power unit - use higher-next transformer level

The Maximum phase shift/Maximum phase angle function can be used to limit the heat output to a certain phase angle.
In KSR and KUR closed-loop control modes, this function provides for the detection of cable losses in the secondary circuit (e.g. wear of secondary cable).

Note:
The inputs for the heat compensation and stepper functions will be accounted for.

The current phase angle can be viewed at *Operation-Status-Heat Level Warning/Current Status*.

The message will be active until the electrode has been replaced!

Current measurement loop open	1001(1119)
Current measurement circuit open	
Possible cause	Remedial action
- broken sensor cable	- replace cable
- detached plug connections	- check plug-in connections
- incorrect connector assignment	- check connector assignment
- defective sensor	- replace sensor

Current measurement loop shorted	1002(1120)
Current measurement circuit shorted	
Possible cause	Remedial action
- squeezed sensor cable	- replace cable
- incorrect connector assignment	- check connector assignment
- defective sensor	- replace sensor

Termination of weld/no current	169(1131)
Possible cause	Remedial action
No current was measured for 40ms at the beginning of welding (the schedule is aborted)	- check closing mechanisms (robot, machine) - check position and pressure of electrodes - clean sheets - check conductivity - check connector assignment - replace sensor

No primary voltage 1.HW No voltage 1.HW	1003(1121)
Possible cause	Remedial action
- no primary voltage was measured in KUR mode	- check connectors and cables

Primary Voltage Measurement Fault Voltage Measurement Fault	1004(1122)
Possible cause	Remedial action
- a primary voltage of more than 200% or less than 50% of the programmed voltage was measured during the KUR schedule	- check transformer ratio at *Operation - Modify - Basic Setup - Power Unit Setup/Thyristor Unit Setup*. - check the programmed mains voltage at *Operation - Modify - Basic Setup - Power Unit Setup/Thyristor Unit Setup*.

Spot repetition	1005
Possible cause	Remedial action
- the spot weld was repeated	- refer to heat/%I error reported

Inhibit monitoring on Monitoring stopped	1006
Possible cause	Remedial action
- schedule with Inhibit monitoring on/Monitoring stopped	- check programmed Inhibit monitoring on/Monitoring stopped at *Quick-Programming Window2*

No weld	1007
Possible cause	Remedial action
- Firing was switched off during the schedule	-

Without Monitoring / KSR Current monitor off / KSR	1008
Possible cause	Remedial action
- schedule with Inhibit monitoring on/Monitoring stopped and Without monitoring/Current monitor off	- check programmed Inhibit monitoring on/Monitoring stopped at *Quick-Programming Window2* and Without monitoring/Current monitor off at *Quick-Programming-Window1*

No current Weld 1 to 3 No current 1. to 3. Weld	1010 to 1013
Possible cause	Remedial action
- electrodes not closed - no electrical contact at the point to be welded - contamination of sheets - use of sealant	- check closing mechanisms (robot, machine) - check position and pressure of electrodes - clean sheets - check conductivity

Current too low Weld 1 to 3 Current too low 1. to 3. Weld	1020 to 1023
Possible cause	Remedial action
Current measured is below tolerance band: - tolerance band too narrow - programmed value too high, e.g., because of stepping - contamination of electrodes - contamination of sheets - bad electrode positioning - welding transformer too small	- check tolerance band - check programmed value, stepper values - repeat weld, clean electrodes - repeat weld, clean sheets - improve positioning - change over or replace welding transformer

Current too high Weld 1 to 3	**1030 to 1033**
Current too high 1. to 3. Weld	
Possible cause	Remedial action
Current measured exceeds tolerance band: - programmed value jump to lower current values - handling of different sheet thicknesses or sheet layers - variant electrode pressure conditions - variant resistances (impedance) in secondary circuit, e.g. shunt resistor - mains voltage fluctuations	- increase tolerance band, reduce programmed value jumps - use several programs with different parameters - check electrode force system - check secondary circuit - increase tolerance band, ensure constant conditions

