Universal and Scalable
Motion and Logic Controllers

Control Technology
Flexible solutions for effective drive automation

Controlling motions efficiently and individually – this is at the focus of control technology from SEW-EURODRIVE to implement the functional and economical automation of machines.

This control technology excels by a universal, scalable, and powerful range of controllers and software optimally matched to the drives and drive electronic components of the modular system. The practical benefits are great both in terms of functionality and cost effectiveness.

Control technology from SEW-EURODRIVE offers a wide variety of flexible components that can be combined to form efficient drive solutions, which can be easily integrated into many automation concepts. New potential in terms of functions and cost effectiveness can in this way be created to implement the automation of machines. Such potential includes, among others, the reduction of investment and startup costs, production capacities, or possible follow-up costs for maintenance and repair.

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.
Overview of the control technology

Universal and scalable hardware

The controllers are available in three variants:

As option cards
- for MOVIDRIVE® B inverters and MOVITRAC® B frequency inverters,
- for the master module of the modular MOVIAxis® multi-axis servo inverters, and
- for the decentralized drive or positioning controllers MOVIFIT® and MOVIPRO®,
- or as compact controller on a DIN rail.

All SEW-EURODRIVE inverters can be connected using the system bus.

- Available performance classes:
  - DHP11B – performance class ‘basic’ for simple motion control and control tasks with low requirements on response times
  - DHx21B – performance class ‘standard’ for motion control tasks for up to 16 axes and simple data management via SD card
  - DHx41B – performance class ‘advanced’ for high-end motion control tasks for up to 64 axes and simple data management via SK card

- Optional accessories
  - I/O system for interface expansion
  - ORA11B modem for remote maintenance
Free programming of applications with MOVI-PLC®

All controllers enable easy access to the entire drive functionality. They optimally match the drive electronics and offer scalable functionality from simple single-axis functions, universal program modules to application solutions for several axes. The integrated standard modules of a PLC additionally provide full logic control.

The MOVI-PLC® motion and logic controller is therefore the first choice when it comes to the free programming of applications. Users can choose between parameterizable function modules, which can be easily programmed in accordance with IEC 61131, and program modules, which combine comprehensive drive functions.

Configuring applications easily with CCU

The solution for easily configurable applications is the configurable control unit (CCU). It comprises standardized application modules that can be run immediately. The functions are designed to match the specific application — without any programming. Integrated diagnostics make for a fast and straightforward startup procedure.
Applications:
Automation concepts in many industries

SEW-EURODRIVE controllers always come equipped with the matching drive functionality. They are therefore the perfect choice for intelligent drive solutions, for example when a number of drives have to interact perfectly and this interaction is to be controlled in a simple and flexible manner. The drive functionality of a module is combined decentrally, for instance. Doing so relieves the workload of the centralized PLC and reduces response times. This method also allows for protecting know-how and eliminates complex porting to other control solutions.

Motion Control

With simple operation and a variety of preset function blocks, the controllers allow for the efficient implementation of motion functions, particularly when several axes are to be coordinated. Since the axes are connected to a fast synchronous system bus, all the motion control tasks can be taken over by one controller.
In practice it is favorable in many cases that I/Os, which directly depend on the motion sequence or have an effect on them, are processed in the controller, for example in the form of cam switches or touch probe events. In addition to motion control, the controller then controls individual sequences of sub-processes and automates a self-sufficient module of a machine. Benefits: less workload for the PLC, reduced response times, and increased performance. Further, integrating functionality in the controller can protect the company’s know-how and reduce the workload when changing the central automation system.

Moreover, all the components required for an automation solution are provided in conjunction with the Drive Operator Panels (DOP) and the I/O system – drives with suitable drive electronics, controllers with a flexible I/O system, as well as visualization. The stand-alone controller takes over all the automation tasks ranging from motion control to sequence control.
Controller:
Basic performance class
**DHP11B basic control card**
- In unit versions T0, T1, T2
- Installation in MOVIDRIVE® B, MOVITRAC® B, or as compact controller

**Features:**
- Motion and logic controller in the lower power range
- Up to 12 axes
- Libraries and program modules:
  - Single-axis motion control (T0)
  - Technology motion control (T1)
- MOVI-PLC® I/O system via SBus
- Engineering via RS485

