



# Hybrid Motor Starter and Motor Manager CONTACTRON

# CONTACTRON Hybrid Motor Starters

## – clever switching and smart wiring

Switch and reverse motors safely and reliably with CONTACTRON compact Hybrid Motor Starters.

Thanks to integrated fuses and the SmartWire-DT™ connection, wiring effort is also reduced – for power and control wiring.

### reliable protection

With the integrated fuses, the Motor Starters meet type 2 coordination according to IEC/EN 60947-4-2. These devices can be mounted flexibly on standard DIN rails or on 60 mm busbars.



1. Forward running



3. Motor protection



2. Reverse running



4. Emergency stop



## clever switching

CONTACTRON 4 in 1 combines all functions of a conventional reversing contactor circuit in a single device – for motors up to 4 kW, with a design width of just 22.5 mm.

## smart wiring

The SmartWire-DT™ communication system makes the complex cabling of the control and signal levels simpler and clearer. Furthermore, you can connect the Hybrid Motor Starters with standard fieldbus systems.



# Hybrid Motor Starters – up to four functions in a single device

The choice is yours: From the basic CONTACTRON direct starter up to the 4 in 1 reversing starter with motor protection and emergency stop.

## Your advantages:

- Up to 75% less space required
- Up to 75% less wiring costs
- Service life ten times longer
- Safety included



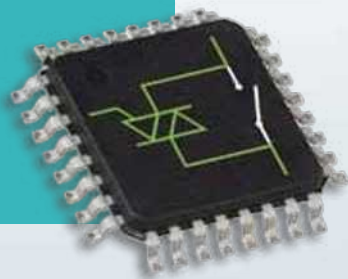
## CONTACTRON

### Hybrid Motor Starter Technology

CONTACTRON Hybrid Motor Starter Technology is a microprocessor-controlled combination of wear-free solid-state technology and rugged relay technology.

This enables gentle switching, and thus considerably reduces the load on the relay contacts. This means that the Hybrid Motor Starters have a service life up to ten times longer than that of purely mechanical switching devices.

Designed by PHOENIX CONTACT





### Forward running

Easy control directly via 24 V PLC output cards or 230 V AC signal.



### Reverse running

Optional: Reversing function including locking circuit and load wiring.



### Motor protection

Convenient protection by means of the electronic motor protection relay with automatic and remote reset function.



### Emergency stop

The integrated safety function enables use in safety-related applications.

SIL3  
IEC 61508



PLe  
ISO 13849-1

Cat.3  
EN 954-1



## Versions

Select the CONTACTRON Hybrid Motor Starter version that meets your application requirements. Due to that you receive exactly the functions you need for your cost-optimized motor control.

				
4 in 1	✓	✓	✓	✓
3 in 1	✓		✓	✓
2 in 1	✓	✓		
1 in 1	✓		✓	

# Hybrid Motor Starters plus short-circuit protection

The CONTACTRON Hybrid Motor Starters with integrated fuses meet type 2 coordination according to IEC/EN 60947-4-2.

This means: Protection for personnel, machines and systems – even in the event of a short circuit. For subsequent operation, the fuses are simply replaced and the switching device is again ready for operation.



## reliable protection

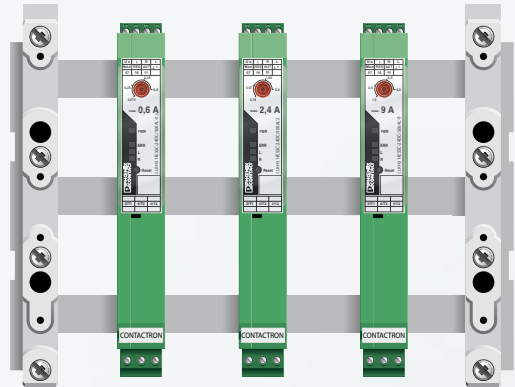
Your advantages:

- Fast restart
- Reduced wiring
- Increased system availability

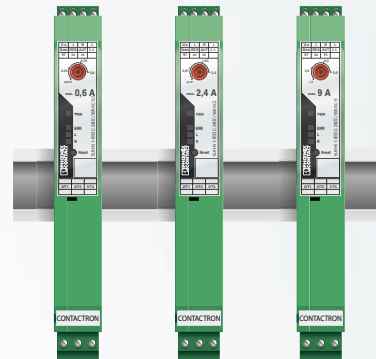




### Mounting on 60 mm busbar system



### Mounting on a standard DIN rail



The Hybrid Motor Starters can be flexibly mounted on standard DIN rails or on busbar systems using the mounting adapter.

