

LIMITED LIFETIME
WARRANTY

BUILD WITH CONFIDENCE

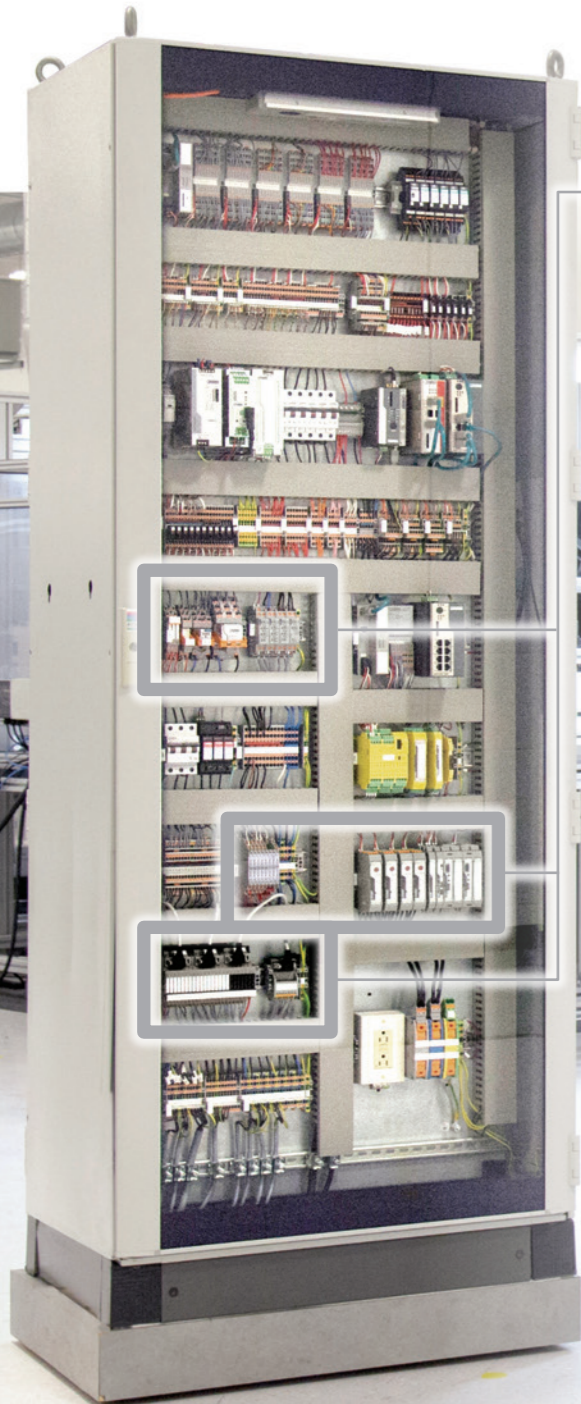
Signal switching and conditioning

Analog, digital, and motor switching

Cabinet Confidence

Your trusted partner for the control cabinet

From connectivity to control, Phoenix Contact gives you the confidence you need in your production systems. Our longstanding commitment to quality and innovation will give you the peace of mind and competitive edge to succeed in today's highly complex manufacturing world.

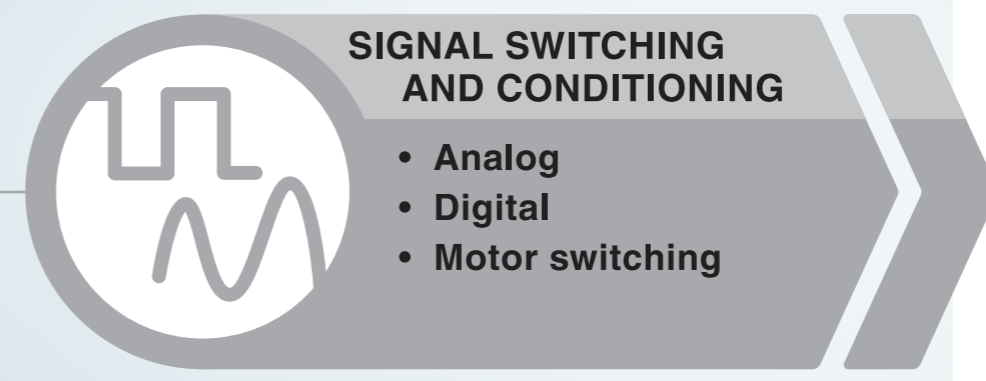


- NETWORKING
- AUTOMATION AND CONTROL
- CONNECTIVITY
-
- POWER RELIABILITY
- SAFETY
- SHOP FLOOR PRODUCTIVITY

 **LIMITED LIFETIME WARRANTY**
BUILD WITH CONFIDENCE

Signal switching and conditioning

Every signal has a specific purpose and not all signals are the same. And sometimes along the journey, signals may need to be isolated, amplified, or converted to serve their purpose in the system. Ensuring the signal's mission is accomplished can be as simple as choosing a universal product, or might require digging deeper and allowing the application to dictate the product selection. Analog signals, digital signals, and motors all require the right product to ensure that the signal gets the job done.

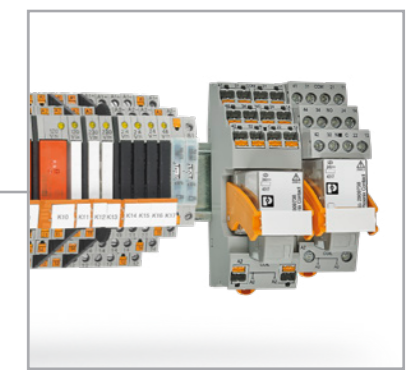


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Analog



Digital



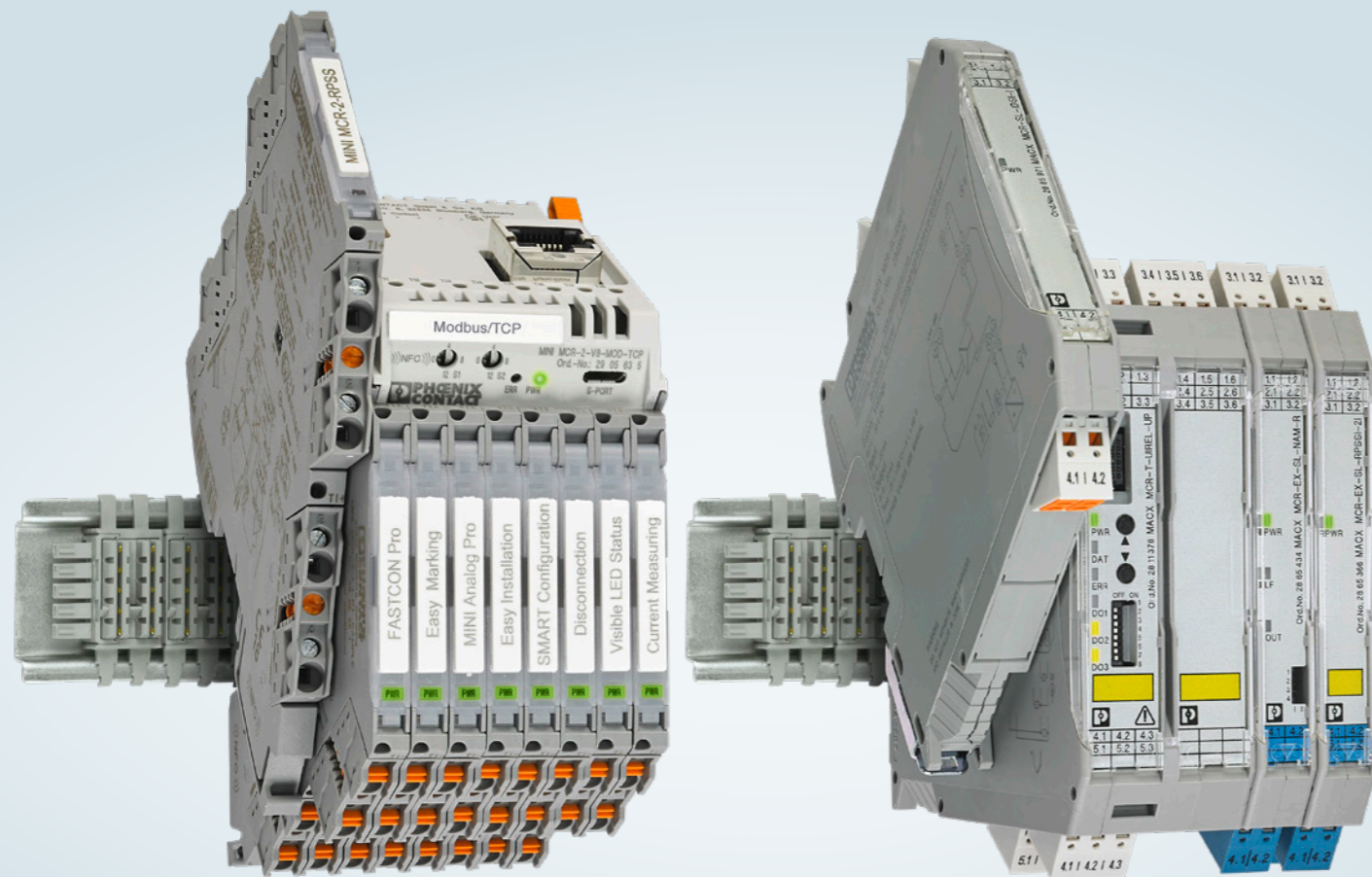
Motor switching

Analog

Analog signal conditioners and compact analog signal conditioners

Isolating, amplifying, and converting are the most basic functions of these signal conditioners, and they do it in style. Configure the module with DIP switches, software, or even NFC. Connection of the device can be done simply with PT technology and integrated T-Bus to save time throughout the process.

