











## MOVITRAC<sup>®</sup> B Keypad

GA3A000

Edition 01/2006 11363916 / EN

# Operating Instructions





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## 1 Important notes

## 1.1 Explanation of pictograms

Always follow the safety and warning notes in this publication.



#### Hazard

Indicates an imminently hazardous situation, which, if not avoided, will result in death or serious injury.



#### Warning

Indicates an imminently hazardous situation caused by the product, which, if not avoided, will result in death or serious injury. You will also find this signal to indicate the potential for damage to property.



#### Caution

Indicates a potentially hazardous situation which, if not avoided, may result in minor injury or damage to products.



#### Note

Indicates a reference to useful information, e.g. on startup.



#### **Documentation reference**

Indicates a reference to a document, such as operating instructions, catalog, data sheet.



You must adhere to the operating instructions to ensure:

- · Trouble-free operation
- · Fulfillment of any rights to claim under limited warranty

Read the operating instructions before you start working with the unit.

The operating instructions contain important information on servicing. Therefore, keep the operating instructions close to the unit.





#### 1.2 Designated use

The frequency inverters from SEW-EURODRIVE operate AC motors. These motors must be suitable for operation with frequency inverters. Do not connect any other loads to the frequency inverters.

Frequency inverters are devices for stationary installation in control cabinets. Adhere to all instructions referring to the technical data and the permissible conditions where the unit is operated.

Do not start up the unit (take it into operation in the designated fashion) until:

- The machine complies with the EMC Directive 89/336/EEC
- The conformity of the end product has been determined to be in accordance with the Machinery Directive 89/392/EEC (with further reference to EN 60204)

#### 1.2.1 Operational environment

The following applications are prohibited unless measures are expressly taken to make them possible:

- · Operation in potentially explosive areas
- Operation in environments with harmful substances to EN 60721, such as oils, acids, gases, vapors, dusts, radiation
- Operation with mechanical vibration and shock loads in excess of the regulations stipulated in EN 61800-5-1
- If the inverter performs safety functions that have to guarantee the protection of machinery and people

## 1.3 Waste disposal

Please follow the current regulations: Dispose in accordance with the material structure and the regulations in force.





## 2 Safety notes

## 2.1 Installation and startup

- Never install damaged products or take them into operation. Submit a complaint to the shipping company immediately in the event of damage.
- Installation, startup and service work on the unit to be performed by trained personnel only. Such personnel must have undergone accident prevention training and adhere to the applicable regulations (such as EN 60204, DIN-VDE 0100/0113/0160).
- Follow the specific instructions during installation and startup of the motor and the brake!
- Preventive measures and protection devices must correspond to the regulations in force (e.g. EN 60204 or EN 61800-5-1).

The unit must be grounded as a protective measure.

Overcurrent protection devices are a necessary protection device.

- The unit meets all requirements for reliable isolation of power and electronics connections in accordance with EN 61800-5-1. All connected circuits must also satisfy the requirements for reliable isolation so as to guarantee reliable isolation.
- Take suitable measures to ensure that the connected motor does not start up automatically when the inverter is switched on (for example by disconnecting the electronics terminal block).

#### 2.2 Operation and service

- Disconnect the unit from power supply before you remove the protective cover. Dangerous voltages may still be present for up to ten minutes after disconnection from the power supply source.
- 4
- The unit has IP00 enclosure with the protective cover removed. Dangerous voltages
  are present at all subassemblies except for the control electronics. The unit must be
  closed during operation.
- When the unit switch is in the ON position, dangerous voltages are present at the
  output terminals as well as any connected cables and motor terminals. Dangerous
  voltages may even occur if the unit is inhibited and the motor is at standstill.
- The unit may not necessarily be free from any voltages even if the displays are no longer illuminated.



- Safety functions of the unit or mechanical blocking may result in a motor standstill.
   Removing the cause of this problem or performing a reset can result in the drive restarting on its own. If, for safety reasons, this is not permitted for the driven machine, disconnect the unit from the mains before correcting the fault.
- · Switch the frequency inverter output with inhibited output stage only.
- For 230V AC units: The interval between two mains activations must be longer than two minutes.





## 3 Startup

## 3.1 Optional keypad

#### 3.1.1 Preliminary work and resources for MOVITRAC® B with keypad

- Check the installation (Sec. Installation).
- · 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.



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

#### 3.1.2 Functions of the operating panel

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





Use UP/DOWN to select symbols and change the values.





ENTER/OUT to activate and deactivate the symbols or parameter menus



Press "RUN" to start the drive.



"STOP/RESET" is used for resetting errors 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.



Switching the power supply system off and on re-enables the inverter!

The STOP/RESET key can be used for performing a reset after an error has occurred with a programmed error response. The drive is then inhibited and must be enabled using the RUN key.