### Safely disconnect motor feeders

The mounting adapter enables safe disconnection of motor feeders. By simply pulling the switching device off the assembly adapter the motor feeders can be safely disconnected from the mains voltage for maintenance and service purposes.

# Hybrid Motor Starters plus SmartWire-DT™

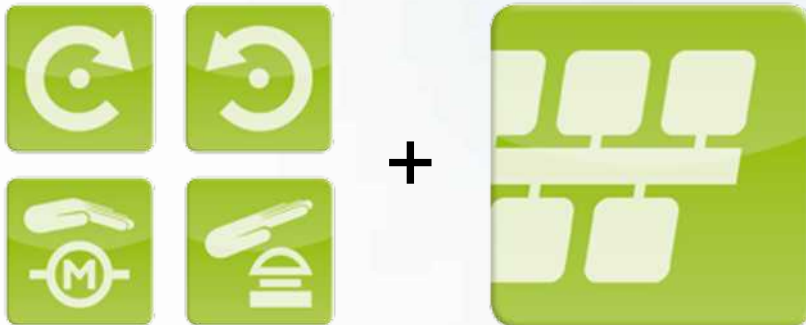
Connecting CONTACTRON Hybrid Motor Starters to the SmartWire-DT™ communication system reduces time-consuming parallel wiring of the control and signal level to an absolute minimum.

PROFI®  
BUS

CANopen

EtherNet/IP™

Modbus



## smart wiring

Your advantages:

- Fast, clearly arranged wiring
- Easy connection to fieldbus systems via a gateway
- Short startup times and diagnostic options

### SmartWire-DT™ Technology

SmartWire-DT™ takes the efficient wiring concept of the CONTACTRON Hybrid Motor Starters a step further. SmartWire-DT™ handles the complex parallel cabling of up to 99 devices.

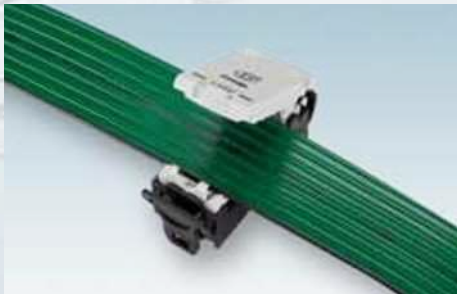
Supported by PHOENIX CONTACT

SmartWire-DT™ is a trademark of Eaton Corporation.





**Easy connection to the SmartWire-DT™ communication system**



1. Place eight-pole flat-ribbon conductor in the device plug and close.



2. Position device plug as desired and fix in place with slight pressure.



3. Bring the device plug and flat-ribbon conductor into contact using the plier.

# Hybrid Motor Starters – clever combined

Combine the short-circuit proof CONTACTRON Hybrid Motor Starters with SmartWire-DT™ connection, and benefit from six functions in just one device.



