9. Error Assistance

The following chapter shall help you to avoid errors as well as help you to determine and remove the cause of errors on your own.

9.1 Troubleshooting

9.1.1 General

If error messages or malfunctions occur repeatedly during operation, the first thing to do is to pinpoint the exact error. To do that go through the following checklist:

- Is the error reproducable ?
For that reset the error and try to repeat it under the same conditions. If the error can be reproduced, the next step is to find out during which operating phase the error occurs.

- Does the error occur during a certain operating phase (e.g. always during acceleration)?
If so, consult the error messages and remove the causes listed there.

- Does the error occur or disappear after a certain time?
That may be an indication for thermal causes. Check, whether the inverter is used in accordance to the ambient conditions and that no moisture condensation takes place.

9.1.2 Error Messages and their Cause

At KEB COMBIVERT **error messages** are always represented with an „E.“ and the appropriate error in the display. Error messages cause the immediate deactivation of the modulation. Restart possible only after reset.
Malfunction are represented with an „A.“ and the appropriate message. Reactions to malfunctions can vary.
Status messages have no addition. The status message shows the current operating status of the inverter (e.g. forward constant run, standstill etc.).
In the following the display and their cause are described.

Display	COMBIVIS **Status Messages**	Value	Meaning
bbL	base block	76	Power modules for motor de-excitation locked
bon	close brake	85	Brake control, brake engaged (see chapter 6.9)
boFF	open brake	86	Brake control, brake released (see chapter 6.9)
Cdd	calculate drive	82	Measurement of the motor stator resistance
dcb	DC brake	75	Motor is decelerated by a DC-voltage at the output.
dLS	low speed / DC brake	77	Modulation is switched off after DC-braking (see chapter 6.9 „DC-Braking“).
FAcc	forward acceleration	64	Acceleration with the adjusted ramps in clockwise direction of rotation.
Fcon	forward constant	66	Acceleration / deceleration phase is completed and it is driven with constant speed / frequency in clockwise direction of rotation.
FdEc	forward deceleration	65	It is stopped with the adjusted ramp times in clockwise direction of rotation.
HCL	hardware current limit	80	The message is output if the output current reaches the hardware current limit.

Display	COMBIVIS	Value	Meaning
LAS	LA stop	72	This message is displayed if during acceleration the load is limited to the adjusted load level.
LdS	Ld stop	73	This message is displayed if during deceleration the load is limited to the adjusted load level or the DC-link current to the adjusted voltage level.
LS	low speed	70	No direction of rotation pre-set, modulation is off.
nO_PU	power unit not ready	13	Power circuit not ready or not identified by the control.
noP	no operation	0	Control release (terminal ST) is not switched.
PA	positioning active	122	This message is displayed during a positioning process.
PLS	low speed / power off	84	No modulation after Power-Off
PnA	position not reachable	123	The specified position cannot be reached within the pre-set ramps. The abort of the positioning can be programmed.
POFF	power off function	78	Depending on the programming of the function (see chapter 6.9 „Power-off Function“) the inverter restarts automatically upon system recovery or after a reset.
POSI	positioning	83	Positioning function active (F5-G).
rAcc	reverse acceleration	67	Acceleration with the adjusted ramp times in anti-clockwise direction of rotation.
rcon	reverse constant	69	The acceleration / deceleration phase is completed and it is driven with constant speed / frequency in anti-clockwise direction of rotation.
rdEc	reverse deceleration	68	It is stopped with the adjusted ramp times in anti-clockwise direction of rotation.
rFP	ready for positioning	121	The drive signals that it is ready to start the positioning process.
SLL	stall	71	This message is displayed if during constant operation the load is limited to the adjusted current limit.
SrA	search for ref. active	81	Search for reference point approach active.
SSF	speed search	74	Speed search function active, that means that the inverter attempts to synchronize onto a running down motor.
StOP	quick stop	79	The message is output if as response to a warning signal the quick-stop function becomes active.
	Error Messages		
E. br	ERROR brake	56	Error: This error can occur in the case of switched on brake control (see Chapter 6.9.5), if • the load is below the minimum load level (Pn.43) at start up or the absence of an engine phase was detected. • the load is too high and the hardware current limit is reached
E.buS	ERROR bus	18	Error: Adjusted monitoring time (Watchdog) of communication between operator and PC / operator and inverter has been exceeded.
E.Cdd	ERROR calc. drive data	60	Error: During the automatic motor stator resistance measurement.
E.co1	ERROR counter overrun 1	54	Counter overflow encoder channel 1
E.co2	ERROR counter overrun 2	55	Counter overflow encoder channel 2

