

Compact and versatile
MOVITRAC® B

Frequency inverter



Compact and versatile: MOVITRAC® B

„Unit modularity“ and „smaller dimensions“ are two of the most important criteria considered when selecting a frequency inverter for a specific application. The economic and compact solution from SEW-EURODRIVE: MOVITRAC® B – the latest generation frequency inverter. The versatile unit concept and comprehensive expansion options make for individual combinations of inverter functions for solutions matched to the requirements of the application.

MOVITRAC® B for improved efficiency: in component planning and system operation.

The reduced size of MOVITRAC® B frequency inverters makes for improved use of control cabinet space. Especially the reduced size makes a tremendous contribution to component planning. The operating concept of MOVITRAC® B is par-

ticularly favorable in terms of applications and costs. Here as well, the basic functionality is simply expanded by the relevant modules, for example the removable FBG11B keypad. This keypad lets users quickly and easily perform diagnostics, parameter setting, and data backup during ongoing plant operation.

Driving the world – with innovative drive solutions for all branches of industry and for every application. Products and systems from SEW-EURODRIVE for any application – worldwide. SEW-EURODRIVE products can be found in a variety of industries, e. g. automotive, building materials, food and beverage as well as metal-processing. The decision to use drive technology “made by SEW-EURODRIVE” stands for safety regarding functionality and investment.



MOVITRAC® B offers more flexibility and modularity for machine and system operation: Easy startup using plug-and-play is a matter of course for MOVITRAC® B frequency inverters.

The big advantage of MOVITRAC® B is its flexibility and modular expansion options for system operation. For example, the DOP11B-xx operator terminals complete the concept for a modern human machine interface, which facilitates handling in every application by means of texts and graphics.

The **standard version** of MOVITRAC® B already provides best possible matching of the inverter functionality to simple applications, such as materials handling applications. The combination of basic unit and keypad makes for user-

friendly parameter setting and diagnostics. Even the operation of several MOVITRAC® B units requires only one keypad. The MOVITOOLS® MotionStudio operating software offers expanded operation and comprehensive diagnostic options. Operation is even possible without keypad or communication module. This means the modular expansion concept significantly reduces the required accessories.

IPOS^{plus}®, the integrated positioning and sequence control program in the **technology version** of MOVITRAC® B is available for more demanding applications. This is where the advantages of the great number of combination options of drive electronics and drive technology from the modular system of SEW-EURODRIVE become apparent: The technology version of

MOVITRAC® B provides functions such as position control and position processing, which take load off the higher-level PLC. By using the EI7C built-in encoder in the combination of MOVITRAC® B and the modular DR motor system, users are offered a powerful package for implementing positioning operations.

And with a **MOVI-PLC®** controller, MOVITRAC® B provides **motion control functionality** close to the drive as additional feature. Available either as integrated control card or as compact controller: User-programmable motion control operations can be performed independent of the complexity of the required solution via IEC 61331 or function libraries, which means via already programmed processes.



Contents:

– Profitability, flexibility, and modularity	2
– "Application-specific" redefined	4
– Standard version with basic functions	6
– Technology version for more demanding applications with IPOS ^{plus} ®	8
– Optional with motion control functionality with MOVI-PLC®	10
– Functionalities, options, and accessories	12
– Technical data	14







“Application-specific“ redefined

MOVITRAC® B frequency inverters are perfectly integrated into the modular concept of SEW-EURODRIVE and are suited for many applications with the most varied requirements. In combination with other components from SEW-EURODRIVE, individual and user-friendly functions perfectly matching the specific application are implemented quickly and easily.

No matter if you want to use the analog option for displaying the speed value on a display panel in an isolated application or if you want to enable a synchronized process by means of a

bus system within a drive group, the modular concept of MOVITRAC® B frequency inverters makes it possible to quickly find the perfect option for any application.

Overview of more details

- | | | |
|--|--|--|
| <ul style="list-style-type: none"> – Temperature range: up to + 60 °C – Operating status LED – Motor control: <ul style="list-style-type: none"> - U/f characteristics control for simple startup - VFC (Voltage Flux Control) vector control for field-oriented control (no encoder) – Control signals: 6 programmable digital inputs, 2 programmable digital outputs, 1 programmable relay output, 1 analog setpoint input with DC 10 V voltage supply, 24 V voltage supply | <ul style="list-style-type: none"> – Control electronics: <ul style="list-style-type: none"> - 24 V supply for internal or optional external backup mode - 10 V supply for external potentiometer – Removable keypad FBG11B for diagnostics, parameter setting and data backup – Degree of protection: IP20, IP10 as of 37 kW rated power – Motor cable length: min. 100 m shielded; min. 200 m unshielded – IT network capability – Separable signal terminals – Separable power terminals (up to 4 kW) | <ul style="list-style-type: none"> – Startup: plug-and-play – Cold-plate technology: Heat dissipation interface to external heat sink or machine components – Certification:     – Unit functions: Hoist function, flying start function, motor potentiometer, setpoint holding function, 2-motor parameter sets, PI controller – Integrated safety function “Safe stop” – Integrated EMC filter (up to 11 kW) |
|--|--|--|

