

1 ERROR CODES

1.1 Operating Errors E01 through E05

These errors are usually caused by operating in a way that is not allowed per the load charts.

Note: If an error message is displayed which is not contained in the following list, please contact the PAT service department.

Error Code	Error	Cause	Elimination
E01	Fallen below radius range or angle range exceeded	<ul style="list-style-type: none"> • Fallen below the minimum radius or gone past the maximum angle specified in the respective load chart due to hoisting up the boom too far 	<ul style="list-style-type: none"> • Hoist the boom down to a radius or angle specified in the load chart.
E02	Radius range exceeded or fallen below angle range	<ul style="list-style-type: none"> • Gone past the maximum radius or fallen below the minimum angle specified in the respective load chart due to hoisting down the boom too far 	<ul style="list-style-type: none"> • Hoist the boom up to a radius or angle specified in the load chart.
E04	Operating mode not existing or non permitted slewing zone	<ul style="list-style-type: none"> • A non existing operating mode has been selected • The selected operating mode is not available in the data EPROM or blocked. • The boom is in a non-permitted slewing zone 	<ul style="list-style-type: none"> • Set the correct operating mode for the crane configuration in question • Check programming of the data EPROM • Slew the crane into a permitted area.
E05	Forbidden length range of the main boom	<ul style="list-style-type: none"> • Boom has been extended too far or not enough, e.g. the boom length has been moved out of the permitted range for load charts. • The length sensor adjustment was modified, e.g. cable slid off the length sensor reel. • Clutch between length sensor pot and drive is defective • Failure of the +5V-supply for the analog part of the LMI-analog board. • Length potentiometer defective. 	<ul style="list-style-type: none"> • Retract or extend boom to the correct length. • Retract the boom. Check the pretension on the cable. Open the length sensor and carefully turn the length pot counterclockwise to the detent with a screwdriver. • Completely replace the clutch with the drive wheel and adjust length sensor pot • Check +5V-voltage. If there is no voltage or break down at a charge of 50 ohm approximately, exchange LMI board. • Replace length potentiometer.

1.2 Lockout Function Errors 07 and 08

These errors are caused by defects around the function lockouts.

Error Code	Error	Cause	Elimination
E07	Faulty acknowledgment of the overload relay on the connection board. The relay should be energized, the 2nd contact however is indicated to be off, or the 2nd contact is indicated to be on while the relay should be de-energized.	<ul style="list-style-type: none"> Overload relay or main board are defective LMI board defective 	<ul style="list-style-type: none"> Replace main board
E08	No acknowledgment from the anti-two-block relay	<ul style="list-style-type: none"> refer to E07 	<ul style="list-style-type: none"> refer to E07
E11	Fallen below limit for the measuring channel "Length telescopic boom".	<ul style="list-style-type: none"> Length sensor potentiometer defective. Electronic board in the measuring channel defective. 	<ul style="list-style-type: none"> Replace length sensor potentiometer. Replace LMI board.
E21	Upper limit value for measuring channel "length telescopic boom" exceeded.	<ul style="list-style-type: none"> Length sensor potentiometer defective. Electronic part in the measuring channel defective. 	<ul style="list-style-type: none"> Replace length sensor potentiometer. Replace LMI board.
E12	Fallen below the lower limit value in the measuring channel "pressure piston side"	<ul style="list-style-type: none"> Cable between the central unit and pressure transducers defective or water inside the plugs Pressure transducer is defective. Electronic component in the measuring channel is defective. 	<ul style="list-style-type: none"> Check cable as well as plugs, replace, if need be. Replace pressure transducer Replace LMI main board or processor board.
E22	Upper limit value in measuring channel "pressure piston side" has been exceeded	<ul style="list-style-type: none"> refer to E12 	<ul style="list-style-type: none"> refer to E12

E13	Fallen below lower limit value in the measuring channel "pressure rod side"	<ul style="list-style-type: none"> • refer to E12 	<ul style="list-style-type: none"> • refer to E12
E23	Upper limit value in measuring channel "pressure rod side" has been exceeded.	<ul style="list-style-type: none"> • refer to E12 	<ul style="list-style-type: none"> • refer to E12
E15	Fallen below lower limit value for the measuring channel "angle main boom".	<ul style="list-style-type: none"> • Angle sensor defective. • Electronic part in the measuring channel defective. 	<ul style="list-style-type: none"> • Replace angle sensor. • Replace LMI board.
E25	Upper limit value in measuring channel "angle main boom" exceeded	<ul style="list-style-type: none"> • refer to E15 	<ul style="list-style-type: none"> • refer to E15
E16	Fallen below lower limit value for the measuring channel "middle section".	<ul style="list-style-type: none"> • Angle sensor defective. • Electronic part in the measuring channel defective. 	<ul style="list-style-type: none"> • Replace angle sensor. • Replace LMI board.
E26	Upper limit value in measuring channel "middle section" exceeded	<ul style="list-style-type: none"> • refer to E16 	<ul style="list-style-type: none"> • refer to E16
E17	Fallen below lower limit value for the measuring channel "telescopic jib".	<ul style="list-style-type: none"> • Angle sensor defective. • Electronic part in the measuring channel defective. 	<ul style="list-style-type: none"> • Replace angle sensor. • Replace LMI board.
E27	Upper limit value in measuring channel "telescopic jib" exceeded	<ul style="list-style-type: none"> • refer to E17 	<ul style="list-style-type: none"> • refer to E17
E19	Reference and/or supply voltage defective	<ul style="list-style-type: none"> • The supply voltage is falsified by one of the sensors (DAV, LWG) • Electronic component is defective 	<ul style="list-style-type: none"> • Check the voltages on the LMI main board (AGND = MP0). Check sensors, plugs and cable, replace, if need be. • Replace LMI board

1.3 Errors 31 and up

Miscellaneous Errors, most of them caused by electronics.

