



Technical Info - Service Note

# COMBIVERT F6

Error messages for F6 APPLICATION

|          |                                  |
|----------|----------------------------------|
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## Impressum

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# 1 Preface

The Service Notes provide advice and skills for maintenance, service and repair.

**The use of our devices in the target products is beyond of our control and therefore exclusively the responsibility of the machine manufacturer, system integrator or customer.**

This document is not legally part of the certified device documentation. The functions described in the current KEB documentation must always be given priority. The enclosed documents correspond to conditions valid at printing. Misprint, mistakes and technical changes reserved.

## 2 Validity

The listed error lists are valid for the following Config-Ids:

| Group | Type           | Config-Id  |
|-------|----------------|--|
| F6    | F6-A V x.x.x.x | 9252, 9256, 9262, 9268, 9271, 9276, 9285, 9294, 9303, 9310, 9849, 9940, 9985 |

### 3 Error list ru01

| Value | Error message              | Description  | Cause/Remedy   |
|-------|----------------------------|--|--|
| 0     | no error                   | There is no error. Drive Controller does not modulate.   | Release via the control word is missing (co00).  |
| 1     | ERROR chain                | The error chain looped through the devices is interrupted and the signal is set to 0.  | Check wiring.  |
| 2     | ERROR supply               | Precharging not completed. An error is only generated if the drive modulates.  | Check whether the pre-charging contactor has tightened.<br>Check wiring.   |
| 3     | ERROR overcurrent PU       | Overcurrent detection in the power unit has triggered  | Check wiring at inverter / motor for short circuit / star / delta and ground fault.<br>EMC interference on the motor cable / inverter.<br>Motor cable too long.<br>Acceleration time too short, extend time.<br>Disconnect motor cable from inverter,<br>- If the error is still present with the disconnected motor, the device is defective and must be sent to the KEB Service.<br>- measure the power semiconductors according to the manual.  |
| 4     | ERROR overcurrent analog   | Overcurrent level on the control card exceeded (e.g. incorrect setting of the controller or the torque limit characteristic curve) | Check wiring at inverter / motor for short circuit.<br>Check the drive for sluggishness.<br>Brake not released.<br>Acceleration time too short. Extend time.   |
| 5     | ERROR overpotential        | Voltage in the DC link has exceeded the triggering level.  | Switch-in threshold of the braking transistor set too high (pn32/de36).<br>Braking transistor is not activated (is30).<br>Deceleration ramp set too short. Extend time.<br>Braking resistor defective (high-resistance).<br>Braking transistor defective (high-resistance).<br>Input voltage too high,<br>poor controller calibration, resulting in strongly fluctuating speed of the drive, check controller parameters.<br>Check the insulation of the connected motor (step-up controller). |
| 6     | ERROR undervoltage DC link | Voltage in the DC link (de32) too low.   | Are all mains phases available at terminals L1 / L2 (N) / L3.<br>Braking resistor connected to DC link instead of braking transistor.<br>If the error only occurs with short acceleration ramps, then check motor / inverter design. Avoid a 1:1 design for closed-loop drives.  |

| Value | Error message              | Description  | Cause/Remedy   |
|-------|----------------------------|--|--|
| 7     | ERROR overload             | Long-term average power utilization is above 100%.   | Check for mechanical sluggishness of the drive.<br>Acceleration time too short. Extend time.<br>Brake not released?<br>Motor design: Inverter does not fit   |
| 8     | reset E. overload          | Overload counter (ru29) has reached a value < 50% of the warning level.  | Error! Module overload (I2t) can be reset now.   |
| 9     | ERROR overload 2           | Fast overload protection - defined by standstill continuous current and short-time limit current - has responded | Check for mechanical sluggishness of the drive.<br>Acceleration time too short. Extend time.<br>Brake not released.  |
| 10    | ERROR overheat pmod.       | Overheat of the power semiconductors (heat sink)   | Check heat sink fan. Clean or replace fan if necessary.<br>F6 size 7 – 9:<br>External 24V supply for the heat sink fans available (24V/10A)?<br>Fuses on internal fan board defective/ check.<br>For liquid cooling: switches the solenoid valve for the coolant?<br>Sufficient coolant in the system?<br>System vented? |
| 11    | reset E. overheat pmod.    | Temperature of the power semiconductors at the heat sink has decayed to 5° below the overheat threshold.         | Error overheat heat sink can be reset now.   |
| 12    | ERROR overheat internal    | Internal temperature of the device has exceeded the triggering level.  | Internal fan dirty/ defective.<br>Mounting position/ distances not observed.<br>Control cabinet fan dirty/defective.<br>Keep control cabinet door closed nevertheless.   |
| 13    | reset E. overheat internal | Overtemperature in the internal of the inverter has dropped below the permissible level again.                   | Error can be reset now.  |
| 14    | ERROR motorprotection      | Electronic (software) motor protection function has triggered.   | Check star/delta wiring of the motor.<br>Check/correct motor data in inverter (dr03/dr34).<br>Brake not released.  |
| 15    | reset E. motorprotection   | The internal overload counter has returned to a value of <98%.   | Error can be reset now.  |
| 16    | ERROR drive overheat       | Temperature input (e.g. T1, T2) has triggered.   | Check terminals at the inverter (e.g. T1, T2)<br>Temperature sensor in the motor (e.g. PTC or KTY) has triggered.<br>If no sensor is connected, the terminals must be bridged when the function is activated.<br>Check connection at the motor.<br>Possible cable breakage   |