- MINI Analog Pro is the flagship series for signal conditioning
- MACX devices integrate functional safety and signal conditioning
- Protocol transmitters connect your analog devices with industrial networks



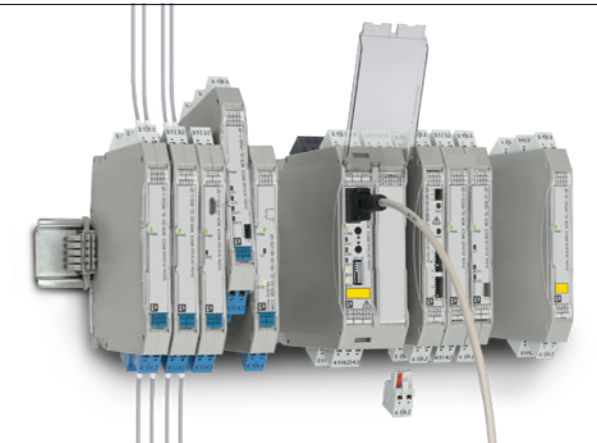
MINI Analog Pro

- ✓ Industry-exclusive pluggable 6.2 mm housing
- ✓ Test signals without disconnecting loops
- ✓ Solutions for many analog signal types
- ✓ DIP switch and software programming options
- ✓ Ruggedized design - EX Triple Rated (UL, ATEX, and IECEx), operating range -40° to +70° C, supply voltage 9.6 V DC-30 V DC, 3kV isolation input to output



MACX devices

- ✓ Modules with process safety and machine safety approvals
- ✓ Slim 12.5 mm modules in single- and dual-channel
- ✓ Universal temperature conversion modules for all sensor types
- ✓ Universal analog signal converters with limit relays
- ✓ Wide range operating voltage modules, from 24-240 V AC/DC



HART and industrial protocols

- ✓ Network adapters for analog and digital signals
- ✓ Safely isolate from field to network
- ✓ Modules for isolation and transmission of HART communications
- ✓ Ex and non-Ex versions for HART primary values



Analog

Intrinsic safety and analog field devices

Analog signals often begin in the field and work their way back to the control system. Throughout their journey, they can be subject to a number of complications that may not be clear for an analog card to read. These signals may require some processing to ensure the data gets back to the controller accurately, or these signals may need to be altered to ensure they don't pose a risk to assets around them.

- Intrinsic safety isolators support the most hazardous locations
- Process displays visualize the signals
- Temperature head transmitters provide easy temperature measurements



Intrinsic safety isolators

- ✓ Intrinsically safe power-limiting devices
- ✓ Isolates field-connected devices in hazardous areas from safe areas
- ✓ DIP switch and software programming options
- ✓ Universal power supply options for legacy applications
- ✓ Narrow 12.5 mm housing width and multi-channel devices
- ✓ Universal use for hazardous locations around the globe with approvals that cover all gas and dust groups



Process displays

- ✓ Simple configuration via front buttons or software
- ✓ Integrated HART communications
- ✓ Standard cutout sizes for easy integration
- ✓ Global approvals
- ✓ Advanced display with bar graph and error indication
- ✓ Accepts voltage, current, thermocouple, and RTD inputs
- ✓ EX and non-Ex versions



Temperature head transmitters

- ✓ Programmable and customizable via software
- ✓ Loop-powered for easy wiring
- ✓ Accepts voltage, thermocouple, and RTD inputs
- ✓ Supports HART communications
- ✓ Wide-range power supply voltage and temperature ratings
- ✓ Install temperature transducers directly in head transmitters
- ✓ EX and non-Ex versions



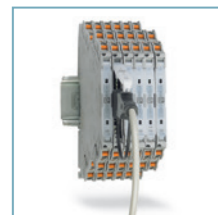
Common analog products

Analog signal conditioners and compact analog signal conditioners					
A. What type of conversion and/or isolation do you need?					
B. What is your input signal?					
C. What is your output signal?					
D. What is the module power? (Standard is module powered by separate 24 V DC circuit)					
E. Resulting order number					

A. Type	B. Input signal	C. Output signal	D. Module power	Type description	E. Order number
Fixed signal conversion and isolation	4-20 mA	4-20 mA	Line	MINI MCR-2-I-I	2901998
	0-10 V DC	0-10 V DC	Line	MINI MCR-2-U-U	2902042
	4-20 mA	0-10 V DC	Line	MINI MCR-2-I4-U	2902002
	0-10 V DC	4-20 mA	Line	MINI MCR-2-U-I4	2902029
	4-20 mA/HART	4-20 mA/HART	Line	MINI MCR-2-RPSS-I-I	2901998
Universal and configurable analog signal conversion and isolation	Universal	Universal	Line	MINI MCR-2-UNI-UI-UIRO	2902037
	Universal	Universal	Line	MACX MCR-UI-UI-NC	2811446
	Universal	Universal	Line	MACX MCR-UI-UI-UP-NC	2811297
Temperature signal conversion and isolation	PT100	Common analog	Line	MINI MCR-SL-PT100-UI-NC	2864273
	PT100	Common analog	Loop	MINI MCR-SL-PT100-LP-NC	2810308
	RTD	Universal analog	Line	MINI MCR-2-RTD-UI	2902049
	Thermocouple	Universal analog	Line	MINI MCR-2-TC-UI	2902055
	Universal analog	Universal analog w-set point	Line	MACX MCR-T-UI-UP	2811394
	Universal analog	Universal analog w-3 set points	Line	MACX MCR-T-UIREL-UP	2811378
	Universal temperature	N.O. relay set point	Line	MINI MCR-2-T-REL	2905632
Loop-powered signal conversion and isolation	Active universal analog	Active 4-20 mA	Loop	MINI MCR-2-UI-I-OLP	2902061
	Active 4-20 mA	Passive 4-20 mA	Loop	MINI MCR-2-I-I-ILP	2901994
	Active 4-20 mA	Passive 4-20 mA	Loop	MINI MCR-2-2I-2I-ILP	2901996
	Passive 4-20 mA	Active 4-20 mA	Loop	MINI MCR-2-RPS-I-I-OLP	2906446
	Passive 4-20 mA	Active 4-20 mA	Loop	MINI MCR-2-RPS-2I-2I-OLP	2906448
Specialty signal conversion and isolation	Universal analog	2x 4-20 mA	Line	MINI MCR-2-UI-2I-NC	2905026
	4-20 mA/HART	2x 4-20 mA/HART	Line	MINI MCR-2-RPSS-I-2I	2905628
	Frequency and PWM	Analog	Line	MINI MCR-2-F-UI	2902056
	Analog	Frequency and set point	Line	MINI MCR-2-UI-FRO	2902031
	Potentiometer	Analog	Line	MINI MCR-2-POT-UI	2902016
	Universal analog	Set point/relay out	Line	MINI MCR-2-UI-REL	2902033
	Load cell/strain gauge	4-20 mA/ 0-10 V	Line	MCR-SGA-4/6-DC	5604058
HART compatible	4-20 mA/HART	4-20 mA/HART	Line	MINI MCR-2-RPSS-I-I	2901998
	4-20 mA/HART	4-20 mA/HART	Line	MACX MCR-SL-RPSSI-I	2865955
	Universal temperature	4-20mA/HART - head mount	Loop	FA MCR-HT-TS-I-OLP-PT	2908742
	Universal temperature	4-20 mA/HART	Loop	MACX MCR-TS-I-OLP	2908662

Other module power options are:

- Universal powered (-UP) which is a 24-240 V AC/DC powered module
- Loop powered (-LP) in which the module is powered by the 4-20 mA input signal or by output side 4-20 mA loop



MINI Analog Pro



Analog signal conditioners



Intrinsic safety



Process displays

Analog signal conditioners for hazardous location and intrinsic safety					
A. What type of conversion and/or isolation do you need?					
B. What is your input signal?					
C. What is your output signal?					
D. What is the module power? (Standard is module powered by separate 24 V DC circuit)					
E. Resulting order number					

A. Type	B. Input signal	C. Output signal	D. Module power	Type description	E. Order number
Digital outputs/solenoid drivers for hazardous locations	25.1V, 87 mA	Loop powered 20...30 V DC	Loop	MACX MCR-EX-SL-SD-21-40-LP	2865764
	27.7V, 101 mA	Loop powered 20...30 V DC	Loop	MACX MCR-EX-SL-SD-24-48-LP	2865609
	25.1V, 188 mA	Loop powered 20...30 V DC	Loop	MACX MCR-EX-SL-SD-21-60-LP	2865515
	23.98V, 37.4 mA	Switching level 15...30 V DC	Line	MACX MCR-EX-SL-SD-21-25-LFD	2905669
	25.3V, 94 mA	Switching level 15...30 V DC	Line	MACX MCR-EX-SL-SD-23-48-LFD	2924867
	27.06V, 91.11 mA	Switching level 15...30 V DC	Line	MACX MCR-EX-SL-SD-24-48-LFD	2906155
Digital inputs for hazardous locations	NAMUR	1x NO, NC (SPDT)	Line	MACX MCR-EX-SL-NAM-R	2865434
	NAMUR	2x NO (SPST)	Line	MACX MCR-EX-SL-NAM-2RO	2865450
	2x NAMUR	2x NO (SPST)	Line	MACX MCR-EX-SL-2NAM-RO	2865476
	2x NAMUR	2x NO, NC (SPDT)	Line	MACX MCR-EX-SL-2NAM-R-UP	2865984
	NAMUR	2x transistors	Line	MACX MCR-EX-SL-NAM-2T	2865463
	2x NAMUR	2x transistors	Line	MACX MCR-EX-SL-2NAM-T	2865489
Temperature signal conversion and isolation for hazardous locations	RTD	4-20 mA	Line	MACX MCR-EX-SL-RTD-I-NC	2865078
	Thermocouple	4-20 mA	Line	MACX MCR-EX-SL-TC-I-NC	2924346
	Universal analog	Universal w-set point	Line	MACX MCR-EX-T-UI-UP	2865654
	Universal analog	Universal w-3 set points	Line	MACX MCR-EX-T-UIREL-UP	2865751
HART compatible	Universal temperature	4-20mA/HART - head mount	Loop	FA MCR-EX-HT-TS-I-OLP-PT	2908743
	Universal temperature	4-20 mA/HART	Loop	MACX MCR-EX-TS-I-OLP	2908660
	4-20 mA/HART	4-20 mA/HART	Line	MACX MCR-EX-SL-RPSSI-I	2865340
	4-20 mA/HART	2x 4-20 mA/2x HART	Line	MACX MCR-EX-SL-RPSSI-2I	2865366
	2x 4-20 mA/HART	2x 4-20 mA/HART	Line	MACX MCR-EX-SL-RPSSI-2I-2I	2865382
	4-20 mA/HART	4-20 mA/HART output	Line	MACX MCR-EX-SL-IDSI-I	2865405