Versions

Standard version



Typical application examples for the standard version can be found, for example, in materials handling technology, such as handling machines, bottle conveyors, or transport systems.

MOVITRAC® B redefines the “application-specific frequency inverter” by its extensive power range of 0.25 to 75 kW, mains voltages of 1x 230 V, 3x 230 V and 3x 400/500 V, an overload capacity up to 125 % I_N in continuous operation (briefly up to 150 % I_N), and a breakaway torque of up to a maximum of 200 % M_N in an impressively compact design. Combining the basic unit with a keypad ensures user-friendly configuration and diagnostics of the application.

Special parameter settings for each control mode, for example, ensure straightforward and safe process sequences for fan and hoist applications.

Technology version



Using the technology version of MOVITRAC® B with IPOS^{plus}®, the integrated sequence and position control system, means the drive can be flexibly adjusted to the application at any time. Functions, such as position control and position processing or task and interrupt management, are implemented quickly and easily – often by significantly taking load off the higher-level PLC.

The built-in encoder EI7C from the new modular DR motor system used together with the technology version of MOVITRAC® B offers ideal prerequisites for gaining the entire added value provided by a solution package from SEW-EURODRIVE. This built-in encoder not only does away with the additional length usually added by mounting an encoder but considerably contributes to saving time and effort in implementing and starting up positioning tasks due to IPOS^{plus}® and the proven bus positioning application module.

Motion control functionality



For programming more complex processes, the basic functionality of MOVITRAC® B is simply expanded by a MOVI-PLC® controller. All relevant drive parameters are available in the controller – up-to-date and at any time. Standardized programming languages to IEC 61131 (LD, FBD, IL, ST, SFC) along with configurable function blocks certified to PLCopen make for easy programming and motion in plug & play mode.

The standard version takes care of conveying, lifting, and lowering

Implementing individual, application-specific machine and system concepts with small but powerful frequency inverters was the objective of the MOVITRAC® B series developers. This is why the MOVITRAC® B frequency inverters fit even the smallest control cabinet, they can be integrated quickly and simply in existing and new automation concepts via standard interfaces, and they offer a large variety of communication options.

The modular unit concept reduces accessories and options to the components necessary for the application. The multi-tier operating concept offers two operating units for the different requirements of simple or complex machine and system concepts:

- Basic plug-in keypad FBG11B with 5-digit LED display for changing and displaying the parameters, diagnostic LED, setpoint selection and parameter copy functions, as well as a short parameter menu for a quick and transparent overview.
 - Or the plain text keypad DBG60B with LCD graphic display, a comfortable 21 keys for quicker data entry, 15 selectable languages (language key) and a permanent status display.
- The operator panels of the DOP11B series are also available for customer-specific visualization. If users additionally use the MOVITOOLS® MotionStudio operation and diagnostic software from SEW-EURODRIVE, they will not only be able to easily and quickly set parameters but also benefit from convenient and extensive diagnostic capabilities or process visualizations.

Simple, plug-in keypad FBG11B

1. 5-digit LED display
2. Display of current speed and output frequency
3. Diagnostic LED