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



#### 3.2 Basic operation of the keypad

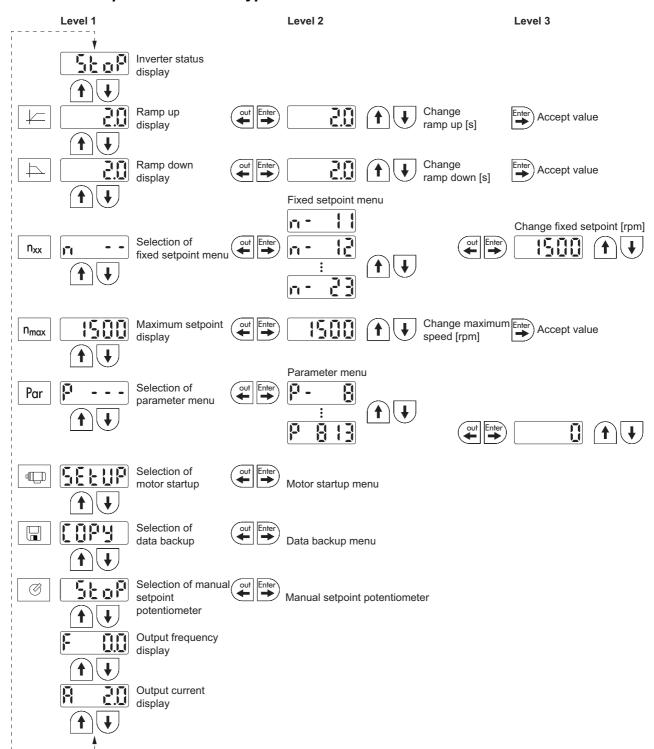


Fig. 1: Basic operation of the FBG11 keypad

#### Startup

#### Manual setpoint generator and external setpoint selection

#### 3.2.1 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

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

#### 3.2.2 Status displays

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

- Drive "Controller inhibit": OFF
- Drive "No enable": StoP
- Drive "enabled": 8888 (Actual speed)
- Factory settings are being restored: SEt
- Current at standstill: dc
- 24V operation: 24U

#### 3.2.3 Error 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 Servicing section). This situation will not occur during active startup.

#### 3.2.4 Warnings

You may not alter any parameter in any operating mode. If you try to do so, r-19 ... r-32 appears on the display. The display shows a code depending on the action, e.g. r-28 (controller inhibit required). You will find a list of warnings in the section Operation and service.

#### 3.3 Manual setpoint generator and external setpoint selection

FBG setpoint generator of the operating panel (local manual operation): LED flashes

#### **External setpoint selection**

Control via

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



## S N

### Startup

#### Manual setpoint generator and external setpoint selection

#### 3.3.1 Manual setpoint generator

The only relevant parameters in "manual setpoint generator" operating mode are:

- P122 FBG manual operation
- "RUN" and "STOP/RESET" buttons
- Setpoint generator

The LEDs and the symbol are flashing with active manual setpoint generator.

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

After an error, a reset can be performed using the "STOP/RESET" button via the terminal or the interface. After a reset, the "manual setpoint generator" 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 generator" operating mode.

Removing the FBG11B keypad will trigger a stop response.

#### 3.3.2 External setpoint selection

Set direction of rotation

You can specify the set direction of rotation:

- "CW/STOP" and "CCW/STOP" in P101 Control 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 set the speed:

- The setpoint generator (if P121 Addition setpoint generator 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:

UNIPOL./FIXED SETP MOTOR POTENTIOMETER FIX.SETPT+AI1 FIX.SETPT\*AI1 FREQUENCY INPUT

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

Bipolar setpoint sources:

BIPOL./FIXED SETP RS485 SBUS

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



#### 3.4 Startup with optional keypad

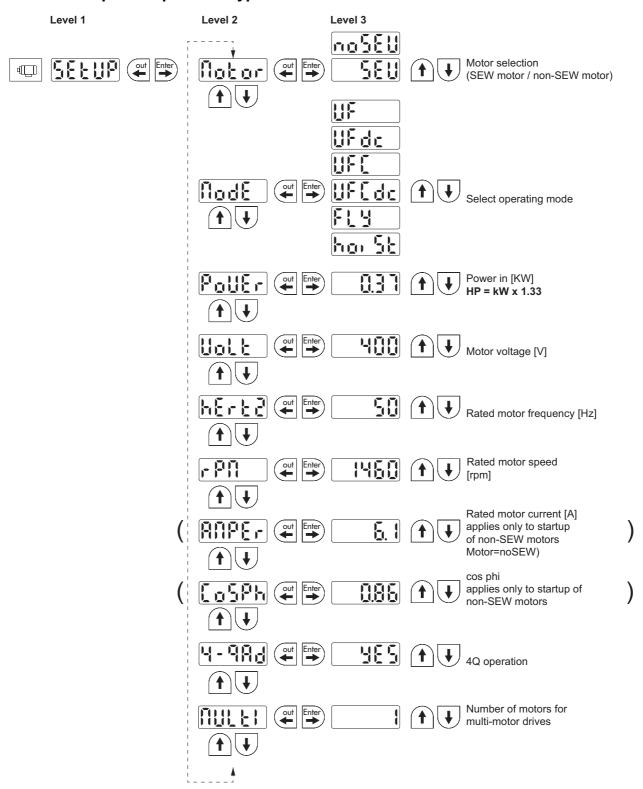


Fig. 2: Startup with the FBG keypad



#### 3.4.1 Activating startup

Prerequisites:

• 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 key.