**Technical data:**
- PROFIBUS slave DP-V1
- 2 x CAN interfaces, 1 of which is electrically isolated
- 1 x RS485
- 8 digital I/Os
- Status display for PLC and fieldbus
- 512 kB program memory + 128 kB data memory
- 16 kB retain variables + 8 kB system variables (retain)
- Free-wheeling task and cyclic task (1 ms, 5 ms, 10 ms, 100 ms)
- OST11B expansion card for second RS485 interface (electrically isolated)
Controller:
Standard performance class
**DHx21B standard control card**
- DHE21B with ETHERNET interface
- DHF21B with additional interface for PROFIBUS slave and DeviceNet slave
- DHR21B additionally with interface for PROFINET / EtherNet/IP / Modbus TCP/IP slave
- In T0 unit version
- Installation in MOVIDRIVE® B, MOVITRAC® B, or as compact controller (*)

**Features:**
- Motion and logic controller for response times ≥ 10 ms
- Up to 16 axes
- Libraries and program modules: Single-axis motion control
- MOVI-PLC® I/O system via SBus
- PC-readable SD card for firmware, application program and data allows for easy unit replacement and recipe management
- Fast engineering via USB and ETHERNET

**Technical data:**
- 1 x ETHERNET (10/100 BaseT) for engineering or TCP/IP and UDP via IEC 61131-3
- 2 x CAN interfaces, 1 electrically isolated
- 2 x RS485, 1 electrically isolated
- USB device
- DHF21B: PROFIBUS slave DP-V1, DeviceNet slave
- DHR21B: PROFINET slave, EtherNet/IP slave, Modbus TCP/IP slave
- 8 digital I/Os
- Status display for PLC and fieldbus
- Real-time clock
- 2 MB program memory + 4 MB data memory
- 32 kB retain variables + 24 kB system variables (retain)
- Free-wheeling task (min. 10 ms), cyclic task (10 ... 10000 ms)

* can only be installed at the factory, DHF + DHR not in MOVITRAC® B
Controller:
Advanced performance class
**DHx41B advanced control card**

- DHE41B with ETHERNET interface
- DHF41B with additional interface for PROFIBUS slave and DeviceNet slave
- DHR41B additionally with interface for PROFINET / EtherNet/IP / Modbus TCP/IP slave
- In T0 … T25 unit versions
- Installation in MOVIDRIVE® B, MOVITRAC® B, MOVIAXIS® master module, or as compact controller (*)

**Features:**

- Motion and logic controller for response times ≥ 1 ms
- Up to 64 axes
- Libraries and program modules:
  - Single-axis motion control (T0)
  - Technology motion control (T1)
  - MultiMotion (T2)
  - Robotics (from T3)
- MOVI-PLC® I/O system via SBus, or high-performance implementation with SBUSPLUS
- PC-readable SD card for firmware, application program and data allows for easy unit replacement and recipe management
- Fast engineering via USB and ETHERNET

**Technical data:**

- 1 x ETHERNET (10/100 BaseT) for engineering or TCP/IP and UDP via IEC 61131-3
- 1 x ETHERNET as SBUSPLUS (EtherCAT®) master
- 2 CAN interfaces, 1 electrically isolated
- 2 x RS485, 1 electrically isolated
- USB device
- DHF41B: PROFIBUS slave DP-V1, DeviceNet slave (DHF41B)
- DHR41B: PROFINET slave, EtherNet/IP slave, Modbus TCP/IP slave
- 8 digital I/Os
- Status display for PLC and fieldbus
- 6 MB program memory + 8 MB data memory
- 32 kB retain variables + 24 kB system variables (retain)
- Free-wheeling task (min. 10 ms), cyclic task (10…10000 ms)

* can only be installed at the factory, DHF41B not in MOVITRAC® B
### Controllers: Types

<table>
<thead>
<tr>
<th>Controller Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UOH../DHx compact controller</strong></td>
<td>All controllers are also available as compact controller in a red housing for IP20 control cabinet installation, and for mounting on a DIN rail.</td>
</tr>
</tbody>
</table>
| **MOVIFIT® MTx**          | MOVIFIT® Technology function level  
- Integrated control card ‘basic’ or ‘standard’  
- For decentralized field installation up to IP69  
- As freely programmable motion and logic controller with libraries and program modules specifically for materials handling applications  
- As parameterizable configurable control unit (CCU) with special application modules for materials handling applications, such as cam or simple positioning |
| **MOVIPRO® SDC/ ADC**     |  
- Integrated control card ‘advanced’  
- For compact power with decentralized field installation up to IP54  
- As freely programmable motion and logic controller with libraries and program modules specifically for materials handling applications  
- As parameterizable configurable control unit (CCU) with special application modules for materials handling applications and positioning applications, such as cam positioning, bus positioning, modulo positioning, or sensor based positioning |
Controller: SD cards

**Memory cards**

- **OMH41B:**
  For the performance classes ‘standard’ and ‘advanced’ in conjunction with the freely programmable MOVI-PLC® motion controller, technology levels T0...T25 depending on the required motion control functions

- **OHMC41B:**
  For the performance classes ‘standard’ and ‘advanced’ in conjunction with the configurable control unit (CCU), technology levels T0...T25 depending on the application module in use
Modular and flexible: I/O system

The I/O system expands the digital and analog interfaces of the controllers. Up to 32 modules in IP20 degree of protection can be connected per bus coupler via SBus or SBUSplus system bus.

