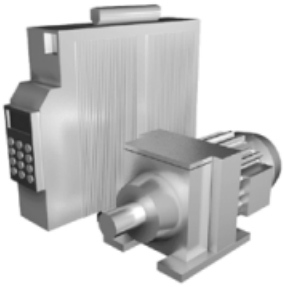
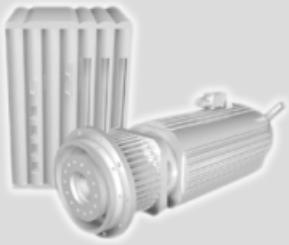
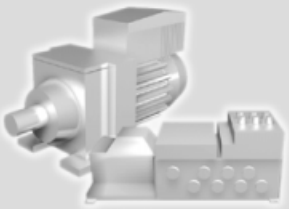
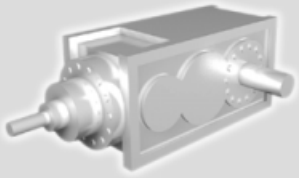
SEW EURODRIVE









MOVITRAC® B
Keypad

Edition 02/2007
11586214 / EN

Operating Instructions

SEW EURODRIVE

1 Important Notes

1.1 Structure of the safety notes

The safety notes in these operating instructions are structured as follows:

Symbol	SIGNAL WORD
	Nature and source of hazard Possible consequence(s) if disregarded. • Measure(s) to avoid the hazard.

Symbol	Signal word	Meaning	Consequences if disregarded
Example:  General hazard	**HAZARD**	Imminent danger	Severe or fatal injuries
	WARNING	Possible dangerous situation	Severe or fatal injuries
 Electric shock	**CAUTION**	Possible dangerous situation	Minor injuries
	**STOP**	Possible damage to property	Damage to the drive system or its environment
	**NOTE**	Useful information or tip Simplifies the operation of the drive system	

1.2 Right to claim under warranty

You must follow the information in the operating instructions to ensure trouble-free operation and for the fulfillment of any rights to claim under the limited warranty. Read the operating instructions before you start working with the unit.

Make sure that the operating instructions are available to persons responsible for the system and its operation, as well as to persons who work independently on the unit.

1.3 Exclusion of liability

You must comply with the information contained in these operating instructions to ensure safe operation of frequency inverters and to achieve the specified product characteristics and performance requirements. SEW-EURODRIVE assumes no liability for injury to persons or damage to equipment or property resulting from non-observance of these operating instructions. In such cases, any liability for defects is excluded.

2 Safety Notes

The following basic safety notes are intended to avoid injury to persons and damage to property. The operator must make sure that the basic safety notes are read and observed. Make sure that persons responsible for the plant and its operation, as well as persons who work independently on the unit, have read through the operating instructions carefully and understood them. If you are unclear about any of the information in this documentation, or if you require further information, please contact SEW-EURODRIVE.

2.1 General information

Never install or operate damaged products. In the event of damage, submit a complaint to the shipping company immediately.

During operation, drives with this type of enclosure may have live, uninsinuated, and sometimes moving or rotating parts as well as hot surfaces.

Removing covers without authorization, improper use as well as incorrect installation or operation may result in severe injuries to persons or damage to machinery.

Consult the documentation for additional information.

2.2 Target group

Only qualified personnel are authorized to transport, install, startup or service the units (observe IEC 60364 or CENELEC HD 384 or DIN VDE 0100 and IEC 60664 or DIN VDE 0110 as well as national accident prevention guidelines).

Qualified personnel in the context of these basic safety notes are persons familiar with installation, assembly, startup and operation of the product who possess the necessary qualifications.

All work in further areas of transportation, storage, operation and waste disposal must be carried out by persons who are trained appropriately.

2.3 Proper use

Frequency inverters are components intended for installation in electrical systems or machines.

In case of installation in machines, startup of the drive inverters (meaning the start of proper use) is prohibited until it is determined that the machine meets the requirements stipulated in the EC Directive 98/37/EC (machine directive); observe EN 60204.

Startup (i.e., the start of proper use) is only permitted under observance of the EMC (89/336/EEC) directive.

The frequency inverters comply with the requirements of the Low Voltage Directive 2006/95/EC. The harmonized standards of the EN 61800-5-1/DIN VDE T105 series in connection with EN 60439-1/VDE 0660 part 500 and EN 60146/VDE 0558 are applied to these frequency inverters.

Technical data and information on the connection requirements are provided on the nameplate and in the documentation; they must be strictly observed.

2.3.1 Safety functions

Frequency inverters from SEW-EURODRIVE cannot perform any safety functions unless the inverters are subordinate to higher-level safety systems. Use higher-level safety systems to ensure protection of equipment and personnel.

When using the "Safe stop" function, you must observe the following publications:

- MOVITRAC® B Safe Disconnection – Conditions
- MOVITRAC® B Safe Disconnection – Applications

2.4 Transportation, storage

You must observe the notes on transportation, storage and proper handling. Observe the climatic conditions as stated in the section "General technical data".

2.5 Installation

The units must be installed and cooled according to the regulations and specifications in the corresponding documentation.

Protect the frequency inverters from excessive strain. Especially during transportation and handling, do not allow the components to be deformed and/or insulation spaces altered. Avoid contact with electronic components and contacts.

Frequency inverters contain components that can easily be damaged by electrostatic energy and improper handling. Prevent mechanical damage or destruction of electric components (may pose health risk).

The following applications are prohibited unless the unit is explicitly designed for such use:

- Use in potentially explosive areas
- Use in areas containing harmful oils, acids, gases, vapors, dust, radiation, etc.
- Use in non-stationary applications which are subject to mechanical vibration and impact loads in excess of the requirements in EN 61800-5-1.

2.6 Electrical connection

Observe the applicable national accident prevention guidelines when working on live frequency inverters (for example, BGV A3).

Electrical installation must be carried out according to pertinent regulations (e.g., cable cross-sections, fusing, protective conductor connection). Additional information is contained in the documentation.

You will find notes on EMC compliant installation, such as shielding, grounding, arrangement of filters and routing of lines, in the documentation of the frequency inverters. Always observe these instructions, even for frequency inverters bearing the CE marking. The manufacturer of the system or machine is responsible for observing the limits established by EMC legislation.