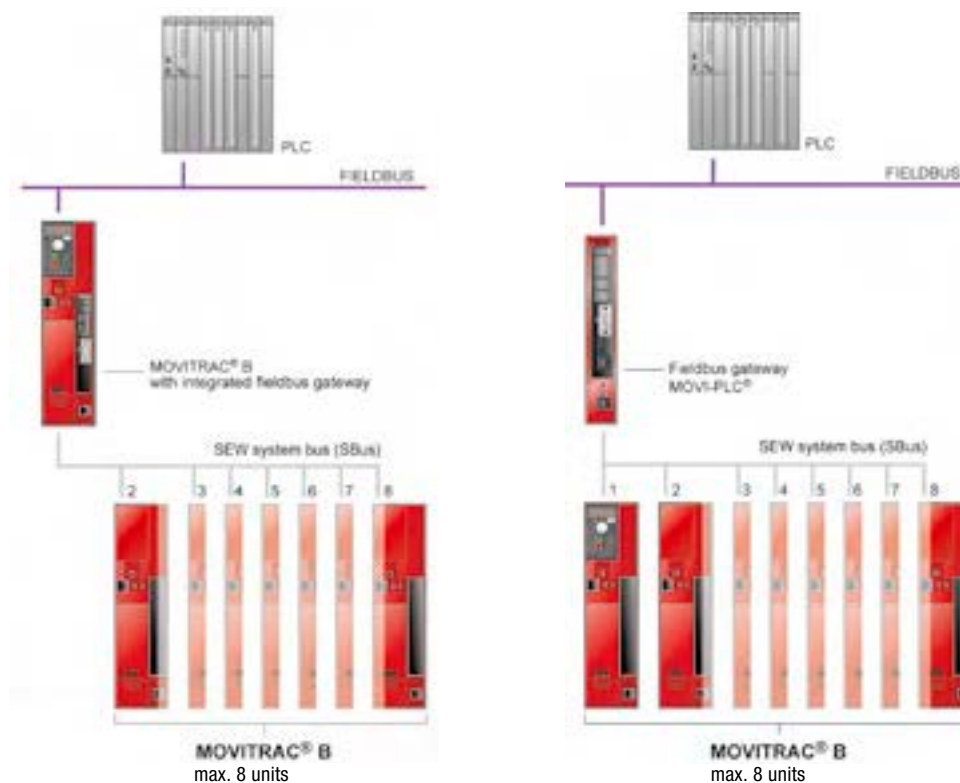
4. Pictograms for
 - Acceleration ramp
 - Deceleration ramp
 - Fixed setpoints
 - Maximum speed
 - Parameter menu
 - Motor startup
 - Data transfer
 - Manual speed control module

Communication via fieldbus gateways

The modularity and functionality of MOVITRAC® B frequency inverters also becomes apparent when looking at the fieldbus gateways. Gateways are available for the standard bus systems for integration into existing or new automation concepts. They can control one to eight frequency inverters. MOVITRAC® B exchanges all process data with the control unit via the selected fieldbus. When using the SEW system bus SBus for an application, MOVITRAC® B can communi-

cate also with other drive electronics components, such as MOVIDRIVE® inverters.

The fieldbus gateways can be mounted either inside the MOVITRAC® B housing or in a separate housing close to the drive. Both variants meet enclosure IP20 requirements.



Overview of fieldbus gateways:

- PROFIBUS UOH/DFP21B
- PROFIBUS DP-V1 UOH/DFS11B with PROFIsafe interface
- DeviceNet UOH/DFD11B
- ETHERNET:
 - Modbus TCP, EtherNet/IP, UOH/DFE33B
 - PROFINET IO (RT) UOH/DFE32B
 - PROFINET IO (RT) with PROFIsafe UOH/DFS21B (in preparation)
- EtherCAT UOH/DFE24B
- INTERBUS UF111A

Intelligence integrated in the technology version solves more demanding applications

The technology version with IPOS^{plus}® integrated positioning and sequence control makes MOVITRAC® B a frequency inverter that can be adjusted quickly and user-friendly to any requirement of the application.



MOVITRAC® in technology version offers additional functions:

- Positioning control
- Position processing
- Task management
- Interrupt management
- IPOS parameters
- IPOS variables
- Application modules

You can create your own control programs with IPOS^{plus}® in assembler or high language. Furthermore, there is the option to access already created control programs, the so-called application modules. In this way MOVITRAC® B takes on, for example, the "bus positioning" function.

Advantages of the technology version with IPOS^{plus}®:

- Flexible adjustment to the requirements of the application
- Saving potential for the hardware
- Utilization of the advantages of new mechanical components, such as the EI7C built-in encoder from the modular DR motor system.
- Convenient and extensive control options take load off the higher-level PLC.
- The user program runs regardless of encoder feedback and the selected control mode.
- Simple positioning tasks can be solved economically by means of an incremental encoder.
- Several application programs/tasks can be executed at the same time and independently of one another.
- Status and monitoring functions
- The following can be modified during operation:
 - Target position
 - Travel speed
 - Positioning ramp

Motion control and integrated control function with MOVI-PLC®

Complex applications that require the coordination of several drives can be implemented easily with the MOVI-PLC® control card. The motion control functionality can be conveniently programmed using preconfigured function modules. Transferring the control intelligence to the frequency inverter means an automation module is created that combines the functionality in a meaningful manner.