Specialty analog displays

A. What type of display?					
B. What is your input signal?					
C. What is your output signal?					
D. What is the module power? (Standard is module powered by separate 24 V DC circuit)					
E. Resulting order number					

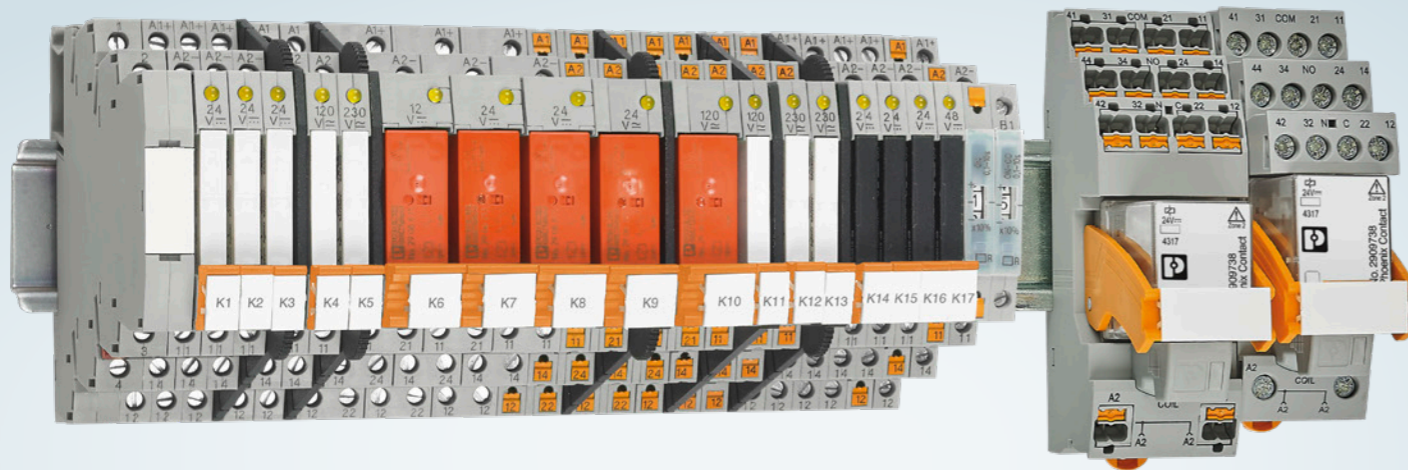
A. Type	B. Input signal	C. Output signal	D. Module power	Type description	E. Order number
Universal display w- alarming	Analog/temperature sensors	Analog w- set points	Line	FA MCR-D-TUI-UI-2REL-UP	2907064
Universal display w- alarming	Analog/temperature sensors	Analog w- set points	Line	FA MCR-EX-D-TUI-UI-2REL-UP	2907216
Universal display w- alarming	Analog/temperature sensors	Analog w- set points	Line	FA MCR-EX-FD-TUI-UI-2REL-UP	2907781
Dedicated	4-20 ma/HART	4-20 ma/HART	Loop	FA MCR-DS-I-I-OLP	2908781
Dedicated	4-20 ma/HART	4-20 ma/HART	Loop	FA MCR-EX-DS-I-I-OLP	2908800
Dedicated	4-20 ma/HART	4-20 ma/HART	Loop	FA MCR-EX-FDS-I-I-OLP	2908801

Accessories

Order number	Description	Order number	Type description
2695439	T-Bus gray	2905634	MINI Pro Adapter to Modbus RTU
2902066	Power terminal block	2905635	MINI Pro Adapter to Modbus TCP
2904504	Fault monitoring module	2905636	MINI Pro Adapter to Profibus-DP
2901993	MINI Pro V8 adapter to quick cabling	2865625	MACX MCR-PTB

Digital

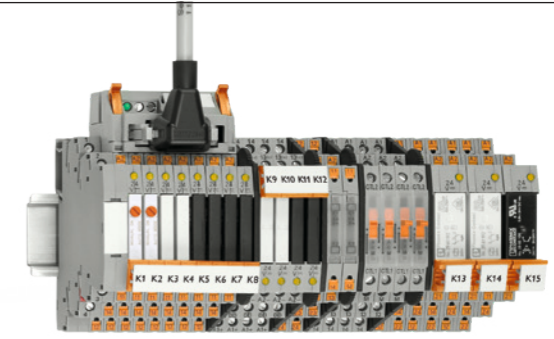
The most basic function of the industrial relay is to act as an interface module to switch something from one state to another. Phoenix Contact products do that and much more. The need to switch, isolate, amplify, or convert digital signals can be found in every industry, and our wide range of products offers a variety of cost-effective solutions to meet all requirements, from simple switching to more advanced control.



In 1996, Phoenix Contact set the industry standard with the plug-in Slimline relay, and we haven't slowed down since. Innovation is part of our core and it plays throughout our world-class digital product portfolio.

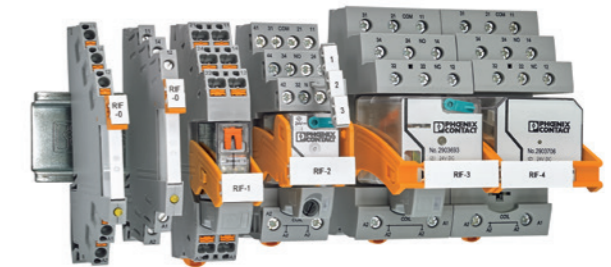
Slimline relays

The most versatile relay product family, the PLC relays, boast a 6.2 mm width that can handle almost all AC and DC switching applications. Step outside the standard universal relay and you will find a number of specific options to handle your application perfectly.



Ice cube relays

Implement all standard relay applications with the economical and effective RIFLINE complete system of relays. This Phoenix Contact legacy product features a universal plug-in design for quick, easy, and error-free handling.



Solid state contactors

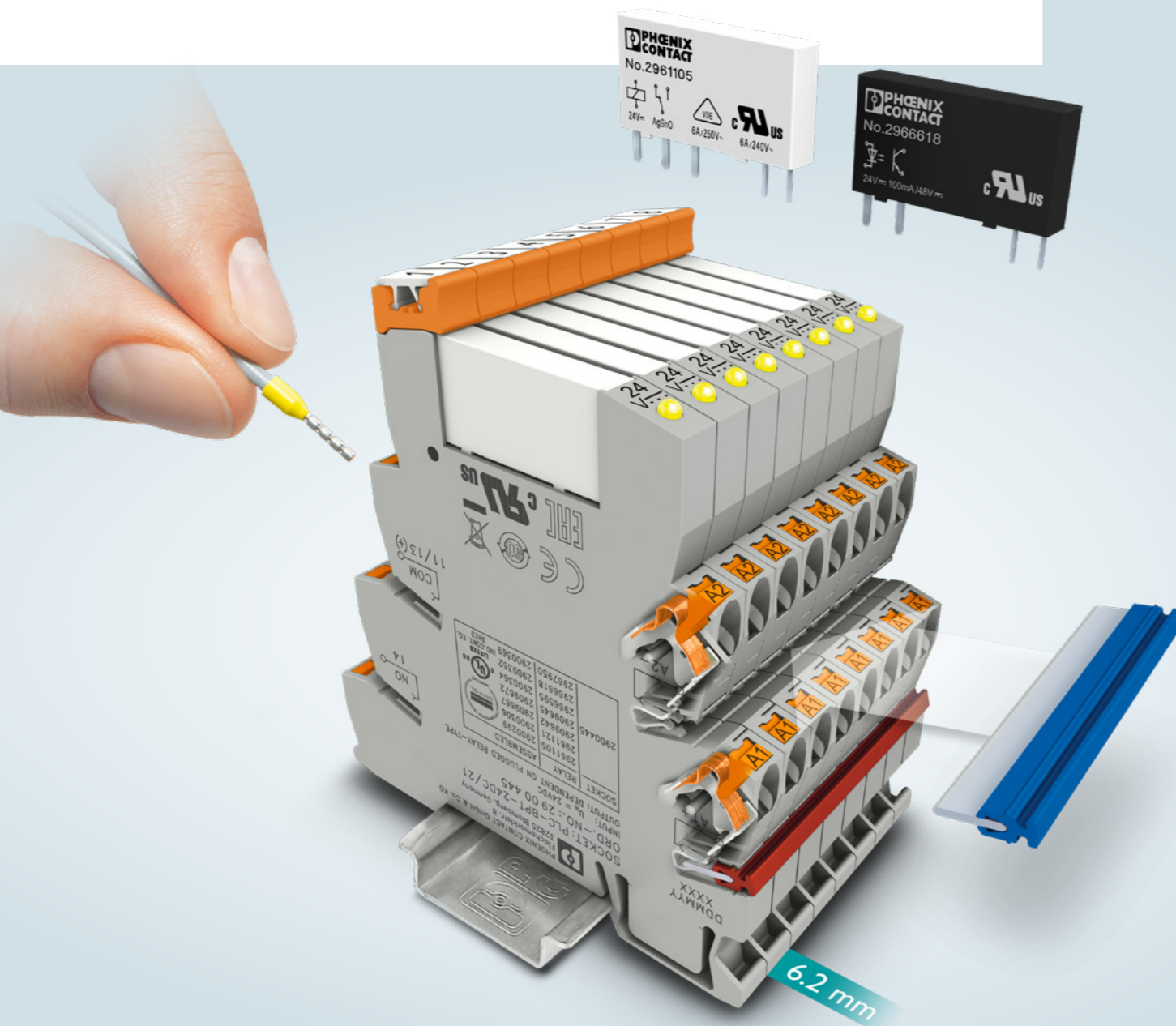
Solid state contactors are far superior to mechanical contactors in terms of switching speed, service life, and robustness. They switch resistive and inductive loads silently and without wear.