| Value | Error message              | Description   | Cause/Remedy  |
|-------|----------------------------|---|---|
|       |                            |   | Setting whether the correct temperature sensor (dr33) is set.<br>Check setting of parameter pn14.<br>Is the brake switched on?  |
| 17    | reset E. drive over-heat   | Conditions at the temperature input of the inverter back in the normal range.   | Error can be reset now..  |
| 18    | ERROR overspeed            | Speed > pn26 x rated speed  | Are the encoder increments per revolution (encoder1 or encoder2) (ec29) set correctly?<br>Is the encoder cable laid correctly (EMC)?  |
| 19    | ERROR frequency            | Mains output frequency of the Active Infeed Controller outside the permissible tolerance.   |   |
| 20    | ERROR drive data           | Error in the specification of the motor data.   | Normalization of the motor data.<br>Check the set motor data,<br>Check star / delta wiring.<br>Brake not released.  |
| 21    | ERROR motordata not stored | Motor data have not yet been confirmed with parameter dr99.   | Confirm parameter dr99.   |
| 22    | ERROR ident                | An error has occurred during identification. Information on the type of error in dr57.  | dr57 for more information.<br>Is the brake released?  |
| 23    | ERROR diff speed           | Speed difference between set speed and actual speed directly before the speed controller > set level within a parameterized time (pn38/39). | Adjust controller.<br>Change values in pn38/39.<br>Check connection encoder/motor shaft.<br>Check of set and actual speed (ru08/09).<br>Is the brake released?  |
| 24    | ERROR fieldbus memory      | Incorrect software configuration of the drive controller.   | Contact KEB Service.  |
| 25    | WARNING overpotential      | Voltage in the DC link has exceeded the set warning level.<br>The behavior of the drive can be parameterized.                               | Switch-in threshold of the braking transistor set too high (pn32/de36).<br>Braking transistor is not activated (is30).<br>Deceleration ramp set too short. Extend time.<br>Braking resistor defective (high-resistance).<br>Braking transistor defective (high-resistance).<br>Input voltage too high,<br>poor controller calibration, resulting in strongly fluctuating speed of the drive, check controller parameters.<br>Check the insulation of the connected motor (step-up controller).<br>Check/set the triggering level. |



| Value | Error message            | Description  | Cause/Remedy   |
|-------|--------------------------|--|--|
| 26    | WARNING! underpotential  | Voltage in the DC link (de32) too low. The behavior of the drive can be parameterized.   | Are all mains phases available at terminals L1 / L2 (N) / L3.<br>Braking resistor connected to DC link instead of braking transistor.<br>If the error only occurs with short acceleration ramps, then check motor / inverter design. Avoid a 1:1 design for closed-loop drives.  |
| 27    | WARNING overload         | Overload ru29 (I2t -function) > pn03 OL warning level.<br>The behavior of the drive can be parameterized.                                  | Check for mechanical sluggishness of the drive.<br>Acceleration time too short. Extend time.<br>Brake not released?<br>Dimensioning motor: inverter does not fit   |
| 28    | reset W. overload        | Overload counter (ru29) has fallen below the warning level pn03 again.   | Warning! Module overload (I2t) can be reset now.   |
| 29    | WARNING overload 2       | Fast overload protection (ru27), defined by standstill continuous current and short-time current limit, > Overload2 warning level (pn05).  | Check for mechanical sluggishness of the drive.<br>Acceleration time too short. Extend time.<br>Brake not released.  |
| 30    | WARNING overhear powmod. | Temperature of the power semiconductors (heat sink) ru25 > pn07.<br>The behavior of the drive can be parameterized.                        | Check heat sink fan. Clean or replace fan if necessary.<br>F6 size 7 – 9:<br>External 24V supply for the heat sink fans available (24V/10A)?<br>Fuses on internal fan board defective/ check.<br>For liquid cooling: switches the solenoid valve for the coolant?<br>Sufficient coolant in the system?<br>System vented? |
| 31    | reset W. overhear pmod.  | Temperature of the power semiconductors at the heat sink has decayed to 5° below the overtemperature threshold.                            | Warning overtemperature heat sink can be reset now.  |
| 32    | WARNING overhear intern. | The internal temperature of the device (ru26) has exceeded the triggering level (pn09).<br>The behavior of the drive can be parameterized. | Internal fan dirty/ defective.<br>Mounting position/ distances not observed.<br>Control cabinet fan dirty/defective.<br>Keep control cabinet door closed nevertheless.   |
| 33    | reset W. overhear intern | Overtemperature in the internal of the inverter has dropped below the permissible level again.   | Warning can be reset now.  |
| 34    | WARNING motorprotection  | Counter of the electronic motor protection function (ru32) > pn15.   | Check star/delta wiring of the motor.<br>Check/correct motor data in inverter (dr03/dr34).<br>Brake not released.  |

| Value | Error message                     | Description  | Cause/Remedy   |
|-------|-----------------------------------|--|--|
| 35    | reset W. motorprotection          | The internal overload counter (ru32) has returned to a value < pn15.   | Error can be reset now.  |
| 36    | WARNING drive overheat            | Temperature input (e.g. T1, T2) has triggered.<br>If "Warning" is programmed as error response in pn12, ru03 changes into status error after the delay time pn13 has elapsed | Check terminals at the inverter (e.g. T1, T2)<br>Temperature sensor in the motor (e.g. PTC or KTY) has triggered.<br>If no sensor is connected, the terminals must be bridged when the function is activated.<br>Check connection at the motor.<br>Possible cable breakage<br>Setting whether the correct temperature sensor (dr33) is set.<br>Check setting of parameter pn14.<br>Is the brake switched on? |
| 37    | reset W. drive overheat           | Conditions at the temperature input of the inverter back in the normal range.  | Error can be reset now.  |
| 38    | ERROR memory size                 | Incorrect software configuration of the drive controller.  | Contact KEB service.   |
| 39    | ERROR power unit software version | Invalid checksum of the parameter range (de115).   | Contact KEB service.   |
| 40    | ERROR FPGA conf.                  |  | Contact KEB service.   |
| 41    | ERROR safety mod. SACB comm.      | No communication via the SACB bus with the safety module.  | Contact KEB service.   |
| 42    | ERROR power unit SACB comm.       | No communication via the SACB bus with the power unit.   | Contact KEB service.   |
| 43    | ERROR enc. intf. SACB comm.       | No communication via the SACB bus with the encoder.  | Contact KEB service.   |
| 44    | ERROR invalid power unit data     | Incorrect power unit data in de26/de27.  | Contact KEB service.   |
| 45    | ERROR power unit reset            | Power unit in reset state.   | Contact KEB service.   |
| 46    | ERROR power unit Vref             | Reference voltage for temperature measurement invalid.   | Contact KEB service.   |
| 47    | ERROR power unit flash            | The plausibility check of the flash memory of the power unit CPU has reported an error.  | Contact KEB service.   |
| 48    | ERROR power unit CPU              | Internal error of the power unit CPU.  | Contact KEB service.   |
| 49    | ERROR licence invalid             |  | Contact KEB service.   |

