

# Accessories Manual

Motion Control

MC 5010

MC 5005

MC 5004

MC 5004 P STO

MCS



## Imprint

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Version:  
9th edition, 22.05.2023

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# About this document

## 1 About this document

### 1.1 Validity of this document

This document describes:

- Technical data of accessories
- Purpose of accessories
- Dimensions of accessories

This document is intended for use by trained experts authorised to perform installation and electrical connection of the product.

All data in this document relate to the standard versions of the FAULHABER products. Changes relating to customer-specific versions can be found in the data sheet.

### 1.2 Associated documents

For certain actions during commissioning and operation of FAULHABER products additional information from the following manuals is useful:

Manual	Description
Device manuals	Instructions for installation and use of the respective FAULHABER Motion Controller


These manuals can be downloaded in pdf format from the web page [www.faulhaber.com/manuals](http://www.faulhaber.com/manuals).



### 1.3 Symbols and designations

#### NOTICE!

**Risk of damage.**

- ▶ Measures for avoidance

 Instructions for understanding or optimizing the operational procedures

- ✓ Pre-requirement for a requested action
  1. First step for a requested action
    -  Result of a step
  2. Second step of a requested action
    -  Result of an action
- ▶ Request for a single-step action

## About this document

### 1.4 List of abbreviations

Abbreviation	Meaning
AC	Alternating Current
AEMTL	Absolute multi turn encoder
AES	Absolute encoder
AGND	Analog Ground
AnIn	Analog input
BC	Braking chopper
BL	Brushless
CE marking	Graphical symbol indicating that product complies with EU law
CO	CANopen
COM	Communication Equipment
CAN	Controller Area Network
DC	Direct Current
DIN	Designation for round connectors
DigIn	Digital input
DigOut	Digital output
D-	USB data cable
D+	USB data cable
EGND	Electronic Ground
EMC	Electromagnetic compatibility
ET	EtherCAT (Ethernet for Control Automation Technology)
GND	Ground
Hall	Hall sensors
ID	USB-type identifier
I/O	Input/Output
LM	Linear Motor
MB1	Motherboard with one controller port (only in combination with MC 5004 STO)
MB4	Motherboard with four controller ports (only in combination with MC 5004 STO)
MC	Motion Controller
MCS	Motion Control System
Mot	Motor
M12	Metric ISO thread
n.c.	not connected
PC	Personal Computer
Pin	Pin assignment
RJ	Registered Jack (standardized female connector)
RS	Recommended Standard
RxD	Receive Data
STO	Safe Torque Off

## About this document

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Abbreviation	Meaning
TxD	Transmit data
U	Voltage
USB	Universal Serial Bus
V	Volt
VBUS	USB supply
V3.0 Controller	Controller version 3.0



## 2 Safety

### 2.1 Safety instructions

#### NOTICE!

Electrostatic discharges can damage the electronics.

- ▶ Wear conductive work clothes.
- ▶ Wear a grounded wristband.

#### NOTICE!

Inserting and withdrawing connectors while supply voltage is applied at the device can damage the electronics.

- ▶ Do not insert or withdraw connectors while supply voltage is applied at the device.

#### NOTICE!

When attaching accessories to the device, using the wrong tools can damage the device.

- ▶ Use appropriate tools.

### 2.2 EC directives on product safety

- ▶ The following EC directives on product safety must be observed.
- ▶ If the Motion Controller is being used outside the EU, international, national and regional directives must be also observed.

#### Machinery Directive (2006/42/EC)

The controllers with attached motor described in this accessories manual may be drive systems according to the Machinery Directive. They are therefore to be considered incomplete machines according to the Machinery Directive. Compliance is documented by the Declaration of Incorporation for the product and by the EC Declaration of the Conformity.

#### EMC Directive (2014/30/EU)

The directive concerning electromagnetic compatibility (EMC) applies to all electrical and electronic devices, installations and systems sold to an end user. In addition, CE marking can be undertaken for built-in components according to the EMC Directive. Conformity with the directive is documented in the Declaration of Conformity.

#### Applied standards

Various harmonized standards were applied to the products described in this accessories manual; these standards are documented in the EC Declaration of Conformity.

#### WEEE Directive (2012/19/EU)

The directive on the disposal of electrical and electronic devices prescribes the separate collection of old electrical and electronic devices. The products described in this accessories manual fall within the scope of this directive.

## Accessory products

### 3 Accessory products

#### 3.1 Connection cable

The MB4 motherboard or a suitable customer-specific controller environment must be used for connection of peripheral components to an MC 5004.

Tab. 1: MC 50xx, MC 3001 and MC 3603 connection cables

Article no.	Article designation	Cable length
6501.00224	MC 50xx cable, USB 2.0 connectors A-MINI B	1000 mm
6501.00268	MC 50xx cable, V3.0-RS232	300 mm
6501.00269	MC 50xx cable, V3.0-CAN	300 mm
6501.00274	MC 50xx cable, V3.0-EtherCAT, RJ45-RJ45	2000 mm
6501.00278	MC 5004 ribbon cable, V3.0-EtherCAT, DIN-DIN (circuit board connection)	100 mm
6501.00279	MC 5004 ribbon cable, V3.0-EtherCAT, DIN-DIN (motherboard connection)	250 mm
6501.00272	MC 5004 cable, EtherCAT, V3.0-connectors RJ45-RJ45 straight (circuit board connection)	200 mm
6501.00265	MC 50xx cable, V3.0-DC supply	2000 mm
6501.00262	MC 5010 cable, V3.0-BL phase (3274...BP4/4490...B/BS)	2000 mm
6501.00263	MC 5010 cable, V3.0-3274...BP4 Hall sensors	2000 mm
6501.00264	MC 50xx cable, V3.0-BL Hall sensors + phases	2000 mm
6501.00241	MC 50xx cable, V3.0-2264...BP4, BX4 AES	300 mm
6501.00275	Adapter cable for encoder HEDS	130 mm
6501.00267	MC 50xx / MC 3001 / MC 3603 cable, V3.0-IE3, IE2, IEH2, IER3, IERS3, HEDS	2000 mm
6501.00266	MC 50xx / MC 3001 / MC 3603 cable, V3.0 - IEH3	2000 mm
6501.00377	MC 50xx / MC 3001 / MC 3603 cable, V3.0-IE3L, IER3L, IERS3L, HEDL	2000 mm
6501.00327	MC 50xx cable, V3.0-BHx Hall sensors + IEM3	300 mm
6501.00328	MC 50xx cable, V3.0-BHx phases	300 mm
6501.00338	MC50xx cable, V3.0-BX4 phases	2000 mm
6501.00369	MC 50xx / MC 3001 / MC 3603 cable, AEMTL V3.0 battery adapter	150 mm
6501.00370	MC 50xx / MC 3001 / MC 3603 cable, V3.0-AEMTL	2000 mm
6501.00371	MC 30xx / MC36xx cable, V3.0-BL Hall sensors + phases	2000 mm
6501.00372	MC 30xx / MC 36xx cable, V3.0-DC	2000 mm
6501.00373	MC 30xx / MC 36xx cable, V3.0-IEH3L	75 mm

## Accessory products

Tab. 2: MCS connection cable

Article no.	Article designation	Cable length
6501.00270	MCS cable, EtherCAT, connectors M8-M8, straight	1500 mm
6501.00210	MCS cable, EtherCAT, connectors M8-M8, angled	1500 mm
6501.00271	MCS cable, EtherCAT, connectors M8-RJ45, straight	1500 mm
6501.00211	MCS cable, EtherCAT, connectors M8-RJ45, angled	1500 mm
6501.00255	MCS supply cable, connectors M12, 4-pin, straight	1500 mm
6501.00256	MCS supply cable, connectors M12, 4-pin, angled	1500 mm
6501.00257	MCS I/O cable, connectors M12, 12-pin, straight	1500 mm
6501.00258	MCS I/O cable, connectors M12, 12-pin, angled	1500 mm

