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11 Operation and Service

11.1 Operating condition indication

7-segment display

The 7-segment display shows the operating condition of MOVIDRIVE® in hexadecimal notation and, in the event of a fault, a fault or warning code.

Display	Meaning
0	Inverter not ready
1	Controller inhibit active
2	No enable
3	Current at standstill
4	VFC mode
5	n-control
6	M-control
7	Hold control
8	Factory setting
9	Limit switch reached
A	Technology option
b	unassigned
C	IPOS$^{plus®}$ reference travel
d	Flying start
E	unassigned
F	Fault display (flashing) → page 360
H	Manual operation
t	Timeout active → page 359
amb	"Safe Stop" active
• (flashing dot)	IPOS$^{plus®}$ program is running
flashing digit	STOP via DBG 60B



The display U = "Safe stop" active is not safety-related and may not be used as a safety function!

DBG60B keypad

Basic displays:

0.00rpm 0.000Amp CONTR. INHIBIT	Display when X13:1 (DIØØ "/CONTROLLER INHIBIT") = "0".
0.00rpm 0.000Amp NO ENABLE	Display when X13:1(DIØØ "/CONTROLLER INHIBIT") = "1" and inverter is disabled ("ENABLE/RAPID STOP" = "0").
950.00rpm 0.990Amp ENABLE (VFC)	Display when inverter enabled.
NOTE 6: VALUE TOO LARGE	Information message
(X)=Quit FAULT 9 STARTUP PARAMET.	Fault indication

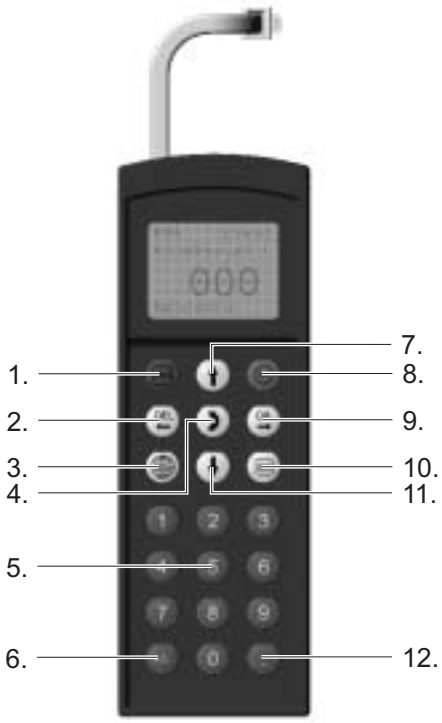
11.2 Information messages

Information messages on the DBG60B (ca. 2 s in duration) or in MOVITOOLS®/SHELL (message that can be acknowledged):

No.	Text DBG60B/SHELL	Description
1	ILLEGAL INDEX	Index addressed via interface is not available.
2	NOT IMPLEMENTED	• Attempt to execute a non-implemented function. • An incorrect communication service has been selected. • Manual mode selected via impermissible interface (e.g. fieldbus).
3	READ ONLY VALUE	Attempt to modify a read only value.
4	PARAM. INHIBITED	Parameter lock P803 = "ON", Parameter cannot be altered.
5	SETUP ACTIVE	Attempt to alter parameters during active factory setting.
6	VALUE TOO LARGE	Attempt to enter a value which is too large.
7	VALUE TOO SMALL	Attempt to enter a value which is too small.
8	REQ. PCB MISSING	The option card required for the selected function is missing.
-		
10	ONLY VIA ST1	Manual mode must be completed using X13:ST11/ST12 (RS-485).
11	TERMINAL ONLY	Manual mode must be completed using TERMINAL (DBG11A or USS21A).
12	NO ACCESS	Access to selected parameter refused.
13	NO CTRLR. INHIBIT	Set terminal DIØØ "/Controller inhibit" = "0" for the selected function.
14	INVALID VALUE	Attempt to enter an invalid value.
--		
16	PARAM. NOT SAVED	EEPROM buffer overrun, e.g. due to cyclical write accesses. Parameter is saved in EEPROM and is not protected against loss following POWER OFF.

11.3 Functions of the DBG60B keypad

Key assignment DBG60B keypad: Functions of the keys.