Low kA in consecutive welds WELD 1 to 3	**1040 to 1043**
Current too low for a series of welds for 1. to 3. WLD	
Possible cause	Remedial action
Current measured is below the limited tolerance band after n repetitions: - programmed value jump to higher current values - handling of different sheet thicknesses or sheet layers - variant electrode pressure conditions - variant resistance conditions in secondary circuit - mains voltage fluctuations	- increase tolerance band, reduce programmed value jumps - use several programs with different parameters - check electrode force system - ensure constant conditions - increase tolerance band, ensure constant conditions

Measuring Range exceeded WELD 1 to 3 Measure limit passed 1. to 3. WLD	1050 to 1053
Possible cause	Remedial action
- the current measured is above the programmed measuring range	- select more appropriate measuring range - check current for excessive fluctuations

Weld time too short Weld 1 to 3 Weld time too short for 1. to 3. Weld	1060 to 1063
Possible cause	Remedial action
- the permitted time tolerance is not reached - external termination of weld signal	- check setting at *Operation - Modify - Programming - Welding parameters - Time monitoring* - check signal

The actual duration of the weld time can be compared to a reference time using the Time monitoring function.
This function can be activated through the Time monitoring parameter.
The limits are entered in parameters Reference time and Permissible Time Tolerance/Tolerance.

 Note:
Changing a weld time requires a modification of the reference time in question if time monitoring is active.

Weld time too long Weld 1 to 3 Weld time too long for 1. to 3.WLD	1070 to 1073
Possible cause	Remedial action
- the permitted time tolerance is exceeded	- check setting at *Operation - Modify - Programming - Welding parameters - Time monitoring*

Diode overcurrent (PSI only)	167(1129)
Possible cause	Remedial action
The calculated image of the welding diode temperature has resulted in a depletion layer temperature of more than 150 degrees C. This value corresponds to the power limit (especially for alternating load) of the welding diode, taking into account a safety margin for the stationary limit: - welding heat/%I too high - duty cycle too high	- reduce welding heat/%I or use longer welding breaks in order to reduce the duty cycle - switch off diode monitoring in BOS in the Welding Transformer screen (no warranty by Bosch)

Diode damaged (PSI only)	167(1130)
Possible cause	Remedial action
In "Secondary" current measuring, a defective welding diode is detected by the welding transformer short-circuited across the defective diode through the occurrence of saturation current peaks: - welding diode defective	- replace transformer

Overcurrent or Earth-fault (PSI only)	**163(1126)**
Possible cause	Remedial action
The inverter output current is in excess of 110% of the maximum current, or there is a major earth leakage current (no personal protection): - the transformer supply line or the welding transformer has a short-circuit or earth fault - output current too high - for weld times above 1s, currents at the power limit and "Secondary" current measuring, the integrator for current measurement can drift off, pretending a lower actual current to the inverter, which results in an overcurrent response due to the closed control loop	- replace transformer supply line, or welding transformer - in PHA mode, the current may become too high. Reduce heat/%I, or work with KSR mode - for currents with a duration of more than 1 s, change to "Primary" current measuring

Driver-Fault (PSI only)	**165(1127)**
Possible cause	Remedial action
A fault was detected in the IGBT power transistor control which indicates a short-circuit or overload. - defective power transistor inside inverter - external short-circuit, if the error can only be reset by cycling power to the unit.	- replace PSI - if the error can simply be reset, please call Bosch Service

No enable for weld circuit No weld contactor enable		107
Possible cause	Remedial action	
- weld circuit/weld contactor enable input signal not available	- check input and wiring	

No feedback from weld circuit Isolation contactor feedback fault		108
Possible cause	Remedial action	
- the feedback signal of the welding circuit contactor is not available	- check input, wiring, and contactor	

Fault reset	**180**
Possible cause	Remedial action
- ALL faults have been reset	-

Weld Fault Reset **Welding-Fault Reset**	**199**
Possible cause	Remedial action
- welding faults have been reset	-

Scaling: Communication error	
Possible cause	Remedial action
- error in data package received from external welding current meter.	- switch welding current meter on, select proper mode - use proper welding current meter - check display on welding current meter: are values plausible?