Overview of benefits:

- Powerful connection of controllers via system bus of machine module
- Optimally integrated into the programming software PLC Editor of MOVITOOLS® MotionStudio
- A variety of combination options makes for flexible and individual machine solutions
- Compact design and the modular structure reduce control cabinet space requirements to a minimum
- Quick and easy installation or replacement during startup or service
- Data exchange every ms using SBUSplus
### I/O system

<table>
<thead>
<tr>
<th>SBus bus coupler</th>
<th>SBUS&lt;sup&gt;pro&lt;/sup&gt; bus coupler</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCC11B</td>
<td>OCE11B</td>
</tr>
<tr>
<td>Bus coupler system bus CAN</td>
<td>Bus coupler system bus ETHERNET</td>
</tr>
<tr>
<td>Transmission rate 10 kBaup to 1 Mbaud</td>
<td>Data exchange to all modules every ms</td>
</tr>
<tr>
<td>User-friendly address setting</td>
<td>Auto addressing</td>
</tr>
<tr>
<td>Max. 32 I/O modules can be freely combined per coupler</td>
<td>Max. 32 I/O modules can be freely combined per coupler</td>
</tr>
<tr>
<td>LED for status display</td>
<td>LED for status display</td>
</tr>
</tbody>
</table>

### Inputs

<table>
<thead>
<tr>
<th>ODI81B</th>
<th>ODO81B</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 digital inputs</td>
<td>8 digital outputs 0.5 A</td>
</tr>
<tr>
<td>Electrically isolated from the bus system</td>
<td>Electrically isolated from the bus system</td>
</tr>
<tr>
<td>LED for status display of the channels</td>
<td>LED for supply voltage, error indication, status display of active channels</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OAI41B</th>
<th>OAO41B</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 analog inputs</td>
<td>4 analog outputs</td>
</tr>
<tr>
<td>Voltage ± 10 V</td>
<td>Voltage ± 10 V or 0 ... 10 V</td>
</tr>
<tr>
<td>Resolution 13 bit</td>
<td>Electrically isolated from the bus system</td>
</tr>
<tr>
<td>Electrically isolated from the bus system</td>
<td>Resolution 12 bit or 11 bit</td>
</tr>
<tr>
<td>LED for exceeding the control range</td>
<td>LED for supply voltage</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OAI42B</th>
<th>OAO42B</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 analog inputs</td>
<td>4 analog outputs</td>
</tr>
<tr>
<td>Current 4 ... 20 mA, ± 20 mA</td>
<td>Current 0 ... 20 mA or 4 ... 20 mA</td>
</tr>
<tr>
<td>Resolution 13 bit</td>
<td>Electrically isolated from the bus system</td>
</tr>
<tr>
<td>Electrically isolated from the bus system</td>
<td>Resolution 12 bit or 11 bit</td>
</tr>
<tr>
<td>LED for exceeding the control range</td>
<td>LED for supply voltage</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OAI43B</th>
<th>OAO43B</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 analog inputs Multi-Input</td>
<td>4 analog outputs Multi-Output</td>
</tr>
<tr>
<td>± 10 V or 4 ... 20 mA, ± 20 mA</td>
<td>Electrically isolated from the bus system</td>
</tr>
<tr>
<td>Pt100, Pt1000, Ni100, Ni1000, Cu50; type J, K, N, R, S, E, T</td>
<td>± 10 V, 1 ... 5 V, 0 ... 10 V, ±20 mA, 4 to 20 mA or 0 ... 20 mA</td>
</tr>
<tr>
<td>Electrically isolated from the bus system</td>
<td>Resolution 12 / 11 or 10 bit</td>
</tr>
<tr>
<td>LED for exceeding the control range</td>
<td>LED for group diagnostics</td>
</tr>
</tbody>
</table>

