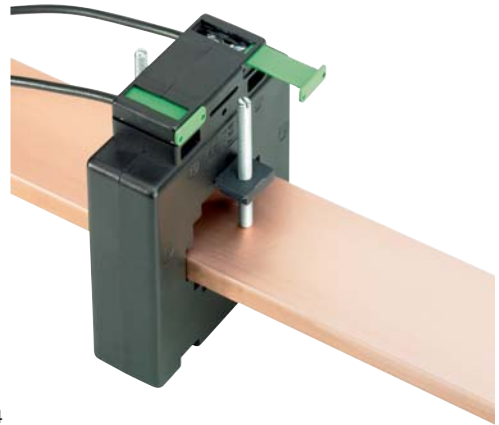


# PACT Analog

## Current transformers



### INTERFACE

Data sheet  
103359\_en\_03

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## 1 Description

The **PACT Analog** current transformers form a complete range of bus-bar, plug-in and winding current transformers for measuring AC currents with a range of 1 A to 4000 A.

Current transformers belong to a group of specialized transformers and are used in those areas where currents cannot be measured directly. Depending on the transformation ratio, the primary current is transmitted to a smaller electrically isolated secondary current.

PACT Analog current transformers can be used either as an industrial version or as a transformer that can be officially calibrated.



The calibration process involves additional costs, which are specified in accordance with the national table of fees.

### 1.1 Features

- Safe isolation as a result of the test voltage of 12 kV (1.2/50  $\mu$ s) prevents a hazardous operating voltage from being transferred to downstream components
- Conforms to surge voltage category 3 as a result of the test voltage amplitude
- Routine test according to EN 50178



Also refer to additional information on "Safe isolation"; see page 28.

PACT Analog current transformers are available in the following designs:

- Winding current transformer ( $I_{pn}$ : 1 A to 40 A)
- Bus-bar current transformer ( $I_{pn}$ : 50 A to 500 A)
- Plug-in current transformer ( $I_{pn}$ : 50 A to 4000 A)



#### **WARNING: Danger due to damaged current transformers**

- Before startup, check that the housing of the current transformer is not damaged.
- Also before startup, check that there are no electrically conductive connections between the primary conductor and the secondary terminals.
- If a built-in current transformer is removed in order to be used in a different system, check the current transformer for damage again.



#### **WARNING: Danger due to voltage at open circuit**

The output of the current transformer is a constant current source. In the event of an increasing load, the output voltage thus increases and reaches its maximum at infinite load (i.e., with open secondary terminals).

- Avoid open-circuit operation at all costs.
- Note that unloaded transformers must be short circuited.
- Only start up the current transformer once the secondary cables are connected on both sides.

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### 3 Ordering data



Make sure you always use the latest documentation.  
It can be downloaded at [www.phoenixcontact.net/catalog](http://www.phoenixcontact.net/catalog).

#### Explanation of the type designation by means of an example

**PACT MCR-V2C-3015-60**

**V1** = Bus-bar current transformer (for assembly with circular conductors)

**V2** = Plug-in current transformer (for direct or horizontal assembly on power rails)

**V3** = Winding current transformer

**C** = Transformer that can be calibrated

**30** = Maximum width of the power rail in mm

**15** = Maximum height of the power rail in mm

**60** = Width of the current transformer in mm

#### Information on the type entry in the order key

Type	Primary current $I_{pn}$	Secondary current $I_{sn}$	Class	Power ()	Order No.
PACT MCR-V2-3015-60	80	5 A	1	2.5 VA	2277268



For some of the current transformers listed in the following tables, popular types are available from stock. These have their own order Nos. and are labeled separately.

For all other types, please complete the order key using the respective selection table.

3.1 Current transformers that cannot be calibrated

Bus-bar current transformers with a primary current of 50 A to 500 A, for circular conductors

Description	Type	Order No.	Pcs. / Pkt.
Bus-bar current transformer with a primary current of 50 A to 500 A, for circular conductors	PACT MCR-V1-21-44-...	2277268	1
Transformation ratio 50 A:5 A; 1.25 VA	PACT MCR-V1-21-44-50-5A-1	2277019	1
Transformation ratio 75 A:5 A; 2.5 VA	PACT MCR-V1-21-44-75-5A-1	2277611	1
Transformation ratio 100 A:5 A; 2.5 VA	PACT MCR-V1-21-44-100-5A-1	2277022	1
Transformation ratio 125 A:5 A; 3.75 VA	PACT MCR-V1-21-44-125-5A-1	2277763	1
Transformation ratio 150 A:5 A; 5 VA	PACT MCR-V1-21-44-150-5A-1	2277035	1
Transformation ratio 200 A:5 A; 5 VA	PACT MCR-V1-21-44-200-5A-1	2277776	1
Transformation ratio 250 A:5 A; 5 VA	PACT MCR-V1-21-44-250-5A-1	2277048	1
Transformation ratio 300 A:5 A; 10 VA	PACT MCR-V1-21-44-300-5A-1	2277789	1
Transformation ratio 400 A:5 A; 5 VA	PACT MCR-V1-21-44-400-5A-1	2277051	1
Transformation ratio 500 A:5 A; 10 VA	PACT MCR-V1-21-44-500-5A-1	2277792	1

Selection table

Primary rated current strength $I_{pn}$																
$I_{sn}$	Cl.	50	60	75	80	100	125	150	200	250	300	400	500	Rated power $S_n$ [VA]		
1 A	0.5					1.25	2.5	2.5	2.5	2.5	2.5	2.5	2.5			
								3.75	5	5	5	5	5			
	1									7.5		7.5	10			
			1.25	1.25	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		2.5	
5 A	0.5						1.25	1.25	1.25	2.5	2.5	2.5	2.5			
							1.5	2.0	2.5	3.75	5	5	5		5	
	1										7.5	10	7.5		7.5	
			1.25	1.25	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		2.5	
		1.5				2.5	2.5	2.5	2.5	5	5	5	5			
								7.5	7.5	10	7.5	10				

**Plug-in current transformers with a primary current of 50 A to 750 A, for rails and circular conductors**

Description	Type	Order No.	Pcs. / Pkt.
Plug-in current transformer with a primary current of 50 A to 750 A, for rails and circular conductors	PACT MCR-V2-3015-60-...	2277271	1
Transformation ratio 60 A:5 A; 1.25 VA	PACT MCR-V2-3015-60-60-5A-1	2277815	1
Transformation ratio 75 A:5 A; 1.25 VA	PACT MCR-V2-3015-60-75-5A-1	2277828	1
Transformation ratio 75 A:5 A; 1.5 VA	PACT MCR-V2-3015-60-75-5A-1	2276502	1
Transformation ratio 80 A:5 A; 1.25 VA	PACT MCR-V2-3015-60-80-5A-1	2277831	1
Transformation ratio 100 A:5 A; 2.5 VA	PACT MCR-V2-3015-60-100-5A-1	2277064	1
Transformation ratio 125 A:5 A; 3.75 VA	PACT MCR-V2-3015-60-125-5A-1	2277624	1
Transformation ratio 150 A:5 A; 3.75 VA	PACT MCR-V2-3015-60-150-5A-1	2277844	1
Transformation ratio 150 A:5 A; 5 VA	PACT MCR-V2-3015-60-150-5A-1	2277077	1
Transformation ratio 200 A:5 A; 5 VA	PACT MCR-V2-3015-60-200-5A-1	2277637	1
Transformation ratio 200 A:5 A; 7.5 VA	PACT MCR-V2-3015-60-200-5A-1	2277857	1
Transformation ratio 250 A:5 A; 5 VA	PACT MCR-V2-3015-60-250-5A-1	2276544	1
Transformation ratio 250 A:5 A; 7.5 VA	PACT MCR-V2-3015-60-250-5A-1	2277860	1
Transformation ratio 250 A:5 A; 10 VA	PACT MCR-V2-3015-60-250-5A-1	2277080	1
Transformation ratio 300 A:5 A; 7.5 VA	PACT MCR-V2-3015-60-300-5A-1	2277640	1
Transformation ratio 400 A:5 A; 10 VA	PACT MCR-V2-3015-60-400-5A-1	2277093	1
Transformation ratio 500 A:5 A; 10 VA	PACT MCR-V2-3015-60-500-5A-1	2277653	1
Transformation ratio 600 A:5 A; 10 VA	PACT MCR-V2-3015-60-600-5A-1	2277103	1
Transformation ratio 750 A:5 A; 10 VA	PACT MCR-V2-3015-60-750-5A-1	2277666	1