Scaling: no valid measuring value received	
Possible cause	Remedial action
- the welding current meter reports an incorrect measurement in the data package transmitted	- repeat scaling

Scaling: no measuring value received	
Possible cause	Remedial action
- no signal was received during communication with the external welding current meter.	- connect cable to RS232/V24 port of the weld timer and to the welding current meter - use suitable cable. Also refer to V24 in the weld timer wiring diagram - switch welding current meter on - apply current measuring belt - check trigger setting on welding current meter:
- no voltage was detected by the force measuring outlet during pressure scaling	- check connection and cable for pressure sensor: 24V supply and reset signal available? - use pressure sensor with 1kN/Volt - check programmed pressure values - check pressure control valve - check pressure build-up on electrode gun

Scaling: Protocol fault	
Possible cause	Remedial action
A fault was detected when changing over from the Bosch protocol to the V24 protocol of the reference current meter.	- first connect welding current meter, then reset fault message and repeat scaling.

Scaling: wrong mode	
Possible cause	Remedial action
- 'secondary' current measuring has been set for current scaling. As a result, scaling was aborted.	- set to primary current measuring at *Operation - Modify - Programming - Basic Setup - Sequence Setup - Current Measuring*.

Scaling: Sequence aborted	
Possible cause	Remedial action
A fault has occurred during a program sequence by which the program was aborted (e.g. Emergency-Stop). Furthermore, a welding process error is signaled with the additional code "Scaling aborted".	- display the underlying error in the *Fault table* and correct it. Reset fault and repeat scaling

Scaling: Current out of range	
Possible cause	Remedial action
The primary or secondary current measured deviates from the programmed value by more than 30%	- check secondary sensor and its connection - check transformer selection at *Operation - Modify - Programming - Basic Setup - Weld transformer selection*. - check current sensor sensitity at *Operation - Modify - Programming - Basic Setup - Electrode Setup/Stepper Setup*.

Scaling: Difference primary- / secondary current too large	
Possible cause	Remedial action
During current monitoring, the difference between the primary current and the secondary current is outside the programmed tolerance band: - secondary circuit shunted - secondary sensor and connection were changed since scaling was performed for the last time - changes in secondary circuit, e.g. electrode replaced without scaling - current sensor sensitivity or transformer selection was changed since last scaling - the value for fade-out time, trail current, or current measuring range have been modified	 - check secondary circuit - repeat scaling - repeat scaling - check current sensor sensitivity at *Operation - Modify - Programming - Basic Setup - Weld transformer selection* and at *Operation - Modify - Programming - Basic Setup - Electrode Setup/Stepper Setup* and repeat scaling, if necessary - check fade-out time, trail current and current measuring range, repeat scaling

Scaling: Result invalid	
Possible cause	Remedial action
During pressure scaling, processing of the pressure values measured yielded inconsistent results: No rising pressure characteristic can be calculated between the 1st and the 2nd pressure measuring point	- check programmed pressure values - check connection and cable for pressure sensor: 24V supply and reset signal available? - check pressure control valve

Force monitoring: Time too long	
Possible cause	Remedial action
The time for building up the required pressure is longer than the pre-squeeze time plus the squeeze time, less "Pressure time before weld time". That is, the electrode gun is too slow in building up the pressure - wear of electrode gun	- check the values for pre-squeeze time, squeeze time and "Pressure time before weld time" - check programmed pressure value - replace electrode gun

Force monitoring: Time too short	
Possible cause	Remedial action
The time required for building up the pressure is shorter than the pre-squeeze time. That is, the electrode gun is too fast in building up the pressure	- check the values for pre-squeeze time, squeeze time and "Pressure time before weld time" - check programmed pressure value - check electrode gun

Force monitoring: Force too high	
Possible cause	Remedial action
The final pressure value is above the tolerance band of the programmed pressure value.	- check the programmed pressure value and tolerance band at *Operation - Modify - Programming- Electrode Setup/Stepper Setup*. - repeat scaling - check pressure sensor - check pressure control valve