3.4.2 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.

3.4.3 VFC

Startup the inverter in VFC or VFC + DC brake operating mode 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 brake in point P-01.

#### 3.4.4 Startup multi-motor drive

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.

#### 3.4.5 Startup of group drives

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

- · Select V/f operating mode
- · Set the power of the largest motor
- Disable automatic adjustment P320/P330
- Set Boost P321/P331 to zero
- · Set IxR compensation P322/P332 to zero
- Set slip compensation P324/P334 to zero
- Set current limit P303/P313 to 1.5 times the total current of all motors

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



The parameter settings apply to all connected motors.





### 3.5 Parameter list

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

- L: Long menu
- S: Short menu
- P: Symbol on keypad

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

| No. | BG | Index | Name                         | Range / | factory setting                  | Value after |
|-----|----|-------|------------------------------|---------|----------------------------------|-------------|
|     |    | dec.  |                              | Display | MOVITOOLS® MotionStudio          | startup     |
| 0   |    |       | Display values (read o       | nly)    |                                  |             |
| 00_ |    |       | Process values               |         |                                  |             |
| 000 |    | 8318  | Speed (signed)               |         | [rpm]                            |             |
| 002 |    | 8319  | Frequency (signed)           |         | [Hz]                             |             |
| 004 |    | 8321  | Output current (amount)      |         | [% I <sub>N</sub> ]              |             |
| 005 |    | 8322  | Active current (signed)      |         | [% I <sub>N</sub> ]              |             |
| 800 | L  | 8325  | DC link voltage              |         | [V]                              |             |
| 009 |    | 8310  | Output current               |         | [A]                              |             |
| 01_ |    |       | Status displays              | 1       |                                  |             |
| 010 |    | 8310  | Inverter status              |         | [Text]                           |             |
| 011 |    | 8310  | Operating status             |         | [Text]                           |             |
| 012 |    | 8310  | Error status                 |         | [Text]                           |             |
| 014 | L  | 8327  | Heat sink temperature        |         | [°C]                             |             |
| 02_ |    |       | Analog setpoint              | II.     |                                  | 1           |
| 020 |    | 8331  | Analog input Al1             |         | [V]                              |             |
| 03_ |    |       | Binary inputs                | II.     |                                  | 1           |
| 030 |    |       | Binary input DI00            |         | Fault reset (factory setting)    |             |
| 031 |    | 8335  | Binary input DI01            |         | CW/STOP (fixed assignment)       |             |
| 032 |    | 8336  | Binary input DI02            |         | CCW/STOP (factory setting)       |             |
| 033 |    | 8337  | Binary input DI03            |         | ENABLE/STOP (factory setting)    |             |
| 034 |    | 8338  | Binary input DI04            |         | n11/n21 (factory setting)        |             |
| 035 |    | 8339  | Binary input DI05            |         | n12/n22 (factory setting)        |             |
| 039 |    | 8334  | Binary inputs DI00<br>DI05   |         | Binary display                   |             |
| 05_ |    |       | Binary outputs               |         |                                  |             |
| 051 |    | 8350  | Binary output DO01           |         | /FAULT (factory setting)         |             |
| 052 |    | 8351  | Binary output DO02           |         | BRAKE RELEASED (factory setting) |             |
| 053 |    | 8916  | Binary output DO03           |         | READY FOR OPERATION              |             |
| 059 |    | 8349  | Binary outputs DO01,<br>DO02 |         | 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]        |             |