Error Code	Error	Cause	Elimination
E31	Error in the system program	<ul style="list-style-type: none"> The system program EPROM is defective. 	<ul style="list-style-type: none"> Replace system program PROM (D13)
E37	Error in the program run.	<ul style="list-style-type: none"> EPROM with System program is defective Electronic component on the main board is defective 	<ul style="list-style-type: none"> Replace system program EPROM. Replace main board.
E38	System program and data EPROM do not match.	<ul style="list-style-type: none"> The system program in the LMI does not match to the programming in the data EPROM 	<ul style="list-style-type: none"> Replace the system program EPROM (D13) or the data EPROM (D1)
E41	Error in the internal write/read memory (RAM) of the computer component 80C537	<ul style="list-style-type: none"> Computer component 80C537 defective CPU module defective Processor board defective. 	<ul style="list-style-type: none"> Replace computer component 80C537. Replace CPU module. Replace processor board with CPU module.
E42	Error in the external write/read memory, 1st part (RAM)	<ul style="list-style-type: none"> Write/read memory (CMOS RAM) or processor board defective. 	<ul style="list-style-type: none"> Replace processor board with CPU module.
E43	Error in the external write/read memory, 2nd part (RAM)	<ul style="list-style-type: none"> refer to E42 	<ul style="list-style-type: none"> refer to E42
E48	Error in the internal write/read memory (RAM)	<ul style="list-style-type: none"> Computer component 80C537 defective Processor board defective. 	<ul style="list-style-type: none"> Replace processor board (main board)
E51	Error in the data EPROM or EEPROM.	<ul style="list-style-type: none"> No valid data in the data EEPROM. Memory module wrongly bridged. Crane data EPROM defective 	<ul style="list-style-type: none"> Load data EEPROM containing valid data. Bridge memory module acc. to memory type Replace crane data EPROM
E52	Error in load chart PROM.	<ul style="list-style-type: none"> Memory module wrongly bridged. Load chart EPROM defective. 	<ul style="list-style-type: none"> Bridge memory module acc. to memory type. Replace load chart EPROM
E56	Error in the data EEPROM.	<ul style="list-style-type: none"> Memory module wrongly bridged. Crane data EEPROM defective 	<ul style="list-style-type: none"> Bridge memory module acc. to memory type Replace crane data EEPROM

Error Code	Error	Cause	Elimination
E57	Error in serial crane data EEPROM.	<ul style="list-style-type: none"> Serial crane data EEPROM does not contain valid data. Memory module defective 	<ul style="list-style-type: none"> Write data on the serial crane data EEPROM (by means of test program or on-line function), then restart the LMI Replace memory module.
E58	Error in the serial analog data EEPROM.	<ul style="list-style-type: none"> No valid data in the serial analog data EEPROM. LMI module(s) defective. 	<ul style="list-style-type: none"> Write data on the serial analog data EEPROM by means of the test program, then, restart the LMI Replace LMI module(s).
E82	No pressure change sensed during boom down or telescope out	<ul style="list-style-type: none"> Blocked velocity fuse No pressure change at piston transducer 	<ul style="list-style-type: none"> Verify correct operation of the velocity fuse.
E83	Error in Telecode	<ul style="list-style-type: none"> The selected telecode is not available 	<ul style="list-style-type: none"> Select an available telecode
E85	Error in the radius determination	<ul style="list-style-type: none"> The computed radius is too small (negative deflection) 	<ul style="list-style-type: none"> Check the programming in the data EPROM.
E91	No data transmission from the console to the central unit	<ul style="list-style-type: none"> +UB supply voltage to the console is interrupted Interruption or accidental ground in the line between console electronics and central unit Transmitter/receiver module is defective 	<ul style="list-style-type: none"> Check +UB voltage at terminal X1 of the console electronics Check the connection console electronics - central unit. In case of an accidental ground, the transmitter module of the console electronics might be damaged. Exchange console electronics or LMI main board resp.
E92	Error in the data transmission from console to central unit	<ul style="list-style-type: none"> Loose connection in the line between console electronics and central unit Transmitter/receiver module is defective 	<ul style="list-style-type: none"> Check the connection between console electronics and central unit Exchange console electronics or LMI main board resp.
E93	Error in the data transmission from the central unit to the console	<ul style="list-style-type: none"> refer to E92 	<ul style="list-style-type: none"> refer to E92

Error Code	Error	Cause	Elimination
E94	No data transmission from the central unit to the console	<ul style="list-style-type: none"> • Interruption or accidental ground in the cable between central unit and console • 5 V supply of the computer in the central unit is missing • 5 V supply is too low • Transmitter/receiver module is defective • Computer module is defective • Electro-magnetic interferences (e.g. when switching contactors or valves) 	<ul style="list-style-type: none"> • Check wiring to the console (in case of accidental ground, replace console electronics, too). • Check connection to the power unit • Exchange the LMI main board • Replace console electronics or LMI main board • Replace processor board. • Eliminate the source of interferences by inverse diodes or varistors.
E95	Error in the console EPROM	<ul style="list-style-type: none"> • The console EPROM is defective. 	<ul style="list-style-type: none"> • Replace the console EPROM
E96	Error in the internal RAM of the console.	<ul style="list-style-type: none"> • The CPU of the console is defective. • The console main board is defective. 	<ul style="list-style-type: none"> • Replace the CPU of the console • Replace the console main board.