## Accessory products

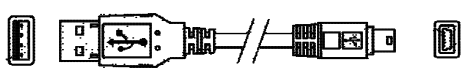
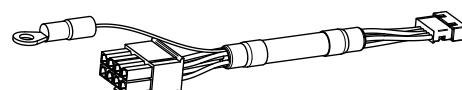
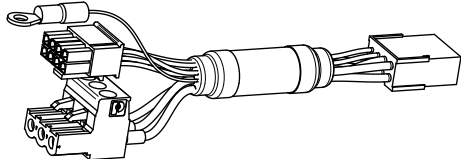
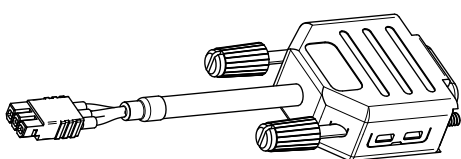
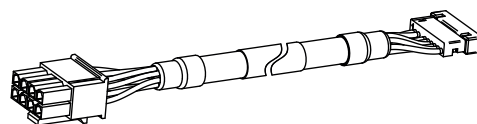
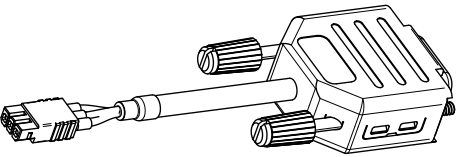
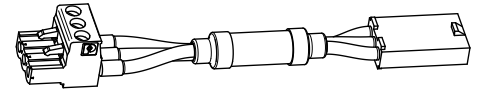

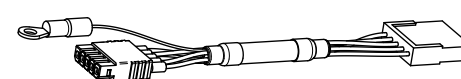

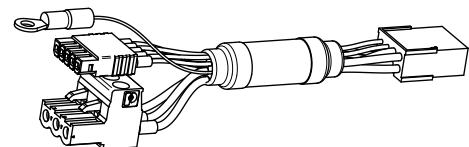
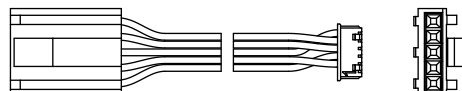
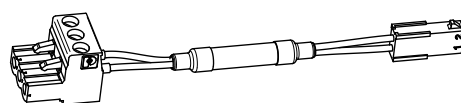
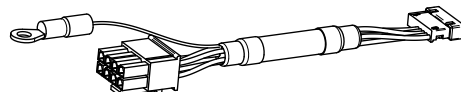

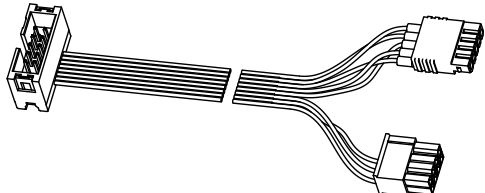
<p>6501.00224 MC 50xx cable, USB 2.0 connectors A-MINI B, 1000 mm</p> 	<p>6501.00267 MC 50xx / MC 3001 / MC 3603 cable, V3.0-IE3, IE2, IEH2, IER3, IER53, HEDS, 2000 mm</p> 
<p>6501.00241 MC 50xx cable, V3.0-BX4 AES, 300 mm</p> 	<p>6501.00268 MC 50xx cable, V3.0-R5232, 300 mm</p> 
<p>6501.00377 MC 50xx / MC 3001 / MC 3603 cable, V3.0-IE3L, IER3L, HEDL, AESL 2000 mm</p> 	<p>6501.00269 MC 50xx / MC 3001 / MC 3603 cable, V3.0-CANopen, 300 mm</p> 
<p>6501.00262 MC 5010 cable, V3.0-BL phase (3274...BP4/4490...B/BS), 2000 mm</p> 	<p>6501.00272 MC 5004 cable, EtherCAT, V3.0-connectors RJ45-RJ45 straight (circuit board connection), 200 mm</p> 
<p>6501.00263 MC 5010 cable, V3.0-3274...BP4 Hall, 2000 mm</p> 	<p>6501.00274 MC 50xx cable, V3.0-EtherCAT, RJ45-RJ45, 2000 mm</p> 
<p>6501.00264 MC 50xx cable, V3.0-BL Hall + phases, 2000 mm</p> 	<p>6501.00275 Adapter cable HEDS, 130 mm</p> 
<p>6501.00265 MC 50xx cable, V3.0-DC supply, 2000 mm</p> 	<p>6501.00266 MC 50xx / MC 3001 / MC 3603, V3.0-IEH3, 2000 mm</p> 
<p>6501.00278 MC 5004 ribbon cable, V3.0-EtherCAT, DIN-DIN (circuit board connection), 100 mm</p> <p>6501.00279 MC 5004 ribbon cable, V3.0-EtherCAT, DIN-DIN (motherboard connection), 250 mm</p> 	<p>6501.00327 MC 50xx cable, V3.0-BHx Hall + IEM3, 300 mm</p> 

Fig. 1: Connection cables overview

## Accessory products

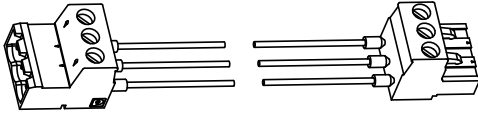
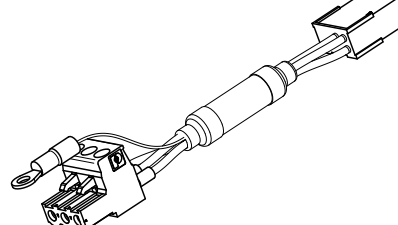
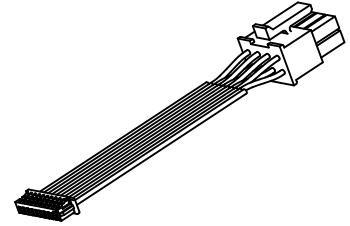
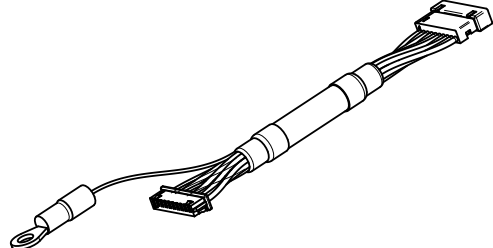
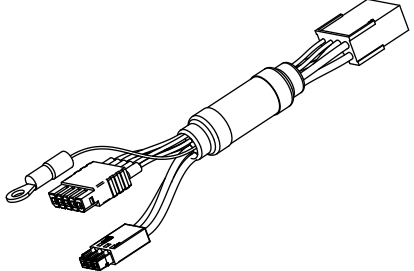
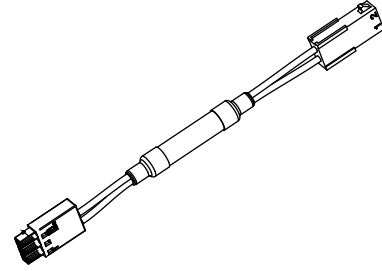
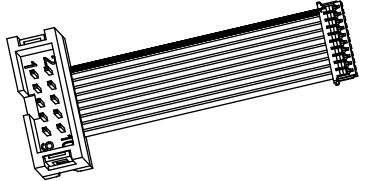
<p>6501.00328 MC 50xx cable, V3.0-BHx phases, 300 mm</p> 	<p>6501.00338 MC50xx cable, V3.0-BX4 phases, 2000 mm</p> 
<p>6501.00369 MC 50xx cable, V3.0-battery adapter AEMTL, 150 mm</p> 	<p>6501.00370 MC 50xx / MC 3001 / MC 3603 cable, V3.0-AEMTL, 2000 mm</p> 
<p>6501.00371 MC 30xx / MC36xx cable, V3.0-BL Hall sensors + phases, 2000 mm</p> 	<p>6501.00372 MC 30xx / MC 36xx cable, V3.0-DC supply, 2000 mm</p> 
<p>6501.00373 MC 30xx / MC 36xx cable, V3.0-IEH3L, 75 mm</p> 	

Fig. 2: Connection cables overview (continuation)

## Accessory products


### 3.2 Combinatorics connection cable/adapter MC 50xx

#### 3.2.1 Series CR/CXR DC-Motors

MC 50xx	IE2	IE3 / IER3 / IERS3	IE3L / IER3L / IERS3L	HEDS	HEDL
<b>Option Motor:</b>	5268	5268	5268	5268	5268
<b>Option Encoder:</b>	2655	3807	5418	Standard	5431
<b>Connection cable</b>					
6501.00265	x	x	x	x	x
6501.00267	x	x		x	
6501.00275				x	
6501.00377			x		x

#### 3.2.2 Series SR DC-Motors

MC 50xx	IE2	IEH2	IEH3
<b>Option Motor + Encoder:</b>	2655	2655	Standard
<b>Encoder multi-adapter</b>			
6501.00323	x	x	x

 Details can be found in chap. 3.7.2.3, p. 42.