Protective measures and protection devices must comply with the regulations in force (e.g. EN 60204 or EN 61800-5-1).

Required protective measures: The unit must be grounded.

2.7 Safe disconnection

The unit meets all requirements for safe disconnection of power and electronic connections in accordance with EN 61800-5-1. All connected circuits must also satisfy the requirements for safe disconnection.

2.8 Operation

Systems with integrated frequency inverters must be equipped with additional monitoring and protection devices, as applicable, according to the relevant safety guidelines and regulations, such as legislation governing technical equipment, accident prevention regulations, etc. Changes to frequency inverters using the operating software are permitted.

Do not touch live components or power connections immediately after disconnecting the frequency inverters from the supply voltage because there may still be some charged capacitors. Note the respective reference plates on the frequency inverter.

Keep all covers and doors closed during operation.

The fact that the status LED and other display elements are no longer illuminated does not indicate that the unit has been disconnected from the mains and no longer carries any voltage.

Mechanical blocking or safety functions inside the unit may result in the motor stopping. Removing the cause of the failure or performing a reset can cause the drive to restart automatically. If, for safety reasons, this is not permitted for the driven machine, disconnect the unit from the mains before beginning to correct the fault.

3 Startup

3.1 Preliminary work and resources for MOVITRAC® B with keypad

- Check the installation ("Installation" sec.).

⚠ HAZARD

Risk of crushing if the motor starts up unintentionally.

Severe or fatal injuries

- Ensure that the motor cannot start inadvertently, for example, by removing the electronics terminal block X13.
- Additional safety precautions must be taken depending on the application to avoid injury to people and damage to machinery.

- Connect the supply system and the motor. **Do not connect signal terminals!**
- Switch on the power supply system.
- Display shows Stop.
- Program the signal terminals.
- Set the parameters correctly (e.g. ramps).
- Check the set terminal assignment (P601 ... P622).
- Switch off the power supply system.
- Connect the signal terminals.
- Switch on the power supply system.

NOTE

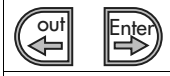
The inverter automatically changes parameter values once you perform a startup.

3.2 Optional FBG11B keypad

Key arrangement and symbols on keypad:

3.2.1 Keypad functions

The UP / DOWN and ENTER / OUT buttons are used for navigating the menus. Use the RUN and STOP/RESET buttons to control the drive. The setpoint control module is used for setpoint specification.

	Use UP / DOWN to select symbols and change values.
	ENTER/OUT to activate and deactivate the symbols or parameter menus
	Press "RUN" to start the drive.
	"STOP/RESET" is used for resetting faults and for stopping the drive.

The STOP/RESET button has priority over a terminal enable or an enable via the interface. If you stop a drive using the STOP/RESET key, you have to enable it again by pressing the RUN key.

	NOTE
	After switching off the power supply, press the STOP key to lift the lock.

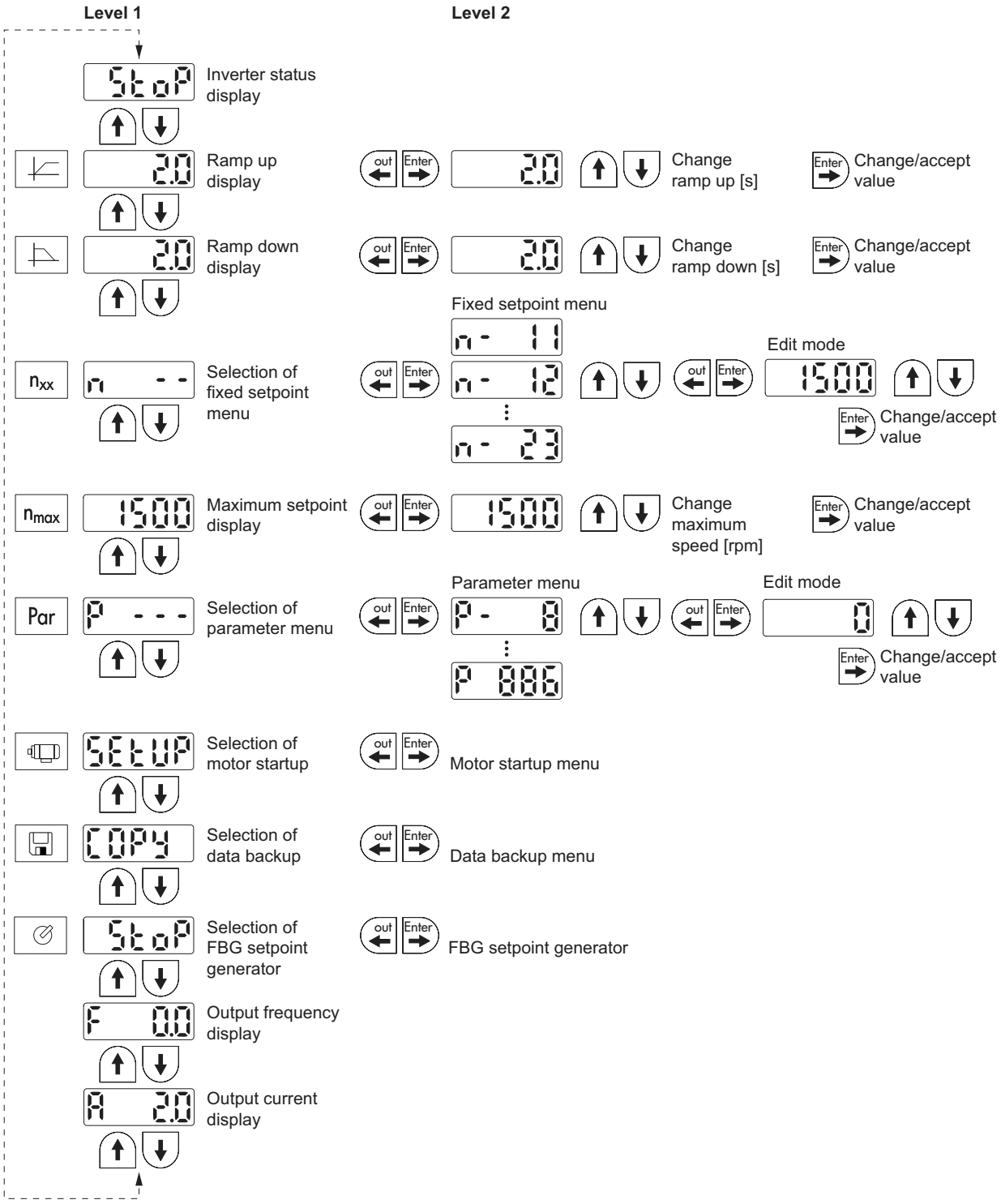
The STOP/RESET key can be used for performing a reset after a fault has occurred with a programmed error response. The drive is then inhibited and must be enabled using the RUN key. You can deactivate the STOP function with parameter 760 using FBG11B.