### Outputs

<table>
<thead>
<tr>
<th>ODI81B</th>
<th>ODO81B</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 digital inputs</td>
<td>8 digital outputs 0.5 A</td>
</tr>
<tr>
<td>Electrically isolated from the bus system</td>
<td>Electrically isolated from the bus system</td>
</tr>
<tr>
<td>LED for status display of the channels</td>
<td>LED for supply voltage, error indication, status display of active channels</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OAI41B</th>
<th>OAO41B</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 analog inputs</td>
<td>4 analog outputs</td>
</tr>
<tr>
<td>Voltage ± 10 V</td>
<td>Voltage ± 10 V or 0 ... 10 V</td>
</tr>
<tr>
<td>Resolution 13 bit</td>
<td>Electrically isolated from the bus system</td>
</tr>
<tr>
<td>Electrically isolated from the bus system</td>
<td>Resolution 12 bit or 11 bit</td>
</tr>
<tr>
<td>LED for exceeding the control range</td>
<td>LED for supply voltage</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OAI42B</th>
<th>OAO42B</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 analog inputs</td>
<td>4 analog outputs</td>
</tr>
<tr>
<td>Current 4 ... 20 mA, ± 20 mA</td>
<td>Current 0 ... 20 mA or 4 ... 20 mA</td>
</tr>
<tr>
<td>Resolution 13 bit</td>
<td>Electrically isolated from the bus system</td>
</tr>
<tr>
<td>Electrically isolated from the bus system</td>
<td>Resolution 12 bit or 11 bit</td>
</tr>
<tr>
<td>LED for exceeding the control range</td>
<td>LED for supply voltage</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OAI43B</th>
<th>OAO43B</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 analog inputs Multi-Input</td>
<td>4 analog outputs Multi-Output</td>
</tr>
<tr>
<td>± 10 V or 4 ... 20 mA, ± 20 mA</td>
<td>Electrically isolated from the bus system</td>
</tr>
<tr>
<td>Pt100, Pt1000, Ni100, Ni1000, Cu50; type J, K, N, R, S, E, T</td>
<td>± 10 V, 1 ... 5 V, 0 ... 10 V, ±20 mA, 4 to 20 mA or 0 ... 20 mA</td>
</tr>
<tr>
<td>Electrically isolated from the bus system</td>
<td>Resolution 12 / 11 or 10 bit</td>
</tr>
<tr>
<td>LED for exceeding the control range</td>
<td>LED for group diagnostics</td>
</tr>
</tbody>
</table>

### Accessories

<table>
<thead>
<tr>
<th>OTM21B</th>
<th>OBP11B&lt;sup&gt;1)&lt;/sup&gt;</th>
<th>OBP81B&lt;sup&gt;2)&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal module</td>
<td>Backplane connector</td>
<td>1-tier and 8-tier connectors</td>
</tr>
<tr>
<td>For 2 or 3-wire installation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. terminal current 10 A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

<sup>1)</sup> Each module (except bus coupler) is supplied with a 1-tier connector.  
<sup>2)</sup> For 8 modules, we recommend to use an 8-tier connector.
Straightforward and reliable access via remote maintenance

Remote maintenance provides a convenient engineering access to the controllers. SEW-EURODRIVE provides several solutions depending on the plant topology: The simplest solution requires only an analog phone line. The ORA11B modem converts signals for ETHERNET so that ‘standard’ and ‘advanced’ controllers can be easily addressed. This provides the ideal solution if the stand-alone method is used to automate an entire machine. Alternatively, the controller can be addressed via a higher-level central PLC.

**ORA11B – technical data**

<table>
<thead>
<tr>
<th>Power supply</th>
<th>DC 0 – 60 V / 3 – 5 W</th>
</tr>
</thead>
</table>
| Functions    | – Analog modem with dial-up line up to 56 kBit/s  
|              | – Router with dial-in / dial-out / callback / DHCP server and client  
|              | – Switch with 4 ports, 10 / 100 MBit/s, full and half-duplex |
| Configuration| Web interface (local / remote) |
| Features     | 2 binary I/Os each, SMS message functionality |
Increasingly complex plants result in ever higher demands on operation, visualization and diagnostics. The DOP11B operator terminals let you create visualizations in a user-friendly manner. The terminals can be easily connected to the controllers, allow for recipe and multi-language management, and for defining various security levels. An integrated web server enables user-friendly remote access to the operator terminal.

The DOP11B series offers eight types of operator terminals to suit any visualization requirement. Users can choose between terminals from 160 x 32 to 1024 x 768 pixels, CD graphic display or touch display, serial interfaces and USB access. The terminals can be installed horizontally or vertically.