| No.       | BG | Index          | Name                        | Range / f                  | actory setting                                                                                  | Value after |
|-----------|----|----------------|-----------------------------|----------------------------|-------------------------------------------------------------------------------------------------|-------------|
|           |    | dec.           |                             | Display                    | MOVITOOLS® MotionStudio                                                                         | startup     |
| 08_       |    |                | Error memory                |                            |                                                                                                 | ,           |
| 080       | L  |                | Error t-0                   | Error code                 | Background information for previous errors.                                                     |             |
| 09_       |    |                | Bus Diagnostics             |                            |                                                                                                 | ,           |
| 094       | L  | 8455           | PO1 setpoint                |                            | [hex]                                                                                           |             |
| 095       | L  | 8456           | PO2 setpoint                |                            | [hex]                                                                                           |             |
| 096       | L  | 8457           | PO3 setpoint                |                            | [hex]                                                                                           |             |
| 097       |    | 8458           | PI1 actual value            |                            | [hex]                                                                                           |             |
| 098       |    | 8459           | PI2 actual value            |                            | [hex]                                                                                           |             |
| 099       |    | 8460           | PI3 actual value            |                            | [hex]                                                                                           |             |
| 1         |    |                | Setpoints/Ramp gener        | ators (on I                | BG only parameter set 1)                                                                        |             |
| 10_       |    |                | Setpoint selection          |                            |                                                                                                 |             |
| 100       | S  | 8461           | Setpoint source             | 0<br>1<br>2<br>4<br>6<br>7 | BIPOL./FIX.SETPT: UNIPOL./FIX.SETPT RS-485 MOTOR POTENTIOMETER FIX.SETPT. + AI1 FIX.SETPT * AI1 |             |
| 101       | S  | 8462           | Control signal source       | 0<br>1<br>3<br>4           | TERMINALS RS-485 SBus 3-WIRE CONTROL                                                            |             |
| 102       | L  | 8840           | Frequency scaling           | Setting ra                 | inge 0.1 <b>10</b> 120.00 [kHz]                                                                 |             |
| 11_       |    |                | Analog input 1 (+10 V)      |                            |                                                                                                 |             |
| 110       | L  | 8463           | Al1 scaling                 | 0.1 <b>1</b>               | . 10                                                                                            |             |
| 112       | S  | 8465           | Al1 operating mode          | 0<br><b>1</b><br>5<br>6    | 0-10V / 3000 rpm<br><b>N-MAX (0 – 10 V)</b><br>N-MAX (0 – 20 mA)<br>N-MAX (4 – 20 mA)           |             |
| 113       | L  | 8466           | Setpoint voltage offset     | -10 V                      | <b>0</b> +10 V                                                                                  |             |
| 12_       |    |                | Setpoint generator of       | the FBG k                  | eypad                                                                                           |             |
| 121       | S  | 8811           | Addition setpoint generator | <b>0</b><br>1<br>2         | OFF<br>ON<br>ON EXCEPT FSP                                                                      |             |
| 122       | S  | 8799           | FBG manual operation        | <b>0</b><br>1<br>2         | UNIPOLAR CW<br>UNIPOLAR CCW<br>BIPOLAR CW + CCW                                                 |             |
| 13_ / 14_ |    |                | Speed ramps 1 / 2           | T                          |                                                                                                 |             |
| 130 / 140 | Р  | 8807 /<br>9264 | Ramp t11 / t21up            | 0.1 <b>2</b>               | . 2000 [s]                                                                                      |             |
| 131 / 141 | Р  | 8808 /<br>9265 | Ramp t11 / t21 down         | 0.1 <b>2</b>               | . 2000 [s]                                                                                      |             |
| 136 / 146 | S  | 8476 /<br>8484 | Stop ramp t13/t23           | 0.1 <b>2</b>               | . 20 [s]                                                                                        |             |
| 15_       |    |                | Motor potentiometer for     | unction                    |                                                                                                 | •           |
| 150       | L  | 8809           | Ramp t3 up = down           | 0.2 <b>20</b>              | 50 [s]                                                                                          |             |
| 152       | L  | 8488           | Save last setpoint          | Off<br>On                  | OFF<br>ON                                                                                       |             |





| No.       | BG | Index          | Name                                                      | Range / f                      | actory setting                                | Value after |
|-----------|----|----------------|-----------------------------------------------------------|--------------------------------|-----------------------------------------------|-------------|
|           |    | dec.           |                                                           | Display                        | MOVITOOLS® MotionStudio                       | startup     |
| 16_ / 17_ |    |                | Fixed setpoints                                           |                                |                                               | ,           |
| 160 / 170 | Р  | 8489 /<br>8492 | Internal setpoint<br>n11 / n21<br>PI controller activated | 0 <b>150</b> .<br>0 <b>3</b> 1 | 5000 [rpm]                                    |             |
| 161 / 171 | Р  | 8490 /         | Internal setpoint n12 /                                   |                                | 5000 [rpm]                                    |             |
|           | ·  | 8493           | n22<br>PI controller activated                            | 0 <b>15</b>                    |                                               |             |
| 162 / 172 | Р  | 8491 /<br>8494 | Internal setpoint<br>n13 / n23<br>PI controller activated | 0 <b>1500</b><br>0 <b>30</b>   | 5000 [rpm]<br>100 [%]                         |             |
| 2         |    |                | Controller parameters                                     |                                |                                               |             |
| 25_       |    |                | PI controller                                             |                                |                                               |             |
| 250       | L  | 8800           | PI controller                                             | <b>0</b><br>1<br>2             | OFF<br>ON STANDARD<br>ON INVERTED             |             |
| 251       | L  | 8801           | P-gain                                                    | 0 1 6                          | 64                                            |             |
| 252       | L  | 8802           | I-component                                               | 0 1 2                          | 2000 [s]                                      |             |
| 253       | L  | 8465           | PI actual value mode                                      | 0<br><b>1</b><br>5<br>6        | 0 10 V<br><b>0 10 V</b><br>0 20 mA<br>4 20 mA |             |
| 254       | L  | 8463           | PI actual value scaling                                   | 0.1 <b>1.0</b>                 | 10.0                                          |             |
| 255       | L  | 8812           | PI actual value offset                                    | <b>0.0</b> 100                 | 0.0 [%]                                       |             |
| 3         |    |                | Motor parameters (on                                      | FBG only p                     | parameter set 1)                              |             |
| 30_ / 31_ |    |                | Limits 1 / 2                                              |                                |                                               |             |
| 300 / 310 | L  | 8515 /<br>8519 | Start/stop speed 1 / 2                                    | 0 <b>150</b> [                 | rpm]                                          |             |
| 301 / 311 | L  | 8516 /<br>8520 | Minimum speed 1 / 2                                       | 0 <b>15</b>                    | 5500 [rpm]                                    |             |
| 302 / 312 | Р  | 8517 /<br>8521 | Maximum speed 1 / 2                                       | 0 <b>1500</b>                  | 5500 [rpm]                                    |             |
| 303 / 313 | L  | 8518 /<br>8522 | Current limit 1 / 2                                       | 0 <b>150</b> [                 | % I <sub>N</sub> ]                            |             |
| 32_ / 33_ |    |                | Motor adjustment 1 / 2                                    |                                | ,                                             |             |
| 320 / 330 | L  | 8523 /<br>8528 | Automatic adjustment 1/2                                  | Off<br>On                      | OFF<br>ON                                     |             |
| 321 / 331 | L  | 8524 /<br>8529 | Boost 1 / 2                                               | 0 100 [                        | %]                                            |             |
| 322 / 332 | L  | 8525 /<br>8530 | IxR compensation 1 / 2                                    | 0 100 [                        | %]                                            |             |
| 323 / 333 | L  | 8526 /<br>8531 | Pre-magnetization time 1 / 2                              | 0 2 [s]                        |                                               |             |
| 324 / 334 | L  | 8527 /<br>8532 | Slip compensation 1 / 2                                   | 0 500 [                        |                                               |             |
| 325       | L  | 8834           | No-load vibration damping                                 | <b>Off</b><br>On               | OFF<br>ON                                     |             |
| 345 / 346 | L  | 9114 /<br>9115 | I <sub>N</sub> -U <sub>L</sub> monitoring 1 / 2           | 0.1 500                        | ) A                                           |             |