If you stop the drive with the STOP/RESET key, the display Stop flashes. This display indicates that you have to enable the drive using the "RUN" key.

After copying the parameter set in MOVITRAC® B, the unit is also stopped.

See also Data backup with FBG11B (→ p. 26).

3.3 Basic operation of the FBG11B keypad



3.3.1 Menu system

The LED integrated in the symbol lights up when you select a symbol. In the case of symbols, which only represent display values, the current display value appears immediately on the display.

Changing parameters

You can select the required parameter by selecting a symbol and pressing the ENTER button.

Press the ENTER button again to edit the parameter value. You can alter the value when the LED in the corresponding symbol flashes. Pressing the ENTER button again activates the value and the symbol is not flashing any longer.

3.3.2 Status displays

If the status is "Drive enabled", the display will show the calculated actual speed. See also "Status display" (→ p. 28).

3.3.3 Fault display

In the event of an error or fault, the display changes and flashes the fault code, for example F-11 (refer to the fault list in the "Operation and Service" section). This situation will not occur during active startup.

3.3.4 Warnings

You may not alter any parameter in any operating mode. Try this anyway to display code r-19 ... r-32. The display shows acode corresponding to the specific action, e.g. r-28 (controller inhibit necessary). You will find a list of warnings in the section Operation and service.

3.3.5 Parameter menu change: Short ↔ Long

Using parameter P800, you can switch back and forth between short menu and long menu. It is indicated in the parameter description and parameter list which parameters are accessible via short and long menu.

3.4 FBG11B setpoint control module and external setpoint specification

FBG11B setpoint control module of the keypad (local manual operation): LED flashes.

External setpoint specification

Control via

- Terminals
- Serial interface
- Setpoint potentiometer connected to AI11/AI12

3.4.1 FBG11B setpoint control module

The only relevant parameters in "FBG setpoint control module" operating mode are:

- *P122 Direction of rotation FBG manual operation*
- "RUN" and "STOP/RESET" buttons
- Setpoint control module

When the FBG setpoint control module is activated, the symbol flashes.

You limit the smallest speed with *P301 Minimum speed* and the largest speed with the n_{max} symbol.

After a fault, a reset can be performed using the "STOP/RESET" button via the terminal or the interface. After a reset, the "manual setpoint control module" operating mode will be active once again. The drive remains stopped.

The Stop display flashes to indicate that you have to re-enable the drive by pressing "RUN."

The *P760 Locking RUN/STOP keys* parameter does not have any effect in "manual setpoint control module" operating mode.

Removing the FBG11B keypad will trigger a stop response.

3.4.2 External setpoint specification

Set direction of rotation

You can specify the set direction of rotation:

- "CW/STOP" and "CCW/STOP" in *P101Control signal source = Terminals* or *P101 Control signal source = 3 wire-control*
- The polarity of the setpoint in the process data word in *P101 Control signal source = RS485 or SBus* **and** *P100 Setpoint source = RS485 or SBus*

Set speed

You can specify the set speed:

- Setpoint control module (if *P121 Addition FBG setpoint control module* is set to ON)
- *P100 Setpoint source*
  - Fixed setpoints
  - Fixed setpoints with analog input
  - Process data word from SBus or RS-485
  - Motor potentiometer

Direction of rotation enable with RS-485 or SBus

Unipolar setpoint sources:

Unipolar / Fixed setpoint
Motor potentiometer / Fixed setpoint
Fixed setpoint + AI1
Fixed setpoint * AI1
Frequency setpoint input / Fixed setpoint