| Value | Error message                 | Description   | Cause/Remedy   |
|-------|-------------------------------|---|--|
| 51    | ERROR heartbeat               | CAN heartbeat signal failed.  | Check heartbeat settings.<br>Check Pn23 and address 0x1016, 0x1017.  |
| 52    | ERROR undervoltage phase      | Phase failure at mains input (L1, L2, L3).  | Measure input voltage at terminals L1...L3.<br>Possibly defective back-up fuse, PKZ has triggered.<br>Ripple of DC link voltage too large due to application (acceleration / braking).         |
| 53    | ERROR rot.detect. curr.       |   |  |
| 54    | ERROR rot.detect. enc.        |   |  |
| 55    | ERROR safety module           | The safety module has reported an error.  | Contact KEB service or machine builder.  |
| 56    | ERROR software switch left    | Software limit switch has triggered.  | Check programming of the software limit switch.  |
| 57    | ERROR software switch right   | Software limit switch has caused an error.  | Check programming of the software limit switch.  |
| 58    | ERROR fieldbus watchdog       | Fieldbus watchdog has responded.  | Check RJ45 connector.<br>Check for cable breakage.<br>EMC disturbances.  |
| 59    | ERROR prg. input              | Error via programmable input.   | If no intentional action:<br>Check cabling, programming of digital inputs.   |
| 60    | ERROR safety module changed   | The safety module was replaced without authorization.   | Contact KEB service.   |
| 61    | ERROR safety module changed   | The safety module has been changed.   | Contact KEB service.   |
| 62    | ERROR power unit changed      | The power unit has been changed.  | Contact KEB service.   |
| 63    | ERROR enc. intf. changed      | The encoder interface has been changed.   | Contact KEB service.   |
| 64    | ERROR power unit type changed | The power unit type has been changed.   | Contact KEB service.   |
| 65    | ERROR enc. intf. version      | Invalid version of the encoder interface.   | Contact KEB service.   |
| 66    | ERROR Overcurrent PU          |   | Contact KEB service.   |
| 67    | ERROR max acc/dec             | Maximum acceleration/ deceleration setting exceeded (monitoring particularly necessary for cyclic synchronous operating modes). | Checking the setpoint setting and the ramp settings.   |
| 68    | ERROR Overcurrent brake       | Overcurrent on the brake output.  | Check the brake output for short circuit.<br>Remove the plug from the control board.<br>(F6/S6 X1C Pin 1/2)<br>(H6 X1B B+/B- // X1BA BA+/BA- // X1BB BB+/BB-)<br>(P6 X1B Pin B+/B- // HB+/HB-) |

| Value | Error message                                 | Description  | Cause/Remedy   |
|-------|---|--|--|
| 69    | ERROR power unit                              | General power unit error (E.PU).   | Contact KEB service.   |
| 81    | ERROR rot.det. five step                      |  |  |
| 82    | ERROR rot.det. Ld=Lq                          |  |  |
| 83    | ERROR limit for.                              |  |  |
| 84    | ERROR limit rev.                              |  |  |
| 85    | ERROR limit switch for. maximum limit overrun |  |  |
| 86    | ERROR limit switch rev. maximum limit overrun | Positive (hardware) limit switch overrun by hm19.  | Check stopping process in application limit switch (control, ramp profile).                    |
| 87    | ERROR limit                                   | Either both (hardware) limit switches are triggered or one (hardware) limit switch is triggered and only the actual direction of rotation corresponds to the limit switch direction. | Checking the limit switches, wiring / position / possibly the limit switches are interchanged. |
| 88    | ERROR end power off                           |  | Check power off function setting (cu 32 subindex 7 ... status power off function).             |
| 89    | ERROR at enc.type change                      | Incompatible encoder interface and drive software versions.  | Contact KEB service.   |
| 90    | ERROR enc.intf.fast comm.                     | Communication error control board encoder interface.   | Contact KEB service.   |
| 91    | init encoder interface                        | Encoder interface in initialization routine.   | Contact KEB service.   |
| 92    | ERROR encoder A                               | Hardware defect or incorrect setting of the encoder parameters (type, increments per revolution, etc.).  | Check encoder cable.<br>Is the encoder correctly connected to the motor shaft.                 |
| 93    | ERROR encoder B                               | Hardware defect or incorrect setting of the encoder parameters (type, increments per revolution, etc.).  | Encoder A –X3A / encoder B –X3B (F6/S6).   |
| 94    | init encoder A                                | Initialization encoder A is running.   | Check encoder cabling.<br>Check the setting of ec16.   |
| 95    | init encoder B                                | Initialization encoder B is running.   | Check encoder cabling.<br>Check the setting of ec16.   |
| 96    | ERROR encoder missing                         | If a mode requires an encoder, no encoder type is selected in ec16.  | Control setting of ec16.   |
| 97    | ERROR overspeed (EMF)                         | pn72 overspeed level (EMF) has been exceeded.  | Checking setpoint speed, overshoot speed control. Malfunction actual encoder value.            |