Digital Slimline relays

The PLC relay family from Phoenix Contact has been the industry standard since 1996. This family includes over 700 different part numbers ready to meet the needs of any switching applications. Not only are its external features important to its use, the core of the relay is made from a copper “lead frame” ensuring reliable connections every time.

- Universal Slimline relays are the go-to for almost every application
- Application-specific relays are perfect for special requirements
- Specialty relays assist with unique functionality



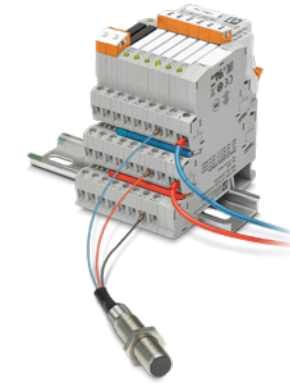
Universal Slimline relays

- ✓ Just 6.2 mm wide on the DIN rail
- ✓ Plug-in electromechanical or solid-state relays
- ✓ Choose traditional screw cage or fast Push-in technology
- ✓ Versatile accessories enable easier and faster wiring
- ✓ Quick connection to many PLCs via pluggable system cabling adapter



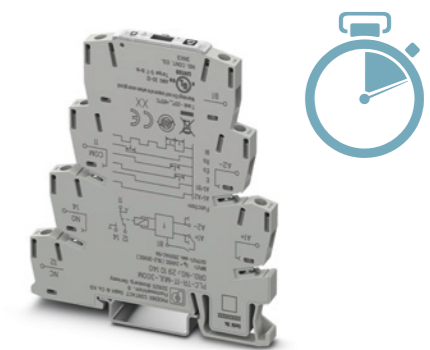
Application-specific relays

- ✓ Sensor and actuator relays simplify and minimize components
- ✓ Hazardous Location relays are perfect for C1D2 areas
- ✓ NAMUR relays convert reliable communication to PLCs
- ✓ Railway-approved relays provide wide voltage range and high shock/vibe resistance



Specialty relays

- ✓ Timer relays control simple time sequences
- ✓ Manual switches are well-suited for maintenance and startup
- ✓ Filter relays eliminate leakage current from AC output cards
- ✓ Gold-plated relays ensure low-level signals maintain reliable switching

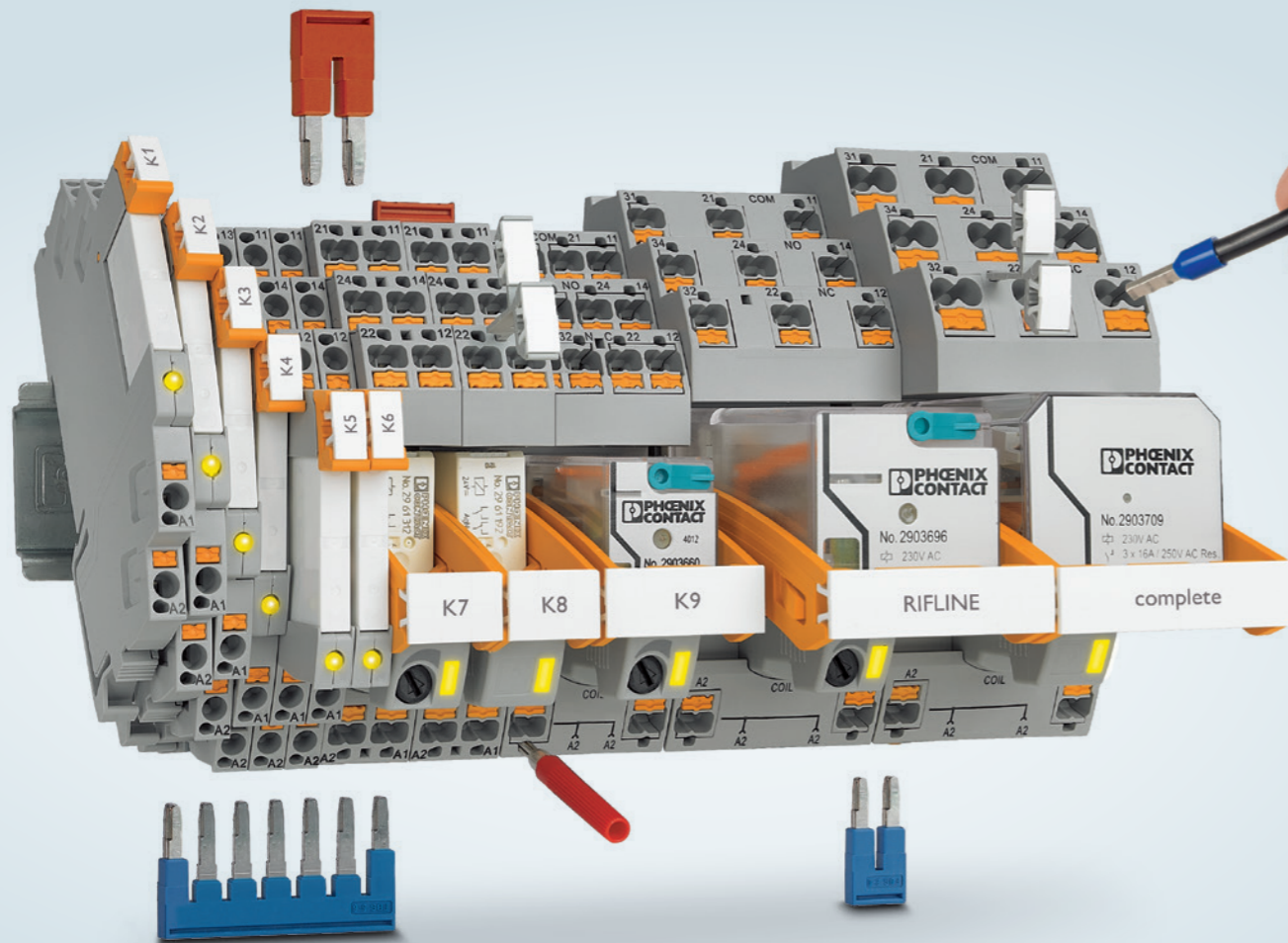


Digital

Ice cube relays and solid state contactors

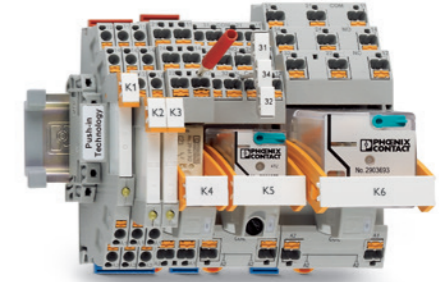
RIFLINE ice cube relays and solid state contactors are there to get the job done. With high reliability and simple implementation, the RIFLINE series features industry-standard footprints and relays to ensure its place in almost any application. Fully-assembled modules save even more time and boost productivity.

