

Contents

1 Diagnostic Message Descriptions	1
1.1 Overview of the diagnostic message descriptions	1
Diagnostic Message Types	1
Construction of a diagnostic message	1
2 Description of diagnostic letters F... and E...	2-1
2.1 Error diagnostic messages F...	2-1
F207 Switching to uninitialized Operation Mode	2-2
F208 UL The motor type has changed.....	2-2
F209 PL Load parameter default values	2-3
F218 Amplifier Overtemp. shutdown.....	2-3
F219 Motor Overtemp. shutdown.....	2-4
F221 Error Motor temp. surveillance defective	2-4
F226 Undervoltage in power section.....	2-4
F228 Excessive Deviation	2-5
F229 Motor Encoder Failure: Quadrant Error	2-6
F233 External Power Supply Error	2-6
F236 Excessive Position Feedback Difference.....	2-6
F237 Excessive Position Command Difference.....	2-7
F242 External Encoder Failure: Signal too small	2-8
F245 External Encoder Failure: Quadrant Error	2-9
F248 Low Battery Voltage	2-9
F267 Erroneous internal Hardware Synchronization.....	2-10
F268 Brake Fault.....	2-10
F270 Error power supply home switch	2-11
F271 Error power supply travel limit switch.....	2-11
F272 Error power supply probe input.....	2-11
F273 Error power supply E-Stop	2-12
F276 Absolute encoder out of allowed window	2-12
F280 Short circuit to earth	2-13
F316 Softstart fault power supply unit.....	2-13
F318 Heatsink overtemp. fault power supply unit	2-13
F320 Bleeder overload	2-13
F360 Overcurrent power supply unit	2-14
F369 +24V/+15V/+5V fault power supply unit.....	2-14
F380 Short to ground power supply unit	2-14
F381 Mains failure.....	2-14
F382 Mains phase loss fault	2-15
F383 Line voltage fault	2-15

F384 Connection error at power supply unit	2-15
F385 Line frequency fault.....	2-15
F394 Checksum error power supply unit	2-15
F401 Double MST error shutdown	2-16
F402 Double MDT error shutdown.....	2-16
F403 Invalid Communication Phase Shutdown	2-16
F404 Error during Phase Progression.....	2-17
F405 Error during Phase Regression.....	2-17
F406 Phase Switching without Ready Signal	2-17
F434 Emergency-Stop	2-17
F629 Positive Travel Limit exceeded	2-18
F630 Negative Travel Limit exceeded.....	2-18
F634 Emergency-Stop	2-19
F643 Positive Travel Limit Switch detected	2-19
F644 Negative Travel Limit Switch detected	2-19
F822 Motor Encoder Failure: Signal too small	2-20
F827 Drive interlock while drive activated	2-21
F860 Overcurrent: Short in power stage	2-21
F861 Overcurrent: Short to ground	2-21
F869 +/-15Volt DC Error	2-22
F870 +24Volt DC Error.....	2-22
F871 +10Volt DC Error.....	2-22
F878 Velocity Loop Error.....	2-23
F879 Velocity limit S-0-0091 exceeded.....	2-23
2.2 Warning Diagnostic Messages E.....	2-24
E219 Warning Drive temp. surveillance defective	2-24
E221 Warning Motor temp. surveillance defective.....	2-24
E225 Motor Overload	2-25
E226 Undervoltage in power section.....	2-25
E247 Interpolation velocity = 0	2-26
E248 Interpolation acceleration = 0.....	2-26
E249 Positioning velocity S-0-0259 > S-0-0091.....	2-26
E250 Drive Overtemp. prewarning.....	2-27
E251 Motor Overtemp. prewarning	2-27
E253 Target position out of travel zone.....	2-28
E255 Feedrate-Override S-0-0108 = 0.....	2-28
E257 Continuous current limit active.....	2-28
E259 Command velocity limit active	2-29
E261 Continuous current limiting prewarning	2-29
E263 Velocity Command Value > Limit S-0-0091	2-29
E324 Option module error power supply unit.....	2-30
E325 Recovery overload power supply unit	2-30
E326 Bus power overload	2-30
E350 Heat sink overtemp. warning power supply unit	2-30
E352 Bleeder overload warning power supply unit	2-31
E353 Diagnostic message power supply erroneous	2-31
E387 Control voltage supply fault power supply unit.....	2-31

E410 Slave not scanned or adress 0	2-31
E825 Overvoltage in power stage	2-32
E826 Undervoltage in power section.....	2-32
E829 Positive Position Limit exceeded	2-32
E830 Negative Position Limit exceeded.....	2-33
E834 Emergency-Stop	2-33
E843 Positive Limit Switch activated.....	2-33
E844 Negative Limit Switch activated	2-34