| Value | Error message                 | Description   | Cause/Remedy   |
|-------|-------------------------------|---|--|
| 98    | ERROR encoder A changed       | Serial number read from the encoder does not correspond to the stored serial number (ec48 != ec49). | Enter the correct serial number of the encoder in parameters:<br>- ec48 = encoder 1 (A)<br>- ec49 = encoder 2 (B).   |
| 99    | ERROR encoder B changed       | Serial number read from the encoder does not correspond to the stored serial number (ec48 != ec49). | Enter the correct serial number of the encoder in parameters:<br>- ec48 = encoder 1 (A)<br>- ec49 = encoder 2 (B).   |
| 100   | ERROR overcurrent out1        | Overcurrent at digital output 1.  | Check whether there is an overload/short circuit at digital output 1 of the control board.<br>F6 / S6 devices:<br>A card X2A Pin 11 (100mA)<br>K card X2A Pin 17 (100mA)<br>P card X2A Pin 10 (100mA). |
| 101   | ERROR overcurrent out2        | Overstom at digital output 2.   | Check if there is overload/short circuit at digital output 2 of the control board.<br>F6 / S6 devices:<br>A card X2A Pin 12 (100mA)<br>K card X2A Pin 19 (100mA)<br>P card X2A Pin 12 (100mA).         |
| 102   | ERROR overcurrent out3        | Overstom at digital output 3.   | Check if there is overload/short circuit at digital output 3 of the control board. F6 / S6 devices<br>K card X2B Pin 5 (100mA).  |
| 103   | ERROR overcurrent out4        | Overcurrent at digital output 4.  | Check if there is overload/short circuit at digital output 4 of the control board. F6 / S6 devices<br>K card X2B Pin 6 (100mA).  |
| 104   | ERROR overcurrent fan         |   | Check if a fan is blocked or if there is another defect.<br>Detach the fan from the plug contact, replace the defective fan.   |
| 105   | ERROR overcurrent encoder     | Overcurrent at the encoder interface.   | Check data sheet from encoder. Check permissible total current.  |
| 106   | ERROR overcurrent 24V         | Overcurrent at the 24V outputs of the control terminal block.                                       | Check permissible load at the output.<br>F6 / S6 devices.  |
| 107   | ERROR over frequency          | The maximum output frequency de120 has been exceeded. (599Hz).                                      | Decrease setpoint (associated frequency must have safety distance to de120). Check control performance.<br>Check system position for synchronous machine (in case of uncontrolled acceleration)        |
| 108   | reset E. reset E. overheat CB | Overtemperature in the internal of the inverter has dropped below the permissible level again.      | Error message can be reset now.  |
| 109   | ERROR overheat internal CB    | Measured temperature in the interior exceeds 45°C.  | Check temperature in the control cabinet.<br>Check/clean control cabinet fan.  |
| 110   | reset W. overheat CB          |   |  |

| Value | Error message                       | Description  | Cause/Remedy   |
|-------|-------------------------------------|--|--|
| 110   | ERROR ramp over-heat                | Maximum time between the occurrence of an overtemperature error and modulation shut-down has been exceeded.                    | Deceleration ramp exceeds 2s time limit.   |
| 111   | ERROR ramp over-temperature intern. | Maximum time between the occurrence of an overtemperature error in the interior and the modulation shutdown has been exceeded. | Deceleration ramp exceeds 2s time limit.   |
| 111   | WARNING overheat intern.            |  |  |
| 112   | ERROR 24V supply low                | 24V supply has dropped to a value < 18V.   | Check external voltage supply.<br>Compare permissible output current with actual output current.<br>Is there an overload?  |
| 113   | ERROR STO signals                   | Delay in switching of ST=1 and STO2.   | Is only checked for the safety modules.  |
| 114   | ERROR ext 24V low                   | External 24V output of the control board below tolerance.  | Measure external 24V voltage at the control board.<br>Compare permissible output current with actual output current.<br>Is there an overload?                                      |
| 115   | ERROR GTR7 always OFF               | Braking transistor can no longer be switched on.   | Check braking resistor.<br>Deactivation in is30 if no braking resistor is connected.   |
| 116   | ERROR GTR7 OC                       | The current at the output terminals for the braking resistor > permissible levels.   | Braking resistor causes a short circuit or ground fault.<br>Check/disconnect braking resistor.   |
| 117   | ERROR GTR7 always ON                | Braking transistor can no longer be switched off.  | Braking transistor defective.<br>Checking the braking resistor.<br>Caution - fire risk. Disconnect device from mains.<br>Deactivation in is30 if no braking resistor is connected. |
| 118   | OC at 5V Diag                       | Short circuit of the 5V output   | Contact KEB service.   |
| 119   | ERROR extreme overpotential         | Very high overvoltage in the DC link. Can lead to the defect of the DC link capacitors.  | Defective filter cabling<br>Incorrect parameterization of the filter.<br>Uncontrolled ramp-up of a synchronous motor.<br>Device defective. Contact KEB service.                    |
| 120   | ERROR DC capacitor damaged          | DC capacitors have been damaged by too long / high voltage in the DC link circuit.   | Contact KEB service.<br>Device must be sent to KEB for inspection / repair.  |
| 121   | ERROR runtime                       | Program runtime exceeded.  | Activation of too many functions.<br>Contact KEB service.  |
| 122   | ERROR underpotential 2              | Error is triggered when the transition of the status machine to  | Mains voltage missing.<br>Check the timing of mains connection and control.  |