+



+

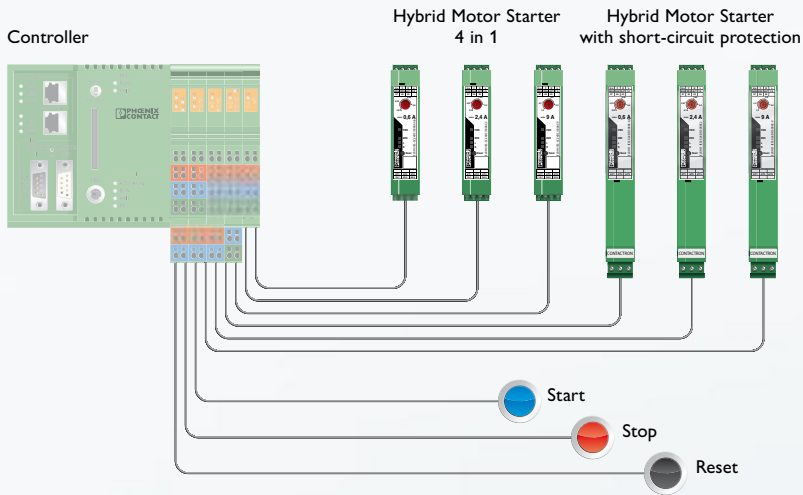


**smart  
wiring**

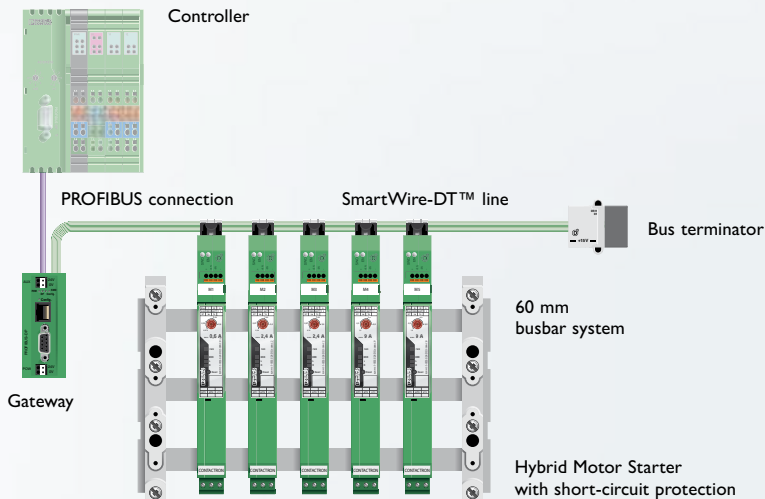
**clever  
switching**

**reliable  
protection**

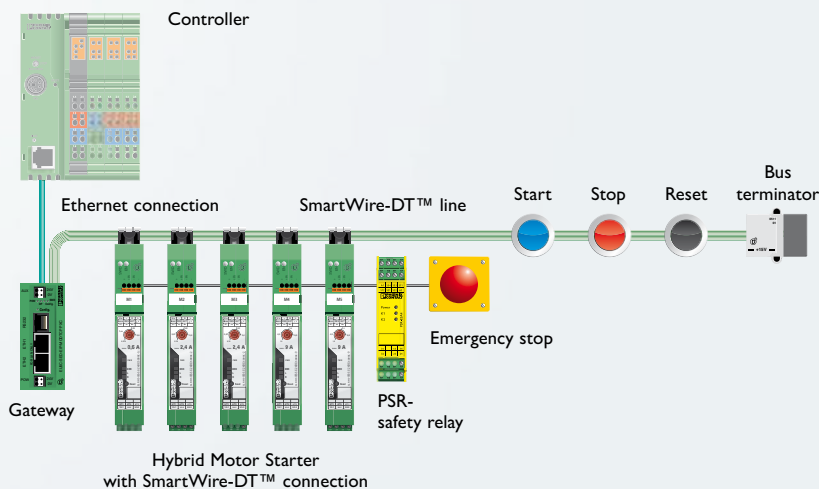
## Clever motor switching and smart wiring



1. The internal load and locking circuits of the Hybrid Motor Starters reduce the amount of wiring – ideal for control cabinets with short wiring paths. Each button and Hybrid Motor Starter is directly connected to the I/O card of the controller.



2. The Hybrid Motor Starters with integrated fuses can also be mounted directly on busbar systems. Thus, you save time and money, particularly in large systems with many devices. A connection to SmartWire™ is also possible.



3. The Hybrid Motor Starters, as well as the command and signaling devices, are directly connected to the controller with SmartWire-DT™ via a gateway. Safe shutdown is implemented with a PSR safety relay. Thanks to SmartWire-DT™ the amount of wiring is significantly reduced. You benefit from clearly arranged and compact control cabinets.