**Selection table**

Primary rated current strength I <sub>pn</sub>																
I <sub>sn</sub>	Cl.	50	60	75	80	100	125	150	200	250	300	400	500	600	750	
1 A	0.5					1.25	1.25	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
										3.75	5	5	5	5	5	5
												7.5	10	10	10	10
	1		1.25	1.25	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	5
								3.75	5	5	5	5	5	5	5	10
											7.5	10	10	10	10	10
5 A	0.5								2.5	2.5	2.5	2.5	2.5	2.5	2.5	
										3.75	5	5	5	5	5	5
												7.5	10	10	10	10
	1		1.25	1.25	1.25	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
				1.5	2		3.75	3.75	5	5	5	5	5	5	5	5
								5	7.5	7.5	7.5	10	10	10	10	10
									10	10	15				15	

Rated power S<sub>n</sub> [VA]

**Plug-in current transformers with a primary current of 75 A to 1000 A, for rails**

Description	Type	Order No.	Pcs. / Pkt.
Plug-in current transformer with a primary current of 75 A to 1000 A, for rails	PACT MCR-V2-4012-70-...	2277284	1
Transformation ratio 250 A:5 A; 5 VA	PACT MCR-V2-4012-70-250-5A-1	2277116	1
Transformation ratio 300 A:5 A; 7.5 VA	PACT MCR-V2-4012-70-300-5A-1	2277679	1
Transformation ratio 400 A:5 A; 7.5 VA	PACT MCR-V2-4012-70-400-5A-1	2277129	1
Transformation ratio 500 A:5 A; 10 VA	PACT MCR-V2-4012-70-500-5A-1	2277682	1
Transformation ratio 600 A:5 A; 10 VA	PACT MCR-V2-4012-70-600-5A-1	2277132	1
Transformation ratio 750 A:5 A; 10 VA	PACT MCR-V2-4012-70-750-5A-1	2277695	1
Transformation ratio 800 A:5 A; 10 VA	PACT MCR-V2-4012-70-800-5A-1	2277145	1
Transformation ratio 1000 A:5 A; 10 VA	PACT MCR-V2-4012-70-1000-5A-1	2277158	1

**Selection table**

Primary rated current strength $I_{pn}$																	Rated power $S_n$ [VA]		
$I_{sn}$	Cl.	50	60	75	80	100	125	150	200	250	300	400	500	600	750	800		1000	
1 A	0.5						1.25	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
										3.75	5	5	5	5	5	5	5	5	
													7.5	10	10	10	10	10	
	1				1.25	1.25	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
								3.75	5	5	5	5	5	5	5	5	5	5	
											7.5	7.5	7.5	10	10	10	10	10	
5 A	0.5						1.25	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
										3.75	5	5	5	5	5	5	5	5	
													7.5	10	10	10	10	10	
	1				1.25	1.25	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
								3.75	5	5	5	5	5	5	5	5	5	5	
											7.5	7.5	7.5	10	10	10	10	10	

**Plug-in current transformers with a primary current of 100 A to 1500 A, for rails and circular conductors**

Description	Type	Order No.	Pcs. / Pkt.
Plug-in current transformer with a primary current of 100 A to 1500 A, for rails and circular conductors	PACT MCR-V2-5012-85-...	2277297	1
Transformation ratio 150 A:5 A; 3.75 VA	PACT MCR-V2-5012-85-150-5A-1	2276117	1
Transformation ratio 200 A:5 A; 5 VA	PACT MCR-V2-5012-85-200-5A-1	2276120	1
Transformation ratio 250 A:5 A; 7.5 VA	PACT MCR-V2-5012-85-250-5A-1	2276133	1
Transformation ratio 300 A:5 A; 10 VA	PACT MCR-V2-5012-85-300-5A-1	2276146	1
Transformation ratio 400 A:5 A; 10 VA	PACT MCR-V2-5012-85-400-5A-1	2277161	1
Transformation ratio 500 A:5 A; 15 VA	PACT MCR-V2-5012-85-500-5A-1	2276159	1
Transformation ratio 600 A:5 A; 10 VA	PACT MCR-V2-5012-85-600-5A-1	2277174	1
Transformation ratio 600 A:5 A; 15 VA	PACT MCR-V2-5012-85-600-5A-1	2276162	1
Transformation ratio 750 A:5 A; 10 VA	PACT MCR-V2-5012-85-750-5A-1	2276175	1
Transformation ratio 800 A:5 A; 10 VA	PACT MCR-V2-5012-85-800-5A-1	2277187	1
Transformation ratio 1000 A:5 A; 10 VA	PACT MCR-V2-5012-85-1000-5A-1	2276463	1
Transformation ratio 1000 A:5 A; 15 VA	PACT MCR-V2-5012-85-1000-5A-1	2277190	1
Transformation ratio 1250 A:5 A; 15 VA	PACT MCR-V2-5012-85-1250-5A-1	2277200	1
Transformation ratio 1500 A:5 A; 15 VA	PACT MCR-V2-5012-85-1500-5A-1	2276188	1

**Selection table**

Primary rated current strength $I_{pn}$																	
$I_{sn}$	Cl.	100	125	150	200	250	300	400	500	600	750	800	1000	1250	1500		
1 A	0.5			1.25	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		
					5	5	5	5	5	5	5	5	5	5	5		
	1						7.5	10	10	10	10	10	10	10	10		
								15	15	15			15	15	15		
5 A	0.5	1.25	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	5	5	5		
				3.75	5	5	5	5	5	5	5	5	5	10	10	10	
	1				7.5	7.5	10	10	10	10	10	10	10	15	15	15	
							10		15	20	20		15	20	20	30	
5 A	0.5			1.25	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		
					5	5	5	5	5	5	5	5	5	5	5		
	1						7.5	10	10	20	10	10	10	10	10		
								15	15	15			15	15	15		
1	1.25	2.5	2.5	2.5	2.5	2.5	2.5	5	5	2.5	2.5	2.5	5	5	5		
			3.75	5	5	5	5	10	10	5	5	10	10	10	10		
			7.5	7.5	10	10	15	15	10	10	15	15	15	15			
					10		15	20	20		15	20	20	20			

Rated power  $S_r$  [VA]

**Plug-in current transformers with a primary current of 200 A to 1600 A, for rails and circular conductors**

Description	Type	Order No.	Pcs. / Pkt.
Plug-in current transformer with a primary current of 200 A to 1600 A, for rails and circular conductors	PACT MCR-V2-6015-85-...	2277336	1
Transformation ratio 200 A:5 A; 2.5 VA	PACT MCR-V2-6015-85-200-5A-1	2277873	1
Transformation ratio 250 A:5A; 2.5 VA	PACT MCR-V2-6015-85-250-5A-1	2277886	1
Transformation ratio 300 A:5 A; 2.5 VA	PACT MCR-V2-6015-85-300-5A-1	2277899	1
Transformation ratio 400 A:5 A; 2.5 VA	PACT MCR-V2-6015-85-400-5A-1	2277909	1
Transformation ratio 500 A:5 A; 5 VA	PACT MCR-V2-6015-85-500-5A-1	2277912	1
Transformation ratio 600 A:5 A; 10 VA	PACT MCR-V2-6015-85-600-5A-1	2277925	1
Transformation ratio 750 A:5 A; 10 VA	PACT MCR-V2-6015-85-750-5A-1	2277938	1
Transformation ratio 800 A:5 A; 10 VA	PACT MCR-V2-6015-85-800-5A-1	2277941	1
Transformation ratio 1000 A:5 A; 15 VA	PACT MCR-V2-6015-85-1000-5A-1	2277954	1
Transformation ratio 1250 A:5 A; 15 VA	PACT MCR-V2-6015-85-1250-5A-1	2277967	1
Transformation ratio 1500 A:5 A; 15 VA	PACT MCR-V2-6015-85-1500-5A-1	2277970	1
Transformation ratio 1600 A:5 A; 15 VA	PACT MCR-V2-6015-85-1600-5A-1	2277983	1