| Value | Error message                | Description  | Cause/Remedy  |
|-------|------------------------------|--|---|
|       |                              | "switched on" is requested and the status "run" in ru04 is not yet reached after the delay time. |   |
| 123   | ERROR LT ready               | Error is triggered if the ready signal of the power unit is missing during activated modulation. | Check mains voltage supply at power unit.<br>EMC interferences.<br>Change cable routing of motor and/or control cables. |
| 124   | ERROR General Fieldbus Error | The fieldbus has signaled a general error.   | Further problem analysis via fb91.  |
| 125   | ERROR fieldbus type changed  | The selected fieldbus type in fb68 has been changed. The new fieldbus type cannot be used yet.   | Perform power-on reset so that the new fieldbus type is taken over.   |
| 126   | ERROR overheat 2 powmod.     | Cooling capacity at the heat sink too low.   | Check fan.<br>Ambient temperature or coolant inlet temperature too high.<br>Load of the device too high.                |
| 127   | reset E. overheat 2 pmod.    | Overheating (2) in the power unit subsided again.  | Error can be reset now.   |
| 128   | ERROR overheat 3 powmod.     | Cooling capacity at the heat sink too low.   | Check fan.<br>Ambient temperature or coolant inlet temperature too high.<br>Load of the device too high.                |
| 129   | reset E. overheat 3 pmod.    | Overheating (3) in the power unit subsided again.  | Error can be reset now.   |
| 130   | ERROR overheat 2 internal    | Overtemperature in the interior.   | Check fan.<br>Check overload of the device.<br>Ambient temperature too high?<br>Parameterization of the fan function.   |
| 131   | reset E. overheat 2 intern   | Overtemperature in the internal of the inverter has dropped below the permissible level again.   | Error can be reset now.   |
| 132   | ERROR overheat 3 internal    | Overtemperature in the interior.   | Check fan.<br>Check overload of the device.<br>Ambient temperature too high?<br>Parameterization of the fan function.   |
| 133   | reset E. overheat 3 intern   | Overtemperature in the internal of the inverter has dropped below the permissible level again.   | Error can be reset now.   |
| 134   | ERROR safety stop            | Error SS1 or SS2 is generated by the safety module.  | Can be activated with pn80.   |
| 135   | ERROR file code              | Invalid file code.   | Contact KEB service.  |

| Value | Error message                     | Description  | Cause/Remedy  |
|-------|-----------------------------------|--|---|
| 136   | ERROR blockade                    | Setpoint at ramp output is higher than actual value.   | Determine why the drive cannot follow the setpoint.<br>Input or output blocked.<br>Drive sluggish.  |
| 136   | ERROR PQ controller reverse speed |  |   |
| 137   | WARNING blockade                  | Setpoint at ramp output is higher than actual value."Warning" was parameterized as reaction. | Determine why the drive cannot follow the setpoint.<br>Input or output blocked.<br>Drive sluggish.  |
| 138   | WARNING LT ready                  | Power unit is not ready.   | Check voltage supply of the power unit.   |
| 139   | ERROR STO                         | Error is generated by the safety module.   | Check application where the safety chain is interrupted.<br>Check parameterization of the safety module.<br>Check cabling of control release. |
| 140   | ERROR fail-safe                   | Error is generated by the safety module.   | Check parameterization of safety module or application.   |



## 4 Error list ec01

| Value | Message                           | Cause  | Remedy  |
|-------|-----------------------------------|--|---|
| 0     | no error                          |  |   |
| 6     | fast comm: overrun err            | Fast, internal communication for encoder evaluation.   | EMC problems or device defective.                 |
| 7     | fast comm: sync err               | Fast, internal communication for encoder evaluation.   | EMC problems or device defective.                 |
| 8     | fast comm: BCC err                | Fast, internal communication for encoder evaluation.   | EMC problems or device defective.                 |
| 9     | fast comm: inv. data              | Fast, internal communication for encoder evaluation.   | EMC problems or device defective.                 |
| 25    | 5V supply too low                 | Error during power-on of the voltage supply, e.g. short circuit or voltage too low.            | Check encoder cable, hardware defect possible.    |
| 25    | activating enc.supply during init | Error during power-on of the voltage supply, e.g. short circuit or voltage too low.            | Check encoder cable, hardware defect possible.    |
| 25    | short circuit of the 5V supply    | Short circuit or supply voltage too low.   | Check encoder cable, hardware defect possible.    |
| 25    | 8V supply too low                 | Error during power-on of the voltage supply, e.g. short circuit or voltage too low.            | Check encoder cable, hardware defect possible.    |
| 25    | short circuit of the 8V supply    | Short circuit or supply voltage too low.   | Check encoder cable, hardware defect possible.    |
| 29    | wrong enc type combination        | Endat+1Vss on one channel and Endat digital on the other channel cannot be evaluated together. | Set the same endat encoder type on both channels. |
| 30    | read motor temp. via encoder      | Error when reading the motor temperature via the encoder                                       | Encoder does not support temperature sensors.     |
| 41    | slow comm: overrun err            | Slow, internal communication for encoder evaluation  | EMC problems or device defective                  |
| 41    | int. comm: Tx still active        | Slow, internal communication for encoder evaluation  | EMC problems or device defective                  |
| 42    | slow comm: frame err              | Slow, internal communication for encoder evaluation.   | EMC problems or device defective                  |
| 42    | int. comm - Rx still active       | Slow, internal communication for encoder evaluation.   | EMC problems or device defective                  |