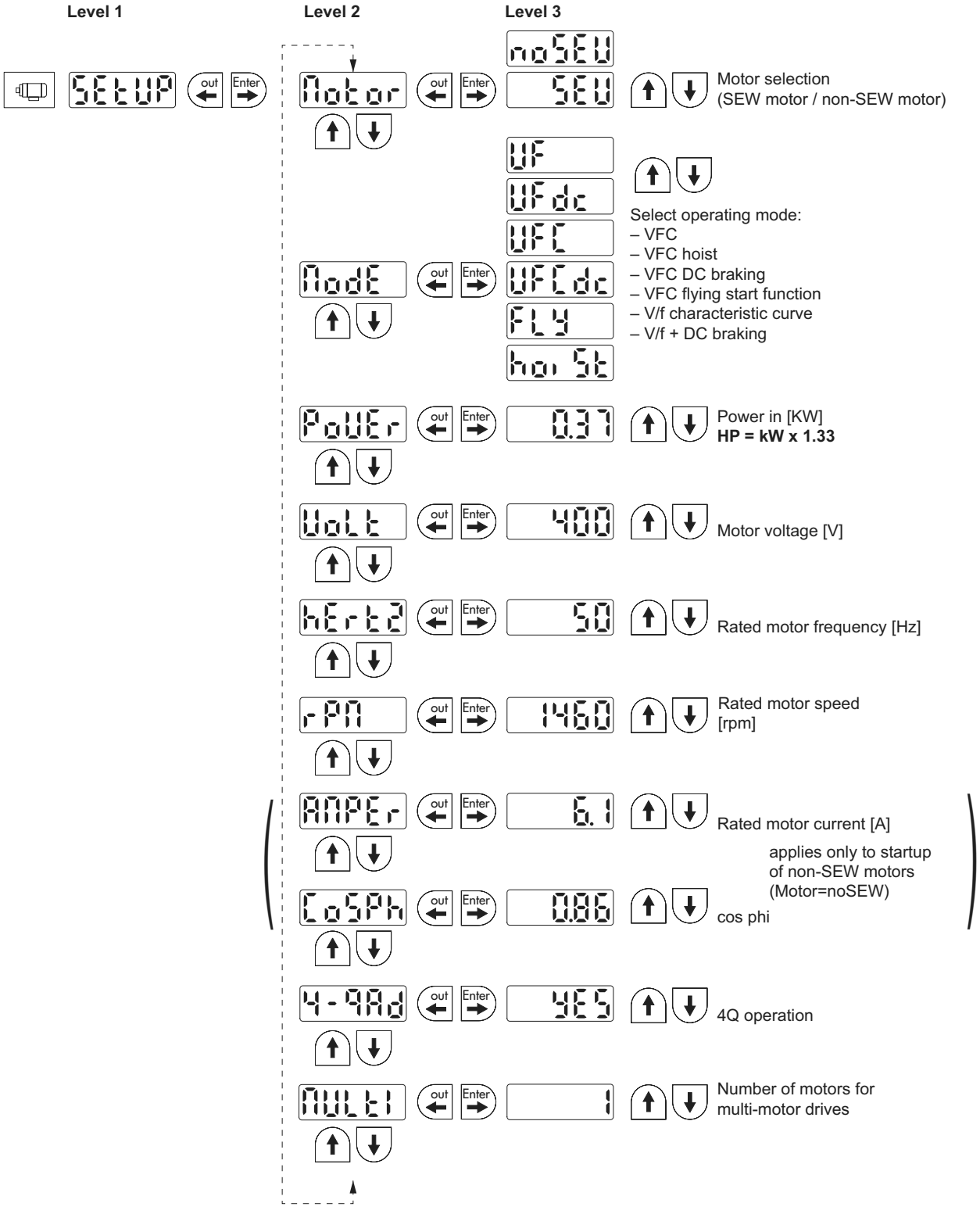
The direction of rotation is set with the CW or CCW terminals.

Bipolar setpoint sources:

Bipolar / Fixed setpoint
RS 485 / Fixed setpoint
SBus 1 / Fixed setpoint

The direction of rotation is determined by the setpoint. Enable with terminal CW or CCW.

3.5 Startup with the FBG11B keypad



3.5.1 Required data

The following data is required to ensure startup is successful:

- Motor type (SEW or non-SEW motor)
- Motor data
  - Rated voltage and rated frequency
  - Additionally for non-SEW motors: rated current, rated power, power factor cosj and rated speed
- Rated supply voltage

3.5.2 Activating startup

Requirements:

- Drive "no enable": Stop

If a smaller or a larger motor is connected (maximum difference one size), then you have to choose the value closest to the rated motor power.

The complete startup procedure is not complete until you have returned to the main menu level by pressing the OUT button.

You can then perform the startup only with motor parameter set 1.

	NOTE
	The SEW motor startup is designed for 4-pole motors. It may be useful to startup 2-pole or 6-pole SEW motors as non-SEW motors.

3.5.3 V/f

The default operating mode setting is V/f. Use this operating mode if you have no particular requirements and when a high maximum speed is required.

3.5.4 VFC

Startup the inverter in operating mode VFC or VFC & DC braking for the following requirements:

- High torque
- Continuous duty at low frequencies
- Accurate slip compensation
- More dynamic behavior

To do this, during startup you must select operating mode VFC or VFC & DC braking in point P-01.

3.5.5 Startup multi-motor drive

Multi-motor drives are mechanically connected to each other (e.g., chain drive with several motors). Observe the notes in the publication "Multi-Motor Drives".

Multi-motor drives are possible with installed identical SEW motors only.

- Set the multi parameter of the motor startup to the number of connected motors.

3.5.6 Startup of group drives

Group drives are mechanically decoupled from each other (e.g., different conveyor belts). In this operating mode, the inverter operates without slip compensation and with a constant V/f ratio.

You can operate a group of asynchronous motors on one inverter in V/f characteristic curve operating mode. Important:

- Select V/f operating mode
- Set the power of the largest motor
- Disable automatic adjustment P320/330
- Set boost P321/331 to zero
- Set IxR compensation P322/332 to zero
- Set slip compensation P324/334 to zero
- Set current limitation P303/313 to 1.5 times the total current of all motors
- Set I_{Rated}-UL monitoring P345/346 to the total current of the connected motors. Motor protection must be implemented individually.

In this operating mode, the inverter operates without slip compensation and with a constant V/f ratio.

	NOTE
	The parameter settings apply to all connected motors.

3.6 Parameter list

All parameters that can also be displayed and edited using the keypad are indicated as follows in the "FBG" (keypad) column:

- Selection in long menu
- Selection in short or long menu
- Selection using symbols on keypad
- Selection within FGB motor startup

If a selection is offered, the factory setting is indicated in **bold**.

No.	FBG	Index dec.	Name	Range / Factory setting		Value after startup
				Display	MOVITOOLS® MotionStudio	
0__			**Display values** (read only)			
00_			**Process values**			
000		8318	Speed (signed)		[rpm]	
002		8319	Frequency (signed)		[Hz]	
004		8321	Output current (amount)		[% I_{Rated}]	
005		8322	Active current (signed)		[% I_{Rated}]	
008	Short	8325	DC link voltage		[V]	
009		8326	Output current		[A]	
01_			**Status displays**			
010		8310	Inverter status		[Text]	
011		8310	Operating status		[Text]	
012		8310	Fault status		[Text]	
013		8310	Current parameter set		Current parameter set	
014	Long	8327	Heat sink temperature		[°C]	
02_			**Analog setpoints**			
020	Long	8331	Analog input AI1		[V]	
021	Long	8332	Analog input AI2 (optional)		[V]	
03_			**Binary inputs**			
030		8844	Binary input DI00		**Fault reset**	
031		8335	Binary input DI01		CW / STOP (fixed assignment)	
032		8336	Binary input DI02		**CCW / STOP**	
033		8337	Binary input DI03		**Enable / stop**	
034		8338	Binary input DI04		**n11 / n21**	