# Solid-State Contactors – wear-free switching of single-phase or three-phase loads

Solid-State Contactors allow quick, frequent, and wear-free switching, for example of motors and heaters.

The CONTACTRON Solid-State Contactors are resistant to shocks, vibrations, and aggressive, polluted environments. They are available as single-phase or three-phase devices and depending on the type, also with reversing function.

## Your advantages:

- Fast
- Durable
- Rugged



## Forward running + reverse running

Easy control via a 24 V DC or 230 V AC signal.  
Locking circuit and load wiring included.



# Motor Manager – protects motor and system

The Motor Manager offers more than motor protection, it also protects the system mechanics. Through permanent power measurement it detects critical load states and switches the motor off in the case of emergency. The Motor Manager also optimizes maintenance and helps you during startup.

## Your advantages:

- Integrated full motor protection
- Protection of high-quality system parts
- High level of system availability
- Saves the cost of sensors
- Easy configuration and diagnostics
- ATEX certified for Ex e-Motors



### PROFIBUS connection

- Optional auxiliary device
- Up to 32 Motor Managers per gateway
- Easy coupling via T-BUS connector



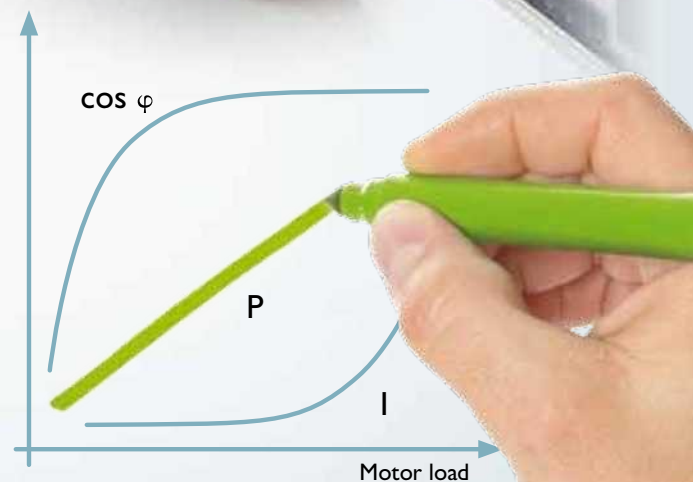
### Motor protection

- Thermistor evaluation
- Electronic motor protection relay
- Adjustable trigger curves



### Monitoring

- Overload and underload detection
- Wear detection
- Energy consumption and production data acquisition






### System protection requires real power measurement

While a  $\cos \varphi$  monitor only detects underload states, and a motor protection relay only detects overload states, real power measurement detects all critical load states of the motor. If necessary, the Motor Manager switches the drive off and thus protects the motor and the connected system mechanics.