| No.       | BG | Index          | Name                      | Range / f      | actory setting                                                                                                                                                                                                                         | Value after |
|-----------|----|----------------|---------------------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
|           |    | dec.           |                           | Display        | MOVITOOLS® MotionStudio                                                                                                                                                                                                                | startup     |
| 4         |    |                | Reference signals         |                |                                                                                                                                                                                                                                        |             |
| 40_       |    |                | Speed reference signa     | ıl             |                                                                                                                                                                                                                                        |             |
| 400       | L  | 8539           | Speed reference value     | 0 <b>750</b> . | 5000 [rpm]                                                                                                                                                                                                                             |             |
| 401       | L  | 8540           | Hysteresis                | 0 <b>100</b> . | +500 [rpm]                                                                                                                                                                                                                             |             |
| 402       | L  | 8541           | Delay time                | 0 1 9          | 9 [s]                                                                                                                                                                                                                                  |             |
| 403       | L  | 8542           | Signal = "1" if:          | <b>0</b> 1     | n < n <sub>ref</sub><br>n > n <sub>ref</sub>                                                                                                                                                                                           |             |
| 45_       |    |                | PI Controller reference   | signal         |                                                                                                                                                                                                                                        |             |
| 450       | L  | 8813           | PI actual value reference |                |                                                                                                                                                                                                                                        |             |
| 451       | L  | 8796           | Signal = "1" if:          | 0<br><b>1</b>  | PI actual value < PI reference PI actual value > PI reference                                                                                                                                                                          |             |
| 5         |    |                | Monitoring functions (    | on FBG on      | nly parameter set 1)                                                                                                                                                                                                                   |             |
| 50_       |    |                | Speed monitoring 1 / 2    | 2              |                                                                                                                                                                                                                                        |             |
| 500 / 502 | L  | 8557 /<br>8559 | Speed monitoring 1 / 2    | <b>0</b> 3     | OFF<br>ON                                                                                                                                                                                                                              |             |
| 501 / 503 | L  | 8558 /<br>8560 | Delay time 1 / 2          | 0 1 1          | 10 [s]                                                                                                                                                                                                                                 |             |
| 6         |    |                | Terminal assignment       |                |                                                                                                                                                                                                                                        |             |
| 60_       |    |                | Binary inputs             |                |                                                                                                                                                                                                                                        |             |
| 601       | S  | 8336           | Binary input DI02         |                | 0: NO FUNCTION                                                                                                                                                                                                                         |             |
| 602       | S  | 8337           | Binary input DI03         |                | 1: ENABLE/STOP (factory setting DI03) 2: CW/STOP                                                                                                                                                                                       |             |
| 603       | S  | 8338           | Binary input DI04         |                | 3: CCW/STOP (factory setting DI02)                                                                                                                                                                                                     |             |
| 604       | S  | 8339           | Binary input DI05         |                | 4: n11/n21 (factory setting DI04)<br>5: n12/n22 (factory setting DI05)                                                                                                                                                                 |             |
| 608       | S  | 8844           | Binary input DI00         |                | n13 = n11 + n12 6: FIXED SETP. SELECT 7: CHANGING PARAMETER SETS 9: MOTORPOT. UP 10: MOTORPOT. DOWN 11: /EXT. ERROR 12: ERROR RESET (factory setting DI00) 20: ACCEPT SETPOINT 26: TF RESPONSE (only with DI05) 30: CONTROLLER INHIBIT |             |
| 62_       |    |                | Binary outputs            |                |                                                                                                                                                                                                                                        |             |
| 620       | S  | 8350           | Binary output DO01        |                | 0: NO FUNCTION                                                                                                                                                                                                                         |             |
| 621       | S  | 8351           | Binary output DO02        |                | 1: /FAULT (factory setting DO01) 2: READY (factory setting DO03)                                                                                                                                                                       |             |
| 622       | S  | 8916           | Binary output DO03        |                | 3: OUTPUT STAGE ON 4: ROTATING FIELD ON 5: BRAKE RELEASED (factory setting DO02) 9: SPEED REFERENCE 11: SP/ACT.VAL.COMP. 23: PI ACTUAL VALUE REF.                                                                                      |             |