Force monitoring: Force too low	
Possible cause	Remedial action
The final pressure value is below the tolerance band of the programmed pressure value.	- check the programmed pressure value and tolerance band at *Operation - Modify - Programming- Electrode Setup/Stepper Setup*. - repeat scaling - check pressure sensor - check pressure control valve - replace electrode gun

Fault log overflow	
Possible cause	Remedial action
- the entries in the timer's protocol memory cannot be synchronized with the protocol memory in BOS. Error messages have occurred which are no longer available in the timer's protocol memory	This situation can occur with - timer change - link between the weld timer and the PC was down for too long

Weld fault log overflow	
Possible cause	Remedial action
- the entries in the timer's protocol memory cannot be synchronized with the protocol memory in BOS. Welding faults have occurred which are no longer available in the timer's protocol memory	This situation can occur with - timer change - link between the weld timer and the PC was down for too long

Weld kA Log overflow Weld-Feedback-Log overflow	
Possible cause	Remedial action
- the entries in the timer's protocol memory cannot be synchronized with the protocol memory in BOS. Welding values have occurred which are no longer available in the timer's protocol memory	This situation can occur with - timer change - link between the weld timer and the PC was down for too long

Data change log overflow	
Possible cause	Remedial action
- the entries in the timer's protocol memory cannot be synchronized with the protocol memory in BOS. Data changes have occurred which are no longer available in the timer's protocol memory	This situation can occur with - timer change - link between the weld timer and the PC was down for too long

Maximum code length reached	
Possible cause	Remedial action
-	-

Communication error(-200)	
Possible cause	Remedial action
- error in calling parameters - internal communication error	- exit GUI and restart program

Communication error(-199)	
Possible cause	Remedial action
- unknown service	- exit GUI and restart program

Communication error(-198)	
Possible cause	Remedial action
- object does not exist	- exit GUI and restart program

Incorrect station in Ref. Table or LAN driver fault Wrong station definition or LAN driver Error	Communication error(-197)
Possible cause	Remedial action
- station does not exist, or driver has not been loaded	-

Incorrect Channel in Ref. Table or Comms Driver fault Wrong channel allocation or communication error	Communication error(-196)
Possible cause	Remedial action
- driver has not been installed	- re-install the BOS software including the required interfaces

Incorrect Timer in Ref. Table Wrong weld timer in drop.	Communication error(-195)
Possible cause	Remedial action
- timer is not known	- connected timer not yet included in BOS software - install new BOS software

Incompatible Timer connected Wrong software in timer	Communication error(-194)
Possible cause	Remedial action
- timer name is not known	- a timer name may be invalid, check names in timer reference

Incorrect parameter value Parameter value wrong	Communication error(-193)
Possible cause	Remedial action
The timer has discovered a fault when checking the parameters: - a parameter is not allowed - a back-up made previously cannot be transmitted into the weld timer.	 - check input - transfer another back-up into the weld timer

Communication error(-150)	
Possible cause	Remedial action
- unknown layer 8 request (result)	- exit GUI and restart program

Communication error(-149)	
Possible cause	Remedial action
- Task ID not known (open)	- exit GUI and restart program

Communication error(-148)	
Possible cause	Remedial action
- layer 8 unable to allocate invoke ID	- exit GUI and restart program

Communication error(-147)	
Possible cause	Remedial action
- memory allocation error	- exit GUI and restart program
	- close other applications, if necessary

BOSCH

Communication error(-146)	
Possible cause	Remedial action
- error in status message start: possibly not enough memory	- close other applications

Incorrect Timer Type in Ref. Table Wrong Timer-Type in Timer-Table	Communication error(-100)
Possible cause	Remedial action
Communication with weld timer not possible. - the timer type entered in timer reference does not match the selected weld timer. - a different timer type was connected to the bus location on the network after a timer change	- check entry in timer reference - check timer type.