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Figure 187: Functions of the keys

1. Stop
2. Delete previous entry
3. Language selection
4. Change menu
5. Numbers 0 to 9
6. Sign reversal
7. Up arrow, moves up to the next menu item
8. Start
9. OK, confirms the entry
10. Activates the context menu
11. Down arrow, moves down to the next menu item
12. Decimal point

Copy function of DBG60B The DBG60B keypad can be used for copying complete parameter sets from one MOVIDRIVE® unit to other MOVIDRIVE® units. Proceed as follows to do so:

- Select "COPY TO DBG" from the context menu and confirm by pressing the OK key.
- After the copying process has completed, install the keypad on the other inverter.
- Select "COPY TO MDX" from the context menu and confirm by pressing the OK key.

Parameter mode

Proceed as follows to set the parameters in parameter mode:

1. Activate the context menu by pressing the ☰ key. The first menu item is "PARAMETER MODE".

PARAMETER MODE
VARIABLE MODE
BASIC VIEW

2. Start PARAMETER MODE by pressing the OK key. The first display parameter P000 "SPEED" appears. Press the ↑ or ↓ key to select the main parameter groups 0 to 9.

P 000 rpm
SPEED
+0.0
CONTR. INHIBIT

3. Press the ↑ or ↓ key to select the desired parameter main group. The blinking cursor is positioned under the number of the main parameter group.

P 1.. SETPOINTS/
RAMP GENERATORS
CONTR. INHIBIT

4. In the desired parameter main group, press the OK key to select the parameter subgroup. The blinking cursor moves one position to the right.

P 1.. SETPOINTS/
RAMP GENERATORS
CONTR. INHIBIT

5. Press the ↑ or ↓ key to select the desired parameter subgroup. The blinking cursor is positioned under the number of the parameter subgroup.

\ 13. SPEED
RAMPS 1
CONTR. INHIBIT

6. In the desired parameter subgroup, press the OK key to select the parameter. The blinking cursor moves one position to the right.

\ 13. SPEED
RAMPS 1
CONTR. INHIBIT

7. Press the ↑ or ↓ key to select the desired parameter. The blinking cursor is positioned under the third digit of the parameter number.

\ 132 s
T11 UP CCW
+0.13
CONTR. INHIBIT

8. Activate the setting mode for the selected parameter by pressing the OK key. The cursor is positioned under the parameter value.

\ 132 s
T11 UP CCW
+0.13_
CONTR. INHIBIT

9. Press the ↑ or ↓ key to select the desired parameter.

\ 132 s
T11 UP CCW
+0.20_
CONTR. INHIBIT

10. Confirm the setting by pressing the OK key. Exit the setting mode by pressing the ↩ key. The blinking cursor is positioned under the third digit of the parameter number again.

\ 132 s
T11 UP CCW
+0.20
CONTR. INHIBIT

11. To select another parameter, press the ↑ or ↓ key, or return to the parameter subgroup menu by pressing the DEL key.

\ 13. SPEED
RAMPS 1
CONTR. INHIBIT

12. To select another parameter subgroup, press the ↑ or ↓ key, or return to the menu with the main parameter groups by pressing the DEL key.

P 1.. SETPOINTS/
RAMP GENERATORS
CONTR. INHIBIT

13. Return to the context menu by pressing the ☰ key.

PARAMETER MODE
VARIABLE MODE
BASIC VIEW

User menu or detailed parameter menu

The DBG60B keypad features a detailed parameter menu with all parameters, and a user menu with the most frequently used parameters. You can choose from the context menu whether you want to use the detailed parameter menu or the user menu. The parameters of the user menu are indicated on the display by a '/' preceding the parameter number.

- Select "PARAMETER MODE" from the context menu and confirm by pressing OK.
- The detailed parameter menu appears.
- Select "USER MENU" from the context menu and confirm by pressing OK.
- The user menu with the most frequently used parameters appears.

IPOS$^{plus®}$

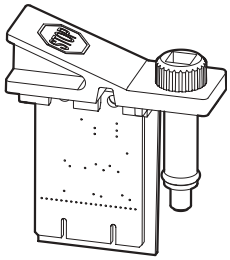
MOVITOOLS® version 4.0 or higher is required for programming IPOS$^{plus®}$. The DBG60B keypad can be used to display or modify IPOS$^{plus®}$ Parameters (P9__).