| Value | Message  | Cause  | Remedy  |
|-------|--|--|---|
| 43    | slow comm: parity err                              | Slow, internal communication for encoder evaluation.   | EMC problems or device defective  |
| 43    | int. comm - CRC error                              | Slow, internal communication for encoder evaluation.   | EMC problems or device defective  |
| 44    | int. comm - CRC payload                            | Incorrect payload data recorded during CRC check.  | EMC problems or device defective  |
| 45    | int. comm - no. of received data                   | An incorrect number of data packets has been received during internal communication.   | EMC problems or device defective  |
| 46    | int. comm - faulty stop bit                        | A faulty stop bit has been detected in the internal communication for encoder detection.   | EMC problems or device defective  |
| 47    | slow comm: BCC err                                 | Slow, internal communication for encoder evaluation.   | EMC problems or device defective  |
| 51    | EnDat: no comm.                                    | No communication to the encoder could be established during initialization   | Hardware defect, check shield on motor, encoder cable or EMC interferences.                                 |
| 52    | EnDat: 1Vpp missing                                | An Endat encoder was detected during initialization, but no 1Vpp signals could be detected.                                      | Hardware defect, no 1Vpp support of the encoder, check shield at motor, encoder cable or EMC interferences. |
| 55    | EnDat: unsupported type                            | Unknown encoder type, encoder is not supported.  | Contact KEB service.  |
| 57    | EnDat: un supp. version                            | The encoder has a different EnDat version than 2.x which is not supported.   | Contact KEB service.  |
| 62    | EnDat: encoder sends battery warning               |  |   |
| 68    | EnDat: write data error                            | Data could not be stored in the encoder.   | Defective non-volatile memory in the encoder.   |
| 74    | EnDat: timeout when reading additional information | Communication was interrupted during reading of the additional information, e.g. due to breakage of a wire in the encoder cable. | Hardware defect, check shield on motor, encoder cable or EMC interferences.                                 |
| 81    | EnDat: error bit 1                                 |  |   |
| 82    | EnDat: error bit 2                                 |  |   |
| 83    | EnDat: CRC error position                          | EnDat communication has become faulty during operation.  | Hardware defect, check shield on motor, encoder cable or EMC interferences.                                 |
| 84    | EnDat: CRC error add.info 1                        | EnDat communication has become faulty during operation.  | Hardware defect, check shield on motor, encoder cable or EMC interferences.                                 |

| Value | Message                                  | Cause  | Remedy  |
|-------|--|--|---|
| 85    | EnDat: CRC error add.info 2              | EnDat communication has become faulty during operation.  | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 86    | EnDat: encoder error type 1              | EnDat communication has become faulty during operation.  | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 87    | EnDat: watchdog error                    | EnDat communication has become faulty during operation.  | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 88    | EnDat: comm. not started                 | EnDat communication has become faulty during operation.  | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 89    | EnDat: comm. time out                    | EnDat communication has become faulty during operation.  | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 91    | dig. pos. corr.diff. err                 | Position difference between incremental and absolute position too large.                             | The number of increments per revolution in ec29 is wrong. One or more signal pairs are connected twisted or reversed. The course of the 1Vpp absolute signals does not match the position of the zero signal. Hardware defect, check shield on motor, encoder cable or EMC interferences. |
| 92    | dig. pos. corr.rot. err                  | Difference between counted revolutions and revolutions of the (multiturn) encoder has occurred.      | The number of increments per revolution in ec29 is wrong. One or more signal pairs are connected twisted or reversed. The course of the 1Vpp absolute signals does not match the position of the zero signal. Hardware defect, check shield on motor, encoder cable or EMC interferences. |
| 96    | Sin/Cos pos. corr.diff. err              | Error position correction at SinCos encoder with incremental, absolute position.                     | The number of increments per revolution in ec29 is wrong. One or more signal pairs are connected twisted or reversed. The course of the 1Vpp absolute signals does not match the position of the zero signal. Hardware defect, check shield on motor, encoder cable or EMC interferences. |
| 101   | 1Vpp-inc.: signal err                    | Error 1Vpp incremental signals   | One or both signals are too small, deformed or missing. Which of the signals is faulty. Check shielding on motor, encoder cable or EMC interferences.   |
| 103   | 1Vpp-abs.: signal err                    | Error 1Vss absolute signals with SinCos encoder  | One or both signals are too small, deformed or missing. Which of the signals is faulty. Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 105   | Sin/Cos+SSI: no signals detected in init | Not all encoder signals were detected during initialization.   | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 105   | Sin/Cos+SSI – 1Vpp err                   | Faulty encoder signals detected.   | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 107   | Sin/Cos+SSI: SSI comm. error             | No data from the encoder. No edges detected on the data signal.                                      | Clock or data signals are too small. Hardware defect, check shield on motor, encoder cable or EMC interferences.  |
| 108   | Sin/Cos+SSI: parity error                | The parity bit from the encoder is set. Is only active if the check of the bit in ec42 is activated. | Encoder does not send a parity bit. Singleturn or multiturn resolution in ec40 or ec41 are wrong. Check shielding on motor, encoder cable or EMC interferences.   |

| Value | Message                        | Cause  | Remedy   |
|-------|--------------------------------|--|--|
| 109   | Sin/Cos+SSI: encoder error bit | The error bit from the encoder is set. Is only active if the check of the bit in ec42 is activated.                        | Voltage supply to encoder is faulty. Singleturn or multiturn resolution in ec40 or ec41 are wrong. Check shielding on motor, encoder cable or EMC interferences. |
| 113   | Sin/Cos: no reference          | The reference signal was not detected.   | The hardware is defective. The increments per revolution in ec29 was entered incorrectly.  |
| 114   | Sin/Cos: inc/rev min err       | The set number of increments per revolution is too small (compared to the distance between two reference signals).         | The increments per revolution in ec29 was entered incorrectly.   |
| 115   | Sin/Cos: inc/ref max err       | The set number of increments per revolution in ec29 is too large (compared to the distance between two reference signals). | The increments per revolution in ec29 was entered incorrectly.   |
| 116   | Sin/Cos: init err              | Not all encoder signals were recognized during initialization (recognized encoder signals are visible in ec17).            | The hardware is defective.   |
| 117   | Sin/Cos: reference err         | Reference signal has become faulty during operation.   | The hardware is defective.   |
| 121   | TTL: trace A error             | Track A is defective or missing  | The hardware is defective.   |
| 122   | TTL: trace B error             | Track B is defective or missing  | The hardware is defective.   |
| 123   | TTL: trace A or B error        | Tracks A and B are defective or missing  | The hardware is defective.   |
| 125   | TTL: no reference              | The reference signal was not detected.   | The hardware is defective.<br>The increments per revolution in ec29 was entered incorrectly.   |
| 126   | TTL: inc/rev min err           | The set number of increments per revolution is too small (compared to the distance between two reference signals).         | The increments per revolution in ec29 was entered incorrectly.   |
| 127   | TTL: inc/rev max err           | The set number of increments per revolution is too large (compared to the distance between two reference signals).         | The increments per revolution in ec29 was entered incorrectly.   |
| 128   | TTL: init err                  | Not all encoder signals were recognized during initialization (recognized encoder signals are visible in ec17).            | The hardware is defective.   |
| 129   | TTL: reference err             | Reference signal has become faulty during operation.   | The hardware is defective.   |