**Selection table**

Primary rated current strength $I_{pn}$																		
$I_{sn}$	Cl.	100	125	150	200	250	300	400	500	600	750	800	1000	1250	1500	1600	Rated power $S_n$ [VA]	
1 A	0.5					1.25	1.25	1.25	2.5	2.5	2.5	2.5	2.5	2.5	2.5			
	1				2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5			
5 A	0.5					1.25	1.25	1.25	2.5	2.5	2.5	2.5	2.5	5	5	5		
	0.5							2.5	5	5	5	5	5	10	10	10		
	0.5									10	10	10	10	15	15	15		
	0.5											15	15	20	20			
1	0.5				2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	5	5	5	5		
	1								5	5	5	5	10	10	10	10		
										10	10	10	15	15	15	15		
												15	20	30				



**Plug-in current transformers with a primary current of 200 A to 2500 A, for rails and circular conductors**

Description	Type	Order No.	Pcs. / Pkt.
Plug-in current transformer with a primary current of 200 A to 2500 A, for rails and circular conductors	PACT MCR-V2-6315-95-...	2277307	1
Transformation ratio 600 A:5 A; 10 VA	PACT MCR-V2-6315-95-600-5A-1	2276191	1
Transformation ratio 750 A:5 A; 10 VA	PACT MCR-V2-6315-95-750-5A-1	2276201	1
Transformation ratio 800 A:5 A; 10 VA	PACT MCR-V2-6315-95-800-5A-1	2277213	1
Transformation ratio 1000 A:5 A; 10 VA	PACT MCR-V2-6315-95-1000-5A-1	2277226	1
Transformation ratio 1250 A:5 A; 10 VA	PACT MCR-V2-6315-95-1250-5A-1	2277239	1
Transformation ratio 1500 A:5 A; 10 VA	PACT MCR-V2-6315-95-1500-5A-1	2277242	1
Transformation ratio 1600 A:5 A; 10 VA	PACT MCR-V2-6315-95-1600-5A-1	2277255	1
Transformation ratio 2000 A:5 A; 15 VA	PACT MCR-V2-6315-95-2000-5A-1	2276243	1

**Selection table**

		Primary rated current strength $I_{pn}$														Rated power $S_n$ [VA]
$I_{sn}$	Cl.	200	250	300	400	500	600	750	800	1000	1250	1500	1600	2000	2500	
	1 A	0.5	2.5	2.5	2.5	2.5	2.5	2.5	5	5	5	5	5	5	5	
					5	5	5	5	10	10	10	10	10	10	10	
						7.5	10	10	15	15			15	15	15	20
1		2.5	2.5	2.5	2.5	2.5	2.5	5	5	5	5	5	5	5	10	
		3.75	5	5	5	5	5	10	10	10	10	10	10	10	15	
				7.5	10	10	10	15	15			15	15	20		
5 A	0.5	2.5	2.5	2.5	2.5	2.5	2.5	5	5	5	5	5	5	5	5	
			3.75	5	5	5	5	10	10	10	10	10	10	10	10	
				7.5	10	10	10	10	15	15	15	15	15	15	15	15
	1					15	15	20	20	30	20	30	30	30	30	30
		2.5	2.5	2.5	2.5	5	5	5	5	10	5	5	10	10	10	
		3.75	5	5	5	10	10	10	10	15	10	10	10	15	15	
		10	10	15	15	15	15	30	15	15	30	30	30	30		
				15	20	20	30	30		30	30	45				

**Plug-in current transformers with a primary current of 200 A to 2000 A, for rails and circular conductors**

Description	Type	Order No.	Pcs. / Pkt.
Plug-in current transformer with a primary current of 200 A to 2000 A, for rails and circular conductors	PACT MCR-V2-6040-96-...	2277349	1
Transformation ratio 600 A:5 A; 10 VA	PACT MCR-V2-6040-96-600-5A-1	2276191	1
Transformation ratio 750 A:5 A; 10 VA	PACT MCR-V2-6040-96-750-5A-1	2276201	1
Transformation ratio 800 A:5 A; 10 VA	PACT MCR-V2-6040-96-800-5A-1	2276214	1
Transformation ratio 1000 A:5 A; 10 VA	PACT MCR-V2-6040-96-1000-5A-1	2277705	1
Transformation ratio 1250 A:5 A; 15 VA	PACT MCR-V2-6040-96-1250-5A-1	2276227	1
Transformation ratio 1500 A:5 A; 10 VA	PACT MCR-V2-6040-96-1500-5A-1	2277718	1
Transformation ratio 1600 A:5 A; 15 VA	PACT MCR-V2-6040-96-1600-5A-1	2276230	1
Transformation ratio 2000 A:5 A; 15 VA	PACT MCR-V2-6040-96-2000-5A-1	2276243	1

**Selection table**

Primary rated current strength $I_{pn}$																	
$I_{sn}$	Cl.	200	250	300	400	500	600	750	800	1000	1250	1500	1600	2000			
1 A	0.5		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5					
					5	5	5	5	5	5	5	5					
	1		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5				
			3.75	5	5	5	5	5	5	5	5	5	5				
5 A	0.5		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	5			
					5	5	5	5	5	5	5	5	5	5	10		
	1		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	5	2.5	5	5		
			3.75	3.75	5	5	5	5	5	5	5	10	5	10	10		
15															Rated power $S_n$ [VA]		
				7.5	7.5	10	10	10	10	15	10	15	15				

**Plug-in current transformers with a primary current of 400 A to 2500 A, for rails and circular conductors**

Description	Type	Order No.	Pcs. / Pkt.
Plug-in current transformer with a primary current of 400 A to 2500 A, for rails and circular conductors	PACT MCR-V2-8015-105-...	2277352	1
Transformation ratio 400 A:5 A; 7.5 VA	PACT MCR-V2-8015-105-400-5A-1	2276256	1
Transformation ratio 500 A:5 A; 10 VA	PACT MCR-V2-8015-105-500-5A-1	2276269	1
Transformation ratio 600 A:5 A; 10 VA	PACT MCR-V2-8015-105-600-5A-1	2276272	1
Transformation ratio 750 A:5 A; 10 VA	PACT MCR-V2-8015-105-750-5A-1	2276285	1
Transformation ratio 800 A:5 A; 15 VA	PACT MCR-V2-8015-105-800-5A-1	2276298	1
Transformation ratio 1000 A:5 A; 10 VA	PACT MCR-V2-8015-105-1000-5A-1	2277721	1
Transformation ratio 1000 A:5 A; 15 VA	PACT MCR-V2-8015-105-1000-5A-1	2276308	1
Transformation ratio 1250 A:5 A; 10 VA	PACT MCR-V2-8015-105-1250-5A-1	2276311	1
Transformation ratio 1500 A:5 A; 15 VA	PACT MCR-V2-8015-105-1500-5A-1	2277734	1
Transformation ratio 1600 A:5 A; 15 VA	PACT MCR-V2-8015-105-1600-5A-1	2276324	1
Transformation ratio 2000 A:5 A; 20 VA	PACT MCR-V2-8015-105-2000-5A-1	2276337	1
Transformation ratio 2500 A:5 A; 20 VA	PACT MCR-V2-8015-105-2500-5A-1	2276340	1