## Accessory products

### 3.2.3 BL motors series B/BHS

MC 50xx	Analog Hall	IE2	IE3	IE3L	HEDS	HEDL
<b>Option Motor:</b>	K3141	K313 / K2971	K1838 / K2971	K1838 / K2971	K312 / K2971	K312 / K2971
<b>Option Encoder:</b>	–	2655	3807	5418	Standard	5431
<b>Connection cable</b>						
6501.00267		x	x		x	
6501.00377				x		x
6501.00264	x	x	x	x	x	x
6501.00275					x	
MC 50xx	AESL			AEMTL		
<b>Option Motor:</b>	on request			on request		
<b>Option Encoder:</b>	5418			5418		
<b>Connection cable</b>						
6501.00377		x				
6501.00369					x	
6501.00370					x	
<b>Adapter</b>						
6501.00368					x	

### 3.2.4 BL motors series BX4

MC 50xx	Analog Hall	IE3 / IER3 / IERS3	IE3L / IER3L / IERS3L	AES	AESL	AEMTL
<b>Option Motor:</b>	3692 / 3830	3592	5419	3830	5419	5419
<b>Option Encoder:</b>	–	3592	5419	–	5419	5419
<b>Connection cable</b>						
6501.00267		x				
6501.00377			x		x	
6501.00264	x	x	x			
6501.00241				x		
6501.00338					x	x
6501.00369						x
6501.00370						x
<b>Adapter</b>						
6501.00368						x

## Accessory products

### 3.2.5 BL motors series BP4

#### 3.2.5.1 3274...BP4

MC 50xx	Analog Hall	IE3 / IER3 / IERS3	IE3L / IER3L / IERS3L	AESL	AEMTL
<b>Option Motor:</b>	3692/5438	5438	5438	on request	on request
<b>Option Encoder:</b>	–	3807	5418	5418	5418
<b>Connection cable</b>					
6501.00267		x			
6501.00377			x	x	
6501.00262	x	x	x	x	x
6501.00263	x	x	x		
6501.00275					
6501.00369					x
6501.00370					x
<b>Adapter</b>					
6501.00368					x

#### 3.2.5.2 2264...BP4

MC 50xx	Analog Hall	IE3 / IER3 / IERS3	IE3L / IER3L / IERS3L	AESL	AEMTL
<b>Option Motor:</b>	3692/3830	3830	3830	on request	on request
<b>Option Encoder:</b>	–	3807	5418	5418	5418
<b>Connection cable</b>					
6501.00267		x			
6501.00377			x		
6501.00262				x	x
6501.00264	x	x	x		
6501.00369					x
6501.00370					x
<b>Adapter</b>					
6501.00368					x



## Accessory products

### 3.2.6 BL motors series BHx

MC 50xx	Phases	IEM3
Option Motor + Encoder:	K3682	K3682
<b>Connection cable</b>		
6501.00327		x
6501.00328	x	

### 3.2.7 BL motors series BXT

MC 50xx	Digital Hall	IE3/IER3/IE3S <sup>a)</sup>	IE3L/IER3L/IE3LS <sup>a)</sup>
Option Motor:	3830	3830	3830
Option Encoder:	–	3807	5418
<b>Connection cable</b>			
6501.00264	x	x	x
6501.00267		x	
6501.00377			x

a) only in combination with BXT H

## Accessory products

### 3.2.8 BL motors series 4490

MC 50xx	Analog Hall	IE3	IE3L	HEDS	HEDL
<b>Option Motor:</b>	K3142	K1838 + K2972	K1838 + K2972	K312 + K2972	K312 + K2972
<b>Option Encoder:</b>	–	3807	5418	Standard	5431
<b>Connection cable</b>					
6501.00267		x		x	
6501.00377			x		x
6501.00262	x	x	x	x	x
6501.00263	x	x	x	x	x
6501.00275				x	

MC 50xx	AESL	AEMTL
<b>Option Motor:</b>	on request	on request
<b>Option Encoder:</b>	5418	5418
<b>Connection cable</b>		
6501.00377	x	
6501.00262	x	x
6501.00369		x
6501.00370		x
<b>Adapter</b>		
6501.00368		x

### 3.2.9 BL motors series LM

MC 50xx	Analog Hall	
<b>Option Motor:</b>	K3098 <sup>a)</sup>	K3113 <sup>b)</sup>
<b>Connection cable</b>		
6501.00264	x	x

a) Only in combination with LM1247-...-01, LM1483-...-01 or LM2070-...-01

b) Only in combination with LM1247-...-11 LM1483-...-11 or LM2070-...-11

## Accessory products

### 3.3 Combinatorics connection cable/adapter MC 3001 / MC 3601

#### 3.3.1 Series CR/CXR DC-Motors

MC 3001 / MC 3603	IE2	IE3/ IER3/ IERS3	IE3L/ IER3L/ IERS3L	HEDS	HEDL	IEH3	IEH3L
Option Motor:	5268	5268	5268	5268	5268	5268	
Option Encoder:	2655	3807	5418	Standard	5431	Standard	
<b>Connection cable</b>							
6501.00372	x	x	x	x	x	x	on request
6501.00267	x	x					
6501.00275				x			
6501.00377			x		x		
6501.00266						x	

#### Motherboard

- MC 3001 B/P: MB 6500.01802
- MC 3603 S: standard

#### 3.3.2 BL motors series B/BHS

MC 3001 / MC 3603	Analog Hall	IE2	IE3	IE3L	HEDS	HEDL
Option Motor:	K3141	K3141	K3141	K3141	K3141	K3141
Option Encoder:	–	2655	3807	5418	Standard	5431
<b>Connection cable</b>						
6501.00267		x	x		x	
6501.00377				x		x
6501.00371	x	x	x	x	x	x
6501.00275					x	

## Accessory products

MC 3001 / MC 3603	AESL	AEMTL	0620...B	0824...B/1824...B + AESM	0824...B/1824...B + IEM3
<b>Option Motor:</b>	on request	on request	on request	on request	on request
<b>Option Encoder:</b>	5418	5418			
<b>Connection cable</b>					
6501.00377	x				
6501.00369		x			
6501.00370		x			
<b>Adapter + cable</b>					
6501.00368		x			
6501.00369		x			

### Motherboard

- MC 3001 B/P: MB 6500.01802
- MC 3603 S: standard

### 3.3.3 BL motors series BX4

MC 3001 / MC 3603	Analog Hall	IE3 / IER3 / IERS3	IE3L / IER3L / IERS3L	AES	AESL	AEMTL	
<b>Option Motor:</b>	3692 / 3830	3592	5419	on request	5419	5419	
<b>Option Encoder:</b>	–	3592	5419		5419	5419	
<b>Connection cable</b>							
6501.00267		x					
6501.00377			x		x		
6501.00371	x	x	x		x	x	
6501.00241							
6501.00370						x	
<b>Adapter</b>							
6501.00368					x		
6501.00369					x		