No.	FBG	Index dec.	Name	Range / Factory setting		Value after startup
				Display	MOVITOOLS® MotionStudio	
035		8339	Binary input DI05		**n12 / n22**	
039	Long	8334	Binary inputs DI00 ... DI05		Binary display	
05_			**Binary outputs**			
051		8349	Binary output DO01		**/Fault**	
052		8349	Binary output DO02		**Brake released**	
053		8349	Binary output DO03		**Ready for operation**	
059	Long	8349	Binary outputs DO01 ... DO03		Binary display	
07_			**Unit data**			
070		8301	Unit type		[Text]	
071		8361	Rated output current		[A]	
076		8300	Firmware basic unit		[Part number and version]	
077		–	DBG firmware		Only in DBG60B	
08_			**Fault memory**			
080 ... 084	Long	8366 ... 8370	Fault t-0 ... t-4	Fault code	Background information for previous faults.	
09_			**Bus diagnostics**			
094	Long	8455	PO1 setpoint		[hex]	
095	Long	8456	PO2 setpoint		[hex]	
096	Long	8457	PO3 setpoint		[hex]	
097		8458	PI1 actual value		[hex]	
098		8459	PI2 actual value		[hex]	
099		8460	PI3 actual value		[hex]	
1__			**Setpoints / Integrators** (on FBG only parameter set 1)			
10_			**Setpoint selection / Frequency input**			
100	Short	8461	Setpoint source	0 **1** 2 4 6 7 10 11 14	Bipolar / Fixed setpoint **Unipolar / Fixed setpoint** RS 485 / Fixed setpoint Motor potentiometer / Fixed setpoint Fixed setpoint + AI1 Fixed setpoint * AI1 SBus 1 / Fixed setpoint Frequency setpoint input / Fixed setpoint Bipolar AI2 / Fixed setpoint	
101	Short	8462	Control signal source	**0** 1 3 4	**Terminals** RS-485 SBus 1 3 wire control	
102	Long	8840	Frequency scaling	0.1 ... **10** ... 120.00 [kHz]		

No.	FBG	Index dec.	Name	Range / Factory setting		Value after startup
				Display	MOVITOOLS® MotionStudio	
103	Lon6	10247.15	FI1 reference	**0** 1	**n_{max}** n_{ref}	
104	Lon6	10247.10	Setpoint reference speed $n_{ref.}$	0 ... **3000** ... 6000 rpm		
105	Lon6	10416.1	Open circuit detection	0 2 4 **7**	No response Immediate stop / fault Rapid stop / fault **Rapid stop / warning**	
106	Lon6	10247.11	FI1 characteristic curve x1	**0** ... 100 %		
107	Lon6	10247.12	FI1 characteristic curve y1	–100 % ... **0** ... +100 %		
108	Lon6	10247.13	FI1 characteristic curve x2	0 ... **100 %**		
109	Lon6	10247.14	FI1 characteristic curve y2	–100 % ... 0 ... **+100 %**		
11_			**Analog input 1 (0 ... 10 V)**			
110	Short	8463	AI1 scaling	0.1 ... **1** ... 10		
112	Short	8465	AI1 Operating mode	**1** 5 6 7 8 9	**10 V, reference maximum speed** 0 – 20 mA, reference maximum speed 4 – 20 mA, reference maximum speed 0 – 10 V, n-reference 0 – 20 mA, n-reference 4 – 20 mA, n-reference	
113	Lon6	8466	AI1 voltage offset	–10 V ... **0** ... +10 V		
116	Short	10247.6	AI1 characteristic curve x1	**0** ... 100 %		
117	Short	10247.7	AI1 characteristic curve y1	–100 % ... **0** ... +100 %		
118	Short	10247.8	AI1 characteristic curve x2	0 ... **100 %**		
119	Short	10247.9	AI1 characteristic curve y2	–100 % ... 0 ... **+100 %**		
12_			**Analog input AI2 / FBG setpoint control module (option)**			
120	Lon6	8469	AI2 operating mode	**0** 1 2	**No function** 0 ... ±10 V + Setpoint 0 ... 10 V current limitation	
121	Short	8811	Addition FBG setpoint control module	**0** 1 2	**Off** On On (without fixed setpoint)	
122	Short	8799	Direction of rotation FBG manual operation	**0** 1 2	**Unipolar CW** Unipolar CCW Bipolar CW and CCW	
126	Lon6	10247.1	AI2 characteristic curve x1	–100 % ... **0** ... +100 % (–10 V ... **0** ... +10 V)		
127	Lon6	10247.2	AI2 characteristic curve y1	–100 % ... **0** ... +100 % ($-n_{max}$ ... **0** ... $+n_{max}$ / **0** ... I_{max})		

No.	FBG	Index dec.	Name	Range / Factory setting		Value after startup
				Display	MOVITOOLS® MotionStudio	
128	Lonb	10247.3	AI2 characteristic curve x2	–100 % ... 0 ... **+100 %** (–10 V ... 0 ... +**10 V)**		
129	Lonb	10247.4	AI2 characteristic curve y2	–100 % ... 0 ... **+100 %** ($-n_{max}$ ... 0 ... +$\mathbf{n_{max}}$ / 0 ... $\mathbf{I_{max}}$)		
13_ / 14_			**Speed ramps 1 / 2**			
130 / 140		8807 / 9264	Ramp t11 / t21up	0.1 ... **2** ... 2000 [s]		
131 / 141		8808 / 9265	Ramp t11 / t21 down	0.1 ... **2** ... 2000 [s]		
136 / 146	Lonb	8476 / 8484	Stop ramp t13 / t23	0.1 ... **2** ... 20 [s]		
15_			**Motor potentiometer function**			
150	Lonb	8809	Ramp t3 up = down	0.2 ... **20** ... 50 [s]		
152	Lonb	8488	Save last setpoint	**Off** On	**Off** On	
16_ / 17_			**Fixed setpoints**			
160 / 170		8489 / 8492	Internal setpoint n11 / n21	0 ... **150** ... 5000 [rpm]		
161 / 171		8490 / 8493	Internal setpoint n12 / n22	0 ... **750** ... 5000 [rpm]		
162 / 172		8491 / 8494	Internal setpoint n13 / n23	0 ... **1500** ... 5000 [rpm]		
163 / 173		8814 / 8817	n11/n21 PI controller	0 ... **3** ... 100 [%]		
164 / 174		8815 / 8818	n12/n22 PI controller	0 ... **15** ... 100 [%]		
165 / 175		8816 / 8819	n13/n23 PI controller	0 ... **30** ... 100 [%]		
2__			**Controller parameters**			
25_			**PI controller**			
250	Lonb	8800	PI controller	**0** 1 2	**Off** Normal Inverted	
251	Lonb	8801	P-gain	0 ... **1** ... 64		
252	Lonb	8802	I-component	0 ... **1** ... 2000 [s]		
253	Lonb	8465	PI actual value mode	**1** 5 6 7 8 9	**10 V, reference maximum speed** 0 – 20 mA, reference maximum speed 4 – 20 mA, reference maximum speed 0 – 10 V, n-reference 0 – 20 mA, n-reference 4 – 20 mA, n-reference	
254	Lonb	8463	PI actual value scaling	0.1 ... **1.0** ... 10.0		
255	Lonb	8812	PI actual value offset	**0.0** ... 100.0 [%]		