- Universal relays are ready to handle almost any application
- Specialty relays solve unique situations
- Solid state contactors are perfect for single and three-phase configurations



Universal relays

- ✓ Complete range covering all standard relay applications
- ✓ Choose traditional screw cage or fast Push-in technology
- ✓ Versatile accessories allow easier and faster wiring
- ✓ Available completely assembled or as separate components



Specialty relays

- ✓ Hazardous Location relays perfect for C1D2 areas
- ✓ Inexpensive high-power relays instead of contactors
- ✓ Octal relays fit the industry-standard footprint
- ✓ Force-guided ensures reliable signal exchange with feedback between two systems



Solid state contactors

- ✓ Available in single and three-phase configurations
- ✓ Instantaneous switching for precise applications
- ✓ Long service life compared to electromechanical parts
- ✓ Switch resistive and inductive loads silently and wear-free



Common digital products

Slimline relays: PLC relay					
A. What is the type needed?					
B. What is the input coil voltage? DC or AC?					
C. What is your switching current? (Ratings are for resistive loads)					
D. Contact arrangement? SPDT, DPDT, etc.					
E. What connection technology? (Screw or Push-in)					
F. Resulting order number					

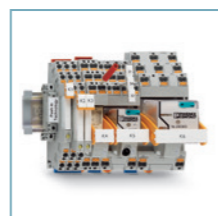
A. Type	B. Input coil voltage	C. Contact rating	D. Contact arrangement	E. Connection style	Description	F. Order number
Electro-mechanical relays (general purpose)	12 V DC	6 A	SPDT - 6.2 mm	SCREW	PLC-RSC- 12DC/21	2966906
				PUSH-IN	PLC-RPT- 12DC/21	2900316
			DPDT - 14 mm	SCREW	PLC-RSC- 12DC/21-21	2967235
				PUSH-IN	PLC-RPT- 12DC/21-21	2900329
	24 V DC	50 mA	SPDT - 6.2 mm	SCREW	PLC-RSC- 24DC/21AU	2966265
				PUSH-IN	PLC-RPT- 24DC/21AU	2900306
			SPDT - 6.2 mm	SCREW	PLC-RSC- 24DC/21	2966171
				PUSH-IN	PLC-RPT- 24DC/21	2900299
	DPDT - 14 mm	SCREW	PLC-RSC- 24DC/21-21	2967060		
		PUSH-IN	PLC-RPT- 24DC/21-21	2900330		
	24 V AC or DC	6 A	SPDT - 14 mm	SCREW	PLC-RSC- 24DC/21HC	2967620
				PUSH-IN	PLC-RPT- 24DC/21HC	2900291
SPDT - 6.2 mm			SCREW	PLC-RSC- 24UC/21	2966184	
			PUSH-IN	PLC-RPT- 24UC/21	2900300	
120 V AC or DC	6 A	DPDT - 14 mm	SCREW	PLC-RSC- 24UC/21-21	2967073	
			PUSH-IN	PLC-RPT- 24UC/21-21	2900332	
		SPDT - 6.2 mm	SCREW	PLC-RSC-120UC/21	2966197	
			PUSH-IN	PLC-RPT-120UC/21	2900304	
Solid state relays (general purpose)	5 V DC	3 A	NO ONLY - 6.2 mm	SCREW	PLC-OSC- 5DC/ 24DC/ 2/ACT	2980144
				PUSH-IN	PLC-OPT- 5DC/ 24DC/ 2/ACT	2900375
	24 V DC	100 mA	NO ONLY - 6.2 mm	SCREW	PLC-OSC- 24DC/ 48DC/100	2966728
				PUSH-IN	PLC-OPT- 24DC/ 48DC/100	2900352
120 V AC or DC	3 A	NO ONLY - 6.2 mm	SCREW	PLC-OSC- 24DC/ 24DC/ 2	2966634	
			PUSH-IN	PLC-OPT- 24DC/ 24DC/2	2900364	
Note: AC outputs also available						
Hazardous Location (HazLoc) relays	12 V DC	6 A	SPDT - 6.2 mm	SCREW	PLC-RSC-12DC/21/EX	2909522
				SCREW	PLC-RSC-12DC/21-21/EX	2909517
			SPDT - 14 mm	SCREW	PLC-RSC-12DC/21/HC/EX	2909518
				SCREW	PLC-RSC-24DC/21/EX	2909524
	24 V DC	6 A	SPDT - 6.2 mm	PUSH-IN	PLC-RPT-24DC/21/EX	2909528
				SCREW	PLC-RSC-24DC/21-21/EX	2909509
			DPDT - 14 mm	PUSH-IN	PLC-RPT-24DC/21-21/EX	2909514
				SCREW	PLC-RSC-24DC/21/HC/EX	2909519
	120 V AC or DC	6 A	SPDT - 14 mm	PUSH-IN	PLC-RPT-24DC/21/HC/EX	2909532
				SCREW	PLC-RSC-120UC/21/EX	2909525
			SPDT - 6.2 mm	SCREW	PLC-RSC-120UC/21-21/EX	2909511
				SCREW	PLC-RSC-120UC/21/HC/EX	2909520
Note: Additional options are available						
Specialty relays	24 V DC	6 A	NO ONLY - 6.2 mm	SCREW	PLC-RSC- 24DC/ 1/ACT	2966210
	120 V AC/DC	6 A	SPDT - 6.2 mm	SCREW	PLC-RSC- 24DC/ 1AU/SEN	2966317
		6 A	SPDT - 6.2 mm	SCREW	PLC-RSC-120UC/21/SO46	5603593
Note: Other specialty relays available (manual switch, force-guided, filter, high-density, DC motor control, etc.)						
Replacement parts – mechanical relays	12 V DC	6 A	SPDT - 6.2 mm		REL-MR- 12DC/21	2961150
	24 V DC	6 A	SPDT - 6.2 mm		REL-MR- 24DC/21	2961105
			DPDT - 14 mm		REL-MR- 24DC/21-21	2961192
			SPDT - 14 mm		REL-MR- 24DC/21HC	2961312
120 V AC	6 A	SPDT - 6.2 mm		REL-MR-60DC/21	2961118	
120 V AC	6 A	DPDT - 14 mm		REL-MR-110DC/21-21	2961202	
Replacement parts – solid state relays	5 V DC	3 A	SPST - 6.2 mm		OPT- 5DC/ 24DC/ 2	2967989
	24 V DC	3 A	SPST - 6.2 mm		OPT-24DC/ 24DC/ 2	2966595
	120 V AC	3 A	SPST - 6.2 mm		OPT-60DC/24DC/2	2966605



Slimline relays



Specialty relays



Ice cube relays



Solid state contactors

Ice cube relays: RIFLINE					
A. What is the input coil voltage? DC or AC?					
B. What is your switching current? (Ratings are for resistive loads)					
C. Contact arrangement? SPDT, DPDT, etc.					
D. What connection technology? (Screw or Push-in)					
E. Resulting order number					

A. Input coil voltage	B. Contact rating	C. Contact arrangement	D. Connection style	Description	E. Order number
12 V DC	6 A	NO ONLY	SCREW	RIF-0-RSC-12DC/ 1	2903367
			PUSH-IN	RIF-0-RPT-12DC/ 1	2903362
24 V DC	6 A	NO ONLY	SCREW	RIF-0-RSC-24DC/ 1	2903366
			PUSH-IN	RIF-0-RPT-24DC/ 1	2903361
12 V DC	11 A	SPDT	SCREW	RIF-1-RSC-LDP-12DC/1X21	2908500
			PUSH-IN	RIF-1-RPT-LDP-12DC/1X21	2906224
	8 A	DPDT	SCREW	RIF-1-RSC-LDP-12DC/2X21	2908501
			PUSH-IN	RIF-1-RPT-LDP-12DC/2X21	2906223
24 V DC	11 A	SPDT	SCREW	RIF-1-RSC-LDP-24DC/1X21	2903358
			PUSH-IN	RIF-1-RPT-LDP-24DC/1X21	2903342
	8 A	DPDT	SCREW	RIF-1-RSC-LDP-24DC/2X21	2903350
			PUSH-IN	RIF-1-RPT-LDP-24DC/2X21	2903334
120 V AC	50 mA	SPDT	SCREW	RIF-1-RSC-LDP-24DC/1X21AU	2903354
			PUSH-IN	RIF-1-RPT-LDP-24DC/1X21AU	2903338
	DPDT	SCREW	RIF-1-RSC-LDP-24DC/2X21AU	2903346	
		PUSH-IN	RIF-1-RPT-LDP-24DC/2X21AU	2903330	
10 A	SPDT	SCREW	RIF-1-RSC-LV-120AC/1X21	2903356	
		PUSH-IN	RIF-1-RPT-LV-120AC/1X21	2903340	
8 A	DPDT	SCREW	RIF-1-RSC-LV-120AC/2X21	2903348	
		PUSH-IN	RIF-1-RPT-LV-120AC/2X21	2903332	
24 V DC	10 A	2PDT	SCREW	RIF-2-RSC-LDP-24DC/2X21	2903326
			PUSH-IN	RIF-2-RPT-LDP-24DC/2X21	2903315
	6 A	4PDT	SCREW	RIF-2-RSC-LDP-24DC/4X21	2903320
			PUSH-IN	RIF-2-RPT-LDP-24DC/4X21	2903308
120 V AC	8.5 A	2PDT	SCREW	RIF-2-RSC-LV-120AC/2X21	2903322
			PUSH-IN	RIF-2-RPT-LV-120AC/2X21	2903311
	6 A	4PDT	SCREW	RIF-2-RSC-LV-120AC/4X21	2903319
			PUSH-IN	RIF-2-RPT-LV-120AC/4X21	2903305
24 V DC	10 A	2PDT	SCREW	RIF-3-RSC-LDP-24DC/2X21	2903303
			PUSH-IN	RIF-3-RPT-LDP-24DC/2X21	2903297
	8.5 A	3PDT	SCREW	RIF-3-RSC-LDP-24DC/3X21	2903300
			PUSH-IN	RIF-3-RPT-LDP-24DC/3X21	2903294
120 V AC	7 A	2PDT	SCREW	RIF-3-RSC-LV-120AC/2X21	2903302
			PUSH-IN	RIF-3-RPT-LV-120AC/2X21	2903296
	6 A	3PDT	SCREW	RIF-3-RSC-LV-120AC/3X21	2903299
			PUSH-IN	RIF-3-RPT-LV-120AC/3X21	2903293
24 V DC	10 A	3PDT	SCREW	RIF-4-RSC-LDP-24DC/3X21	2903288
			PUSH-IN	RIF-4-RPT-LDP-24DC/3X21	2903278
120 V AC	8 A	3PDT	SCREW	RIF-4-RSC-LV-120AC/3X21	2903287
			PUSH-IN	RIF-4-RPT-LV-120AC/3X21	2903277