- Front row, from l. to r.: DOP11B-15, -25, -20, -30, -10
- Back row, from l. to r.: DOP11B-60, -50, -40

SEW-EURODRIVE now also offers a mobile operator terminal: the new DOP11B-M70.
SEW-EURODRIVE is right there for you:

Argentina
Phone +54 3327 4572-84
Fax +54 3327 4572-21
sewar@sew-eurodrive.com.ar

Australia
Phone +61 3 9933-1000
Fax +61 3 9933-1003
enquires@sew-eurodrive.com.au

Austria
Phone +43 1 617 55 00-0
Fax +43 1 617 55 00-30
sew@sew-eurodrive.at

Belarus
Phone +375 17 298 38 50
Fax +375 17 298 1898
sales@sew.by

Belgium
Phone +32 16 386-311
Fax +32 16 386-336
info@sew-eurodrive.be

Brazil
Phone +55 11 2489-9133
Fax +55 11 2480-3328
sew@sew.com.br

Canada
Phone +1 905 791-1553
Fax +1 905 791-2999
marketing@sew-eurodrive.ca

Chile
Phone +56 2 75770-00
Fax +56 2 75770-01
ventas@sew-eurodrive.cl

China
Phone +86 22 25322612
Fax +86 22 25322611
gm-tianjin@sew-eurodrive.cn

Colombia
Phone +57 1 54750-50
Fax +57 1 54750-44
sewcold@sew-eurodrive.com.co

Czech Republic
Phone +420 265 2831086
Fax +420 265 2831087
mdoffice@sewdriveindia.com

Denmark
Phone +45 43 9585-00
Fax +45 43 9585-09
sew@sew-eurodrive.dk

Finland
Phone +358 201 589-300
Fax +358 3 7806-211
sew@seu.com

France
Phone +33 1 617 55 00-0
Fax +33 1 617 55 00-30
seu@sew-eurodrive.fr

Great Britain
Phone +44 1924 893-855
Fax +44 1924 893-702
info@sew-eurodrive.co.uk

Hong Kong
Phone +852 36902200
Fax +852 36902211
contact@sew-eurodrive.hk

Hungary
Phone +36 1 437 06-58
Fax +36 1 437 06-50
office@sew-eurodrive.hu

India
Phone +91 265 2831086
Fax +91 265 2831087
mdoffice@sewdriveindia.com

Italy
Phone +39 02 96 9801
Fax +39 02 96 9802
info@sew-eurodrive.it

Japan
Phone +81 538 373811
Fax +81 538 373814
sewpacific@sewdrive.co.jp

Kazakhstan
Phone +7 727 3332522
Fax +7 727 3332523
sew@sew-eurodrive.kz

Malaysia
Phone +60 7 3549409
Fax +60 7 3549408
sales@sew-eurodrive.com.my

Mexico
Phone +52 442 1030-300
Fax +52 442 1030-301
sew@seweurodrive.com.mx

Netherlands
Phone +31 10 4155-552
Fax +31 10 4155-552
info@vector.ru

New Zealand
Phone +64 7 2746527
Fax +64 9 2740165
sew@seweurodrive.com

Norway
Phone +47 69 241-020
Fax +47 69 241-040
sew@seweurodrive.no

Peru
Phone +51 1 3495280
Fax +51 1 3493002
sew@seweurodrive.pe

Poland
Phone +48 12 3332522
Fax +48 12 3332523
sew@sew-eurodrive.pl

Portugal
Phone +351 21 20 9670
Fax +351 21 20 9685
info@seweurodrive.pt

Russia
Phone +7 812 3332522
Fax +7 812 3332523
sew@sew-eurodrive.ru

Singapore
Phone +65 68621701
Fax +65 68612827
sew@sewsingapore@sew-eurodrive.com

South Africa
Phone +27 11 248-7900
Fax +27 11 248-7904
dross@sew.co.za

South Korea
Phone +82 31 492-8051
Fax +82 31 492-8006
master@seweurodrive.co.kr

Spain
Phone +34 94 318470
Fax +34 94 318471
sew@seweurodrive.es

Sweden
Phone +46 36 344200
Fax +46 36 344280
info@seweurodrive.se

Switzerland
Phone +41 61 41717-17
Fax +41 61 41717-00
info@imhof-sew.ch

Thailand
Phone +66 38 454281
Fax +66 38 454286
sewthailand@seweurodrive.com

Turkey
Phone +90 216 4419163
Fax +90 216 3055867
sew@seweurodrive.com.tr

Ukraine
Phone +380 56 370 3211
Fax +380 56 370 2078
sew@seweurodrive.ua

Uruguay
Phone +598 2 21181-89
Fax +598 2 21181-89
sew@seweurodrive.com.uy

USA
Phone +1 864 439-7537
Fax +1 864 439-0566
cstym@seweurodrive.com

Venezuela
Phone +58 241 832-9804
Fax +58 241 838-9275
ventas@seweurodrive.com.ve

How we’re driving the world