### Motherboard

- MC 3001 B/P: MB 6500.01802
- MC 3603 S: standard

## Accessory products

### 3.3.4 Series LM DC-Motors

MC 3001 / MC 3603	Analog Hall <sup>a)</sup>	Analog Hall <sup>b)</sup>
Option Motor:	on request	K3113
Option Encoder:		-
Connection cable		
6501.00371		x

a) Only in combination with LM0830...-01

b) Only in combination with LM1247-...-11 LM1483-...-11 or LM2070-...-11

#### Motherboard

- MC 3001 B/P: MB 6500.01802
- MC 3603 S: standard

### 3.3.5 Series S/SR DC-Motors

MC 3001 / MC 3603	IE2	IEH2	IEH3	IEH3L	HXM3 <sup>a)</sup>	PA2-50 <sup>b)</sup>	PA2-100 <sup>c)</sup>
Option Motor:							
Option Encoder:					on request		
Connection cable							

a) Only in combination with 0615...S

b) Only in combination with 0615...S/0816...SR

c) Only in combination with 0615...S/0816...SR 1016...SR/1024...SR/1224...SR

#### Motherboard

- MC 3001 B/P: MB 6500.01802
- MC 3603 S: standard

### 3.3.6 BL motors series BXT

MC 3001 / MC 3603	Digital Hall	IE3/IER3/ IERS3 <sup>a)</sup>	IE3L/IER3L/ IERS3L <sup>a)</sup>	IEF3 <sup>a)</sup>	IEF3L <sup>a)</sup>	AEMTL <sup>a)</sup>
Option Motor:	3830	3830	3830	3830	3830	
Option Encoder:	-	3807	5418	3807	5418	
Connection cable						on request
6501.00267		x		x		
6501.00377			x		x	
6501.00371	x	x	x	x	x	
6501.00370						

a) only in combination with BXT H

#### Motherboard

- MC 3001 B/P: MB 6500.01802
- MC 3603 S: standard

## Accessory products

### 3.4 Explanation of the special numbers

#### Motor option for connecting to the MC V3.0 via extension cable

Special number	Field of application	Description	Cable length	Cross-section	Number of wires	Connector manufacturer	Connector
5268	CR/CXR	Single strands	Radial: 150 mm from motor middle Axial: 160 mm from cover	AWG 22	2	MOLEX	Connector: 43025-0200 Crimp: 43030-0008
2655	SR/CXR	Ribbon cable	150 mm	–	–	–	Special connector: RM 1.25 mm
3692	22xx...BX4 (without 2250...BX4 S) 32xx...BX4 2264/3274 BP4	Analog Hall sensors	–	–	–	–	–
3830	22xx...BX4 22xx...BX4 AES 22xx...BX4 CxD 32xx...BX4 32xx...BX4 AES 2264 BP4 2214...BXT R/H 3216...BXT R/H 4221...BXT R/H	Ribbon cables/ single strands	22xx...BX4: 175 mm 22xx...BX4 AES: 162 mm 22xx...BX4 CxD: 158 mm 32xx...BX4: 184 mm 32xx...BX4 AES: 170 mm 2264...BP4: 200 mm 22/32/42BXT: 300 mm	22BX4: AWG 26 32BX4: AWG 22 2264BP4: AWG 26/22 2214BXT: AWG 26 3216BXT: AWG 20/26 4221BXT: AWG 20/26	8	MOLEX	Connector: 43025-0800 Crimp: 43030-0007
5438	3274...BP4	Single strands	200 mm from motor middle	AWG 26/22	8	MOLEX	<b>Motor:</b> Connector: 39-01-4030 Crimp: 42750-1212 <b>Sensors:</b> Connector: 43654-0500 Crimp: 43030-0010
K3141	1226S...B 1628T...B 2036U...B 2057S...B/BHS 2444S...B 3056K...B 3564K...B	Single strands	300 mm	AWG 20-24 AWG 26-30	8	MOLEX	Connector: 43025-0800 Crimp: 43030-0007 Crimp: 43030-0010

## Accessory products

Special number	Field of application	Description	Cable length	Cross-section	Number of wires	Connector manufacturer	Connector
K3142	4490H...B/BS	Single strands	300 mm from motor middle	AWG 16 AWG 26-30	Motor: 3 Sensor: 5	MOLEX	<b>Motor:</b> Connector: 39-01-4030 Crimp: 42750-3212 <b>Sensors:</b> Connector: 43654-0500 Crimp: 43030-0010
K1838	2444S...B 3056K...B 3564K...B 4490H...B/BS	Single strands, second shaft end for combination with IE3	–	–	–	–	–
K312	1628...B 2036...B 2057...B/BHS 2444...B 3056...B 3564...B 4490...B/BS	Single strands, second shaft end for combinations with HEDS/HEDL	–	–	–	–	–
K313	1628...B 2036...B 2057...B/BHS 2444...B	Single strands, second shaft end for combination with IE2	–	–	–	–	–
K2971	2036U...B 2057S...B/BHS 2444S...B 3056K...B 3564K...B	Single strands	300 mm from motor middle	Crimp: AWG 20-24 Crimp: AWG 26-30	Motor: 3 Sensor: 5	MOLEX	Connector: 43025-0800 <b>Motor:</b> Crimp: 43030-0007 <b>Sensors:</b> Crimp: 43030-0010
K2972	4490H...B/BS	Single strands	300 mm from motor middle	Crimp: AWG 16 Crimp: AWG 26-30	Motor: 3 Sensor: 5	MOLEX	<b>Motor:</b> Connector: 39-01-4030 Crimp: 45750-3212 <b>Sensors:</b> Connector: 43654-0500 Crimp: 43030-0010
K3098	Linear Motor LM1247...01 LM1483...01 LM2070...01	Single strands	200 mm	Crimp: AWG 20-24 Crimp: AWG 26-30	Motor: 3 Sensor: 5	MOLEX	Connector: 43025-0800 <b>Motor:</b> Crimp: 43030-0007 <b>Sensors:</b> Crimp: 43030-0010
K3113	1247...01 1483...01 2070...01	Single strands	250...261 mm	Crimp: AWG 26-30	Motor: 3 Sensor: 5	MOLEX	Connector: 43025-0800

## Accessory products

Special number	Field of application	Description	Cable length	Cross-section	Number of wires	Connector manufacturer	Connector
K3682	1660...BHT 1660...BHS	<b>Motor:</b>					
		Single strands	300 mm	AWG 24	3	Phoenix	Connector: 1757022
		<b>Sensors/encoders:</b>					
		Ribbon cable	300 mm	AWG 28	Sensor: 5 Encoder: 3	Pancon	Connector: DIN 41651

### Encoder option for connecting to the MC V3.0 via extension cable

Special number	Field of application	Description	Cable length	Cross-section	Number of wires	Connector manufacturer	Connector
2655	SR/CXR	Ribbon cable	150 mm	–	–	–	Special connector: RM 1.25 mm
3807	IE3/IER3/ERS3	Ribbon cable	–	AWG 28	6	PicoBlade	51021-0600
5418	IE3L/IER3L/ IERS3L/AESL/ AEMTL	Ribbon cable, not for use with BX4	155 mm from motor middle	AWG 28	10	MOLEX	Connector: 51021- 1000 Crimp: 50058-8000
5431	HEDL	Ribbon cable	150 mm from motor middle	AWG 28	10	MOLEX	Connector: 51021- 1000 Crimp: 50058-8000

### Motor/encoder combination for connecting to the MC V3.0 via extension cable

Special number	Field of application	Description	Cable length	Cross-section	Number of wires	Connector manufacturer	Connector
3592	22xx...BX4 + IE3 32xx...BX4 + IE3	Ribbon cable	162/170 mm from motor middle	<b>Motor:</b> AWG 22/26 <b>Encoder:</b> AWG 28	Motor: 8 Encoder: 6	MOLEX	<b>Motor:</b> Connector: 43025- 0800 Crimp: 43030-0010 <b>Encoder:</b> Connector: 51021- 0600 Crimp: 50058-8000
5419	22xx...BX4 + IER3 L 32xx...BX4 + IER3 L 22xx/32xx...BX4 + AESL/AEMTL	Ribbon cable	22xx...BX4: 150 mm 32xx...BX4: 170 mm	<b>Motor:</b> 22xx...BX4: AWG 26 32xx...BX4: AWG22 <b>Encoder:</b> AWG 28	Motor: 8 Encoder: 10	MOLEX PicoBlade	<b>Motor:</b> Connector: 43025- 0800 Crimp: 43030-0010 Crimp: 43030-0007 <b>Encoder:</b> Connector: 51021- 1000 Crimp: 50058-8000