3 Description of Diagnostic Letters C... and A... 3-1

3.1 Command Diagnostic Messages C... and D	3-1
C100 Communication phase 3 transition check.....	3-1
C101 Invalid Communication Parameter (S-0-0021)	3-1
C104 config. IDN for MDT not configurable	3-1
C105 Configured length > max. length for MDT	3-2
C106 config. IDN for AT not configurable	3-2
C107 Configured Length > Max.Length for AT	3-2
C108 Time Slot Parameter > Sercos Cycle Time	3-2
C109 Position of Data Record in MDT (S-0-0009) even.....	3-3
C110 Length of MDT (S-0-0010) odd.....	3-3
C111 ID9 + Record Length - 1 > Length MDT (S-0-0010)	3-3
C112 TNcyc (S-0-0001) or TScyc (S-0-0002) Error.....	3-3
C113 Relation TNcyc (S-0-0001) to TScyc (S-0-0002) Error	3-4
C114 T4 > TScyc (S-0-0002) - T4min (S-0-0005).....	3-4
C115 T2 too small.....	3-4
C200 Communication phase 4 transition check.....	3-4
C201 Invalid Parameter(s) (->S-0-0022).....	3-4
C202 Parameter Limit Error (->S-0-0022).....	3-5
C203 Parameter Calculation Error (->S-0-0022)	3-5
C204 Motor type P-0-4014 incorrect.....	3-5
C210 External Feedback required (->S-0-0022).....	3-5
C211 Invalid feedback data (->S-0-0022)	3-6
C212 Invalid amplifier data (->S-0-0022)	3-6
C213 Position data scaling error	3-6
C214 Velocity data scaling error	3-7
C215 Acceleration data scaling error	3-7
C216 Torque/force data scaling error	3-8
C217 Motor feedback data reading error	3-8
C218 External feedback data reading error	3-9
C220 Motor Feedback initializing error.....	3-9
C221 Ext. Feedback initializing error.....	3-10
C223 Input value for max. range too high	3-10
C225 Coprocessor not ready for initialization.....	3-10
C226 Coprocessor acknowledge failed.....	3-11
C227 Modulo range error	3-11
C228 Controller type S-0-0140 wrong.....	3-11
C232 Motor encoder interface not present.....	3-11

C233 External encoder interface not present.....	3-12
C234 Encoder combination not possible.....	3-12
C235 Load-side motor encoder with inductance motor only	3-12
C236 Motor feedback required (P-0-0074)	3-12
C300 Set absolute measuring.....	3-13
C302 Absolute Measuring system not installed	3-13
C400 Command: Switch to parameter mode.....	3-13
C401 Drive active, Switching not allowed	3-13
C402 Only allowed without Master	3-14
C500 Reset class 1 diagnostic, error reset	3-14
C501 Error delet only in Parameter Mode.....	3-14
C600 Drive controlled homing procedure command.....	3-14
C601 Homing only possible with Drive Enable.....	3-14
C602 Distance homing switch-reference mark erroneous.....	3-15
C604 Homing of absolut encoder not possible	3-15
C700 Basic load	3-15
C701 Basic load not possible if drive is enabled	3-15
C702 Default parameters not available.....	3-16
C703 Default parameters invalid.....	3-16
C704 Parameters not copyable.....	3-16
C705 Locked with password	3-16
C800 Default Parameter load.....	3-16
C801 Parameter default value erroneous (-> S-0-0021).....	3-17
C802 Locked with password	3-17
D300 Command adjust commutation.....	3-17
D301 Drive not ready for commutation command	3-17
D400 Positive stop drive procedure command	3-18
D401 ZKL1-Error at Command Start	3-18
D500 Command 'Get Mark Position'.....	3-18
D501 Incremental encoder required.....	3-18
D600 Cancel reference point procedure command	3-19
D700 Parking Axis Command.....	3-19
3.2 Status diagnostic messages A.....	3-20
A000 Communication phase 0.....	3-20
A001 Communication phase 1.....	3-20
A002 Communication phase 2.....	3-20
A003 Communication phase 3.....	3-21
A010 Drive HALT	3-21
A011 Drive Interlock open.....	3-21
A012 Control and power sections ready for operation	3-21
A013 Ready for Power On	3-21
A100 Drive in TORQUE control	3-21
A101 Drive in VELOCITY control	3-22
A102 Position Mode with Encoder 1	3-22
A103 Position Mode with Encoder 2	3-22
A104 Position Mode lagless, Encoder 1.....	3-22
A105 Position Control lagless, Feedback 2	3-22

A106 Drive controlled interpolation, Encoder 1	3-22
A107 Drive controlled interpolation, Encoder 2	3-23
A108 Drive controlled interpolation, lagless, Encoder 1	3-23
A109 Drive controlled interpolation, lagless, Encoder 2	3-23
A146 Relative drive controlled interpolation, Encoder 1	3-23
A147 Relative drive controlled interpolation, Encoder 2	3-24
A148 Relative drive contr. interpolation, Enc. 1, lagless	3-24
A149 Relative drive contr. interpolation, Enc. 2, lagless	3-25
A800 Unknown Operation Mode	3-25
3.3 Diagnostic messages for basic initialization and after fatal System errors	3-26
Diagnostic Message Display: -0	3-26
Diagnostic Message Display: -1	3-26
Diagnostic Message Display: -2	3-26
Diagnostic Message Display: -3	3-26
Diagnostic Message Display: -5	3-27
Diagnostic Message Display: -6	3-27
Diagnostic Message Display: Watchdog 	3-27
3.4 Operation Status	3-28
bb	3-28
Ab	3-28
AF	3-28
AS	3-28
AH	3-28
P0	3-29
P1	3-29
P2	3-29
P3	3-29

4 Exchanging Drive Components 4-1

4.1 Identifying the Drive Components	4-1
Power Supply Module	4-1
Drive Controllers	4-2
Motors	4-4
Electrical connections	4-4
4.2 Replacing Drive Components	4-5
Power Supply Module	4-5
Drive Controllers	4-6
Motors	4-8
Electrical Connections	4-10
Plug-in Modules	4-11
Software Module	4-12
4.3 Fault Report	4-13

5 Index 5-1

Customer Service Locations