**Selection table**

Primary rated current strength $I_{pn}$														
$I_{sn}$	Cl.	400	500	600	750	800	1000	1250	1500	1600	2000	2500		
1 A	0.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	5			
			5	5	5	5	5	5	5	5	10			
				10		10	7.5	10	10	10	15			
	1								15	15	20			
		2.5	2.5	2.5	2.5	2.5	2.5	2.5	5	5	10			
		5	5	5	5	5	5	5	10	10	15			
5 A	0.5	7.5	10	10	10	10	10	15	15	20				
							15	15	20	20	25			
	1	2.5	2.5	2.5	2.5	2.5	5	2.5	2.5	2.5	2.5	5		
		5	5	5	5	5	10	5	5	5	5	10		
				10	10	10	15	10	10	10	10	15		
			15	15	20			15	15	20				
1	2.5	2.5	2.5	2.5	5	5	2.5	2.5	5	5	10	10	15	
	5	5	5	5	10	10	5	5	10	10	15	15	20	
	7.5	10	10	10	15	15	10	10	15	15	20	20	30	
			15	20			15		20	30				

Rated power  $S_n$  [VA]

**Plug-in current transformers with a primary current of 500 A to 2000 A, for rails and circular conductors**

Description	Type	Order No.	Pcs. / Pkt.
Plug-in current transformer with a primary current of 500 A to 2000 A, for rails and circular conductors	PACT MCR-V2-8020-105-...	2277365	1
Transformation ratio 1000 A:5 A; 10 VA	PACT MCR-V2-8020-105-1000-5A-1	2277747	1
Transformation ratio 1500 A:5 A; 15 VA	PACT MCR-V2-8020-105-1500-5A-1	2277750	1
Transformation ratio 2000 A:5 A; 10 VA	PACT MCR-V2-8020-105-2000-5A-1	2276382	1

**Selection table**

Primary rated current strength $I_{pn}$													
$I_{sn}$	Cl.	500	600	750	800	1000	1250	1500	1600	2000			
1 A	0.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5				
		5	5	5	5	5	5	5	5				
						10							
	1	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5				
		5	5	5	5	5	5	5	5				
			7.5	7.5	7.5	10							
5 A	0.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5			
		5	5	5	5	5	5	5	5	5			
			7.5	7.5	7.5	10	10	10	10	10			
	1	2.5	2.5	2.5	2.5	2.5	5	2.5	5	5			
		5	5	5	5	5	10	5	10	10	10		
			7.5	7.5	10	10	10	10	15				
							15						

Rated power  $S_n$  [VA]

**Plug-in current transformers with a primary current of 400 A to 4000 A, for rails and circular conductors**

Description	Type	Order No.	Pcs. / Pkt.
Plug-in current transformer with a primary current of 400 A to 4000 A, for rails and circular conductors	PACT MCR-V2-10020-129-...	2277378	1
Transformation ratio 2500 A:5 A; 15 VA	PACT MCR-V2-10020-129-2500-5A-1	2276395	1

**Selection table**

Primary rated current strength $I_{pn}$																
$I_{sn}$	Cl.	400	500	600	750	800	1000	1250	1500	1600	2000	2500	3000	4000	Rated power $S_n$ [VA]	
1 A	0.5		2.5	5	5	5	5	5	5	5	5	5	5			
			5	10	10	10	10	10	10	10	10	10	10	10		
									15	15	15	15	15	15		
	1		2.5	2.5	5	5	5	5	5	5	5	5	5	5		
			5	5	10	10	10	10	10	10	10	10	10	10		
									15	15	15	15	15	15		
5 A	0.5		2.5	5	5	5	5	5	5	5	5	5	5	5		
			5	5	10	10	10	10	10	10	10	10	10	10		
									15	15	15	15	15	15		
	1		2.5	2.5	5	5	5	5	5	5	5	5	5	5		
			5	5	10	10	10	10	10	10	10	10	10	10		
									15	15	15	15	15	15		
											25	30				

**Plug-in current transformers with a primary current of 400 A to 4000 A, for rails**

Description	Type	Order No.	Pcs. / Pkt.
Plug-in current transformer with a primary current of 400 A to 4000 A, for rails	PACT MCR-V2-10036-129-...	2277381	1
Transformation ratio 3000 A:5 A; 15 VA	PACT MCR-V2-10036-129-3000-5A-1	2276405	1

**Selection table**

Primary rated current strength $I_{pn}$																
$I_{sn}$	Cl.	400	500	600	750	800	1000	1250	1500	1600	2000	2500	3000	4000	Rated power $S_n$ [VA]	
1 A	0.5		2.5	5	5	5	5	5	5	5	5	5	5			
			5	10	10	10	10	10	10	10	10	10	10	10		
									15	15	15	15	15	15		
	1		2.5	2.5	5	5	5	5	5	5	5	5	5	5		
			5	5	10	10	10	10	10	10	10	10	10	10		
									15	15	15	15	15	15		
											25	30				
5 A	0.5		2.5	2.5	5	5	5	5	5	5	5	5	5	5		
			5	5	10	10	10	10	10	10	10	10	10	10		
									15	15	15	15	15	15		
	1		2.5	2.5	5	5	5	5	5	5	5	5	5	5		
			5	5	10	10	10	10	10	10	10	10	10	10		
									15	15	15	15	15	15		
											20	25	30	30		

**Plug-in current transformers with a primary current of 400 A to 4000 A, for rails and circular conductors**

Description	Type	Order No.	Pcs. / Pkt.
Plug-in current transformer with a primary current of 400 A to 4000 A, for rails and circular conductors	PACT MCR-V2-12020-159-...	2277394	1

**Selection table**

Primary rated current strength $I_{pn}$																	
$I_{sn}$	Cl.	400	500	600	750	800	1000	1250	1500	1600	2000	2500	3000	4000	Rated power $S_n$ [VA]		
1 A	0.5	2.5	2.5	2.5	2.5	2.5	2.5	5	5	5	5	5	5	10			
		5	5	5	5	5	5	10	10	10	10	10	10	15			
		10	10	10	10	10	10	15	15	15	15	15	15	30			
	1							15	20	30	30	30	30	30		45	
		2.5	5	5	2.5	2.5	5	5	5	5	5	5	5	10		10	
		5	10	10	5	5	10	10	10	10	10	10	10	15		15	
5 A	0.5	10	15	15	10	10	15	15	15	15	15	15	30	30			
		15	20	20			15	20	30	30	30	30	30	45		45	
		2.5	2.5	2.5	2.5	2.5	5	5	10	5	5	5	5	10		10	
	1	5	5	5	10	10	10	10	10	10	10	10	10	10		10	
		10	10	10	10	10	15	15	30	15	15	15	15	30		30	
					15	15	30	30	45	30	30	30	30	45		45	

**Plug-in current transformers with a primary current of 400 A to 4000 A, for rails**

Description	Type	Order No.	Pcs. / Pkt.
Plug-in current transformer with a primary current of 400 A to 4000 A, for rails	PACT MCR-V2-12040-159-...	2277404	1
Transformation ratio 4000 A:5 A; 15 VA	PACT MCR-V2-12040-159-4000-5A-1	2276418	1

**Selection table**

Primary rated current strength $I_{pn}$																	
$I_{sn}$	Cl.	400	500	600	750	800	1000	1250	1500	1600	2000	2500	3000	4000	Rated power $S_n$ [VA]		
1 A	0.5	2.5	2.5	2.5	2.5	2.5	2.5	5	5	5	5	5	5	10			
		5	5	5	5	5	5	10	10	10	10	10	10	15			
								10	15	15	15	15	15	15		30	
	1	2.5	5	5	2.5	2.5	5	5	5	5	5	5	5	10		10	
		5	10	10	5	5	10	10	10	10	10	10	10	15		15	
		10	15	15		10	15	15	15	15	15	15	15	30		30	
5 A	0.5	2.5	2.5	2.5	2.5	2.5	5	5	10	5	5	5	10	10			
		5	5	5	5	5	10	10	15	10	10	10	15	15			
					10	10	15	15	30	15	15	15	15	30		30	
	1	2.5	5	5	5	5	5	5	10	5	5	5	10	10			
		5	10	10	10	10	10	10	15	10	10	10	15	15		15	
		10	15	15	15	15	15	15	30	15	15	15	30	30		30	

**Winding current transformers with a primary current of 1 A to 40 A**

Description	Type	Order No.	Pcs. / Pkt.
Winding current transformer with a primary current of 1 A to 40 A	PACT MCR-V3-60-...	2277417	1