## Accessory products

### 3.5 Pin assignment of the connection cables

#### 3.5.1 MC 50xx cable, USB 2.0 connectors A-MINI B

6501.00224 MC 50xx cable, USB 2.0 connectors A-MINI B			
Function	Wire color	Controller X1	USB 2.0
VBUS	Red	Pin 1	Pin 1
D-	White	Pin 2	Pin 2
D+	Green	Pin 3	Pin 3
GND	Black	Pin 4	Pin 5
ID	not connected	not connected	Pin 4

#### 3.5.2 MC 50xx cable, V3.0-RS232

6501.00268 MC 50xx cable, V3.0-RS232			
Function	Wire color	Controller X2	D-Sub
			Pin 1
RxD	Brown	Pin 2	Pin 2
TxD	Red	Pin 1	Pin 3
			Pin 4
GND	Black	Pin 3	Pin 5
			Pin 6
			Pin 7
			Pin 8
			Pin 9

#### 3.5.3 MC 50xx cable, V3.0-CANopen

6501.00269 MC 50xx cable, V3.0-CANopen			
Function	Wire color	Controller X2	D-Sub
			Pin 1
CAN low	Brown	Pin 2	Pin 2
GND	Black	Pin 3	Pin 3
			Pin 4
			Pin 5
			Pin 6
CAN high	Red	Pin 1	Pin 7
			Pin 8
			Pin 9

## Accessory products

### 3.5.4 MC 50xx cable, V3.0-EtherCAT, RJ45-RJ45

6501.00274 MC 50xx cable, V3.0-EtherCAT, RJ45-RJ45	
Function	IN / OUT
TxD+	Pin 1
TxD-	Pin 2
RxD+	Pin 3
	Pin 4
	Pin 5
RxD-	Pin 6
	Pin 7
	Pin 8

### 3.5.5 MC 5004 ribbon cable, V3.0-EtherCAT, DIN-DIN (circuit board connection)

6501.00278 MC 5004 ribbon cable, V3.0-EtherCAT, DIN-DIN (circuit board connection)	
Function	IN / OUT
TxD+	Pin 1
TxD-	Pin 2
RxD+	Pin 3
	Pin 4
	Pin 5
RxD-	Pin 6

### 3.5.6 MC 5004 ribbon cable, V3.0-EtherCAT, DIN-DIN (motherboard connection)

6501.00279 MC 5004 ribbon cable, V3.0-EtherCAT, DIN-DIN (motherboard connection)	
Function	IN / OUT
TxD+	Pin 1
TxD-	Pin 2
RxD+	Pin 3
	Pin 4
	Pin 5
RxD-	Pin 6

## Accessory products

### 3.5.7 MC 5004 cable, EtherCAT, V3.0-connectors RJ45-RJ45 straight (circuit board connection)

6501.00272 MC 5004 cable, EtherCAT, V3.0-connectors RJ45-RJ45 straight (circuit board connection)	
Function	IN / OUT
TxD+	Pin 1
TxD-	Pin 2
RxD+	Pin 3
	Pin 4
	Pin 5
RxD-	Pin 6
	Pin 7
	Pin 8

### 3.5.8 MC 50xx cable, V3.0-DC supply

6501.00265 MC 50xx cable, V3.0-DC supply			
Function	Wire color	Controller M1	Motor
Motor +	Red	Pin 1	Pin 1
Motor -	Black	Pin 2	Pin 2
n.c.	-	Pin 3	

### 3.5.9 MC 5010 cable, V3.0-BL phase (3274...BP4/4490...B/BS)

6501.00262 MC 5010 cable, V3.0-BL phase (3274...BP4/4490...B/BS)			
Function	Wire color	Controller M1	Motor
Phase C	Black	Pin 3	Pin 1
Phase B	Green	Pin 2	Pin 2
Phase A	White	Pin 1	Pin 3

### 3.5.10 MC 5010 cable, V3.0-3274...BP4 Hall

6501.00263 MC 5010 cable, V3.0-3274...BP4 Hall			
Function	Wire color	Controller M2	Sensors
GND	Black	Pin 2	Pin 1
U <sub>DD</sub>	Red	Pin 1	Pin 2
Hall C	Yellow	Pin 5	Pin 3
Hall B	Orange	Pin 4	Pin 4
Hall A	Brown	Pin 3	Pin 5

## Accessory products

### 3.5.11 MC 50xx cable, V3.0-BL Hall sensors + phases

6501.00264		MC 50xx cable, V3.0-BL Hall sensors + phases	
Function	Wire color	Controller M1	Motor/sensors
Phase C	Yellow	Pin 3	Pin 1
Phase B	Orange	Pin 2	Pin 2
Phase A	Brown	Pin 1	Pin 3

### 3.5.12 MC 50xx cable, V3.0-BX4 AES

6501.00241		MC 50xx cable, V3.0-BX4 AES		
Function	Wire color	Controller M3	Controller M1	Motor/Encoder
Phase C	Yellow		Pin 3	Pin 1
Phase B	Orange		Pin 2	Pin 2
Phase A	Brown		Pin 1	Pin 3
GND	Black	Pin 2		Pin 4
U <sub>DD</sub>	Red	Pin 1		Pin 5
CLK	Gray	Pin 8		Pin 6
CS	Blue	Pin 4		Pin 7
DATA	Green	Pin 6		Pin 8

### 3.5.13 Adapter cable HEDS

6501.00275		Adapter cable HEDS	
Function	Wire color	6501.00267	Encoders
n.c.	-	Pin 1	
GND	Brown	Pin 3	Pin 1
Channel I	Gray	Pin 2	Pin 2
Channel A	Green	Pin 6	Pin 3
U <sub>DD</sub>	Orange	Pin 4	Pin 4
Channel B	Blue	Pin 5	Pin 5

For use only in conjunction with cable 6501.00267 (see chap. 3.5.14, p. 29).

## Accessory products

### 3.5.14 MC 50xx cable, V3.0-IE3, IE2, IEH2, IER3, IERS3, HEDS

6501.00267 MC 50xx cable, V3.0-IE3, IE2, IEH2, IER3, IERS3, HEDS			
Function	Wire color	Controller M3	Encoders
n.c.	-	-	Pin 1
Channel I	Yellow	Pin 8	Pin 2
GND	Black	Pin 2	Pin 3
U <sub>DD</sub>	Red	Pin 1	Pin 4
Channel B	Orange	Pin 6	Pin 5
Channel A	Brown	Pin 4	Pin 6

Not for use in conjunction with SR motors.

### 3.5.15 MC 50xx cable, V3.0 - IEH3

6501.00266 MC 50xx cable, V3.0 - IEH3			
Function	Wire color	Controller M3	Encoders
n.c.			
GND	Black	Pin 2	Pin 4
U <sub>DD</sub>	Red	Pin 1	Pin 5
Channel B	Orange	Pin 6	Pin 6
Channel A	Brown	Pin 4	Pin 7
Channel I	Yellow	Pin 8	Pin 8

Not for use in conjunction with SR motors.