No.	FBG	Index dec.	Name	Range / Factory setting		Value after startup
				Display	MOVITOOLS® MotionStudio	
3__			**Motor parameters** (on FBG only parameter set 1)			
30_ / 31_			**Limits 1 / 2**			
300 / 310	Lonb	8515 / 8519	Start/stop speed 1 / 2	0 ... **150** [rpm]		
301 / 311	Lonb	8516 / 8520	Minimum speed 1 / 2	0 ... **15** ... 5500 [rpm]		
302 / 312		8517 / 8521	Maximum speed 1 / 2	0 ... **1500** ... 5500 [rpm]		
303 / 313	Lonb	8518 / 8522	Current limit 1 / 2	0 ... **150** [% I_{Rated}]		
32_ / 33_			**Motor adjustment 1 / 2**			
320 / 330	Lonb	8523 / 8528	Automatic adjustment 1 / 2	Off **On**	Off **On**	
321 / 331	Lonb	8524 / 8529	Boost 1 / 2	0 ... 100 [%]		
322 / 332	Lonb	8525 / 8530	IxR Compensation 1 / 2	0 ... 100 [%]		
323 / 333	Lonb	8526 / 8531	Pre-magnetization time 1 / 2	0 ... 2 [s]		
324 / 334	Lonb	8527 / 8532	Slip compensation 1 / 2	0 ... 500 [rpm]		
325	Lonb	8834	No-load damping	**Off** On	**Off** On	
34_			**I_{Rated} UL monitoring**			
345 / 346	Lonb	9114 / 9115	I_{Rated} UL monitoring 1 / 2	0.1 ... 500 A		
4__			**Reference messages**			
40_			**Speed reference message**			
400	Lonb	8539	Speed reference value	0 ... **750** ... 5000 [rpm]		
401	Lonb	8540	Hysteresis	0 ... **100** ... +500 [rpm]		
402	Lonb	8541	Delay time	0 ... **1** ... 9 [s]		
403	Lonb	8542	Message = "1" if:	**0** 1	**$n < n_{ref}$** $n > n_{ref}$	
45_			**PI controller reference message**			
450	Lonb	8813	PI actual value reference			
451	Lonb	8796	Message = "1" if:	0 **1**	PI Actual value < PI ref **PI Actual value > PI ref**	
5__			**Monitoring functions** (on FBG only parameter set 1)			
50_			**Speed monitoring 1 / 2**			
500 / 502	Lonb	8557 / 8559	Speed monitoring 1 / 2	**0** 3	**Off** Motor / regenerative	
501 / 503	Lonb	8558 / 8560	Delay time 1 / 2	0 ... **1** ... 10 [s]		

No.	FBG	Index dec.	Name	Range / Factory setting		Value after startup
				Display	MOVITOOLS® MotionStudio	
6__			**Terminal assignment**			
60_			**Binary inputs**			
601	Short	8336	Binary input DI02 assignment		0: No function 1: Enable / stop (factory setting DI03) 2: CW / stop 3: CCW / stop (factory settingDI02) 4: n11 / n21 (factory setting DI04) 5: n12 / n22 (factory setting DI05) n13 = n11 + n12 6: Fixed setpoint switchover 7: Parameter set switchover 9: Motor potentiometer up 10: Motor potentiometer down 11: /External fault 12: Fault reset (factory setting DI00) 20: Setpoint acceptance active 26: TF message (only with DI05) 30: Controller inhibit	
602	Short	8337	Binary input DI03 assignment			
603	Short	8338	Binary input DI04 assignment			
604	Short	8339	Binary input DI05 assignment			
608	Short	8844	Binary input DI00 assignment			
62_			**Binary outputs**			
620	Short	8350	Binary output DO01 assignment		0: No function 1: /Fault (factory setting DO01) 2: Ready (factory setting DO03) 3: Output stage on 4: Rotating field on 5: Brake released (factory setting DO02 / not with DO03) 7: Parameter set 9: Speed reference message 11: Comparison message setpoint-actual value 21: IPOS output 22: /IPOS fault 23: PI controller actual value reference 24: Ex-e current limit active (in preparation)	
621	Short	8351	Binary output DO02 assignment			
622	Short	8916	Binary output DO03 assignment			
64_			**Analog outputs AO1** (optional)			
640	Long	8568	Analog output AO1	**0** 1 2 3 4 5 6 7 11 12	**No function** Ramp generator input Setpoint speed Actual speed Actual frequency Output current Active current Unit utilization Actual speed (signed) Actual frequency (signed)	
641	Long	10248.5	AO1 reference	**0** 1 2	**3000 rpm , 100 Hz, 150%** n_{max} $n_{set\ ref.}$	
642	Long	8570	AO1 Operating mode	**0** 2 3 4	**No function** 0 ... 20 mA 4 ... 20 mA 0 ... 10 V	
646	Long	10246.1	AO1 Characteristic curve x1	–100 % ... **0** ... +100 %		
647	Long	10246.2	AO1 Characteristic curve y1	**0** ... 100 %		