**Selection table**

Primary rated current strength $I_{pn}$																Rated power $S_n$ [VA]		
$I_{sn}$	Cl.	1	2	2.5	4	5	6	7.5	10	12.5	15	20	25	30	40			
1 A	0.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5			
		5	5	5	5	5	5	5	5	5	5	5	5	5	5			
	1	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		
		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5		
5 A	0.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5			
		5	5	5	5	5	5	5	5	5	5	5	5	5	5			
	1	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		
		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5		

### 3.2 Current transformers that can be calibrated

#### Bus-bar current transformers with a primary current of 150 A to 500 A, for circular conductors

Description	Type	Order No.	Pcs. / Pkt.
Bus-bar current transformer with a primary current of 150 A to 500 A, for circular conductors	PACT MCR-V1C-21-44-...	2277420	1

#### Selection table

Primary rated current strength $I_{pn}$											
$I_{sn}$	Cl.	150	200	250	300	400	500				
5 A	0.2 S					2.5	2.5				
								5			
	0.2				2.5	2.5	2.5				
					5	5	5				
	0.5 S		2.5	2.5	2.5	2.5	2.5				
				5	5	5	5	5			
0.5		2.5	2.5	2.5	2.5	2.5	2.5				
			5	5	5	5	5				

Rated power  $S_n$  [VA]

#### Plug-in current transformers with a primary current of 200 A to 750 A, for rails and circular conductors

Description	Type	Order No.	Pcs. / Pkt.
Plug-in current transformer with a primary current of 200 A to 750 A, for rails and circular conductors	PACT MCR-V2C-3015-60-...	2277433	1

#### Selection table

Primary rated current strength $I_{pn}$											
$I_{sn}$	Cl.	200	250	300	400	500	600	750			
0.2							2.5	2.5			
							5	5			
							10	10			
0.2 S					2.5	2.5	2.5	2.5			
						5	5	5			
							10	10			
5 A	0.5		2.5	2.5	2.5	2.5	2.5	2.5			
				5	5	5	5	5	5		
	0.5 S					10	10	10	10		
										15	
	0.5		2.5	2.5	2.5	2.5	2.5	2.5	2.5		
				5	5	5	5	5	5		

Rated power  $S_n$  [VA]



**Plug-in current transformers with a primary current of 200 A to 1000 A, for rails and circular conductors**

Description	Type	Order No.	Pcs. / Pkt.
Plug-in current transformer with a primary current of 200 A to 1000 A, for rails and circular conductors	PACT MCR-V2C-4012-70-...	2277446	1

**Selection table**

Primary rated current strength $I_{pn}$												
$I_{sn}$	Cl.	200	250	300	400	500	600	750	800	1000		
0.2 S							2.5	2.5	2.5	5		
							5	5	5	10		
0.2					2.5	2.5	2.5	5	2.5	5		
					5	5	5	10	5	10		
5 A												
			2.5	2.5	2.5	2.5	5	5	2.5	5		
0.5 S				5	5	5	10	10	5	10		
					10	10			10			
0.5		2.5	2.5	2.5	2.5	2.5	5	5	2.5	5		
			5	5	5	5	10	10	5	10		
					10	10			10			

Rated power  $S_n$  [VA]

**Plug-in current transformers with a primary current of 200 A to 1200 A, for rails and circular conductors**

Description	Type	Order No.	Pcs. / Pkt.
Plug-in current transformer with a primary current of 200 A to 1200 A, for rails and circular conductors	PACT MCR-VC2-5012-85-...	2277459	1

**Selection table**

Primary rated current strength $I_{pn}$													
$I_{sn}$	Cl.	200	250	300	400	500	600	700	800	1000	1200		
0.2 S							2.5	2.5	2.5	5	5		
							5	5	5	10	10		
0.2					2.5	2.5	2.5	2.5	2.5	5	5		
					5	5	5	5	5	10	10		
5 A													
			2.5	2.5	2.5	2.5	2.5	5	5	5	5		
0.5 S			5	5	5	5	10	10	10	10	10		
					10	10				15	15		
0.5		2.5	2.5	2.5	2.5	2.5	5	5	5	5	5		
			5	5	5	5	10	10	10	10	10		
					10	10				15	15		
										30	30		

Rated power  $S_n$  [VA]

**Plug-in current transformers with a primary current of 250 A to 1200 A, for rails and circular conductors**

Description	Type	Order No.	Pcs. / Pkt.
Plug-in current transformer with a primary current of 250 A to 1200 A, for rails and circular conductors	PACT MCR-V2C-6015-85-...	2277462	1

**Selection table**

Primary rated current strength $I_{pn}$														
$I_{sn}$	Cl.	200	250	300	400	500	600	750	800	1000	1200			
5 A	0.2 S							2.5	2.5	2.5	2.5			
								5	5	5	5			
	0.2									10	10			
								2.5	2.5	2.5	2.5	2.5		
	0.5 S					2.5	2.5	2.5	2.5	2.5	2.5	2.5		
						5	5	5	5	5	5	5		
0.5			2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5			
			5	5	5	5	5	5	5	5	5			
											10	10		
											15	15		
											10	10		
											15	15		

Rated power  $S_n$  [VA]

**Plug-in current transformers with a primary current of 200 A to 1500 A, for rails and circular conductors**

Description	Type	Order No.	Pcs. / Pkt.
Plug-in current transformer with a primary current of 200 A to 1500 A, for rails and circular conductors	PACT MCR-V2C-6015-95-...	2277475	1

**Selection table**

Primary rated current strength $I_{pn}$																								
$I_{sn}$	Cl.	200	250	300	400	500	600	750	800	1000	1200	1250	1500											
5 A	0.2 S									2.5	5	5	5											
											5	10	10	10										
	0.2										15	15	15	15										
						2.5	2.5	2.5	2.5	2.5	5	5	5	5										
	0.5 S					5	5	5	5	5	10	10	10	10										
						10	10	10	10	10	15	15	15	15										
0.5										15	15	20	20	30										
										15	20	20	20	30	30									
											2.5	2.5	2.5	2.5	2.5	2.5	5	5	5	5	5	5		
											5	5	5	5	5	5	10	10	10	10	10	10		
											10	10	10	10	10	10	15	15	15	15	15	15		
											15	15	15	20	20	20	30	30	30	20	30	30		

Rated power  $S_n$  [VA]

**Plug-in current transformers with a primary current of 500 A to 1500 A, for rails and circular conductors**

Description	Type	Order No.	Pcs. / Pkt.
Plug-in current transformer with a primary current of 500 A to 1500 A, for rails and circular conductors	PACT MCR-V2C-6040-96-...	2277488	1

**Selection table**

Primary rated current strength $I_{pn}$														
$I_{sn}$	Cl.	500	600	750	800	1000	1200	1250	1500					Rated power $S_n$ [VA]
5 A	0.2 S							2.5	2.5	2.5				
								5	5	5				
								10						
	0.2	2.5			2.5	2.5	2.5	2.5	2.5	2.5				
		5			5	5	5	5	5	5				
					10			10						
5 A	0.5 S	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5					
		5		5	5	5	5	5	5	5				
					10	10	10	10	10	10				
	0.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5				
		5	5	5	5	5	5	5	5	5				
		10			10	10	10	10	10	10				

**Plug-in current transformers with a primary current of 400 A to 1500 A, for rails and circular conductors**

Description	Type	Order No.	Pcs. / Pkt.
Plug-in current transformer with a primary current of 400 A to 1500 A, for rails and circular conductors	PACT MCR-V2C-8015-105-...	2277491	1

**Selection table**

Primary rated current strength $I_{pn}$															
$I_{sn}$	Cl.	400	500	600	750	800	1000	1200	1250	1500					Rated power $S_n$ [VA]
5 A	0.2 S									2.5					
										5					
	0.2	2.5			2.5	2.5	2.5	2.5	2.5	2.5	2.5				
		5			5	5	5	5	5	5	5				
					10	10	10	10	10	10	10				
	0.5 S	2.5	2.5	2.5	2.5	2.5	5	2.5	2.5	2.5					
5			5	5	10	5	5	5							
			10	10	15	10	10	10							
0.5	2.5	2.5	2.5	2.5	2.5	5	2.5	2.5	2.5						
	5	5	5	5	5	10	5	5	5						
	10			10	10	15	10	10	10						