### 3.5.16 MC 50xx cable, AEMTL V3.0 battery adapter

6501.00369 MC 50xx cable, AEMTL V3.0 battery adapter			
Function	Wire color	Controller M3	Encoders
n.c.	-	-	Pin 1
U <sub>DD</sub>	-	Pin 1	Pin 2
GND	-	Pin 2	Pin 3
n.c.	-	-	Pin 10
$\overline{CS}$	-	Pin 3	Pin 4
CS	-	Pin 4	Pin 5
$\overline{DATA}$	-	Pin 5	Pin 6
DATA	-	Pin 6	Pin 7
$\overline{CLK}$	-	Pin 7	Pin 8
CLK	-	Pin 8	Pin 9

## Accessory products

### 3.5.17 MC 50xx cable, V3.0-AEMTL

6501.00370 MC 50xx cable, V3.0-AEMTL			
Function	Wire color	Controller M3	Encoders
Preset	Black	Pin 1	Pin 1
U <sub>DD</sub>	Red	Pin 2	Pin 2
GND	Blue	Pin 3	Pin 3
U <sub>bat</sub>	Violet	Pin 4	Pin 4
n.c.	White	Pin 5	Pin 5
n.c.	Brown	Pin 6	Pin 6
$\overline{\text{DATA}}$	Gray	Pin 7	Pin 7
DATA	Pink	Pin 8	Pin 8
$\overline{\text{CLK}}$	Green	Pin 9	Pin 9
CLK	Yellow	Pin 10	Pin 10

### 3.5.18 MC 50xx cable, V3.0-IE3L, IER3L, HEDL, AESL

6501.00377 MC50xx cable, V3.0-IE3L, IER3L, HEDL, AESL			
Function	Wire color	Controller M3	Motor/Encoder
n.c.	-	-	Pin 1
U <sub>DD</sub>	Red	Pin 1	Pin 2
GND	Black	Pin 2	Pin 3
n.c.	-	-	Pin 4
$\overline{\text{Channel A}}, \overline{\text{CS}}$	Green	Pin 3	Pin 5
Channel A, CS	Brown	Pin 4	Pin 6
$\overline{\text{Channel B}}, \overline{\text{DATA}}$	Blue	Pin 5	Pin 7
Channel B, DATA	Orange	Pin 6	Pin 8
$\overline{\text{Index}}, \overline{\text{CLK}}$	Violet	Pin 7	Pin 9
Index, CLK	Yellow	Pin 8	Pin 10

### 3.5.19 MC50xx cable, V3.0-BHx Hall + IEM3

6501.00327 MC 50xx cable, V3.0-BHx Hall + IEM3			
Function	Controller M2	Controller M3 Encoder	Encoder/sensors
GND	Pin 2		Pin 1
U <sub>DD</sub>	Pin 1		Pin 2
Hall C	Pin 5		Pin 3
Hall B	Pin 4		Pin 4
Hall A	Pin 3		Pin 5
Channel B		Pin 6	Pin 6
Channel A		Pin 4	Pin 7
Channel I		Pin 8	Pin 8

## Accessory products

### 3.5.20 MC50xx cable, V3.0-BHx phases

6501.00328		MC50xx cable, V3.0-BHx phases	
Function	Wire color	Controller M1	Motor
Phase C	Yellow	Pin 3	Pin 1
Phase B	Orange	Pin 2	Pin 2
Phase A	Brown	Pin 1	Pin 3

### 3.5.21 MC50xx cable, V3.0-BX4 phases

6501.00338		MC50xx cable, V3.0-BX4 phases	
Function	Wire color	Controller M1	Motor
Phase C	Brown	Pin 3	Pin 1
Phase B	Green	Pin 2	Pin 2
Phase A	White	Pin 1	Pin 3

### 3.5.22 MC 50xx cable, V3.0-LM motor

6501.00264		MC 50xx cable, V3.0-LM motor		
Function	Wire color	Controller M2	Controller M1	Motor/sensors
Phase C	Yellow		Pin 1	Pin 1
Phase B	Orange		Pin 2	Pin 2
Phase A	Brown		Pin 3	Pin 3
GND	Black	Pin 2		Pin 4
U <sub>DD</sub>	Red	Pin 1		Pin 5
Hall C	Gray	Pin 5		Pin 6
Hall B	Blue	Pin 4		Pin 7
Hall A	Green	Pin 3		Pin 8

### 3.5.23 MCS cable, EtherCAT, connectors M8-M8

6501.00270 (straight)		MCS cable, EtherCAT, connectors M8-M8	
6501.00210 (angled)			
Function	IN / OUT		
TxD+	Pin 1		
RxD+	Pin 2		
TxD-	Pin 3		
RxD-	Pin 4		

#### Manufacturer's proof of origin:

6501.00270: Murr Elektronik, article 7000-89701-7910150

6501.00210: Murr Elektronik, article 7000-89771-7910150

## Accessory products

### 3.5.24 MCS cable, EtherCAT, connectors M8-RJ45

6501.00271 (straight) MCS cable, EtherCAT, connectors M8-RJ45  
 6501.00211 (angled)

Function	IN / OUT
TxD+	Pin 1
RxD+	Pin 2
TxD-	Pin 3
RxD-	Pin 4

**Manufacturer's proof of origin:**

6501.00271: Murr Elektronik, article 7000-89721-7910150

6501.00211: Murr Elektronik, article 7000-89781-7910150

### 3.5.25 MCS supply cable, connectors M12, 4-pin

6501.00255 (straight) MCS supply cable, connectors M12, 4-pin  
 6501.00256 (angled)

Function	Wire color	MCS X1
GND	Brown	Pin 1
U <sub>p</sub>	White	Pin 2
U <sub>mot</sub>	Blue	Pin 3
EGND	Black	Pin 4

**Manufacturer's proof of origin:**

6501.00255: Phoenix Contact, article 1536285

6501.00256: Phoenix Contact, article 1536405



## Accessory products

### 3.5.26 MCS I/O cable, connectors M12, 12-pin

6501.00257 (straight) MCS I/O connector, connectors M12, 12-pin		
6501.00258 (angled)		
Function	Wire color	MCS X2
GND	Brown	Pin 1
CAN_L / RxD	Blue	Pin 2
CAN_H / TxD	White	Pin 3
U <sub>DD</sub>	Green	Pin 4
DigOut 1	Pink	Pin 5
DigOut 2	Yellow	Pin 6
DigIn 1	Black	Pin 7
DigIn 2	Gray	Pin 8
DigIn 3	Red	Pin 9
AnIn 1	Violet	Pin 10
AGND	Gray/pink	Pin 11
AnIn 2	Red/blue	Pin 12
EGND	-	Shielding

#### Manufacturer's proof of origin:

6501.00257: Phoenix Contact, article 1430129

6501.00258: Phoenix Contact, article 1430161

### 3.5.27 MC 3001 / MC 3603 cable, V3.0-BL Hall sensors + phases

6501.00371 MC3001 / MC 3603 cable, V3.0-BL Hall sensors + phases				
Function	Wire color	Controller M2	Controller M1	Motor/sensors
Phase C	Yellow		Pin 3	Pin 1
Phase B	Orange		Pin 2	Pin 2
Phase A	Brown		Pin 1	Pin 3
GND	Black	Pin 2		Pin 4
U <sub>DD</sub>	Red	Pin 1		Pin 5
Hall C	Gray	Pin 5		Pin 6
Hall B	Blue	Pin 4		Pin 7
Hall A	Green	Pin 3		Pin 8

### 3.5.28 MC 3001 / MC 3603 cable, V3.0-DC

6501.00372 MC 3001 / MC 3603 cable, V3.0-DC			
Function	Wire color	Controller M1	Motor
Motor +	Red	Pin 1	Pin 1
Motor -	Black	Pin 2	Pin 2
n.c.	-	Pin 3	

## Accessory products

### 3.5.29 MC 3001 / MC 3603 cable, V3.0 - IEH3L

6501.00373		MC 3001 / MC 3603 cable, V3.0 - IEH3L	
Function	Wire color	Motherboard M3/3	Motor/Encoder
Motor -	-	Pin 1	Pin 1
U <sub>DD</sub>	-	Pin 2	Pin 2
GND	-	Pin 3	Pin 3
Motor +	-	Pin 4	Pin 4
$\overline{\text{Channel A}}$	-	Pin 5	Pin 5
Channel A	-	Pin 6	Pin 6
$\overline{\text{Channel B}}$	-	Pin 7	Pin 7
Channel B	-	Pin 8	Pin 8
$\overline{\text{Index I}}$	-	Pin 9	Pin 9
Index I	-	Pin 10	Pin 10

## Accessory products

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### 3.6 Motherboards

#### 3.6.1 MC 5004 motherboard MB4, vertical connector

**Article no.:**

6500.01681

**Function:**

Basic module to accept and combine up to four MC 5004 Motion Controller circuit boards in multi-axis applications. Vertical orientation of the connectors, reduced wiring requirement.

**Manufacturer's proof of origin:**

Socket connectors at the controller connection slots: Fischer, article BL 6 50



Detailed descriptions of the connectors and connections can be found in the current version of the corresponding Technical Manual.