| Value | Message                 | Cause   | Remedy  |
|-------|-------------------------|---|---|
| 131   | BISS: comm init err     | No encoder connected. Switching level at encoder input invalid or encoder does not respond.   | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 132   | BISS: enc init err      | No encoder connected. Switching level at encoder input invalid or encoder does not respond.   | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 133   | BISS: unsupp. protocol  | Communication not possible. Protocol is not supported. Unknown BISS-B encoder connected.  | Use encoder type with KEB specifications.   |
| 134   | BISS: enc comm init err | Encoder is connected. In the initialization, the communication could not be established without errors. The settings in ec40, ec41, ec42 are not correct. | <p>If ec17 = 0: "no encoder detected" and ec02 = 20: "BISS: encoder communication", a BiSS-C unidirectional (without el. nameplate) has been detected.</p> <p>If ec17 = 84: "BISS Mode C, EDS containing inconsistent data" and ec02 = 31: "BISS Mode C: EDS data invalid", a BiSS-C encoder with el. nameplate has been detected. This one could not be initialized.</p> <p>An initialization to a unidirectional encoder Biss-C has failed.</p> |
| 137   | BISS: unsupp. enc ID    | Encoder type is not supported or unknown.   | Use encoder type with KEB specifications.   |
| 138   | BISS: read para timeout | Communication to the encoder.   | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 139   | BISS: read pos. timeout | Communication to the encoder.   | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 140   | BISS: enc comm err      | Communication to the encoder.   | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 141   | BISS: comm watchdog err | Communication to the encoder.   | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 142   | BISS comm: pos. CRC err | Communication to the encoder.   | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 143   | BISS comm: para CRC err | Communication to the encoder.   | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 144   | BISS: pos. read err     | Communication to the encoder.   | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 145   | BISS: pos. invalid      | Communication to the encoder.   | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 146   | BISS: enc err bit       | Communication to the encoder.   | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 147   | BISS: CPU watchdog err  | Communication to the encoder.   | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 151   | Resolver: signal err    | One or both signals incorrect.  | Encoder does not comply with KEB specifications. Hardware defect, check shield on motor, encoder cable or EMC interferences.  |

| Value | Message                                | Cause   | Remedy  |
|-------|--|---|---|
| 161   | Hiperface: enc init err                | Not all encoder signals were recognized during initialization (recognized encoder signals are visible in ec17). | Adjust supply voltage ec14 to 8V. Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 163   | Hiperface: name plate access err       | Access errors to the extended nameplate 0xFF in the encoder.  | Encoder is not supported. Nameplate does not comply with Hiperface specification. Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 164   | Hiperface: enc memory read err         |   |   |
| 168   | Hiperface: enc comm BCC err            | Communication to the encoder.   | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 171   | Hiperface: enc comm parity err         | Communication to the encoder.   | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 172   | Hiperface: enc comm overrun err        | Communication to the encoder.   | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 173   | Hiperface: enc comm overrun/parity     | Communication to the encoder.   | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 174   | Hiperface: enc comm frame err          | Communication to the encoder.   | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 175   | Hiperface: enc comm frame/parity err   | Communication to the encoder.   | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 176   | Hiperface: enc comm frame/overflow err | Communication to the encoder.   | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 177   | Hiperface: enc comm frm/ovrrn/prty     | Communication to the encoder.   | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 178   | Hiperface: enc comm trm time out       | Communication to the encoder.   | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 179   | Hiperface: enc comm time out           | Communication to the encoder.   | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 180   | Hiperface: enc comm red time out       | Communication to the encoder.   | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 181   | Hiperface: enc reset error             | Communication to the encoder.   | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 191   | SSI: no trace detected in init         | Not all encoder signals were recognized during initialization (recognized encoder signals are visible in ec17). | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 192   | SSI: data line signal level error      | Error SSI communication: invalid signal levels at the data inputs.  | Clock or data signal too small, deformed or missing. Hardware defect, check shield on motor, encoder cable or EMC interferences.  |
| 193   | SSI: no reaction or position from enc  | Error SSI communication. No reaction, no position value from the encoder or no edges on the data signal.        | Set data word length in ec40 and ec41 smaller than the actual data word length of the encoder. Hardware defect, check shield on motor, encoder cable or EMC interferences.  |
| 194   | SSI: parity error                      | The parity bit of the encoder is set. Only if the bit check in ec42 is activated.                               | Encoder does not send a parity bit. Singleturn or multiturn resolution in ec40 or ec41 are wrong. If the error does not occur directly after switching on, the motor cable, encoder cable or the EMC must be checked. |

| Value | Message                                 | Cause  | Remedy   |
|-------|---|--|--|
| 195   | SSI: error bit sent by encoder          | The error bit of the encoder is set. Only if the bit check in ec42 is activated. | Voltage supply to encoder is faulty. Singleturn or multiturn resolution in ec40 or ec41 are wrong. If the error does not occur directly after switching on, the motor cable, encoder cable or the EMC must be checked. |
| 202   | TTL output: frequency too high          | Maximum frequency of the output signals has been exceeded (500 kHz).             | Speed of channel A too high. Number of increments per revolution in ec29 of channel B too high.  |
| 203   | TTL output - channel A position invalid | An invalid position was detected at the TTL output for channel A.                | -  |