The IPOS$^{plus®}$ program is also stored in the DBG60B keypad when it is saved and is consequently also transferred when the parameter set is copied to another MOVIDRIVE® unit.

Parameter P931 can be used for starting and stopping the IPOS$^{plus®}$ program from the DBG60B keypad.

11.4 Memory card

The pluggable memory card is installed in the basic unit. The data stored on the memory card are always current and do not have to be copied with typing errors. If a unit has to be replaced, the system/machine can be operated again quickly without the need of a PC and data backup simply by replugging the memory card. Any number of option cards can be installed or power sections replaced without parameters being lost.



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Figure 188: MDX60B/61B memory card



- The memory card may only be installed in another inverter if that inverter is identical with the inverter where the card was originally installed.
- If this is not the case, the error message "79 HW configuration" (hardware configuration) appears. The error can be reset by selecting "Starting mode" (P802, new formatting) from the context menu.

11.5 Fault information

Fault memory

The fault memory (P080) stores the last five fault messages (faults t-0 to t-4). The fault message of longest standing is deleted whenever more than five fault messages have occurred. The following information is stored when a malfunction occurs:

Fault which occurred • Status of the binary inputs/outputs • Operational status of the inverter • Inverter status • Heat sink temperature • Speed • Output current • Active current • Unit utilization • DC link circuit voltage • ON hours • Enable hours • Parameter set • Motor utilization.

Switch-off responses

There are three switch-off responses depending on the fault; the inverter is inhibited when in fault status:

Immediate switch-off

The unit can no longer brake the drive; the output stage goes to high resistance in the event of a fault and the brake is applied immediately (DBØØ "/Brake" = "0").

Rapid stop

The drive is braked with the stop ramp t13/t23. Once the stop speed is reached, the brake is applied (DBØØ "/Brake" = "0"). The output stage goes to high-resistance after the brake reaction time has elapsed (P732 / P735).

Emergency stop

The drive is braked with the emergency ramp t14/t24. Once the stop speed is reached, the brake is applied (DBØØ "/Brake" = "0"). The output stage goes to high-resistance after the brake reaction time has elapsed (P732 / P735).

Reset

A fault message can be acknowledged by:

- Switching the supply system off and on again

  Recommendation: Observe a minimum switch-off time of 10 s for the supply system contactor K11.
- Reset via input terminals, that means via an appropriately assigned binary input (DIØ1 to DIØ7 with the basic unit, DI1Ø to DI17 with the DIO11B option).
- Manual reset in SHELL (P840 = "YES" or [Parameter] / [Manual reset]).
- Manual reset using the DBG60B
- Auto reset performs up to five unit resets with an adjustable restart time. Not to be used with drives where an automatic restart represents a risk of injury to people or damage to equipment.

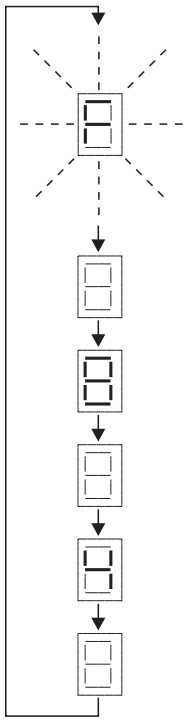
Timeout active

If the inverter is controlled via a communication interface (fieldbus, RS-485 or SBus) and the power was switched off and back on again or a fault reset was performed, then the enable remains ineffective until the inverter once again receives valid data via the interface which is monitored with a timeout.

11.6 Fault messages and list of faults

Fault message on 7-segment display

The fault or warning code is displayed in BCD format. The following display sequence is adhered to (e.g. fault code 84):



Flashes, ca. 1 s

Display off, ca. 0.2 s

Tens, ca. 1 s

Display off, ca. 0.2 s

Ones, ca. 1 s

Display off, ca. 0.2 s

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The display switches over to the operating display following a reset or if the fault or warning code resumes the value '0.'

List of faults

A dot in the "P" column indicates that the response is programmable (P83_ Fault response). The factory set fault response is listed in the "Response" column.