| No.       | BG | Index          | Name                              | Range / f                           | actory setting                                                                                         | Value after |
|-----------|----|----------------|-----------------------------------|-------------------------------------|--------------------------------------------------------------------------------------------------------|-------------|
|           |    | dec.           |                                   | Display                             | MOVITOOLS® MotionStudio                                                                                | startup     |
| 7         |    |                | Control functions (on             | FBG only p                          | arameter set 1)                                                                                        |             |
| 70_       |    |                | Operating mode 1 / 2              |                                     |                                                                                                        |             |
| 700 / 701 |    | 8574 /<br>8575 | Operating mode 1 / 2              | 0<br>2<br>3<br>4<br><b>21</b><br>22 | VFC 1 VFC & HOIST VFC 1 & DC BRAK. VFC & FLY.START V/f CHARACTERISTICS V/f CHARACTERISTIC & DC BRAKING |             |
| 71_       |    |                | Standstill current fund           | tion 1 / 2                          |                                                                                                        |             |
| 710 / 711 | L  | 8576 /<br>8577 | Standstill current function 1 / 2 | <b>0</b> 50%                        | I <sub>Mot</sub>                                                                                       |             |
| 72_       |    |                | Setpoint stop function            | 1/2                                 |                                                                                                        |             |
| 720 / 723 | L  | 8578 /<br>8581 | Setpoint stop function 1 / 2      | <b>Off</b><br>On                    | OFF<br>ON                                                                                              |             |
| 721 / 724 | L  | 8579 /<br>8582 | Stop setpoint 1 / 2               | 0 <b>30</b>                         | 500 [rpm]                                                                                              |             |
| 722 / 725 | L  | 8580 /<br>8583 | Start offset 1 / 2                | 0 <b>30</b>                         | 500 [rpm]                                                                                              |             |
| 73_       |    |                | Brake function 1 / 2              |                                     |                                                                                                        |             |
| 731 / 734 | L  | 8749 /<br>8750 | Brake release time 1 / 2          | <b>0</b> 2 [s]                      |                                                                                                        |             |
| 732 / 735 | L  | 8585 /<br>8587 | Brake application time 1 / 2      | 0 <b>0.2</b>                        | 0 <b>0.2</b> 2 [s]                                                                                     |             |
| 76_       |    |                | Manual operation                  |                                     |                                                                                                        |             |
| 760       | L  | 8798           | Lockout run/stop keys             | <b>Off</b><br>On                    | OFF<br>ON                                                                                              |             |
| 88        |    |                | Unit functions (on FBC            | only para                           | meter set 1)                                                                                           |             |
| 80_       |    |                | Setup                             |                                     |                                                                                                        |             |
| 800       | L  | -              | Short menu                        | long<br>short                       |                                                                                                        |             |
| 802       | L  | 8594           | Factory setting                   | Off<br>std<br>All                   | 0 / NO FACTORY SETTING<br>1 / BASIC INITIALIZATION<br>2 / DELIVERY STATUS                              |             |
| 803       | L  | 8595           | Parameter lock                    | Off<br>On                           | OFF<br>ON                                                                                              |             |
| 804       |    | 8596           | Reset statistics data             |                                     | NO<br>ERROR MEMORY                                                                                     |             |
| 81_       |    |                | Serial communication              |                                     |                                                                                                        |             |
| 810       | L  | 8597           | RS-485 address                    | <b>0</b> 99                         |                                                                                                        |             |
| 811       |    | 8598           | RS-485 group address              | <b>100</b> 19                       | 9                                                                                                      |             |
| 812       |    | 8599           | RS-485 Remote timeout             | <b>0</b> 650 [                      | s]                                                                                                     |             |
| 82_       |    |                | Brake operation 1 / 2             | •                                   |                                                                                                        | •           |
| 820 / 821 |    | 8607 /<br>8608 | 4-quadrant operation 1 / 2        | Off<br>On                           | OFF<br>ON                                                                                              |             |