No.	FBG	Index dec.	Name	Range / Factory setting		Value after startup
				Display	**MOVITOOLS® MotionStudio**	
648	Long	10246.3	AO1 Characteristic curve x2	–100 % ... 0 ... **+100 %**		
649	Long	10246.4	AO1 Characteristic curve y2	0 ... **100 %**		
7__			**Control functions** (on FBG only parameter set 1)			
70_			**Operating modes 1 / 2**			
700 / 701		8574 / 8575	Operating mode 1 / 2	0 2 3 4 **21** 22	VFC VFC & hoist VFC & DC braking VFC & flying start function **V/f characteristic curve** V/f & DC braking	
71_			**Standstill current 1 / 2**			
710 / 711	Long	8576 / 8577	Standstill current 1 / 2	**0** ... 50% I_{Mot}		
72_			**Setpoint stop function 1 / 2**			
720 / 723	Long	8578 / 8581	Setpoint stop function 1 / 2	**Off** On	**Off** On	
721 / 724	Long	8579 / 8582	Stop setpoint 1 / 2	0 ... **30** ... 500 [rpm]		
722 / 725	Long	8580 / 8583	Start offset 1 / 2	0 ... **30** ... 500 [rpm]		
73_			**Brake function 1 / 2**			
731 / 734	Long	8749 / 8750	Brake release time 1 / 2	**0** ... 2 [s]		
732 / 735	Long	8585 / 8587	Brake application time 1 / 2	0 ... 2 [s]		
74_			**Speed skip function**			
740 / 742	Long	8588 / 8590	Skip window center 1 / 2	0 ... **1500** ... 5000 rpm		
741 / 743	Long	8589 / 8591	Skip width 1 / 2	**0** ... 300 rpm		
76_			**Manual operation**			
760	Long	8798	Lock RUN / STOP buttons	**Off** On	**Off** On	
77_			**Energy-saving function**			
770	Long	8925	Energy-saving function	**Off** On	**Off** On	
8__			**Unit functions** (on FBG only parameter set 1)			
80_			**Setup**			
800	Short	–	Short menu	Long **Short**		
802	Long	8594	Factory setting	**no** Std ALL 4	**0 / No** 1 / Standard 2 / Delivery status 4 / NEMA delivery condition	
803	Long	8595	Parameter lock	**Off** On	**Off** On	
804		8596	Reset statistical data		**No action** Fault memory	

No.	FBG	Index dec.	Name	Range / Factory setting		Value after startup
				Display	MOVITOOLS® MotionStudio	
806		–	Copy DBG → MOVITRAC® B		Yes **No**	
807		–	Copy MOVI-TRAC® B → DBG		Yes **No**	
81_			**Serial communication**			
810	LonB	8597	RS-485 address	**0** ... 99		
811		8598	RS-485 group address	**100** ... 199		
812		8599	RS-485 timeout delay	**0** ... 650 [s]		
82_			**Brake operation 1 / 2**			
820 / 821		8607 / 8608	4-quadrant operation 1 / 2	Off **On**	Off **On**	
83_			**Fault responses**			
830	LonB	8609	Response terminal "external fault"	2 **4** **7**	Immediate stop / fault **Rapid stop / fault** (830) **Rapid stop / warning** (833 / 836)	
833	LonB	8612	Response timeout RS-485			
836	LonB	8615	Response timeout SBus			
84_			**Reset behavior**			
840		8617	Manual reset		Yes **No**	
86_			**Modulation 1 / 2**			
860 / 861	LonB	8620 / 8621	PWM frequency 1 / 2	**4** 8 12 16	**4 kHz** 8 kHz 12 kHz 16 kHz	
862 / 863	LonB	8751 / 8752	PWM fix 1 / 2	On **Off**	On **Off**	
87_			**Process data parameter setting**			
870	LonB	8304	Setpoint description PO1		**No function** (factory setting P872) **Set speed** (factory setting P871) Max. speed Ramp **Control word 1** (factory setting P870) Control word 2 Set speed [%] IPOS PO data PI controller setpoint [%]	
871	LonB	8305	Setpoint description PO2			
872	LonB	8306	Setpoint description PO3			
873	LonB	8307	Actual value description PI1		No function **Actual speed** (factory setting P874) **Output current** (factory setting P875) Active current **Status word 1** (factory setting P873) Actual speed [%] IPOS PI-DATA PI controller actual value [%]	
874	LonB	8308	Actual value description PI2			
875	LonB	8309	Actual value description PI3			
876	LonB	8622	PO data enable		No **Yes**	

No.	FBG	Index dec.	Name	Range / Factory setting		Value after startup
				Display	**MOVITOOLS® MotionStudio**	
88_			**Serial communication SBus**			
880	LonB	8937	SBus protocol	**0 / MoviLink** 1 / CANopen		
881	Short	8600	SBus address	**0** ... 63		
882		8601	SBus group address	**0** ... 63		
883	LonB	8602	SBus timeout delay	**0** ... 650 [s]		
884	LonB	8603	SBus baud rate	125 250 **500** 1000	125 kBaud 250 kBaud **500 kBaud** 1 mBaud	
886	LonB	8989	CANopen address	1 ... **2** ... 127		

4 Operation

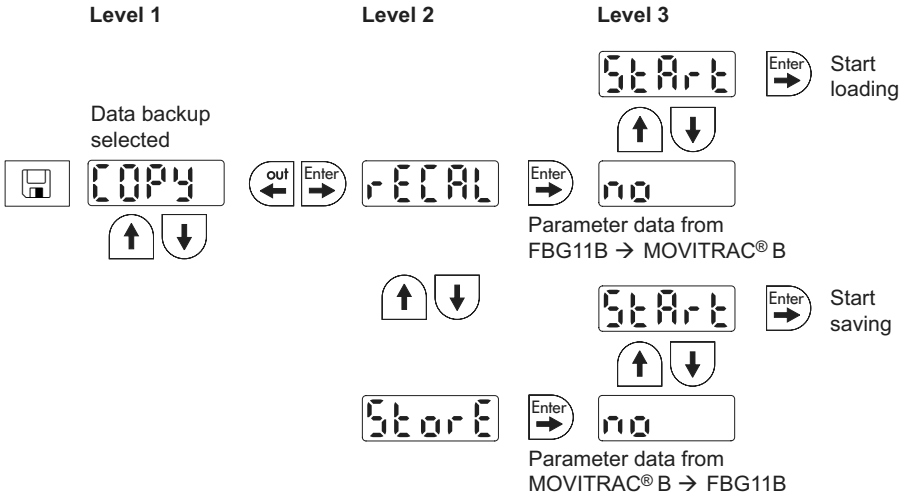
4.1 Data backup

4.1.1 Data backup with FBG11B

Use the FBG11B keypad to download parameter data from the MOVITRAC® B to the keypad or copy from the keypad to the MOVITRAC® B.