**Plug-in current transformers with a primary current of 400 A to 1500 A, for rails and circular conductors**

Description	Type	Order No.	Pcs. / Pkt.
Plug-in current transformer with a primary current of 400 A to 1500 A, for rails and circular conductors	PACT MCR-V2C-8020-105-...	2277501	1

**Selection table**

Primary rated current strength $I_{pn}$														
$I_{sn}$	Cl.	400	500	600	750	800	1000	1200	1250	1500				Rated power $S_n$ [VA]
0.2 S									2.5	2.5				
									5	5				
0.2				2.5	2.5	2.5	2.5	2.5	2.5	2.5				
							5	5	5	5				
5 A			2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5				
				5	5	5	5	5	5	5				
0.5 S						10	10	10	10	10				
0.5		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5				
		5	5	5	5	5	5	5	5	5				
						10	10	10	10	10				

**Plug-in current transformers with a primary current of 500 A to 2500 A, for rails and circular conductors**

Description	Type	Order No.	Pcs. / Pkt.
Plug-in current transformer with a primary current of 500 A to 2500 A, for rails and circular conductors	PACT MCR-V2C-10020-129-...	2277514	1

**Selection table**

Primary rated current strength $I_{pn}$															
$I_{sn}$	Cl.	500	600	750	800	1000	1200	1250	1500	1600	200	2500			Rated power $S_n$ [VA]
0.2 S									2.5	2.5	2.5	2.5			
									5	5	5	5			
0.2						2.5	2.5	2.5	2.5	2.5	2.5	2.5			
						5	5	5	5	5	5	5			
5 A						10	10	10	10	10	10	10			
									15	15	15	15			
0.5 S		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5			
		5	5	5	5	5	5	5	5	5	5	5			
0.2						10	10	10	10	10	10	10			
									15	15	15	15			
		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5			
		5	5	5	5	5	5	5	5	5	5	5			
				10	10	10	10	10	10	10	10	10			
						15	15	15	15	15	15	15			

### Plug-in current transformers with a primary current of 500 A to 2500 A, for rails and circular conductors

Description	Type	Order No.	Pcs. / Pkt.
Plug-in current transformer with a primary current of 500 A to 2500 A, for rails and circular conductors	PACT MCR-V2C-10036-129-...	2277527	1

### Selection table

Primary rated current strength $I_{pn}$														
$I_{sn}$	Cl.	500	600	750	800	1000	1200	1250	1500	1600	2000	2500		
0.2 S									2.5		2.5	2.5		
									5		5	5		
0.2														
						2.5	2.5	2.5	2.5	2.5	2.5	2.5		
						5	5	5	5	5	5	5		
5 A														
						10	10	10	10	10	10	10		
									15	15	15	15		
0.5 S														
						2.5	2.5	2.5	2.5	2.5	2.5	2.5		
						5	5	5	5	5	5	5		
0.5														
						10	10	10	10	10	10	10		
									15	15	15	15		

Rated power  $S_n$  [VA]

### 3.3 Standard accessories, supplied as standard

Description
Attachment of the current transformer to the copper rail using the primary rail support (with 2 screws and 2 nuts)
Secondary terminal cover (2 green slides for covering the secondary terminals)
Plug-in feet which can be inserted into the side for attaching the current transformer to the mounting plate

### 3.4 Optional accessories

Description	Type	Order No.	Pcs. / Pkt.
Copper sleeves for horizontal installation as a connecting piece, e.g., from the power rail to the fuse holder			
Outside diameter 42 mm, inside diameter 12 mm (for MCR-V2-5012-85-...)	PACT MCR-CB-42-12	2277530	1
Outside diameter 28 mm, inside diameter 12 mm (for MCR-V2-3015-60-...)	PACT MCR-CB-28-12	2277543	1
Outside diameter 21 mm, inside diameter 12 mm (for MCR-V1-21-44-...)	PACT MCR-CB-21-12	2277556	1
Outside diameter 21 mm, inside diameter 8 mm (for MCR-V1-21-44-...)	PACT MCR-CB-21-8	2277569	1
Snap-on mounting for DIN rails	PACT MCR-RA	2277598	9
Secondary terminal cover to increase air and creepage distances when installed horizontally, length of 60 mm	PACT MCR-ETC-60	2277572	9
Secondary terminal cover to increase air and creepage distances when installed horizontally, length of 70 mm	PACT MCR-ETC-75	2277585	9
Protective caps for the primary rail mounting screws (for protection against accidental contact)	PACT MCR-ICAP	2277608	9

## 4 Technical data

### General data

Rated frequency	
Transformers that cannot be calibrated	50 Hz to 60 Hz
Transformers that can be calibrated	50 Hz
Class of insulation	E
Thermal rated short-time current $I_{th}$	$60 \times I_N$
Rated surge current $I_{dyn}$	$2.5 \times I_{th}$
Rated insulation voltage according to EN 50178	1 kV
Impulse withstand voltage	12 kV (1.2/50 $\mu$ s)
Surge voltage category	III
Rated power	Depends on type, 1.25 VA to 45 VA
Primary rated current $I_{pn}$	Depends on type, 1 A to 4000 A
Secondary rated current $I_{sn}$	Depends on type, 1 A or 5 A
Accuracy	Depends on type, class 0.2; 0.2 S; 0.5; 0.5 S or 1
Surge current limitation factor	FS 5 or FS 10
Housing material	Polyamide PA glass fiber reinforced, black

### Connection data

Connection capacity of the secondary terminals	2 x (2.5 x 4) mm
--	------------------

### Ambient conditions

Ambient temperature (operation/storage/transport)	-25°C to +40°C
Permissible humidity	Use only indoors; no condensation

### Conformance/approvals

Conformance	EN 50178
Standard	IEC 60044-1

## 5 Safety notes

**WARNING: Danger due to damaged current transformers**

- Before startup, check that the housing of the current transformer is not damaged.
- Also before startup, check that there are no electrically conductive connections between the primary conductor and the secondary terminals.
- If a built-in current transformer is removed in order to be used in a different system, check the current transformer for damage again.

**WARNING: Danger due to voltage at open circuit**

The output of the current transformer is a constant current source. In the event of an increasing load, the output voltage thus increases and reaches its maximum at infinite load (i.e., with open secondary terminals).

- Avoid open-circuit operation at all costs.
- Note that unloaded transformers must be short circuited.
- Only start up the current transformer once the secondary cables are connected on both sides.

**NOTE: Avoid material damage when grounding**

In accordance with VDE 0414, current transformers and voltage transducers must be secondary grounded from a series voltage of 3.6 kV. At low voltages there is no need for grounding, provided the transformers do not have any large metal surfaces within reach.

- Ground the current transformers at the k terminal block.

**NOTE: Avoid damage due to improper mounting**

Vibrations can cause the screws on the primary rail to loosen.

- During mounting, tighten the screws on the primary rail support so that they cannot loosen as a result of vibrations.

Condensation can cause short circuits on the screws of the primary rail.

- Only start up the current transformer inside, where there is no condensation.

## 6 Selecting the optimum transformer

Once the technical specifications for the current transformers required by the application have been defined, the next step is to determine the transformer types.

The four main current transformer characteristics are:

1. Primary rated current (primary current  $I_{pn}$ )
2. Secondary rated current (secondary current  $I_{sn}$ )
3. Capacity (power) in VA
4. Accuracy (class)

The current transformer is selected first and foremost based on the primary rated current  $I_{pn}$ , which can be up to 4000 A (depending on the type) and the secondary rated current  $I_{sn}$ . This is either 1 A AC or 5 A AC at the output.

The accuracy (class) can be another important criterion for selecting the correct current transformer if certain specifications have to be met.

Special attention, however, should be paid to the calculation of the rated power (in VA). Here it is important to take into consideration all occurring loads of the measuring circuit for optimum selection of the rated power of the current transformer (see below).