A possible application in the beverage industry is, for example, the noiseless and gapless isolation of bottles using conveyor belts.

Several drives and frequency inverters form a function module that is controlled using a MOVI-PLC® control card. The card is either integrated in the inverter or can be used separately as compact controller. MOVI-PLC® evaluates the signals of the sensors, calculates the optimum

speed for the conveyor belts, and sends speed setpoints to all inverters via the fast system bus. A connection to a higher-level controller can be implemented via fieldbus interface.

MOVITRAC® B and MOVI-PLC®: Flexible and user-friendly programming implemented in such a way that it perfectly suits the application.

MOVI-PLC® basic DHP11B-T..

- In unit designs T0, T1, T2

Technical data:

- DP-V1 PROFIBUS slave
- 2 CAN interfaces, 1 electrically isolated
- RS-485 interface
- 7 LEDs for PLC, PROFIBUS and CAN status display
- 8 digital I/Os, 5 of which are interrupt-capable
- 512 kB program memory
- 128 kB data memory
- 16 kB retain variables
- 8 kB system variables (retain)
- Up to 4000 IL lines/msec
- Free-wheeling task
- Cyclic tasks: 1 ms, 5 ms, 10 ms, 100 ms

MOVI-PLC® advanced DHx41B

- DHE41B with ETHERNET-Schnittstelle
- DHF41B with additional PROFIBUS and DeviceNet* interface

Technical data:

- 2x ETHERNET interfaces (10/100 BaseT)
- 2 CAN interfaces, 1 electrically isolated
- 2x RS-485 interfaces
- USB
- PROFIBUS slave DP-V1 (DHP41B)
- 8 digital I/O
- status display for PLC and fieldbus
- 8 MB program memory
- 4 MB data memory
- 32 kB retain variables
- 8 kB system variables (retain)
- Up to 4000 IL lines/msec
- free-wheeling task, 5 cyclic tasks (1 ms ... 10000 ms)
- PC-readable memory card for firmware and application program

* product announcement





Basic functions

<p>Basic unit</p>	<ul style="list-style-type: none"> - Bookshelf module: Smaller dimensions than its predecessor MC07; its width has been reduced - Separable terminals – for fast and simple installation (power terminals to 4 kW, signal terminals) - Separable mounting panels for optimum installation of cable shielding - Shield plate for shielded cables - Protection and monitoring functions: <ul style="list-style-type: none"> - Extensive diagnostic capability – status/diagnostic display - Motor monitoring - Integrated EMC filter (up to 11 kW): <ul style="list-style-type: none"> 1-phase limit class C2/C1 3-phase limit class C1 (according to EN 55011 and EN 50014; meets EN 61800-3)
<p>Operating concept</p>	<ul style="list-style-type: none"> - Optional: Plug-in basic keypad FBG11B or plain text keypad DBG60B for diagnostics, parameter setting, and data backup - Operating status LED - DOP11B Drive Operator Panels - MOVITOOLS® MotionStudio operating and diagnostics software: parameter setting, diagnostics, optimization, visualization and data backup - Straightforward, user-friendly parameter-setting process - Startup: plug-and-play
<p>FSC11B communication</p>	<ul style="list-style-type: none"> - RS-485 user interface as service and diagnostics interface - SBus enables communication with other SEW-EURODRIVE units - Compatible with the DOP operator terminals for process visualization

Options and Accessories

Braking resistor	Optional braking resistor can be mounted on unit
Options	<ul style="list-style-type: none"> – Interface adapter: USB11A / UWS11A / UWS21B – Keypad: FBG11B / DBG60B – Standard communication module FSC11B – Analog module FIO11B – Speed control module MBG11A – Parameter module UPB11A <p>Fieldbus gateways:</p> <ul style="list-style-type: none"> – PROFIBUS UOH/DFP21B – PROFIBUS DP-V1 UOH/DFS11B with PROFIsafe interface – DeviceNet UOH/DFD11B – ETHERNET: <ul style="list-style-type: none"> - Modbus TCP, EtherNet/IP, UOH/DFE33B - PROFINET IO (RT) UOH/DFE32B - PROFINET IO (RT) with PROFIsafe UOH/DFS21B (in preparation) – EtherCAT UOH/DFE24B – INTERBUS UF11A
Motion- und Logic-Control	<p>Optional: MOVI-PLC® basic DHP11B as integrated control card or as compact controller in the UOH housing, or MOVI-PLC® advanced DHx41B in the Uxx housing</p> <ul style="list-style-type: none"> – Motion and PLC functionality close to the drive – Control of up to 12 axes – Freely programmable motion control via IEC 61331 and function library – Integrated fieldbus interface (PROFIBUS) – Group control of several MOVITRAC® B
Safety technology	<p>Integrated safety function “Safe stop” ST0 to IEC 61800-5-2, PL d to EN 13849, EN 954-1 (cat. 3)</p> <ul style="list-style-type: none"> – for units from 5.5 ... 75.0 kW / 3x400 V as standard – for units from 0.25 ... 4.0 kW / 3x400 V optional
Accessories	<ul style="list-style-type: none"> – Braking resistors (some can be submounted) – FHS support rail mounting <p>EMC accessories:</p> <ul style="list-style-type: none"> – Line chokes – Line filters – Flat ferrites ULF11A – EMC module FKExx – Output chokes – Output filters