## 5 Error list ec02

| Value | Message                                  | Cause  | Remedy   |
|-------|--|--|--|
| 0     | no warning                               |  |  |
| 1     | fast communication                       | Fast, internal communication for encoder evaluation.<br>ONLY H6  | EMC problems or device defective.  |
| 2     | slow communication                       | Slow, internal communication for encoder evaluation.   | EMC problems or device defective.  |
| 3     | EEPROM access not possible               | EEPROM reading and writing not possible  | EMC problems or device defective.  |
| 4     | EEPROM write access not possible         | EEPROM writing not possible, reading ok  | EMC problems or device defective.  |
| 5     | EEPROM read: error corrected             | EEPROM reading error found and corrected.  | EMC problems or device defective.  |
| 6     | Encoder supply outside the specification | The voltage supply of the encoder is outside the permissible tolerance.  | Check voltage source.<br>Check encoder cable.  |
| 10    | EnDat: communication                     | EnDat: communication   | Hardware defect, check shield on motor, encoder cable or EMC interferences.  |
| 11    | EnDat: comm add. info                    | Endat communication (embedded additional communication).   | Hardware defect, check shield on motor, encoder cable or EMC interferences.  |
| 12    | pos diff occurred                        | Position difference between incremental and absolute position (digital position or reference signal) occurred.               | Wrong number of increments per revolution in Ec29. One or more signal pairs are connected twisted or reversed, e.g. SSI data, incremental signals or analog absolute signals. The hardware is defective. Check shielding on motor, encoder cable or EMC interferences. |
| 13    | pos diff corrected                       | Position difference between incremental and absolute position (digital position or reference signal) occurred and corrected. | Wrong number of increments per revolution in Ec29. One or more signal pairs are connected twisted or reversed, e.g. SSI data, incremental signals or analog absolute signals. The hardware is defective. Check shielding on motor, encoder cable or EMC interferences. |
| 14    | 1Vpp-inc.: amplitude or form             | 1Vpp incremental signals incorrect   | One or both signals are too small, deformed or missing. Which of the signals is faulty. Check shielding at motor, encoder cable or EMC interferences.  |
| 15    | 1Vpp-abs.: amplitude or form             | 1Vpp incremental signals incorrect   | One or both signals are too small, deformed or missing. Which of the signals is faulty. Check shielding on motor, encoder cable or EMC interferences.  |
| 16    | TTL track A / Cos. amplitude             | TTL - track A / amplitude cosine faulty.   | Hardware defect, check shield on motor, encoder cable or EMC interferences.  |
| 16    | TTL trace A / Cos. amplitude             | TTL trace A defective or missing.  | Hardware defect, check shield on motor, encoder cable or EMC interferences.  |
| 17    | TTL trace B / Sin. error                 | TTL - track B / amplitude sine faulty.   | Hardware defect, check shield on motor, encoder cable or EMC interferences.  |
| 17    | TTL trace B / Sin. amplitude             | TTL trace B defective or missing   | Hardware defect, check shield on motor, encoder cable or EMC interferences.  |
| 18    | pos diff to 1Vpp-abs. occurred           | Position deviation to 1Vpp absolute track occurred.  | The number of increments per revolution in ec29 is wrong. One or more signal pairs are connected twisted or reversed. The course of the 1Vpp absolute signals does   |



| Value | Message   | Cause  | Remedy  |
|-------|---|--|---|
|       |   |  | not match the position of the zero signal. Hardware defect, check shield on motor, encoder cable or EMC interferences.  |
| 19    | pos diff to 1Vpp-abs. corrected                           | Position deviation to 1Vpp absolute track occurred and corrected.  | The number of increments per revolution in ec29 is wrong. One or more signal pairs are connected twisted or reversed. The course of the 1Vpp absolute signals does not match the position of the zero signal. Hardware defect, check shield on motor, encoder cable or EMC interferences. |
| 20    | BiSS: encoder communication                               | BiSS communication disturbed.  | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 21    | encoder error   |  |   |
| 22    | SSI communication error                                   | SSI communication faulty.  |   |
| 23    | BiSS Mode C: enc mem access                               | BiSS Mode C - encoder memory access.   | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 24    | encoder data reading error                                | Error when reading encoder data.   | Memory in encoder defective. Encoder rejects memory access.   |
| 25    | encoder data writing error                                | Error when writing encoder data.   | Memory in encoder defective. Encoder rejects memory access.   |
| 26    | internal encoder EEPROM error                             | Encoder has detected internal EEPROM error.  | The encoder must be replaced.   |
| 27    | no reference detected by encoder                          | Reference signal not detected by the encoder   | The hardware is defective. The increments per revolution in ec29 was entered incorrectly.   |
| 28    | Hiperface: communication                                  | Hiperface communication disturbed.   | Hardware defect, check shield on motor, encoder cable or EMC interferences.   |
| 29    | Invalid data in encoder memory                            | Memory in encoder does not contain usable data.  | Save data in the encoder  |
| 30    | TTL output: sync warning                                  | Encoder emulation: Not all signals could be output during the last cycle and will be output during the next cycle. | Only internal warning, no remedy possible.  |
| 31    | BiSS Mode C: EDS data invalid                             |  |   |
| 32    | EnDat: incremental track has reached the functional limit |  |   |
| 33    | EnDat: absolute track has reached the functional limit    |  |   |
| 34    | EnDat: pos. calculation has reached the functional limit  |  |   |
| 35    | enc. sync. comm. is longer than sync cycle                |  |   |



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