Display	COMBIVIS	Value	Meaning
E.dOH	ERROR drive overheat	9	Error: Overtemperature of motor PTC. Error can only be reset at E.ndOH, if PTC is again low-resistance. Causes: • resistance at the terminals T1/T2 >1650 Ohm • motor overloaded • line breakage to the temperature sensor
E.dri	ERROR driver relay	51	Error: Driver relay. Relay for driver voltage on power circuit has not picked up even though control release was given.
E.EEP	ERROR EEPROM defective t	21	After reset the operation is again possible (without storage in the EEPROM)
E. EF	ERROR external fault	31	Error: External error. Is triggered, if a digital input is being programmed as external error input and trips.
E.EnC	ERROR encoder	32	Error: Cable breakage resolver or incremental encoder
E.Hyb	ERROR hybrid	52	Invalid encoder interface identifier
E.HybC	ERROR hybrid changed	59	Error: Encoder interface identifier has changed, it must be confirmed over ec.0 or ec.10.
E.iEd	ERROR input error detect	53	Error: Hardware error during the start/stop measurement.
E.InI	ERROR initialisation MFC	57	MFC not booted.
E.LSF	ERROR load shunt fault	15	Error: Load-shunt relay has not picked up, occurs for a short time during the switch-on phase, but must automatically be reset immediately. If the error message remains the following causes may be applicable: • load-shunt defective • input voltage wrong or too low • high losses in the supply cable • braking resistor wrongly connected or damaged • braking module defective
E.ndOH	no ERROR drive overheat	11	Motor temperature switch or PTC at the terminals T1/T2 is again in the normal operating range. The error can be reset now.
E.nOH	no E. over heat pow.mod.	36	Temperature of the heat sink is again in the permissible operating range. The error can be reset now.
E.nOHI	no ERROR overheat int.	7	No longer overheating in the interior E.OHI, interior temperature has fallen by at least 3°C
E.nOL	no ERROR overload	17	No more overload, OL-counter has reached 0%; after the error E. OL a cooling phase must elapse. This message appears upon completion of the cooling phase. The error can be reset. The inverter must remain switched on during the cooling phase.
E.nOL2	no ERROR overload 2	20	The cooling time has elapsed. The error can be reset.
E. OC	ERROR overcurrent	4	Error: Overcurrent Occurs, if the specified peak current is exceeded. Causes: • acceleration ramps too short • the load is too big at turned off acceleration stop and turned off constant current limit • short-circuit at the output • ground fault • deceleration ramp too short • motor cable too long • EMC • DC brake at high ratings active (see 6.9.3)

Display	COMBIVIS	Value	Meaning
E. OH	ERROR overheat pow.mod.	8	Error: Overtemperature of power module. Error can only be reset at E.nOH. Causes: • insufficient air flow at the heat sink (soiled) • ambient temperature too high • ventilator clogged
E.OH2	ERROR motor protection	30	Electronic motor protective relay has tripped.
E.OHI	ERROR overheat internal	6	Error: Overheating in the interior: error can only be reset at E.nOHI, if the interior temperature has dropped by at least 3°C
E. OL	ERROR overload (Ixt)	16	Error: Overload error can only be reset at E.nOL, if OL-counter reaches 0% again. Occurs, if an excessive load is applied longer than for the permissible time (see technical data). Causes: • poor control adjustment (overshooting) • mechanical fault or overload in the application • inverter not correctly dimensioned • motor wrongly wired • encoder damaged
E.OL2	ERROR overload 2	19	Occurs if the standstill constant current is exceeded (see technical data and overload characteristics). The error can only be reset if the cooling time has elapsed and E.nOL2 is displayed.
E. OP	ERROR Overvoltage	1	Voltage in the DC-link circuit too high. Occurs if the DC-link circuit voltage exceeds the permissible value. Causes: • poor controller adjustment (overshooting) • input voltage too high • interference voltages at the input • deceleration ramp too short • braking resistor defective or too small
E.OS	ERROR over speed	58	Real speed is bigger than the max. Output speed.
E.PFC	ERROR Power factor control	33	Error in the power factor control
E.PrF	ERROR prot. rot. for.	46	The drive has driven onto the right limit switch. Programmed response “Error, restart after reset” (see chapter 6.7 “Response to errors or warning messages”).
E.Prr	ERROR prot. rot. rev.	47	The drive has driven onto the left limit switch. Programmed response “Error, restart after reset” (see chapter 6.7 “Response to errors or warning messages”).
E. Pu	ERROR power unit	12	Error: General power circuit fault
E.Puci	ERROR pow. unit code inv.	49	Error: During the initialization the power circuit could not be recognized or was identified as invalid.
E.Puch	ERROR power unit changed	50	Error: Power circuit identification was changed; with a valid power circuit this error can be reset by writing to SY.3. If the value displayed in SY.2 is written, only the power-circuit dependent parameters are reinitialized. If any other value is written, then the default set is loaded.
E.PUCO	ERROR power unit commun.	22	Error: Parameter value could not be written to the power circuit. Acknowledgement from PC <> OK
E.PUIN	ERROR power unit invalid	14	Error: Software version for power circuit and control card are different. Error cannot be reset (only at F5-G B-housing)