#### 3.6.2 MC 5004 motherboard MB4, horizontal connector

**Article no.:**

6500.01676

**Function:**

Basic module to accept and combine up to four MC 5004 Motion Controller circuit boards in multi-axis applications. Horizontal orientation of the connectors, reduced wiring requirement.

**Manufacturer's proof of origin:**

Socket connectors at the controller connection slots: Fischer, article BL 6 50



Detailed descriptions of the connectors and connections can be found in the current version of the corresponding Technical Manual.

#### 3.6.3 MC 5004 STO motherboard MB1, vertical connector

**Article no.:**

6500.01715

**Function:**

Basic module to accept and combine one MC 5004 STO Motion Controller circuit board in single-axis applications. Vertical orientation of the connectors, reduced wiring requirement.

**Manufacturer's proof of origin:**

Socket connectors at the controller connection slots: Fischer, article BL 6 50



Detailed descriptions of the connectors and connections can be found in the current version of the MC 5004 STO installation instructions.

## Accessory products

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### 3.6.4 MC 3001 STD motherboard, vertical connector

**Article no.:**

6500.01802

**Function:**

Basic module to combine FAULHABER BL/DC-motors including Hall sensors and/or encoders. Vertical orientation of the connectors, reduced wiring requirement.

**Design:**

See Product Application Note 189.



Detailed descriptions of the connectors and connections can be found in the current version of the corresponding Technical Manual.

### 3.6.5 MC 3001 DC IE(H)2 IEH3(L) motherboard, vertical connector

**Article no.:**

6500.01807

**Function:**

Basic module to combine FAULHABER DC-motors with encoders of types IE2, IEH2 or IEH3(L). Motor connections M+ and M- can be connected here either via connector M1 or, with combined cables, via connector M3. Vertical orientation of the connectors, reduced wiring requirement.

**Design:**

See Product Application Note 189.



Detailed descriptions of the connectors and connections can be found in the current version of the corresponding Technical Manual.

### 3.6.6 MC 3001 DC IE(R)(RS)3(L) motherboard, vertical connector

**Article no.:**

6500.01808

**Function:**

Basic module to combine FAULHABER DC-motors with encoders of types IE3(L), IER3(L) or IERS3(L). Vertical orientation of the connectors, reduced wiring requirement.

**Design:**

See Product Application Note 189.



Detailed descriptions of the connectors and connections can be found in the current version of the corresponding Technical Manual.

## Accessory products

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### 3.6.7 MC 3001 DC PA2-100 motherboard, vertical connector

**Article no.:**

6500.01809

**Function:**

Basic module to combine FAULHABER DC-motors with encoder of type PA2-100. Vertical orientation of the connectors, reduced wiring requirement.

**Design:**

See Product Application Note 189.



Detailed descriptions of the connectors and connections can be found in the current version of the corresponding Technical Manual.

### 3.6.8 MC 3001 BL AESM IEM3 motherboard, vertical connector

**Article no.:**

6500.01810

**Function:**

Basic module to combine FAULHABER 0824B- and 1028B-BL-motors with encoders of types AESM or IEM3. Vertical orientation of the connectors, reduced wiring requirement.

**Design:**

See Product Application Note 189.



Detailed descriptions of the connectors and connections can be found in the current version of the corresponding Technical Manual.

### 3.6.9 MC 3001 BL/DC PA2-50 HXM motherboard, vertical connector

**Article no.:**

6500.01811

**Function:**

Basic module to combine FAULHABER BL/DC-motors with encoders of types PA2-50 or HXM. Vertical orientation of the connectors, reduced wiring requirement.

**Design:**

See Product Application Note 189.



Detailed descriptions of the connectors and connections can be found in the current version of the corresponding Technical Manual.

## Accessory products

### 3.7 Connector sets and other accessories

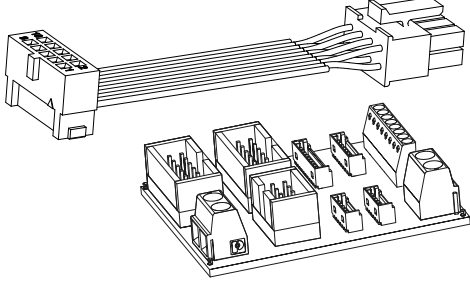
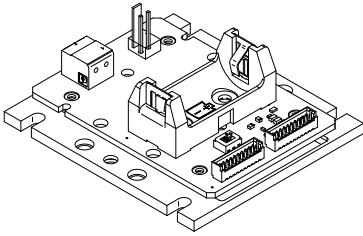
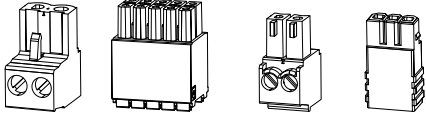
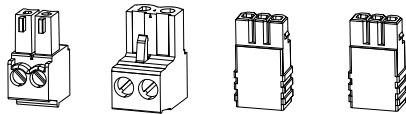
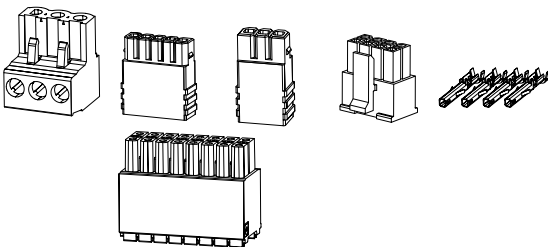
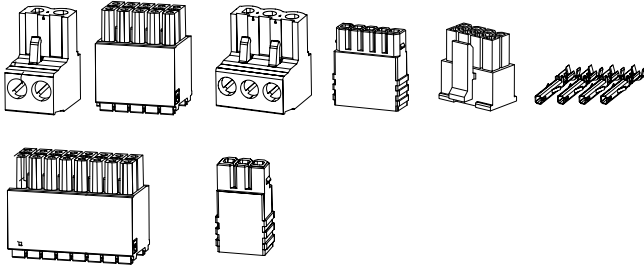
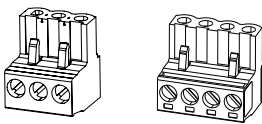
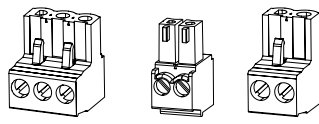
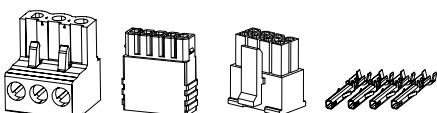
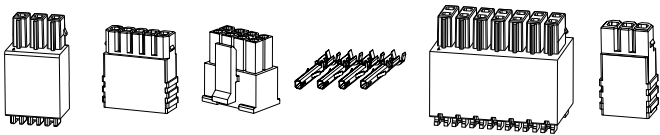
<p>6501.00323 Encoder adapter set MC 50xx / MC 3001 / MC 3603, V3.0</p> 	<p>6501.00368 Battery adapter MC 50xx / MC 3001 / MC 3603, V3.0 - AEMTL</p> 
<p>6501.00221 MC 5005/5010 connector set, V3.0 supply side</p> 	<p>6501.00234 MC 5004 motherboard MB4 connector set, V3.0 supply side</p> 
<p>6501.00276 MC 5004 motherboard MB4 connector set, V3.0 controller</p> 	<p>6501.00312 MC 5004 STO motherboard MB1 connector set, V3.0 motor and supply side</p> 
<p>6501.00359 connector set EFM5001/5003/5008 motor side</p> 	<p>6501.00360 connector set EFS 5004/3004 - supply side</p> 
<p>6501.00222 MC 5005/5010 connector set, V3.0 motor side</p> 	<p>6501.00362 Motherboard MB1 MC 3001 / MC 3603, V3.0 - motor and supply side</p> 

Fig. 3: Overview of connector and adapter sets

## Accessory products

### 3.7.1 Connector sets

#### 3.7.1.1 MC 50xx connector set, V3.0 - Supply side

6501.00221	MC 5005/5010 connector set, V3.0 - Supply side
X2	Communication
X3	I / O
X4	MC power supply
X5	Motor voltage supply