# CONTACTRON product range and accessories








## Hybrid Motor Starters – up to four functions in a single device

### Motor Starter plus motor protection/emergency stop

		4 in 1	3 in 1		
Maximum load current	Housing width	 <p><b>Reversing Starter + emergency stop + motor protection</b></p> 	 <p><b>Reversing Starter + motor protection</b></p> 	 <p><b>Direct Starter + emergency stop + motor protection</b></p> 	
					Input voltage
0.6 A	24 V DC	ELR H5-IES-SC-24DC/500AC-0,6 Order No. 2900582	ELR H5-I-SC-24DC/500AC-0,6 Order No. 2900573	ELR H3-IES-SC-24DC/500AC-0,6 Order No. 2900566	
	120/230 V AC	ELR H5-IES-SC-230AC/500AC-0,6 Order No. 2900692	ELR H5-I-SC-230AC/500AC-0,6 Order No. 2900691	ELR H3-IES-SC-230AC/500AC-0,6 Order No. 2900689	
2.4 A	22.5 mm	24 V DC	ELR H5-IES-SC-24DC/500AC-2 Order No. 2900414	ELR H5-I-SC-24DC/500AC-2 Order No. 2900574	ELR H3-IES-SC-24DC/500AC-2 Order No. 2900567
		120/230 V AC	ELR W3-24DC/500AC-2I* Order No. 2297031	ELR H5-I-SC-230AC/500AC-2 Order No. 2900575	ELR H3-IES-SC-230AC/500AC-2 Order No. 2900568
9 A	22.5 mm	24 V DC	ELR H5-IES-SC-230AC/500AC-2 Order No. 2900420	ELR H5-I-SC-230AC/500AC-2 Order No. 2900575	ELR H3-IES-SC-230AC/500AC-2 Order No. 2900568
		120/230 V AC	ELR W3-230VAC/500AC-2I* Order No. 2297044	ELR H5-IES-SC-24DC/500AC-9 Order No. 2900421	ELR H5-I-SC-24DC/500AC-9 Order No. 2900576
9 A	22.5 mm	24 V DC	ELR W3-24DC/500AC-9I* Order No. 2297057	ELR H5-I-SC-24DC/500AC-9 Order No. 2900576	ELR H3-IES-SC-24DC/500AC-9 Order No. 2900569
		120/230 V AC	ELR H5-IES-SC-230AC/500AC-9 Order No. 2900422	ELR H5-I-SC-230AC/500AC-9 Order No. 2900578	ELR H3-IES-SC-230AC/500AC-9 Order No. 2900570
9 A	22.5 mm	24 V DC	ELR W3-230AC/500AC-9I* Order No. 2297060	ELR H5-I-SC-230AC/500AC-9 Order No. 2900578	ELR H3-IES-SC-230AC/500AC-9 Order No. 2900570
		120/230 V AC	ELR H5-IES-SC-24DC/500AC-9 Order No. 2900421	ELR H5-I-SC-24DC/500AC-9 Order No. 2900576	ELR H3-IES-SC-24DC/500AC-9 Order No. 2900569

\* Terminals L1–L3 and T1–T3 rotated



		Starting/Reversing	
2 in 1		2 in 1	1 in 1
 <p><b>Direct Starter + motor protection</b></p> 		 <p><b>Reversing Starters</b></p> 	 <p><b>Direct Starters</b></p> 
<p><b>ELR H3-I-SC-24DC/500AC-0,6</b> Order No. 2900542</p> <p><b>ELR H3-I-SC-230AC/500AC-0,6</b> Order No. 2900685</p> <p><b>ELR H3-I-SC-24DC/500AC-2</b> Order No. 2900543</p> <p><b>ELR H3-I-SC-230AC/500AC-2</b> Order No. 2900544</p> <p><b>ELR H3-I-SC-24DC/500AC-9</b> Order No. 2900545</p> <p><b>ELR H3-I-SC-230AC/500AC-9</b> Order No. 2900546</p>		<p><b>ELR H5-SC-24DC/500AC-9</b> Order No. 2900538</p> <p><b>ELR H5-SC-230AC/500AC-9</b> Order No. 2900539</p>	<p><b>ELR H3-SC-24DC/500AC-9</b> Order No. 2900530</p> <p><b>ELR H3-SC-230AC/500AC-9</b> Order No. 2900531</p>
		<p><b>Maximum load current</b></p> <p><b>Housing width</b></p> <p><b>Input voltage</b></p>	
		<p><b>9 A</b></p> <p><b>22.5 mm</b></p>	
		<p><b>24 V DC</b></p> <p><b>120/230 V AC</b></p>	
<p><b>Bridge for Hybrid Motor Starter</b> For looping through the 3-phase supply</p>			
2-way	<b>BRIDGE-2</b>	Order No. 2900746	
3-way	<b>BRIDGE-3</b>	Order No. 2900747	
4-way	<b>BRIDGE-4</b>	Order No. 2900748	
5-way	<b>BRIDGE-5</b>	Order No. 2900749	
6-way	<b>BRIDGE-6</b>	Order No. 2900750	
7-way	<b>BRIDGE-7</b>	Order No. 2900751	
8-way	<b>BRIDGE-8</b>	Order No. 2900752	
9-way	<b>BRIDGE-9</b>	Order No. 2900753	
10-way	<b>BRIDGE-10</b>	Order No. 2900754	