Phoenix Contact offers an extensive range of current transformer types. This means that several different types may meet the prescribed technical criteria. The main differences lie in the size and shape of the transformer opening and in the external dimensions of the transformer housing. This allows you to select an optimum current transformer based on the size of the copper rail and the space available in the control cabinet.

### How do you choose the optimum current transformer?

Firstly, add together all occurring loads:

- Calculate the power requirement of the copper cable (info: cable length x 2)
- Take into account the power requirement of the connected devices
- Add the reserve requirement

The optimum current transformer is one which can accommodate a maximum of 1.5 times the total load.

This is because underloads affect accuracy and impair the overcurrent limiting protection, which protects the secondary circuit from being damaged by excessive currents.

### Power requirement of copper cables with a different diameter

Cable cross section in mm <sup>2</sup>	Power in VA (consider the supply and return line)	
	at 5 A	at 1 A
1.5	0.2917	0.117
2.5	0.175	0.0070
4	0.1094	0.0044
6	0.0729	0.0029

$I_{sn}$  at 5 A AC:

$$P = 10 \text{ m} \times 2 \times 0.175 \text{ VA} \rightarrow P = 3.50 \text{ VA}$$

$I_{sn}$  at 1 A AC:

$$P = 10 \text{ m} \times 2 \times 0.007 \text{ VA} \rightarrow P = 0.14 \text{ VA}$$

## 7 Installation and connection

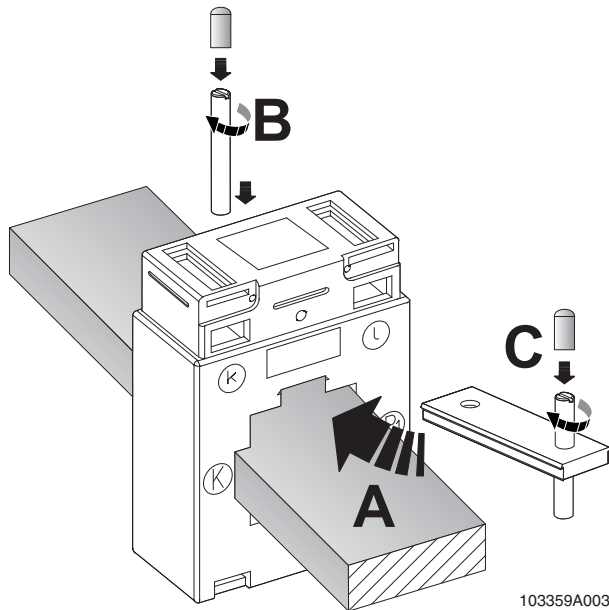
Current transformers from Phoenix Contact can be positioned anywhere.

Thanks to the primary rail support of the PACT Analog current transformer which can be pulled out, no edges protrude from the housing. Instead all edges are flush. This is the basic prerequisite for the parallel attachment and positioning of the current transformers on the copper rail, which thus enables currents and loads supplied via an electric branch to be measured. To this end, a copper sleeve (accessory) is inserted into the internal opening of the current transformer, which creates a conductive connection between the current-carrying copper rail and, e.g., the securing lug of a downstream fuse. To increase the air and creepage distances, an extended secondary terminal cover (accessory) is placed over the connections of the secondary terminals of the horizontal current transformer.



## 7.1 Installing a current transformer

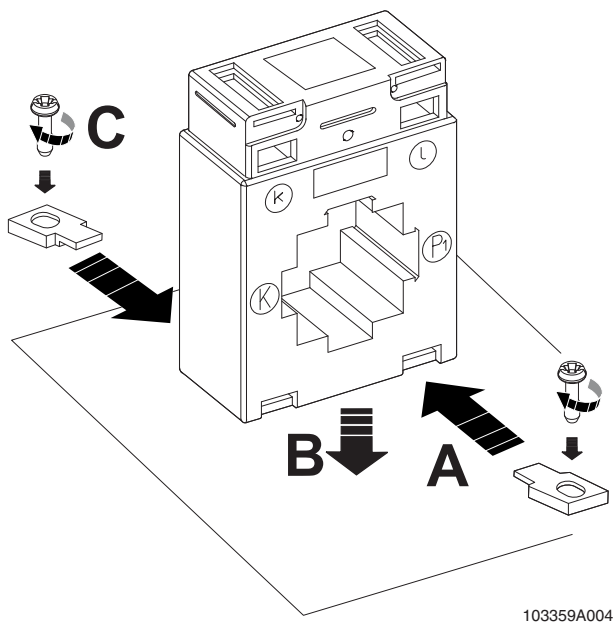
The current transformers can be installed in the following mounting positions:



### 1. Vertically on the copper rail

In most applications, the current transformer is fitted directly onto the copper rail.

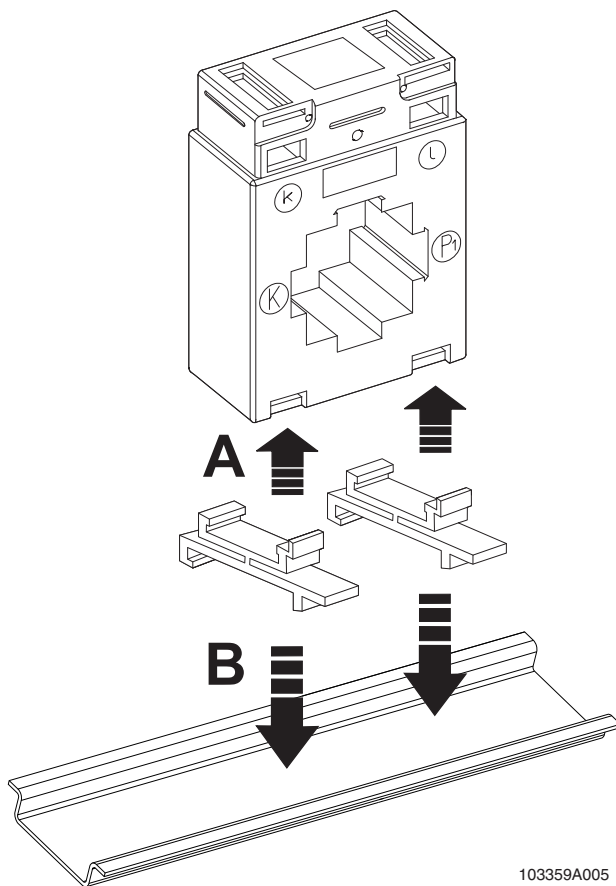
- Slide the current transformer over the copper rail.
- Slide the primary rail support through the inner hole of the current transformer (A).
- Insert the two screws on the left and right of the transformer into the holes of the primary rail support until they reach the copper rail and the pressure is such that the current transformer is fixed in place (B).
- Attach the protective caps for protection against accidental contact to the screw heads (C).



### 2. Vertically on the mounting plate

Two plug-in feet are included as standard accessories (see page 21).

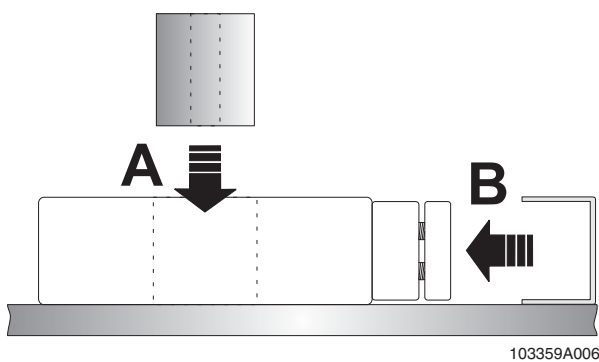
- Insert the plug-in feet underneath the transformer on the right and the left (A).
- Place the current transformer on the mounting plate (B).
- Insert the screws through the openings of the plug-in feet to secure the current transformer (C).



### 3. Vertically on the DIN rail

The current transformer can also be snapped onto the DIN rail with the optional snap-on mounting (see page 21).

- Snap the snap-on mounting into the holes beneath the current transformer (A).
- Snap the current transformer onto the DIN rail (B).