Supply voltage V_{AC} : 1 x 200/240 ± 10 %

Mains frequency Hz: 50 ... 60 ± 5 %

MOVITRAC® B Typ	Recommended motor power [kW]	Output current [A]	Size	Dimensions in mm W x H x D
MC07B 0003-2B1-4-00	0.25	1.7	0XS	55 x 185 x 165
MC07B 0004-2B1-4-00	0.37	2.5		
MC07B 0005-2B1-4-00	0.55	3.3	0S	80 x 185 x 165
MC07B 0008-2B1-4-00	0.75	4.2		
MC07B 0011-2B1-4-00	1.1	5.7	0L	80 x 274 x 165
MC07B 0015-2B1-4-00	1.5	7.3		
MC07B 0022-2B1-4-00	2.2	8.6		

Supply voltage V_{AC} : 3 x 200/240 ± 10 %

Mains frequency Hz: 50 ... 60 ± 5 %

MOVITRAC® B Typ	Recommended motor power [kW]	Output current [A]	Size	Dimensions in mm W x H x D
MC07B 0003-2A3-4-00	0.25	1.7	0XS	55 x 185 x 165
MC07B 0004-2A3-4-00	0.37	2.5		
MC07B 0005-2A3-4-00	0.55	3.3	0S	80 x 185 x 165
MC07B 0008-2A3-4-00	0.75	4.2		
MC07B 0011-2A3-4-00	1.1	5.7	0L	80 x 274 x 165
MC07B 0015-2A3-4-00	1.5	7.3		
MC07B 0022-2A3-4-00	2.2	8.6		
MC07B 0037-2A3-4-00	3.7	14.5		
MC07B 0055-2A3-4-00	5.5	22.0	2	130 x 335 x 229
MC07B 0075-2A3-4-00	7.5	29.0		
MC07B 0110-203-4-00	11.0	42.0	3	200 x 465 x 251
MC07B 0150-203-4-00	15.0	54.0		
MC07B 0220-203-4-00	22.0	80.0	4	280 x 522 x 250
MC07B 0300-203-4-00	30.0	95.0		

Supply voltage V_{AC} : 3 x 400/500 \pm 10 %

Mains frequency Hz: 50 ... 60 \pm 5 %

MOVITRAC® B Typ	Recommended motor power [kW]	Output current [A]	Size	Dimensions in mm W x H x D
MC07B 0003-5A3-4-00	0.25	1.0	0XS	55 x 185 x 165
MC07B 0004-5A3-4-00	0.37	1.6		
MC07B 0005-5A3-4-x0	0.55	2.0	0S	80 x 185 x 165
MC07B 0008-5A3-4-x0	0.75	2.4		
MC07B 0011-5A3-4-x0	1.1	3.1		
MC07B 0015-5A3-4-x0	1.5	4.0		
MC07B 0022-5A3-4-x0	2.2	5.5	0L	80 x 274 x 165
MC07B 0030-5A3-4-x0	3.0	7.0		
MC07B 0040-5A3-4-x0	4.0	9.5		
MC07B 0055-5A3-4-00	5.5	12.5	2S	105 x 335 x 238
MC07B 0075-5A3-4-00	7.5	16.0		
MC07B 0110-5A3-4-00	11.0	24.0	2	130 x 335 x 229
MC07B 0150-503-4-00	15.0	32.0	3	200 x 465 x 251
MC07B 0220-503-4-00	22.0	46.0		
MC07B 0300-503-4-00	30.0	60.0		
MC07B 0370-503-4-00	37.0	73.0	4	280 x 522 x 250
MC07B 0450-503-4-00	45.0	89.0		
MC07B 0550-503-4-00	55.0	105.0	5	280 x 610 x 330
MC07B 0750-503-4-00	75.0	130.0		