##### Manufacturer's proof of origin:

X2: Phoenix Contact, article 1778845

X3: Phoenix Contact, article 1790137

X4: Phoenix Contact, article 1840366

X5: Phoenix Contact, article 1754449

#### 3.7.1.2 MC 5005/5010 connector set, V3.0 - Motor side

6501.00222	MC 5005/5010 connector set, V3.0 - Motor side
M1	Motor power supply
M2	Sensors
M3	Encoders

##### Manufacturer's proof of origin:

M1: Phoenix Contact, article 1754465

M2: Phoenix Contact, article 1778861

M3: Molex, article 43025-0800 (housing) + 43030-0010 (contacts)

#### 3.7.1.3 MB4 MC 5004 motherboard connector set, V3.0 - Supply side

6501.00234	MB4 MC 5004 motherboard connector set, V3.0 - Supply side
COM	Communication
X4	Motherboard voltage supply
X5	Motor voltage supply

##### Manufacturer's proof of origin:

COM: Phoenix Contact, article 1778845

X4: Phoenix Contact, article 1840366

X5: Phoenix Contact, article 1754449

## Accessory products

### 3.7.1.4 MB4 MC 5004 motherboard connector set, V3.0 - Controller

6501.00276	MB4 MC 5004 motherboard connector set, V3.0 - Controller
M1	Motor power supply
M2	Sensors
M3	Encoders
X2	Communication
X3	I/O

#### Manufacturer's proof of origin:

M1: Phoenix Contact, article 1754465

M2: Phoenix Contact, article 1778861

M3: Molex, article 43025-0800 (housing) + 43030-0010 (contacts)

X2: Phoenix Contact, article 1778845

X3: Phoenix Contact, article 1790166

### 3.7.1.5 MB1 MC 5004 STO motherboard connector set, V3.0 - Motor and supply side

6501.00312	MB1 MC 5004 STO motherboard connector set, V3.0 - Motor and supply side
M1	Motor power supply
M1_1	Combi-connection for motor phases and sensors
M2	Sensors
M3	Encoders
X2 / X2_1	Communication (RS232 / CAN)
X3	I/O
X5	Voltage supply for motor and controller
X6	STO

#### Manufacturer's proof of origin:

M1: Phoenix Contact, article 1754465

M1\_1 / M3: Molex, article 43025-0800 (housing) + 43030-0010 (contacts)

M2: Phoenix Contact, article 1778861

X2 / X2\_1: Phoenix Contact, article 1778845

X3: Phoenix Contact, article 1790140

X5: Phoenix Contact, article 1754449

X6: Phoenix Contact, article 1790124



## Accessory products

### 3.7.1.6 EFM 5001/5003/5008 connector set - Motor side

6501.00359	EFM 5001/5003/5008 connector set - Motor side
M1	Motor supply (controller side)
M2	Motor supply (motor side)

**Manufacturer's proof of origin:**

M1: Phoenix Contact, article 1754481

M2: Phoenix Contact, article 1754465

### 3.7.1.7 EFS 5004/3004 connector set - Supply side

6501.00360	EFS 5004/3004 connector set - Supply side
X1	Motor and MC supply (power supply side)
X2	MC voltage supply (controller side)
X3	Motor voltage supply (controller side)

**Manufacturer's proof of origin:**

X1: Phoenix Contact, article 1754465

X2: Phoenix Contact, article 1840366

X3: Phoenix Contact, article 1754449

### 3.7.1.8 MB1 MC 3001 / MC 3603 motherboard connector set, V3.0 - Motor and supply side

6501.00362	MB1 MC3001 / MC 3603 motherboard connector set, V3.0 - Motor and supply side (for MC 3001 with MB 6500.01802 or MC 3603)
M1	Motor power supply
M2	Sensors
M3	Encoders
X2	RS232/CAN communication (MC 3001)
X3	I/O + voltage supply (MC + motor)

**Manufacturer's proof of origin:**

M1: Phoenix Contact, article 1821106

M2: Phoenix Contact, article 1778861

M3: Molex, article 43025-0800 (housing) + 43030-0010 (contacts)

X2: Phoenix Contact, article 1778845

X3: Phoenix Contact, article 1844620

## Accessory products

### 3.7.2 Other accessories

#### 3.7.2.1 MC 5005/5010 top-hat rail installation set

**Article no.:**

6501.00223

**Function:**

Top-hat rail clip including 2 M3x6 screws for attaching the Motion Controller to the installation set. Comfortable installation aid for installing the Controller, e. g. in control cabinets.

#### 3.7.2.2 MC 3603 DIN rail mounting set

**Article no.:**

6501.00375

**Function:**

Top-hat rail clips (2 pieces) including 2 screws for attaching the Motion Controller to the installation set. Comfortable installation aid for installing the Controller, e. g. in control cabinets.

#### 3.7.2.3 MC 50xx encoder adapter set

6501.00323	MC 50xx encoder adapter set	
Function	Adapter X10	Controller M3
n.c.	Pin 1	
$U_{DD}$	Pin 2	Pin 1
GND	Pin 3	Pin 2
$\overline{\text{Channel A, CS}}$	Pin 4	Pin 3
Channel A, CS	Pin 5	Pin 4
$\overline{\text{Channel B, DATA}}$	Pin 6	Pin 5
Channel B, DATA	Pin 7	Pin 6
$\overline{\text{Index, CLK}}$	Pin 8	Pin 7
Index, CLK	Pin 9	Pin 8
n.c.	Pin 10	

**Function:**

Multi-functional adapter for connection of standard versions of various types of encoder to the MC 5005/5010 Motion Controller and/or the MB4 MC 5004 or MB1 MC 5004 STO motherboard.

#### 3.7.2.4 MCS programming adapter, RS232/CAN

**Article no.:**

6501.00283

**Function:**

Interface adapter for parametrizing a Motion Control System via PC / Motion Manager 6.

## Accessory products

### 3.7.2.5 MCS programming adapter, USB

**Article no.:**

6501.00284

**Function:**

Interface adapter for parametrizing a Motion Control System via PC / Motion Manager 6. Only in combination with interface variant RS232.

### 3.7.2.6 Supply filter

Article no.	Supply filter
6501.00350	MC50xx/SC50xx, EFS 5004 S
6501.00367	MC3002/3006/SC1801/2402/2804, EFS 3004 S

**Function:**

These filters are special for applications that either cannot use the motor filter (e.g., integrated controllers) or in which the filtering by the ferrite-based motor filters is not sufficient.

### 3.7.2.7 Motor filter

Article no.	Motor filter
6501.00352	SC1801, EFM 5001 S
6501.00357	MC5004/5005/SC2402/2804/5004, EFM 5003 S
6501.00358	MC5005/5010/SC5004/5008, EFM 5008 S

**Function:**

These filters remove the PWM for the motors by means of DC mean value formation.

Article no.	Motor filter
6501.00351	MC3002/3003/3006/50xx/SC1801/2402/2804/5004/5008, EFC 5008 S

**Function:**

These filters reduce the rise time of the motor voltage/current and thereby reduce the high-frequency coupling currents on the shield.

### 3.7.2.8 MC 50xx / MC 3001 / MC 3603 battery adapter, V3.0 - AEMTL

**Article no.:**

6501.00368

**Function:**

If the power supply fails or is switched off, the AEMT-12/16 L multi-turn encoder automatically switches to a battery mode with greatly reduced energy consumption. In combination with a suitable backup battery, the battery adapter ensures that the multi-turn functionality of the encoder is temporarily maintained.

## Accessory products

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### 3.7.2.9 BC 5004 braking chopper

**Article no.:**

6501.00134

**Function:**

The function of the BC 5004 braking chopper is to limit the supply voltage at 4-quadrant controllers and other connected devices such as programmable adapters or power supply units.

### **4 Troubleshooting**

If unexpected malfunctions occur during operation according to the intended use, please contact your support partner.

### 5 Warranty

Products of the company Dr. Fritz Faulhaber GmbH & Co. KG are produced using the most modern production methods and are subject to strict quality inspections. All sales and deliveries are performed exclusively on the basis of our General Conditions of Sale and Delivery which can be viewed on the FAULHABER home page [www.faulhaber.com/gtc](http://www.faulhaber.com/gtc) and downloaded from it.