Fault code	Designation	Response	P	Possible cause	Action
00	No fault	-			
01	Overcurrent	Immediate switch-off		• Short circuit on output • Motor too large • Defective output stage	• Rectify the short circuit • Connect a smaller motor • Contact SEW Service for advice if the output stage is defective
03	Ground fault in the motor cable	Immediate switch-off		Ground fault • in the motor cable • in the inverter • in the motor	• Eliminate ground fault • Consult SEW Service
04	Brake chopper	Immediate switch-off		• Regenerative power excessive • Braking resistor circuit interrupted • Short circuit in braking resistor circuit • Excessively high braking resistance • Brake chopper defective	• Extend deceleration ramps • Check feeder cable to braking resistor • Check technical data of braking resistor • Replace MOVIDRIVE® if the brake chopper is defective
06	Mains phase failure	Immediate switch-off		Phase failure	Check supply system lead
07	DC link overvoltage	Immediate switch-off		DC link voltage too high	• Extend deceleration ramps • Check connecting harness for braking resistor • Check technical data of braking resistor

Fault code	Designation	Response	P	Possible cause	Action
08	n-monitoring	Immediate switch-off		• Speed controller or current controller (in VFC operating mode without encoder) operating at setting limit due to mechanical overload or phase failure in the power system or motor. • Encoder not connected correctly or incorrect direction of rotation. • n_{max} is exceeded during torque control.	• Reduce load • Increase deceleration time setting (P501 or P503). • Check encoder connection, swap over A/A and B/B pairs if necessary • Check encoder voltage supply • Check current limitation • Extend ramps if appropriate • Check motor cable and motor • Check supply system phases
09	Startup	Immediate switch-off		Inverter startup not yet performed for selected operating mode.	Perform startup for appropriate operating mode.
10	IPOS-ILLOP	Emergency stop		• Incorrect command detected during running of IPOS$^{plus®}$ program. • Incorrect conditions during command execution.	• Check program memory content and correct if necessary. • Load correct program into program memory. • Check program sequence (→ IPOS$^{plus®}$ manual)
11	Overtemperature	Emergency stop		Thermal overload of inverter.	Reduce load and/or ensure adequate cooling.
12	Resolver 14 bits	Emergency stop		**Only with DER11B option:** 14-bit resolver evaluation is active and the actual speed is ≥ 6000 1/min.	Set P302 "Maximum speed 1" to max. 6000 1/min.
13	Control signal source	Immediate switch-off		Control signal source not defined or defined incorrectly.	Set correct control signal source (P101).
14	Encoder	Immediate switch-off		• Encoder cable or shield not connected correctly • Short circuit/open circuit in encoder cable • Encoder defective	Check encoder cable and shield for correct connection, short circuit and open circuit.
15	24 V internal	Immediate switch-off		No internal 24 V supply voltage.	Check the mains connection. Contact SEW Service if this fault reoccurs.
17-24	System fault	Immediate switch-off		Inverter electronics disrupted, possibly due to effect of EMC.	Check ground connections and shieldings and correct, if necessary. If this error occurs again, contact SEW service for support.
25	EEPROM	Rapid stop		Fault when accessing EEPROM of the memory card	• Call up default setting, perform reset and set parameters again. • Contact SEW service if this fault reoccurs. • Replace memory card.
26	External terminal	Emergency stop	•	Read in external fault signal via programmable input.	Eliminate specific cause of fault; reprogram terminal if necessary.
27	Limit switches missing	Emergency stop		• Open circuit/both limit switches missing. • Limit switches are swapped over in relation to direction of rotation of motor	• Check wiring of limit switches. • Swap over limit switch connections. • Reprogram terminals
28	Fieldbus timeout	Rapid stop	•	No master/slave communication took place within the configured response monitoring time.	• Check master communication routine • Extend fieldbus timeout time (P819) or switch off monitoring
29	Limit switch reached	Emergency stop		A limit switch was reached in IPOS$^{plus®}$ operating mode.	• Check travel range. • Correct user program.
30	Emergency stop timeout	Immediate switch-off		• Drive overloaded • Emergency stop ramp too short	• Check project planning • Extend emergency stop ramp
31	TF sensor	No response	•	• Motor too hot, TF sensor has tripped • TF sensor of motor not connected or not connected properly • Connection of MOVIDRIVE® and TF on motor interrupted • No jumper between X10:1 and X10:2.	• Let motor cool off and reset fault • Check connections/link between MOVIDRIVE® and TF. • If no TF is connected: Jumper X10:1 to X10:2. • Set P835 to "NO RESPONSE"
32	IPOS index overrun	Emergency stop		Basic programming rules violated causing stack overflow in system.	Check IPOS$^{plus®}$ user program and correct if necessary (→ IPOS$^{plus®}$ manual).
33	Setpoint source	Immediate switch-off		Setpoint source not defined or defined incorrectly	Set correct setpoint source (P100).
34	Ramps timeout	Immediate switch-off		Time of downward ramps exceeded, e.g. due to overload.	• Extend the downwards ramps • Eliminate overload
35	Operating mode	Immediate switch-off		Operating mode not defined or defined incorrectly	Use P700 or P701 to set correct operating mode