## Reliable protection

### Hybrid Motor Starters



**4 in 1**  
+ short-circuit protection



Maximum load current	Housing width		Input voltage	Product details
	22.5 mm	22.5 mm		
	0.6 A	2.4 A		
0.6 A	24 V DC	ELR-H51-IESSC-24DC500AC-06 Order No. 2902746	+ Din rail adapter: ELR-H51-0.6-DIN-RAIL-SET Order No. 2902952	
		ELR-H51-IESSC-24DC500AC-2 Order No. 2902744		+ DIN rail adapter ELR-H51-2.4-DIN-RAIL-SET Order No. 2902953
2.4 A	24 V DC	ELR-H51-IESSC-24DC500AC-9 Order No. 2902745	+ DIN rail adapter: ELR-H51-9-DIN-RAIL-SET Order No. 2902954	

### DIN rail adapter



**EM-RD-ADAPTER**  
Order No. 2902747

### Busbar adapter



160 mm      200 mm  
**EM-RI-ADAPTER COMPACT**      **EM-RI-ADAPTER CLASSIC**  
Order No. 2902748      Order No. 2902831

### Fuses

**Coordination type 1**  
(e.g., for heavy-starting motors)

30 kA / 500 V  
**FUSE-10X38-30A-MR**  
Order No. 2903119

**Coordination type 2**  
Devices are delivered with the following fuses:  
0.6 A and 2.4 A device      9 A device

10 kA / 500 V      5 kA/400 V  
**FUSE-10X38-16A-GR**      **FUSE-10X38-20A-GR**  
Order No. 2903126      Order No. 2903384

## Smart wiring

### Hybrid Motor Starters



**4 in 1**  
+ SmartWire-DT™



Maximum load current	Housing width		Input voltage	Product details
	22.5 mm	22.5 mm		
	0.6 A	2.4 A		
0.6 A	24 V DC	ELR H5-IES-SC-SWD/500AC-06 Order No. 2903116		
2.4 A	24 V DC	ELR H5-IES-SC-SWD/500AC-2 Order No. 2903117		
9 A	24 V DC	ELR H5-IES-SC-SWD/500AC-9 Order No. 2903118		

### Power-feed module



**EU5C-SWD-PF2-1 PXC**  
Order No. 2903113

### Network termination plug



**SWD4-RC8-10 PXC**  
Order No. 2903106

### CONTACTRON adapter



**EM SWD-ADAPTER**  
Order No. 2902776

### Coupling for flat plug



**SWD4-8SFF2-5 PXC**  
Order No. 2903109



## Gateways



**CANopen  
PROFIBUS DP  
Ethernet**

CANopen  
**EU5C-SWD-CAN PXC**  
Order No. 2903098

PROFIBUS DP  
**EU5C-SWD-DP PXC**  
Order No. 2903100

Ethernet  
**EU5C-SWD-EIP-MODTCP PXC**  
Order No. 2903244

## I/O modules



**Digital and  
analog modules**

Digital module: 4 inputs, 4 outputs  
**EU5E-SWD-4D4D PXC**  
Order No. 2903101

Digital module: 4 inputs  
**EU5E-SWD-4DX PXC**  
Order No. 2903102

Digital module: 8 outputs  
**EU5E-SWD-X8D PXC**  
Order No. 2903103

Analog module: 2 inputs, 2 outputs  
**EU5E-SWD-2A2A PXC**  
Order No. 2903104

## Device plug, 8-pole



**SWD4-8SF2-5 PXC**  
Order No. 2903107

## Flat plug, 8-pole



**SWD4-8MF2 PXC**  
Order No. 2903108

## Flat-ribbon cable, 8-pole



100 m: **SWD4-100LF-8-24 PXC**  
Order No. 2903111

3 m: **SWD-3LF8-24-2S**  
Order No. 2903112

## Pliers



Pliers for device plugs: **SWD4-CRP-1 PXC**  
Order No. 2903110

Pliers for flat plugs: **SWD4-CRP-2 PXC**  
Order No. 2903114

## Configuration software SmartWire-DT™ Assist





You can set up and configure a SmartWire-DT™ line without any software tools. The SWD-Assist software helps you to easily and quickly plan the SmartWire-DT™ line.