Timer is refusing access Access denied in Timer	Communication error(-99)
Possible cause	Remedial action
- no access to objects possible	- exit GUI and restart program

Backup or Restore active in Timer Upload or Download active in Timer	Communication error(-98)
Possible cause	Remedial action
- the backup/upload function is active - the restore/download function is active	- wait, this condition will be automatically finished after data transmission

Timer Connection has been disconnected Communication broken off by Timer	Communication error(-97)
Possible cause	Remedial action
Communication with weld timer not possible. - link cable interrupted - weld timer was switched off	 - check link cable - switch weld timer back on

Timer Connection cannot be established Connection to Timer cannot be established	Communication error(-96)
Possible cause	Remedial action
-	-

Error in data transfer(write)	Communication error(-95)
Possible cause	Remedial action
A fault has occurred when writing data to the weld timer. - link cable interrupted - weld timer was switched off	 - check link cable - switch weld timer back on

Error in data transfer(read)	Communication error(-94)
Possible cause	Remedial action
A fault has occurred when reading data from the weld timer. - link cable interrupted - weld timer was switched off	 - check link cable - switch weld timer back on

Error in data transfer	Communication error(-93)
Possible cause	Remedial action
General fault in communication with the weld timer: - link cable interrupted - weld timer was switched off	 - check link cable - switch weld timer back on

Abbreviations, terms

2.WLD	2. Weld time, main welding time, may consist of a block comprising individual impulses; only the 2nd WLD can be programmed with an upward and downward slope.
BOS	Welding GUI
CT	Cool time, time between the current impulses/blocks (1., 2., 3. CT)
ED	Duty cycle: Ratio between weld time and time without current flow
EMC	Electromagnetic compatibility
EST	End slope time in which the HEAT/%I decreases until the end of the 2nd WLD.
Ext	External, e.g. +24V voltage for signal transmitters (switches) and actuators (valves) outside the timer
HLD	Hold time, the last time of the welding process, time following the last weld time in which the parts to be welded can cool down
HSA	Main switch release
HT/%I(G)	Heat/%I in scale values or kA
I/O	Input / Output
Ignition	Ignition, firing pulses for triggering the power unit are switched on and off
IMP	Number of impulses, impulses forming the 2nd WLD
kA	Kilo-Ampere (amount of current)
kN	Kilo-Newton (pressure)
KSR	Constant-Current Regulation, i.e. the current in the secondary circuit is kept at a constant level by this control mechanism
KUR	Constant-Voltage Regulation, line fluctuations are balanced
LAN	Local Area Network: General network
LT	Power unit (thyristor or inverter)
MV	Solenoid valve, drives the cylinders for closing the electrodes
NBS	Mains load limitation control, monitors and influences the mains load
OFF	Off time, time between two spot welds in which the solenoid valve is not driven. For Repeat mode only.
PG	Programming terminal/welding computer
PHA	Heat value (phase shift)
Post-Heat	Post-heating time, also referred to as 3. WLD
Pre-Heat	Pre-heating time, also referred to as 1. WLD
PSG	Transformer-rectifier unit for the PSU/PSI inverter
PSI	Medium-frequency power unit (1000 Hz)
PSL	PS power unit
PSS	PS timer unit
PST	Thyristor power unit (50/60 Hz)
PSU	Welding current inverter (medium-frequency)
REPEAT	Repeat mode for manually operated systems only
SKT	Scale divisions, represent an electrical heat value
Slope	Current increase (or decrease) from an initial to a final heat value
SP	Single spot mode for automatic and manual welding system
SQZ	Squeeze time that runs before the weld time. The electrodes squeeze the parts to be welded together.
SST	Start slope time in which the HEAT/%I increases from the beginning of the 2nd WLD.
Stepper	Heat stepping in order to compensate for electrode wear
Temp	Temperature
ÜK	Monitoring contact, e.g. monitoring of the pressure inside the cylinder that closes the electrodes or monitoring of the electrode position, e.g. gun closed
WC	Weld complete contact, signal is output when the spot has been welded
WLD	Weld time
WT	Weld timer, also referred to as resistance weld timer