| No.       | BG | Index          | Name                         | Range /                          | factory setting                                                                  | Value after |
|-----------|----|----------------|------------------------------|----------------------------------|----------------------------------------------------------------------------------|-------------|
|           |    | dec.           |                              | Display                          | MOVITOOLS® MotionStudio                                                          | startup     |
| 83_       |    |                | Error responses              | <u>'</u>                         |                                                                                  | <u>'</u>    |
| 830       | L  | 8609           | Response /EXT.<br>ERROR      | 2<br><b>4</b><br>7               | IMMEDIATE STOP/FAULT STOP/FAULT STOP/WARNING                                     |             |
| 84_       |    |                | Reset behavior               |                                  |                                                                                  |             |
| 840       |    | 8617           | Manual reset                 |                                  | YES<br>NO                                                                        |             |
| 86_       |    |                | Modulation 1 / 2             | 1                                |                                                                                  |             |
| 860 / 861 | L  | 8620 /<br>8621 | PWM frequency 1 / 2          | <b>4</b><br>8<br>12<br>16        | <b>4 kHz</b><br>8 kHz<br>12 kHz<br>16 kHz                                        |             |
| 862 / 863 | L  | 8751 /<br>8752 | PWM fix 1 / 2                | On<br><b>Off</b>                 | ON<br>OFF                                                                        |             |
| 87_       |    |                | Fieldbus parameter se        | etting                           |                                                                                  | 1           |
| 870       |    | 8304           | Setpoint description PO1     |                                  | NO FUNCTION (factory setting P872) SPEED (factory setting P871)                  |             |
| 871       |    | 8305           | Setpoint description PO2     |                                  | MAX. SPEED RAMP CONTROL WORD 1 (factory setting P870) SPEED [%] PI CTRL SETPOINT |             |
| 872       |    | 8306           | Setpoint description PO3     |                                  |                                                                                  |             |
| 873       |    | 8307           | Actual value description PI1 |                                  | NO FUNCTION SPEED (factory setting P874)                                         |             |
| 874       |    | 8308           | Actual value description PI2 |                                  | OUTPUT CURRENT (factory setting P875) ACTIVE CURRENT                             |             |
| 875       |    | 8309           | Actual value description PI3 |                                  | STATUS WORD 1 (factory setting P873) SPEED [%] IPOS PI-DATA PI CTRL [%]          |             |
| 876       |    | 8622           | PO data enable               |                                  | OFF<br>ON                                                                        |             |
| 88_       |    |                | Serial communication         | SBus                             | 1                                                                                | 1           |
| 881       | L  | 8600           | SBus address                 | <b>0</b> 63                      |                                                                                  |             |
| 882       |    | 8601           | SBus group address           | <b>0</b> 63                      |                                                                                  |             |
| 883       | L  | 8602           | SBus timeout delay           | <b>0</b> 650                     | [s]                                                                              |             |
| 884       | L  | 8603           | SBus baud rate               | 125<br>250<br><b>500</b><br>1000 | 125 kBaud<br>250 kbaud<br><b>500 kbaud</b><br>1000 kbaud                         |             |





## 4 Operation and service

#### 4.1 Device information

#### 4.1.1 Error memory

The inverter stores the error message in fault memory P080. The inverter does not save a new error until the error message has been acknowledged. The local operating panel shows the most recent error. Whenever double errors 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:

- · Error which has 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

#### 4.1.2 Reset

An error message can be acknowledged by:

Manual reset on the keypad (STOP/RESET key).

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

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

#### 4.1.3 Current limit

The operation LED will start flashing green when the current limit is reached.

#### 4.2 Data backup with FBG11B

Use the FBG11B keypad to download parameter data from the MOVITRAC $^{\circledR}$  B to the keypad or copy from the keypad to the MOVITRAC $^{\circledR}$  B.

Level 2

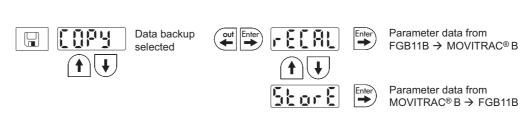
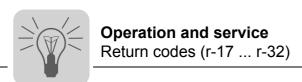


Fig. 3: Data backup with FBG11B

Level 1





## 4.3 Return codes (r-17 ... r-32)

| No. | Designation                        | Meaning                                                                  |
|-----|------------------------------------|--------------------------------------------------------------------------|
| 19  | Parameter lock activated           | Parameters cannot be changed                                             |
| 20  | Factory settings being reactivated | Parameters cannot be changed                                             |
| 28  | Controller inhibit required        | Controller inhibit required                                              |
| 29  | Invalid value for parameter.       | Setpoint generator selection invalid as PC is in active manual operation |
| 32  | Enable                             | You cannot perform this function in ENABLED status                       |
| 34  | Error in sequence                  | Error when saving in FGB, as startup does occur                          |
| 38  | FBG07B incorrect data set          | Stored data set does not match the unit                                  |