Solid state contactors					
A. What is the input coil voltage? DC or AC?					
B. Single phase or 3 phase load?					
C. Maximum load current? (AC only)					
D. Direct (On/Off) or reversing (FWD/REV + On/Off)?					
E. Resulting order number					

A. Input voltage	B. Single or 3Ø	C. Load current	D. Switching type	Description	E. Order number
24 V DC	Single	20 A AC	Direct	ELR 1-SC-24DC/600AC-20	1032919
		30 A AC		ELR 1-SC-24DC/600AC-30	1032921
		50 A AC		ELR 1-SC-24DC/600AC-50	1032926
	3Ø	2 A AC	Direct	ELR 3- 24DC/500AC- 2	2297196
		9 A AC	Reversing	ELR W3- 24DC/500AC- 2	2297293
			Direct	ELR 3- 24DC/500AC- 9	2297219
120 V AC	Single	37 A AC	Direct	ELR W3- 24DC/500AC- 9	2297316
		37 A AC	Reversing	ELR 2+1- 24DC/500AC-37	2297277
			Reversing	ELR W2+1- 24DC/500AC-37	2297374
	3Ø	20 A AC	Direct	ELR 1-SC-230AC/600AC-20	1032920
		30 A AC		ELR 1-SC-230AC/600AC-30	1032922
		50 A AC		ELR 1-SC-230AC/600AC-50	1032927
120 V AC	Single	2 A AC	Direct	ELR 3-230AC/500AC- 2	2297206
		9 A AC	Reversing	ELR W3-230AC/500AC- 2	2297303
			Direct	ELR 3-230AC/500AC- 9	2297222
	3Ø	9 A AC	Reversing	ELR W3-230AC/500AC- 9	2297329
			Direct	ELR 2+1-230AC/500AC-37	2297280
		37 A AC	Reversing	ELR W2+1-230AC/500AC-37	2297387

Motor switching

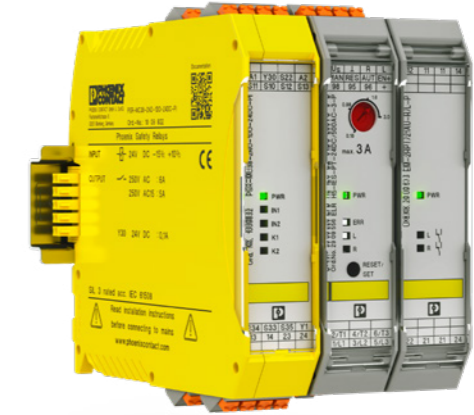
Electric motors are used in virtually all industrial applications, from pumps and fans, to conveyors and controlling movements. Phoenix Contact offers an innovative take on motor switching technology with CONTACTRON hybrid motor starters. Further monitoring and advanced control of motors can be realized with the motor manager suite of products. By combining the functionality of traditional starters with intelligent, long-life switching devices and advanced monitoring capabilities, our solutions save significant space and operational cost. This leads to a more productive, profitable, and IIoT-ready system.



Invented by Phoenix Contact and launched in 2009, hybrid technology provided one of the first noteworthy innovations for across-the-line motor starting in decades. Long service life, small form-factors, and simplified wiring are just some of the CONTACTRON family advantages.

Hybrid motor starters

CONTACTRON hybrid technology lasts 10 times longer than electromechanical motor starters, while requiring 75 percent less space and wiring time. Hybrid technology enables forward, reversing, overload protection, and safety functions for motors up to 5 HP, all packaged in a slim 22.5 mm housing. CONTACTRON motor starters can be wired as stand-alone devices, in modular groups, or networked for remote diagnostics and control capabilities.



Motor manager

Motor managers turn motors into sensors and provide real-time insight into machine operations. These devices monitor voltage, current, power, and power factor, and then turn that data into action. Combined with integrated monitoring, motor managers shut down the motor in event of a malfunction or grid-side issue. The Electronic Machine Manager allows the motor manager principles to be applied to machines, measuring and acting on data, providing predictive maintenance opportunities.



Motor switching

Hybrid motor starters

Control a single motor or a group of motors virtually wear-free with CONTACTRON motor starters. Hybrid technology provides reliable motor control for many years, with switching components that last up to 30 million cycles, which is 10 times that of other contactors. That is not to mention all the other benefits these devices can provide, such as integrated safe shutdown, motor protection functions, and network capabilities.

- Standalone module provides simple, long-life motor control
- Group motor controls up to 10 motors with integrated group-safe shutdown
- Networkable motor control enables IIoT connectivity of your motors



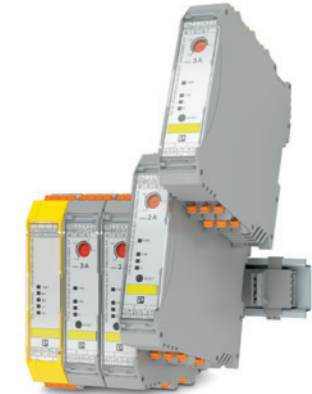
Stand-alone motor starters

- ✓ Hybrid technology increases service life by 10x
- ✓ Up to 75 percent smaller than equivalent IEC mechanical starters
- ✓ Integrated overload and motor protection functions
- ✓ Internally-integrated interlocking circuits reduce wiring time up to 75 percent
- ✓ Optional integrated e-stop, up to SIL3/PLe in combination with select safety relays



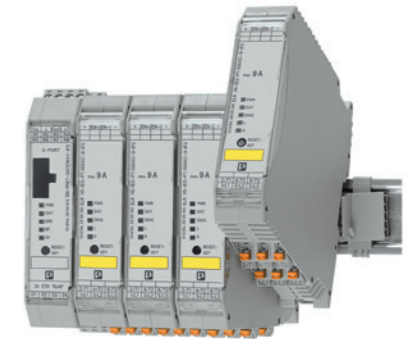
Modular motor starters

- ✓ T-bus backplane allows fast interconnection of devices
 - Bridge power, e-stop, and auxiliary contact signals
 - Further reduction in wiring time compared to stand-alone devices
- ✓ Next-generation hardened hybrid motor-switching technology onboard
- ✓ Auxiliary contact expansion modules
- ✓ Available PSR-MC38 safety relay enables group shutdowns via T-bus up to SIL3/PLe



Networkable motor starters

- ✓ Network-enabled starters built on proven next-generation hybrid technology
- ✓ Configure, control, and monitor motors via Ethernet
- ✓ Remotely monitor overloads, loss of phases, and more
- ✓ Ultimate wiring reduction with T-bus power and communications
- ✓ Less complex and more compact compared to variable frequency drives
- ✓ Also available with IO-Link interface

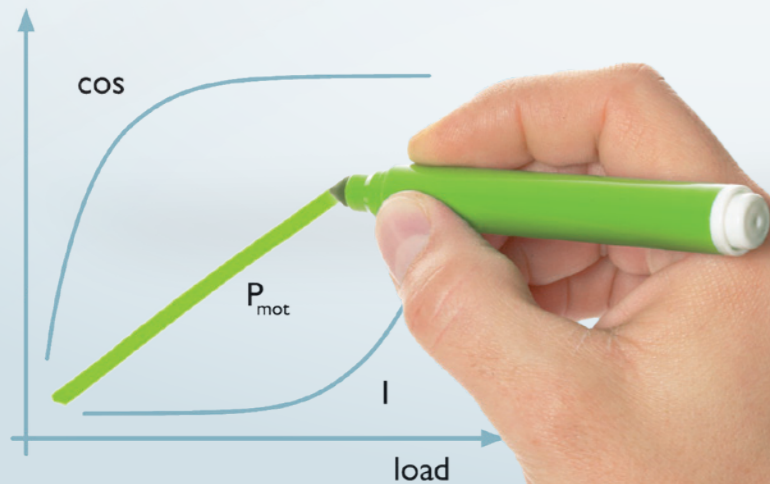
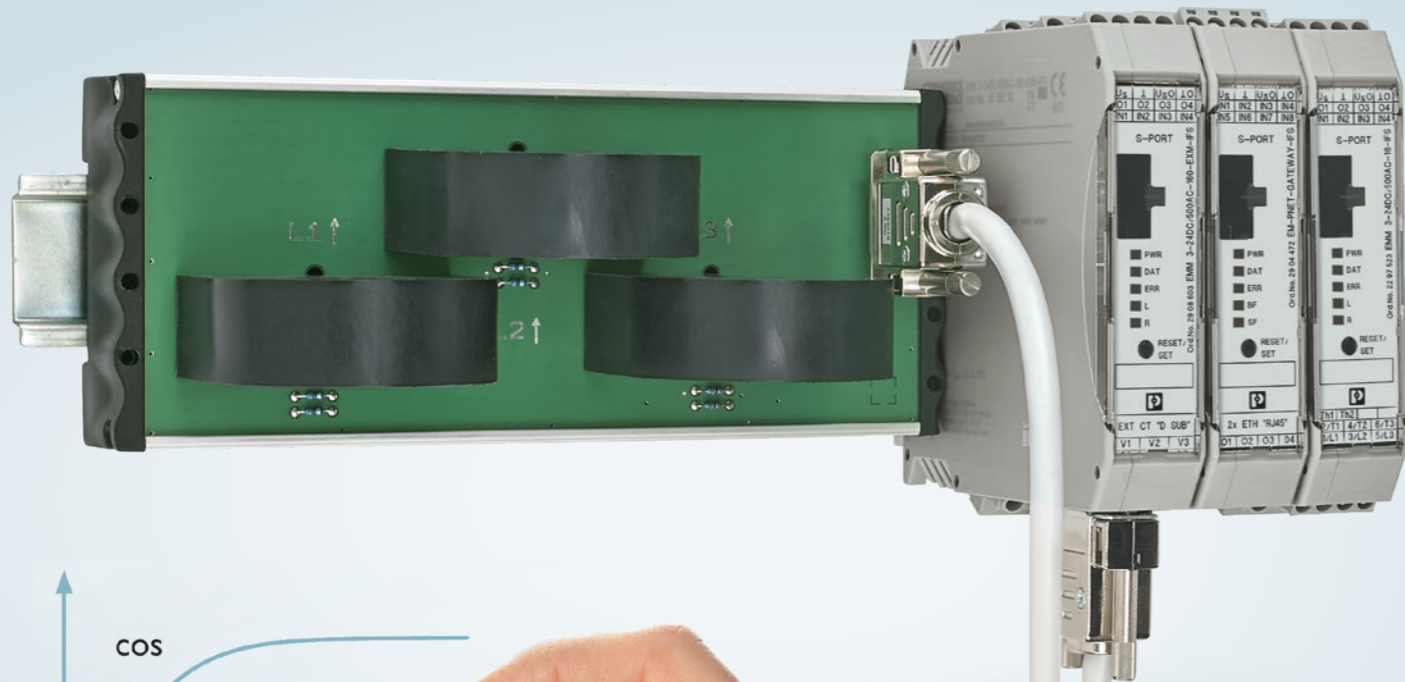