Fault code	Designation	Response	P	Possible cause	Action
36	No option	Immediate switch-off		• Type of option card not allowed. • Setpoint source, control signal source or operating mode not permitted for this option card. • Incorrect encoder type set for DIP11A.	• Use correct option card. • Set correct setpoint source (P100). • Set correct control signal source (P101). • Set correct operating mode (P700 or P701). • Set the correct encoder type.
37	System watchdog	Immediate switch-off		Error during execution of system software	Contact SEW Service.
38	System software	Immediate switch-off		System error	Contact SEW Service.
39	Reference travel	Immediate switch-off		• Reference cam missing or does not switch • Limit switches not connected correctly • Reference travel type changed during reference travel	• Check reference cam • Check connection of limit switches • Check reference travel type setting and the parameters required for it
40	Boot synchronization	Immediate switch-off		**Only with DIP11B or DRS11B:** Fault during boot synchronization between inverter and option.	Install a new option card if this fault reoccurs.
41	Watchdog option	Immediate switch-off		Fault during communication between system software and option software.	Contact SEW Service.
42	Lag error	Immediate switch-off	•	• Incremental encoder connected incorrectly • Accelerating ramps too short • P-component of positioning controller too small • Speed controller parameters set incorrectly • Value of lag fault tolerance too small	• Check rotary encoder connection • Extend ramps • Set P-component to higher value • Set speed controller parameters again • Increase lag fault tolerance • Check encoder, motor and mains phase wiring • Check mechanical components can move freely, possibly blocked up
43	RS485 timeout	Rapid stop	•	Communication between inverter and PC interrupted	Check connection between inverter and PC. Contact SEW Service if necessary.
44	Unit utilization	Immediate switch-off		Unit utilization (IxT value) exceeds 125 %	• Reduce power output • Extend ramps • Use a larger inverter if the specified points are not possible.
45	Initialization	Immediate switch-off		• No parameters set for EEPROM in power section, or parameters set incorrectly. • Option card not in contact with backplane bus.	• Restore factory settings. Consult SEW Service if the fault still cannot be reset. • Insert the option card correctly.
46	System bus 2 timeout	Rapid stop	•	Fault during communication via system bus 2.	Check system bus connection.
47	System bus 1 timeout	Rapid stop	•	Fault during communication via system bus 1.	Check system bus connection.
48	Hardware DRS	Immediate switch-off		**Only with DRS11B:** • Encoder signal for master faulty. • Hardware required for synchronous operation is missing.	• Check encoder wiring. • Install a new synchronous operation board.
77	IPOS$^{plus®}$ control word	No response		**Only in IPOS$^{plus®}$ operating mode:** • Attempt was made to set an invalid automatic mode (via external control). • P916 = BUSRAMP set.	• Check serial connection to external control. • Check write values of external control. • Set P916 correctly.
78	IPOS$^{plus®}$ SW limit switches	No response		**Only in IPOS$^{plus®}$ operating mode:** Programmed target position is outside travel range delimited by software limit switches.	• Check user program • Check position of software limit switches
79	HW configuration (hardware configuration)	Immediate switch-off		The following items do not match anymore after having replaced the memory card: • Power • Rated voltage • Variant identification • Range of units • Application or standard version • Option cards	Ensure identical hardware or perform factory setting (parameter = factory setting).
80	n registration	Immediate switch-off		Internal unit fault, RAM defective.	Contact SEW Service.