## 4.4 Status displays

### 4.4.1 Keypad

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

| Status                     | 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                 |



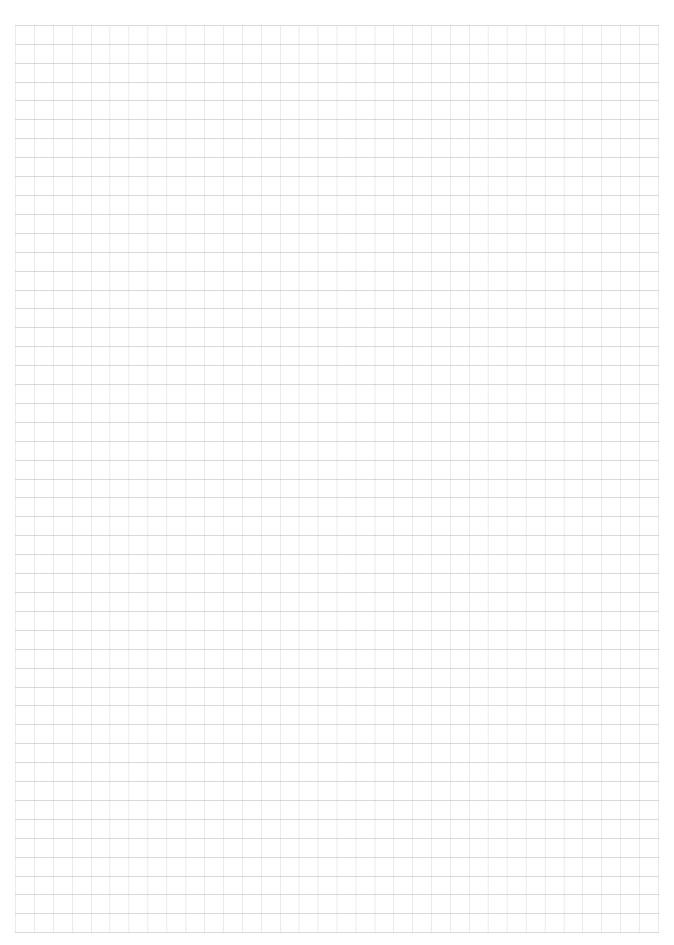


## Index

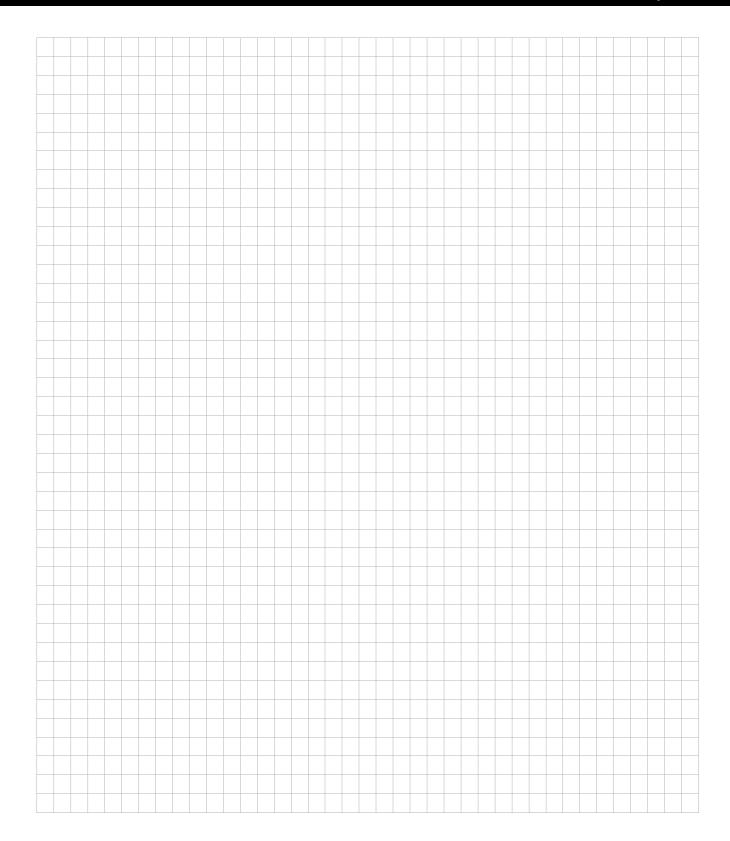
| Current limit                                                                                                                  | 19             |
|--------------------------------------------------------------------------------------------------------------------------------|----------------|
| D Data backup                                                                                                                  | 19             |
| E Enable direction of rotation                                                                                                 | 19<br>5        |
| K Keypad, basic operation                                                                                                      | 8              |
| M Manual setpoint generator                                                                                                    |                |
| O Operating mode                                                                                                               |                |
| P Parameter data, copy                                                                                                         |                |
| R Reset                                                                                                                        | 19             |
| Set direction of rotation Set speed Setpoint generator, external 9, Setpoint generator, manual 9, Startup with optional keypad | 10<br>10<br>10 |
| <b>V</b> V/f                                                                                                                   |                |













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