Display	COMBIVIS	Value	Meaning
E.SbuS	ERROR bus synchron	23	Sychronization over sercos-bus not possible. Programmed response “Error, restart after reset” (see chapter 6.7 “Response to errors or warning messages”).
E.SEt	ERROR set	39	It has been attempted to select a locked parameter set. Programmed response “Error, restart after reset” (see chapter 6.7 “Response to errors or warning messages”).
E.SLF	ERROR! Software limit switch forward	44	The right software limit switch lies outside the defined limits. Programmed response “Error, restart after reset” (see chapter 6.7 “Response to errors or warning messages”).
E.SLr	ERROR software limit switch reverse	45	The left software limit switch lies outside the defined limits. Programmed response “Error, restart after reset” (see chapter 6.7 “Response to errors or warning messages”).
E. UP	ERROR underpotential	2	Error: Undervoltage (DC-link circuit). Occurs, if DC-link voltage falls below the permissible value. Causes: • input voltage too low or instable • inverter rating too small • voltage losses through wrong cabling • the supply voltage through generator / transformer breaks down at very short ramps • At F5-G housing B E.UP is also displayed if no communication takes place between power circuit and control card. • Jump factor (Pn.56) too small (see 6.9.20) • if a digital input was programmed as external error input with error message E.UP (Pn.65).
E.UPh	ERROR Phase failure	3	One phase of the input voltage is missing (ripple-detection)
	Warning Messages		
A.buS	ABN.STOP bus	93	Warning: Watchdog for communication between operator/ control card or operator/PC has responded. The response to this warning can be programmed (see chapter 6.7 “Response to errors and warning messages”).
A.dOH	ABN.STOP drive over heat	96	The motor temperature has exceeded an adjustable warning level. The switch off time is started. The response to this warning can be programmed (see chapter 6.7 “Response to errors or warning messages”). This warning can be generated only with a special power circuit.
A. EF	ABN.STOP external fault	90	This warning is triggered via an external input. The response to this warning can be programmed (see chapter 6.7 “Response to errors or warning messages”).
A.ndOH	no A. drive overheat	91	The motor temperature is again below the adjusted warning level. The switch off time is stopped.
A.nOH	no A. overheat pow.mod.	88	The heat sink temperature is again below the adjusted warning level.
A.nOHI	no A.STOP overheat int.	92	The temperature in the interior of the inverter is again below the warning threshold.
A.nOL	no ABN.STOP overload	98	Warning: no more overload, OL counter has reached 0 %.
A.nOL2	no ABN.STOP overload 2	101	The cooling time after “Warning! Overload during standstill” has elapsed. The warning message can be reset.

Display	COMBIVIS	Value	Meaning
A. OH	A.STOP overheat pow.mod	89	A level can be defined, when it is exceeded this warning is output. A response to this warning can be programmed (see chapter 6.7 “Response to errors or warning messages”).
A.OH2	ABN.STOP motor protect.	97	Warning: electronic motor protective relay has tripped. The response to this warning can be programmed (see chapter 6.7 “Response to error or warning messages”).
A.OHI	ABN.STOP overheat int.	87	The temperature in the interior of the inverter lies above the permissible level. The switch off time was started. The programmed response to this warning message is executed (see chapter 6.7 “Response to errors or warning messages”).
A. OL	ABN.STOP overload	99	A level between 0 and 100 % of the load counter can be adjusted, when it is exceeded this warning is output. The response to this warning can be programmed (see chapter 6.7 “Response to errors or warning messages”).
A.OL2	ABN.STOP overload 2	100	The warning is output when the standstill continuous current is exceeded (see technical data and overload characteristics). The response to this warning can be programmed (see chapter 6.7 “Response to errors and warning messages”). The warning message can only be reset after the cooling time has elapsed and A.nOL2 is displayed.
A.PrF	ABN.STOP prot. rot. for.	94	The drive is driven onto the right limit switch. The response to this warning can be programmed (see chapter 6.7 “Response to errors and warning messages”).
A.Prr	ABN.STOP prot. rot. rev.	95	The drive is driven onto the left limit switch. The response to this warning can be programmed (see chapter 6.7 “Response to errors and warning messages”).
A.SbuS	ABN.Bus synchron	103	Synchronization over sercos-bus not possible. The response to this warning can be programmed (see chapter 6.7 “Response to errors and warning messages”).
A.SEt	ABN.STOP set	102	Warning: set selection: It has been attempted to select a locked parameter set. The response to this warning can be programmed (see chapter 6.7 “Response to errors or warning messages”).
A.SLF	ABN.Software limit switch forward	104	The right software limit switch lies outside the defined limits. The response to this warning can be programmed (see chapter 6.7 “Response to errors or warning messages”).
A.SLr	ABN.Software limit switch reverse	105	The left software limit switch lies outside the defined limits. The response to this warning can be programmed (see chapter 6.7 “Response to errors or warning messages”).