Fault code	Designation	Response	P	Possible cause	Action
81	Start condition	Immediate switch-off		**Only in "VFC hoist" operating mode:** Current during premagnetization phase could not be injected into motor at a high enough level: • Rated motor power too small in relation to rated inverter power. • Motor cable cross section too small.	• Check startup data and repeat startup procedure if necessary. • Check connection between inverter and motor. • Check cross section of motor cable and increase if necessary.
82	Output open	Immediate switch-off		**Only in "VFC hoist" operating mode:** • Two or all output phases interrupted. • Rated motor power too small in relation to rated inverter power.	• Check connection between inverter and motor. • Check startup data and repeat startup procedure if necessary.
84	Motor protection	Emergency stop	•	Motor utilization too high.	• Reduce load. • Extend ramps. • Observe longer pause times.
85	Copy	Immediate switch-off		Fault when copying parameters.	Check connection between inverter and PC.
86	Memory module	Immediate switch-off		• No memory card • Encoder defective	• Tighten knurled screw • Insert and secure memory card • Replace memory card
87	Technology function	Immediate switch-off		A technology function was activated in a standard version.	Disable technology function
88	Flying start	Immediate switch-off		**Only in VFC n-CTRL operating mode:** Actual speed > 5000 1/min when inverter enabled.	Enable only at actual speed ≤ 5000 1/min.
92	DIP operating range	Emergency stop		**Only with DIP11B option:** Drive has exceeded the permitted operating range of the absolute encoder. Setting of DIP parameter encoder type/operating range possibly incorrect.	Check position offset and zero offset parameters.
93	DIP encoder fault	Emergency stop		**Only with DIP11B option:** The encoder signals a fault, e.g. power failure. • Connection cable between encoder and DIP does not meet the requirements (twisted pair, shielded). • Cycle frequency too high for cable length. • Permitted max. speed/acceleration of encoder exceeded. • Encoder defective.	• Check absolute encoder connection. • Check connection cables. • Set correct cycle frequency. • Reduce max. traveling velocity or ramp. • Install new absolute encoder.
94	EEPROM checksum	Immediate switch-off		Inverter electronics disrupted, possibly due to effect of EMC or a defect.	Send the unit in for repair.
95	DIP plausibility error	Emergency stop		**Only with DIP11B option:** Unable to determine a plausible position. • Incorrect encoder type set. • IPOS$^{plus®}$ travel parameter set incorrectly. • Numerator/denominator factor set incorrectly. • Zero adjustment performed. • Encoder defective.	• Set the correct encoder type. • Check IPOS$^{plus®}$ travel parameters. • Check traveling velocity. • Correct numerator/denominator factor. • Reset after zero adjustment. • Install new absolute encoder.
97	Copy data	Immediate switch-off		• Memory card cannot be written or read. • Error during data transmission	• Repeat copying process • Restore default setting (P802) and repeat copying process
98	CRC error flash	Immediate switch-off		Internal unit fault Flash memory defective	Send the unit in for repair.
99	IPOS ramp calculation error	Immediate switch-off		**Only in IPOS$^{plus®}$ operating mode:** Attempt made to alter ramp times and traveling velocities when the inverter is enabled, with a sine or squared positioning ramp.	Rewrite the IPOS$^{plus®}$ program so that ramp times and traveling velocities can only be altered when the inverter is inhibited.

11.7 SEW electronics service

Send in for repair

Please contact the **SEW-EURODRIVE electronics service if a fault cannot be rectified** (→ "Customer and spare parts service").

When contacting the SEW electronics service, please always quote the digits of your service code to enable our service personnel to assist you more effectively.



Please provide the following information if you are sending the unit in for repair:

- Serial number (→ nameplate)
- Unit designation
- Standard version or application version
- Digits of the service code
- Brief description of the application (application, control via terminals or serial)
- Connected motor (motor type, motor voltage, ⅄ or Δ circuit)
- Nature of the malfunction
- Accompanying circumstances
- Your own presumptions as to what has happened
- Any unusual events preceding the problem, etc.

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