Motor switching

Motor and machine management

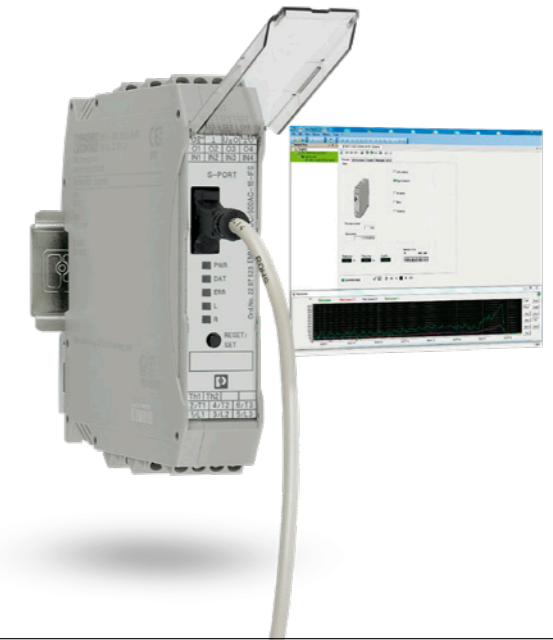
Turning data into action is the specialty of our electronic motor and machine manager products. Any smart solution begins with data; our EMM (electronic motor management) portfolio measures power basics. From there, simple digital outputs can be used for onboard condition monitoring. Ethernet communications allow for data to be communicated to other systems and IIoT solutions. EMM provides a critical link in the predictive maintenance space by measuring and collecting data.

- Electronic motor manager monitors and protects from abnormal conditions
- Machine manager is a cost-effective monitor of motors or machines



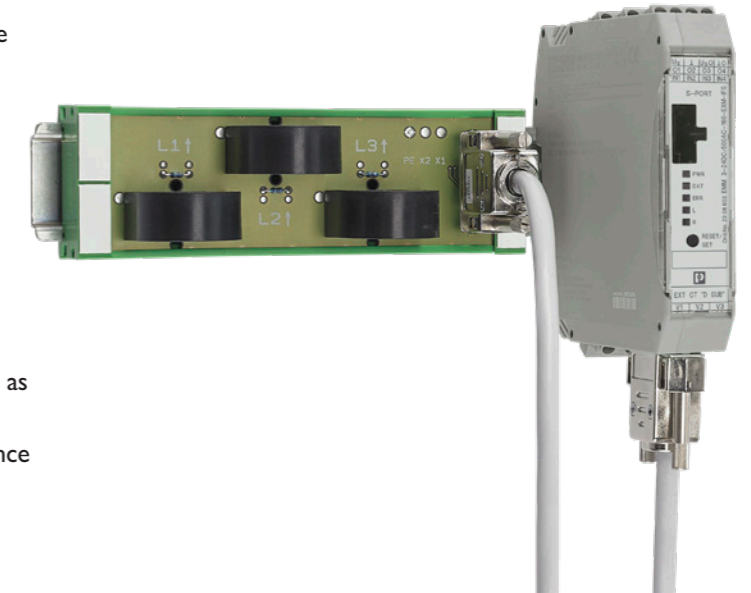
Electronic motor manager

- ✓ Integrated overload and motor protection functions
- ✓ Monitors motors for overloads, wear-and-tear, and malfunctions
- ✓ Monitoring based on real power consumption provides granular load details
- ✓ Freely-configurable digital outputs for motor control, alarming, and more
- ✓ Turn your motors into sensors
 - Detect dry-running pumps and clogged filters
 - Identify dull, worn, or broken tooling
 - Spot slipping belts, equipment binding, and other issues
 - Prevent unexpected failures, downtime, and outages



Machine manager

- ✓ One part number solution provides cost-effective energy monitoring up to 160 A
- ✓ Acquire production and energy data without the need for additional devices
- ✓ Protect machines from undervoltages, overloads, and more
- ✓ Keep track of all important power parameters such as voltage, current, power, and power factor
- ✓ Measurements can be communicated to Ethernet networks and to PROFICLOUD as well as other IIoT solutions
- ✓ Monitor changes over time and trigger maintenance events before equipment failure occurs



Common motor switching products

Hybrid motor starters						
A. What is the type needed?						
B. What is the maximum load current?						
C. What is the control voltage?						
D. Which starter type is required?						
E. Is overload protection required?						
F. Any additional functions required?						
G. Resulting order number						

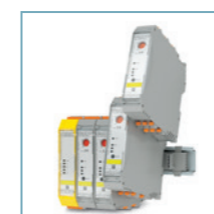
A. Type	B. Max load current	C. Control voltage	D. Starter type	E. Overload protection	F. Additional functions	G. Order number		
						Screw	Push-in	
Stand-alone	2.4 A	24 V DC	Direct starter	Yes	-	2900543	2903922	
					E-stop and ATEX	2900567	2903916	
			Reversing starter	Yes	-	2900574	2903910	
				E-stop and ATEX	2900414	2903904		
						-	2902744	
						-	2900544	
			120 V AC	Direct starter	Yes	-	2900568	
					E-stop and ATEX	2900575		
				Reversing starter	Yes	-	2900575	
					E-stop and ATEX	2900420		
					-	2900530		
					-	2900545	2903924	
		9 A	24 V DC	Direct starter	No	-	2900530	
						Yes	E-stop and ATEX	2900569
					Reversing starter	No	-	2900538
						-	2900576	2903912
					E-stop and ATEX	2902745		
					-	2900421	2903906	
		120 V AC	Direct starter	No	-	2900531		
				Yes	-	2900546		
			Reversing starter	No	-	2900539		
				Yes	-	2900578		
				E-stop and ATEX	2900422			
Modular	3 A	24 V DC	Direct starter	Yes	-	2908696	2909563	
					E-stop	2908700	2909570	
					E-stop and ATEX	2909557		
			Reversing starter	Yes	-	2908695	2909562	
					E-stop	2908699	2909569	
					E-stop and ATEX	2909556		
	9 A	24 V DC	Direct starter	Yes	-	2908694	2909561	
					E-stop	2908698	2909568	
					E-stop and ATEX	2909555		
			Reversing starter	Yes	-	2908693	2909560	
				E-stop	2908697	2909567		
				E-stop and ATEX	2909554			
Network-capable	3 A	24 V DC	Direct starter	Yes	-	2905163	2905149	
					E-stop and ATEX	2905155	2905142	
					-	2905159	2905146	
			Reversing starter	Yes	-	2905152	2905139	
					E-stop and ATEX	2905152	2905139	
	9A	24 V DC	Direct starter	Yes	-	2905164	2905150	
					E-stop and ATEX	2905156	2905143	
					-	2905160	2905147	
			Reversing starter	Yes	-	2905160	2905147	
					E-stop and ATEX	2905153	2905140	
Hybrid starters with IO-Link Interface	3 A AC	24 V DC	Direct starter	Yes		2908671		
			Reversing starter	Yes		2908672		
	9 A AC	24 V DC	Direct starter	Yes		2908669		
			Reversing starter	Yes		2908670		

Electronic motor and machine management				
A. What type of equipment is being managed?				
B. What is the load current and how will it be measured?				
C. What is the control voltage?				
D. Resulting order number				
E. Programming cable				
A. Type	B. Load current and measurement	C. Control voltage	D. Order number	E. Programming cable
Electric motor	<16 A AC via integrated CTs	24 V DC	2297523	2320500
		120 V AC	2297536	
	>16 A AC via external CTs	24 V DC	2297497	
		120 V AC	2297507	
Machine	90 A AC external CT module	24 V DC	2908602	
	160 A AC external CT module	24 V DC	2908603	

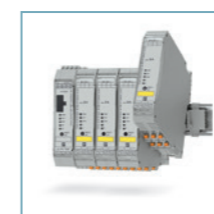
Communications gateway for networkable starters, electronic motors, and machine managers	
A. What is the desired protocol?	
B. Resulting order number	
A. Protocol	B. Order number
Modbus TCP	2901528
EtherNet/IP	2901988
PROFINET	2904472
PROFIBUS	2297620
CANopen	2901504