After copying the parameters, check for accuracy.

Data backup with FBG11B



After copying data, the MOVITRAC® B is inhibited. The inhibited status is indicated by a flashing STOP in the status display. The status LED also slowly flashes yellow.

You can lift the inhibit by taking one of the following measures:

- Pressing the RUN button on the FBG11B
- Switching the mains off, waiting 10 seconds, and switching the mains back on

4.1.2 Data backup with DBG60B

Copy the parameter set from MOVITRAC® B to the DBG60B keypad. You have the following options:

- In the context menu, select the "COPY TO DBG" menu item. Confirm your selection by selecting OK. The parameter set is copied from MOVITRAC® B to the DBG60B.
- In the context menu, select the "PARAMETER MODE" menu item. Select parameter P807 "MCB → DBG". The parameter set is copied from MOVITRAC® B to the DBG60B.

4.1.3 Data backup with UBP11A

Copy the parameter set from MOVITRAC® B to the UBP11A parameter module. In addition, press the button at the lower end of the module. You need a pointed object to do so.

4.2 Return codes (r-19 ... r-38)

Return codes MOVITRAC® B:

No.	Description	Meaning
19	Parameter lock activated	Parameters cannot be changed
20	Factory setting in progress	Parameters cannot be changed
23	Option card missing.	The required option card for the function is missing.
27	Option card missing.	The required option card for the function is missing.
28	Controller inhibit required	Controller inhibit required
29	Invalid value for parameter.	• Invalid value for parameter. • FGB manual operation selection invalid as PC is in active manual operation.
32	Enable	You cannot perform this function in ENABLED status
34	Fault in sequence	• Fault when saving in FBG11B. • Startup did not occur with FBG. Perform FGB startup with MotionStudio or select a new motor.
38	FBG11B incorrect data set	Stored data set does not match the unit

4.3 FBG keypad

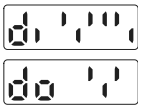
If the status is "Drive enabled", the display will show the actual speed calculated.

State	Display
Drive "Controller inhibit"	oFF
Drive "No enable"	StoP
Drive "Enable"	8888 (Actual speed)
Factory setting	SEt (Set)
Standstill current	dc
24 V operation	24U
Timeout active	t

4.3.1 Status of the binary inputs / binary outputs

Parameter P039 (binary inputs) and parameter P059 (binary outputs) are adopted in the parameter menu as display parameters. The status is displayed as binary. Every binary input or output has two segments vertically on top of one another of the 7 segment display assigned to it. The upper segment lights up when the binary input or output is set, and the lower segment lights up when the binary input or output is not set. The two 7 segment displays on the right are displayed if P039 (di = binary inputs) or P059 (do = binary outputs) are output.

Examples:



Above: Input status: DI00 = 1 / DI01 = 0 / DI02 = 1 / DI03 = 1 / DI04 = 1 / DI05 = 0

Bottom: Output status: DO01 = 1 / DO02 = 0 / DO03 = 1

5 Service

5.1 Fault memory

The inverter saves the fault message in fault memory P080. The inverter only saves a new fault after the fault message has been acknowledged. The local operating panel shows the most recent fault. Whenever double faults occur, the value stored in P080 does not correspond to the value displayed on the operating panel. This is an example of what happens with F-07 DC link overvoltage followed by F34 Ramp timeout.

The inverter stores the following information when a malfunction occurs:

- Fault occurred
- Status of the binary inputs / binary outputs
- Operating status of the inverter
- Inverter status
- Heat sink temperature
- Speed
- Output current
- Active current
- Unit utilization
- DC link voltage

5.2 Reset keypad

A fault message can be acknowledged by:

- Manual reset on the keypad (STOP/RESET button).

The "STOP/RESET" button has priority over a terminal enable or an enable via the interface.

The STOP/RESET button can be used for performing a reset after a fault has occurred with a programmed error response. A reset inhibits the drive. To enable the drive, press the RUN button.

6 Technical Data

6.1 FBG11B keypad front option

The FBG11B front option can be used for simple diagnostics and startup.

Part number	1820 635 2
Functions	• Displaying process values and status • Fault memory queries and fault reset • Displaying and setting parameters • Back up and transfer of parameter sets • Easy-to-use startup menu for SEW and non-SEW motors • Manual control of MOVITRAC® B
Features	• 5-digit, 7-segment display / 6 buttons / 8 icons / setpoint control module • Selection of short or long menu • Can be plugged onto the inverter (during operation) • Enclosure IP20 (EN 60529)

7 Index

How we're driving the world

With people who think fast and develop the future with you.

With a worldwide service network that is always close at hand.

With drives and controls that automatically improve your productivity.

With comprehensive knowledge in virtually every branch of industry today.

With uncompromising quality that reduces the cost and complexity of daily operations.

SEW-EURODRIVE
Driving the world

With a global presence that offers responsive and reliable solutions. Anywhere.

With innovative technology that solves tomorrow's problems today.

With online information and software updates, via the Internet, available around the clock.

SEW-EURODRIVE GmbH & Co KG
P.O. Box 3023 · D-76642 Bruchsal / Germany
Phone +49 7251 75-0 · Fax +49 7251 75-1970
sew@sew-eurodrive.com

→ **www.sew-eurodrive.com**