Standard MS Windows functions facilitate operation and handling. You can save the configuration and continue to use it for any number of other projects.

Download the software free of charge at:  
[www.phoenixcontact.net/catalog](http://www.phoenixcontact.net/catalog)



## Solid-State Contactors – wear-free switching

		Single-phase		3-phase	
					
Maximum load current	Housing width	Switching		Switching	
					
	Input voltage	Switching + reversing			
20 A	24 V DC	ELR 1-24DC/600AC-20 Order No. 2297138		ELR 3-24DC/500AC-2 Order No. 2297196	
	120/230 V AC	ELR 1-230AC/600AC-20 Order No. 2297141		ELR 3-230AC/500AC-2 Order No. 2297206	
30 A	24 V DC	ELR 1-24DC/600AC-30 Order No. 2297154		ELR 3-24DC/500AC-9 Order No. 2297219	
	120/230 V AC	ELR 1-230AC/600AC-30 Order No. 2297167		ELR 3-230AC/500AC-9 Order No. 2297222	
50 A	24 V DC	ELR 1-24DC/600AC-50 Order No. 2297170		ELR 3-24DC/500AC-16 Order No. 2297235	
	120/230 V AC	ELR 1-230AC/600AC-50 Order No. 2297183		ELR 3-230AC/500AC-16 Order No. 2297248	
37 A	24 V DC	ELR 2+1-24DC/500AC-37 Order No. 2297277		ELR W 2+1-24DC/500AC-37 Order No. 2297374	
	120/230 V AC	ELR 2+1-230AC/500AC-37 Order No. 2297280		ELR W 2+1-230AC/500AC-37 Order No. 2297387	

# Motor and system protection

## Motor Managers



**< 16 A**  
with integrated  
current transformers



**> 16 A for external current  
transformers** (e.g., with PACT  
current transformers)



**24 V DC**  
**EMM 3- 24DC/500AC-16-IFS**  
Order No. 2297523

**24 V DC**  
**EMM 3- 24DC/500AC-IFS**  
Order No. 2297497

**120/230 V AC**  
**EMM 3- 24DC/500AC-16-IFS**  
Order No. 2297536

**120/230 V AC**  
**EMM 3-230AC/500AC-IFS**  
Order No. 2297507

### Easy configuration and diagnostics

The CONTACTRON-DTM-IFS configuration software allows you to configure and parameterize the Motor Managers. Familiarize yourself with the software using the different video tutorials. Among other things, you will learn:

- How to set up the programming adapter and software
- How to configure and assign parameters for Motor Managers
- How to observe and record online values

Download the software free of charge at:  
[www.phoenixcontact.net/catalog](http://www.phoenixcontact.net/catalog)

### PROFIBUS gateway



**EM-PB-GATEWAY-IFS**  
Order No. 2297620

### Inline gateway



**IB IL IFS-MA-PAC\***  
Order No. 2992720

### T-BUS connector



**ME 22,5 TBUS 1,5/ 5-ST-3,81 GN**  
Order No. 2707437

### USB programming adapter



**IFS-USB-PROG-ADAPTER**  
Order No. 2811271



\* Suitable connecting cable for Inline gateway  
**IMC 1,5/5-ST-3,81SET IL IFS 2M**, Order No. 1784729

Further information on the products presented here and on the world of solutions from Phoenix Contact can be found at [www.phoenixcontact.net/catalog](http://www.phoenixcontact.net/catalog)



Or contact us directly.



**Modular Terminal Blocks**  
CLIPLINE 1



**Marking Systems, Tools, and Mounting Material**  
CLIPLINE 2



**Connection Technology for Field Devices and Field Cabling**  
PLUSCON



**Device Connection Technology and Electronic Housings**  
COMBICON



**Power and Signal Quality**  
TRABTECH



**Signal Converters, Switching Devices, Power Supply Units**  
INTERFACE



**Automation Components and Systems**  
AUTOMATION

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