### 4. Horizontally on the copper rail

As a result of their flat shape, the Phoenix Contact current transformers can also be fitted horizontally onto copper rails, e.g., behind fuse rails.

This is possible with the following current transformer types:

- MCR-V2-5012-85... (see page 7)
- MCR-V2-3015-60... (see page 5)
- MCR-V1-21-44... (see page 4)

- Insert a suitable copper sleeve (see page 21) into the inner hole of the current transformer (A) to create a conductive connection between the copper rail and the fuse.
- Attach the extended secondary terminal cover to the secondary terminals (B) to increase the air and creepage distances when the current transformer is installed horizontally.

### 7.2 Connecting a current transformer

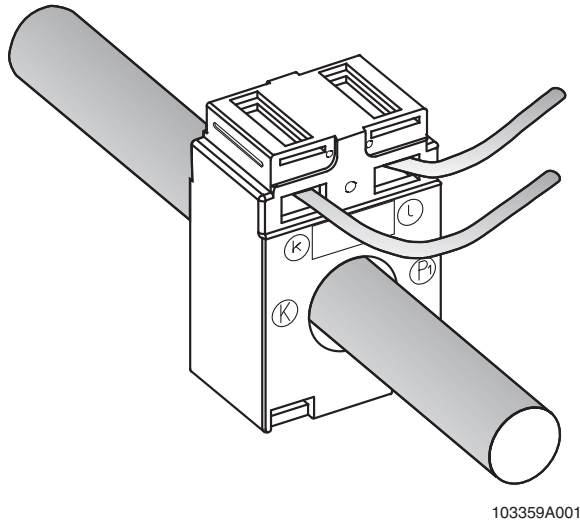


Figure 1 Example connection with PACT MCR-V1-21-44-...

The connections of the primary winding are designated as "K" and "L" or "P1" and "P2". The connections of the secondary winding are designated as "k" and "l" or "s1" and "s2". Pole the cables so that the power flows from "K" to "L".

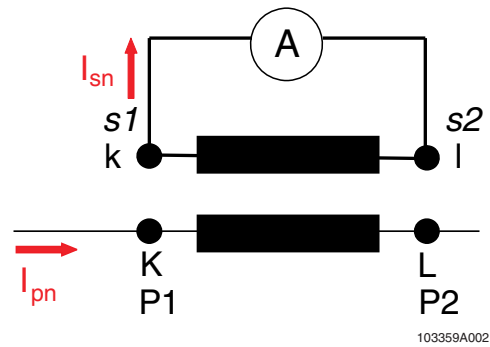


Figure 2 Power flow direction

## 8 Calibrating the current transformers

Calibrated current transformers are identified by a yellow sticker:

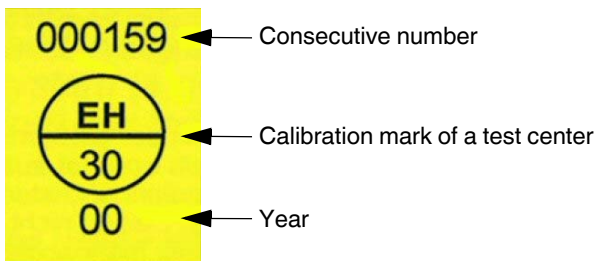


Figure 3 Example stamp of a nationally recognized test center

A PTB (Physikalisch-Technischen Bundesanstalt) approval mark is also applied:

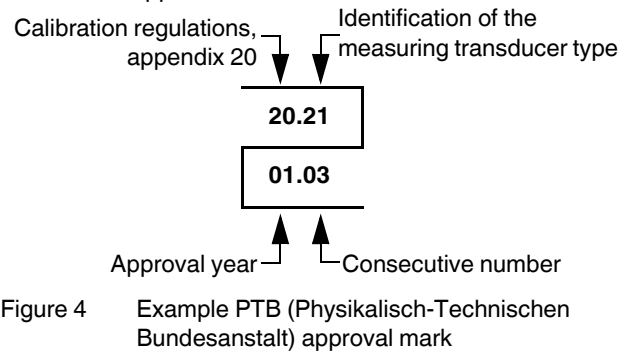


Figure 4 Example PTB (Physikalisch-Technischen Bundesanstalt) approval mark

Each calibrated current transformer is provided with a corresponding calibration certificate.



The calibration process involves additional costs, which are specified in accordance with the national table of fees. These depend on the maximum rated input current of the current transformer.

## 9 Safe isolation

### Operating voltages by comparison

	EN 60044-1 <sup>1</sup>		EN 50178 <sup>2</sup>
Rated insulation voltage: (operating voltage)	480 V (L-L)	≅	277 V (L-L)
	7280 V (L-L)	≅	416 V (L-L)
	1000 V (L-L)	≅	577 V (L-L)
	/	≅	1000 V (L-L)
Impulse withstand voltage for transformer testing: at 277 V (L-N)	3 kV		6 kV
	3 kV		12 kV

<sup>1</sup> EN 60044-1: Measuring transducers - Part 1: Current transformer

<sup>2</sup> EN 50178: Electronic equipment for use in power installations

### 9.1 Application example with safe isolation up to 1 kV

- The current transformer converts the high current down to 1 A AC or 5 A AC.
- A downstream current transducer creates a standard signal from the secondary current.

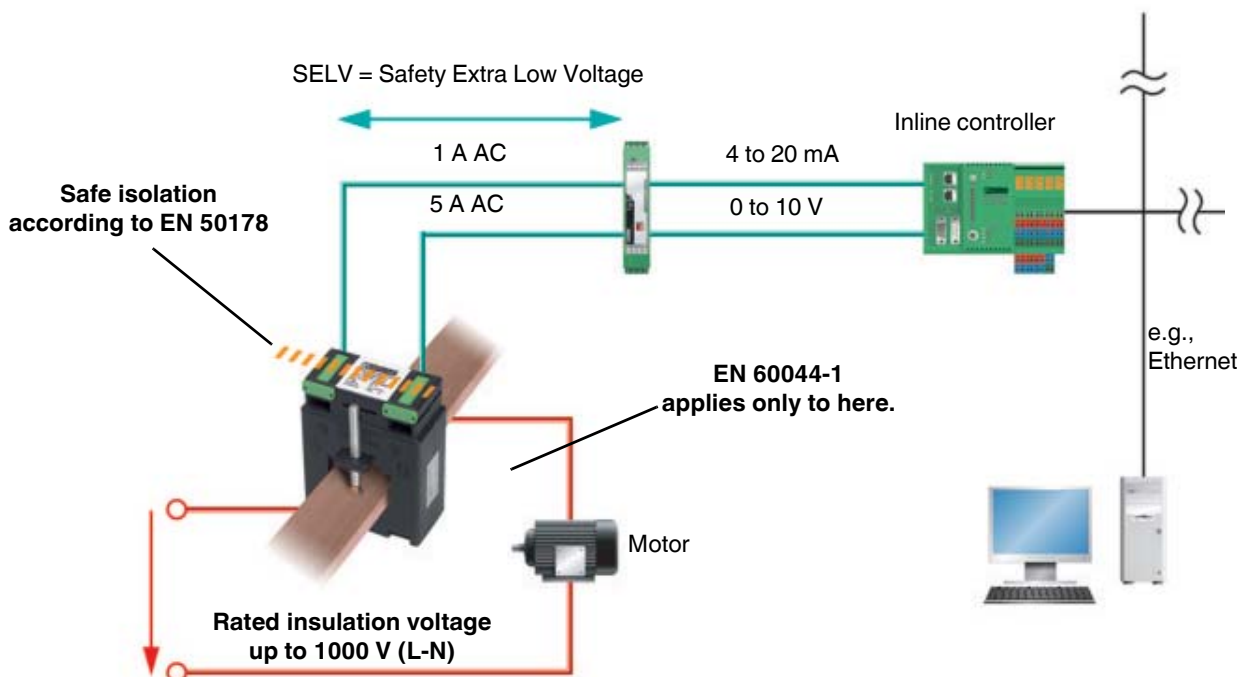


Figure 5 Application example

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