Solid state 24 V DC motor control			
A. What is the load current?			
B. What is the module width?			
C. What connection technology? (Screw or Push-in)			
D. Resulting order number			
A. Load current	B. Module width	C. Connection style	D. Order number
2 A DC	6.2 mm	Screw	2980539
		Push-in	1069556
6 A DC	12.5 mm	Screw	2963598
		Screw	2982090
10 A DC	62 mm	Screw	2964306

Modular motor starter accessories			
A. Type of module?			
B. What connection technology? (Screw or Push-in)			
C. Resulting order number			
D. Required T-Bus accessory order number			
A. Type	B. Connection style	C. Resulting order number	D. Required T-Bus accessory
Safety relay	Screw	1009831	2890425
	Push-in	1009832	
Auxiliary contacts	Screw	2908701	N/A (included w/ module)
	Push-in	2909573	
Modular motor starter	-	-	2203861



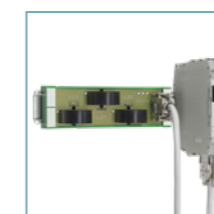
Modular motor starters



Networkable motor starters



Electronic motor manager



Machine manager

The Cabinet Confidence Limited Lifetime Warranty (LLW)

Phoenix Contact offers the industry's most comprehensive warranty program

Phoenix Contact USA customers have access to the industry's most extensive limited lifetime warranty policy. Phoenix Contact's Cabinet Confidence Limited Lifetime Warranty (LLW) applies to a wide range of Phoenix Contact products. LLW coverage is exclusive to U.S. customers who register and use Phoenix Contact power supplies and surge protection to protect electronics in their applications.

"For almost 100 years, engineers and automation professionals have relied on Phoenix Contact," said Jack Nehlig, President of Phoenix Contact USA. "With this exciting new Cabinet Confidence initiative, we are elevating our customer commitment to the next level — our goal is to be our customers' most trusted partner by improving the long-term reliability of their systems and applications."

Phoenix Contact is a world leader in industrial connection and automation technologies, electronic interface systems, and low-voltage power products. This LLW commitment is an extension of the trust customers have come to rely on.

How to register

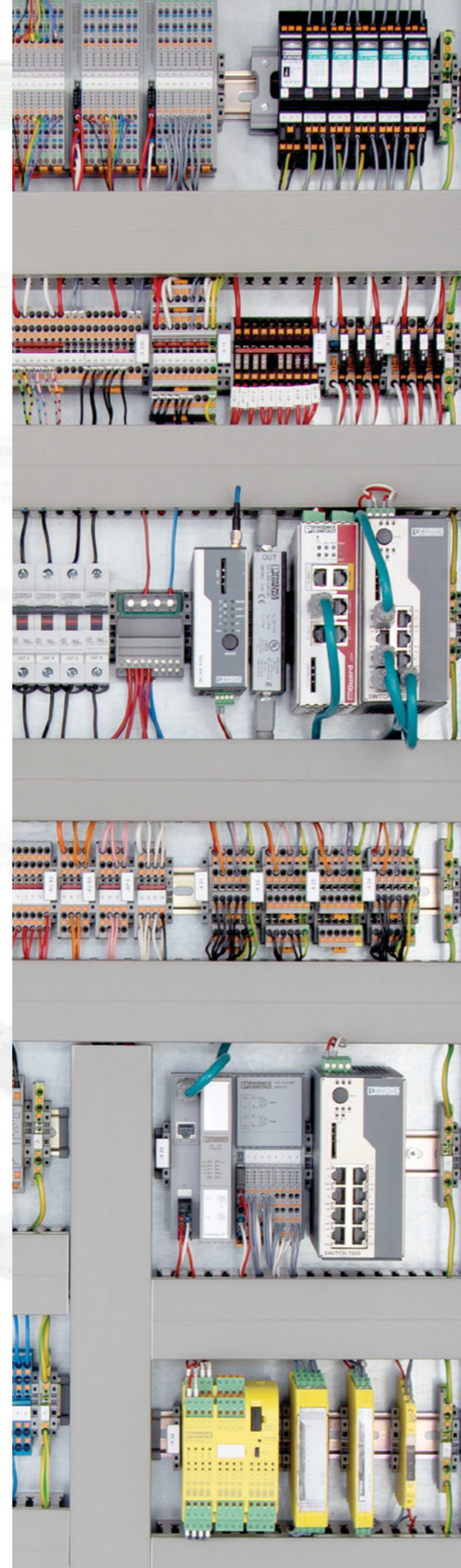
The following link will step you through the simple Limited Lifetime Warranty registration process. Register at: www.phoenixcontact.com/LLW

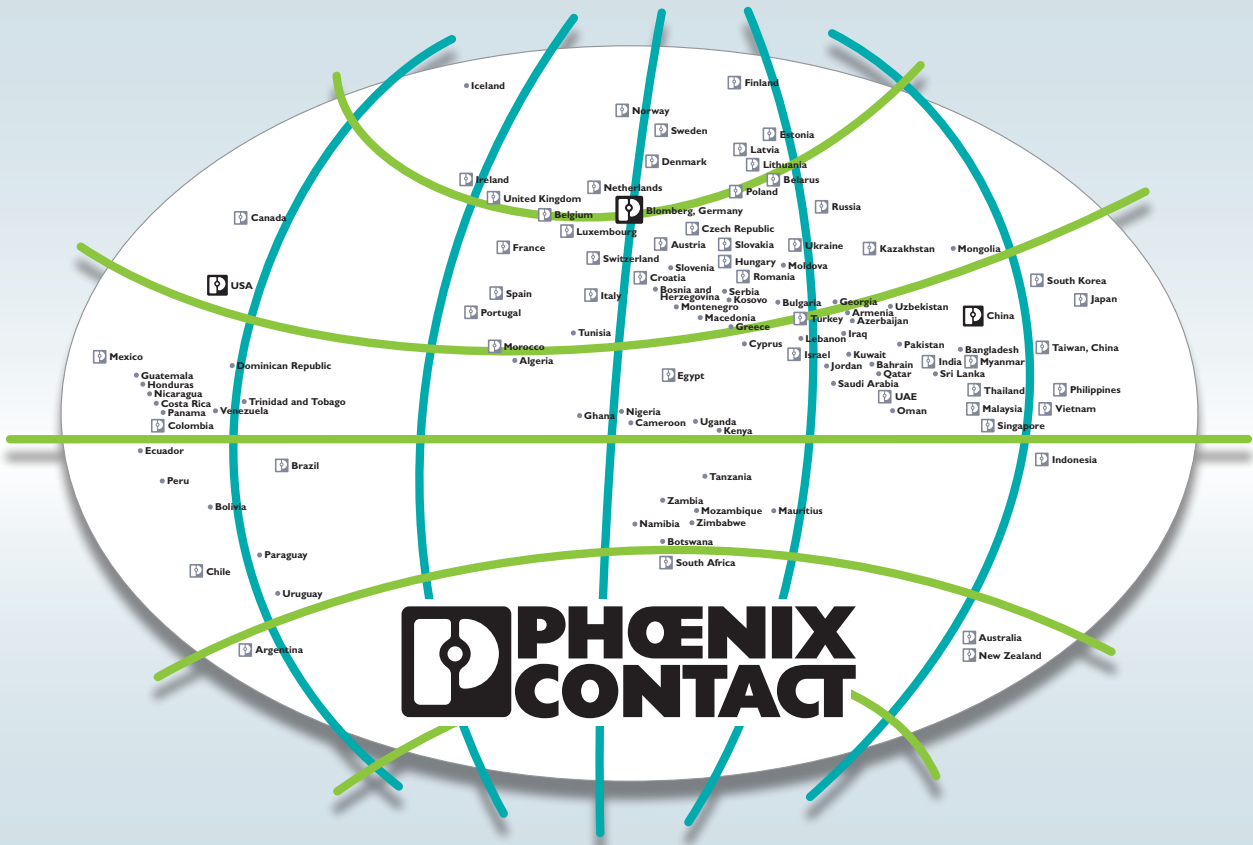
LLW coverage* requires registration and the appropriate powering and protection of all Phoenix Contact electronic products with Phoenix Contact power supplies and surge protection at all times.

*Certain restrictions apply. Coverage is limited to Phoenix Contact products sold in the USA. See complete Terms and Conditions for full details.

Common power supplies and surge protection suggested for LLW

System type	Product	Input voltage	Power supply nominal output	Description	Order #
Single phase	Power Supply	85 V AC - 264 V AC	10 A/24 V DC	QUINT4-PS/1AC/24DC/10	2904601
	Surge Protection	120 V AC	-	PLT-SEC-T3-120-FM-UT	2907918
	Surge Protection	240 V AC	-	PLT-SEC-T3-230-FM-UT	2907919
Three phase	Power Supply	320 V AC - 550 V AC	10 A/24 V DC	QUINT4-PS/3AC/24DC/10	2904621
	Surge Protection	120/208 V AC	-	VAL-US-120/40/3+1-FM	2910354
	Surge Protection	277/480 V AC	-	VAL-US-277/40/3+1-FM	2910374





Ongoing communication with customers and partners worldwide

Phoenix Contact is a global market leader based in Germany. We are known for our future-oriented components, systems, and solutions in the fields of electrical engineering, electronics, and automation. With a global network reaching across more than 100 countries with over 17,400 employees, we stay in close contact with our customers, something we believe is essential for success.

Our wide variety of innovative products makes it easy for our customers to find future-oriented solutions for multiple applications and industries. We focus predominantly on the fields of energy, infrastructure, process, and factory automation.

You can find your local partner at

www.phoenixcontact.com