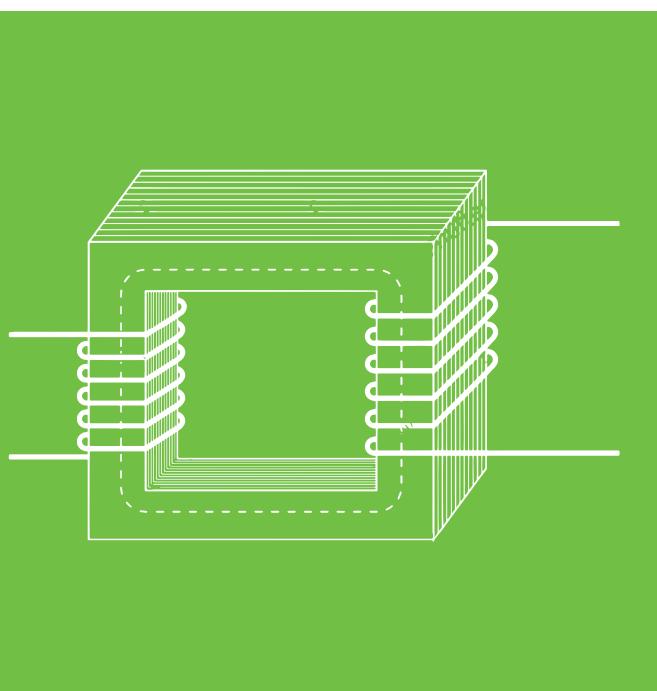




T201 SERIES CURRENT TRANSDUCERS

- SELECTION GUIDE
- TECHNICAL DATA



HOW TO MEASURE AND CONVERT CURRENT

CURRENT TRANSDUCERS WITH ANALOG OUTPUT

Current transducers with output in volts or milliAmperes (also available with power from measurement loops, ModBUS interface and contacts digital to handle alarms) provide current measurements that can be directly acquired by PLCs, indicators, and acquisition and control systems, without the interposition of separate transducers and without wiring for auxiliary power. The measurement conversion stage and generation of the output signal is integrated within the transducer. Modular panel-mounted current converters measure alternating current applied at the input or acquired via sensors and then provide standard mA or V signals directly proportional to the measured current.



T201 SERIES - CURRENT TRANSDUCERS WITH ANALOG OUTPUT



T201 SERIES - OPEN CORE CURRENT TRANSDUCERS OPEN WITH ANALOG OUTPUT



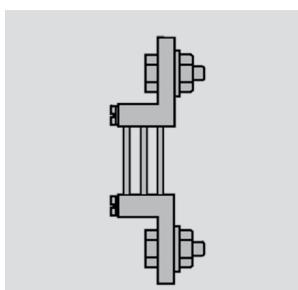
MODULAR CONVERTERS WITH ANALOG OUTPUT

CURRENT SENSORS AND MEASUREMENT INSTRUMENTS

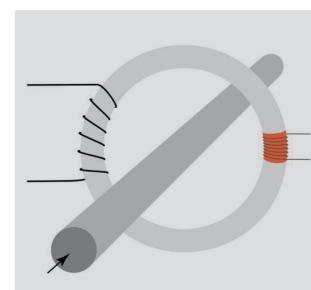
Rogowski sensors are flexible coils without a magnetic core placed around the current conductor. They are suitable for making measurements high current by winding large bundles of cables, bus bars, irregularly shaped conductors and with difficult access. Current shunts detect current flow through a precision low ohmic value resistor inserted in the current path. Zero current sensors Flux use a winding that makes them ideal for high-precision measurements. Also available are ammeters, current clamps and multimeters that allow current to be measured quickly with diagnostic functions and without interrupting circuits.



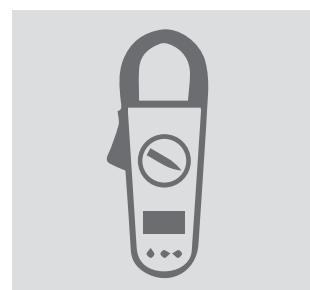
ROGOWSKI COILS - RC150 SENECA SERIES



SHUNTS



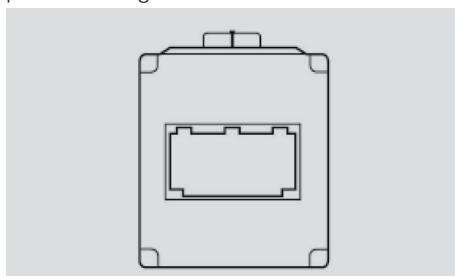
ZERO FLUX SENSORS



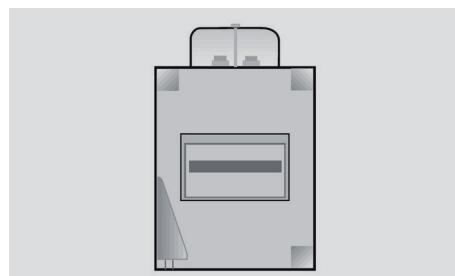
CURRENT CLAMPS

CURRENT TRANSFORMERS (CT)

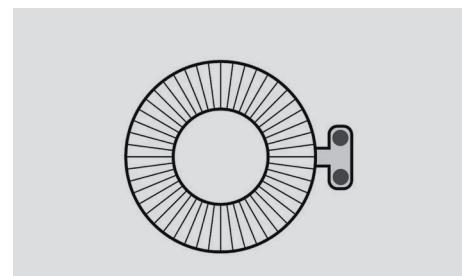
Current transformers or CTs consist of two windings insulated from each other and a magnetic core. The primary winding is passed through by the current to be measured, while the secondary winding supplies the measuring instruments. CTs are characterized by the transformation ratio between the primary and secondary current. They can be primary-through (hollow or busbar) to reduce the primary current to a secondary value of a few amperes, primary-wound (with low primary values or with high power associated with small CT size), toroidal CTs in which the conductor passes through the central hole and on the core are wound coils.



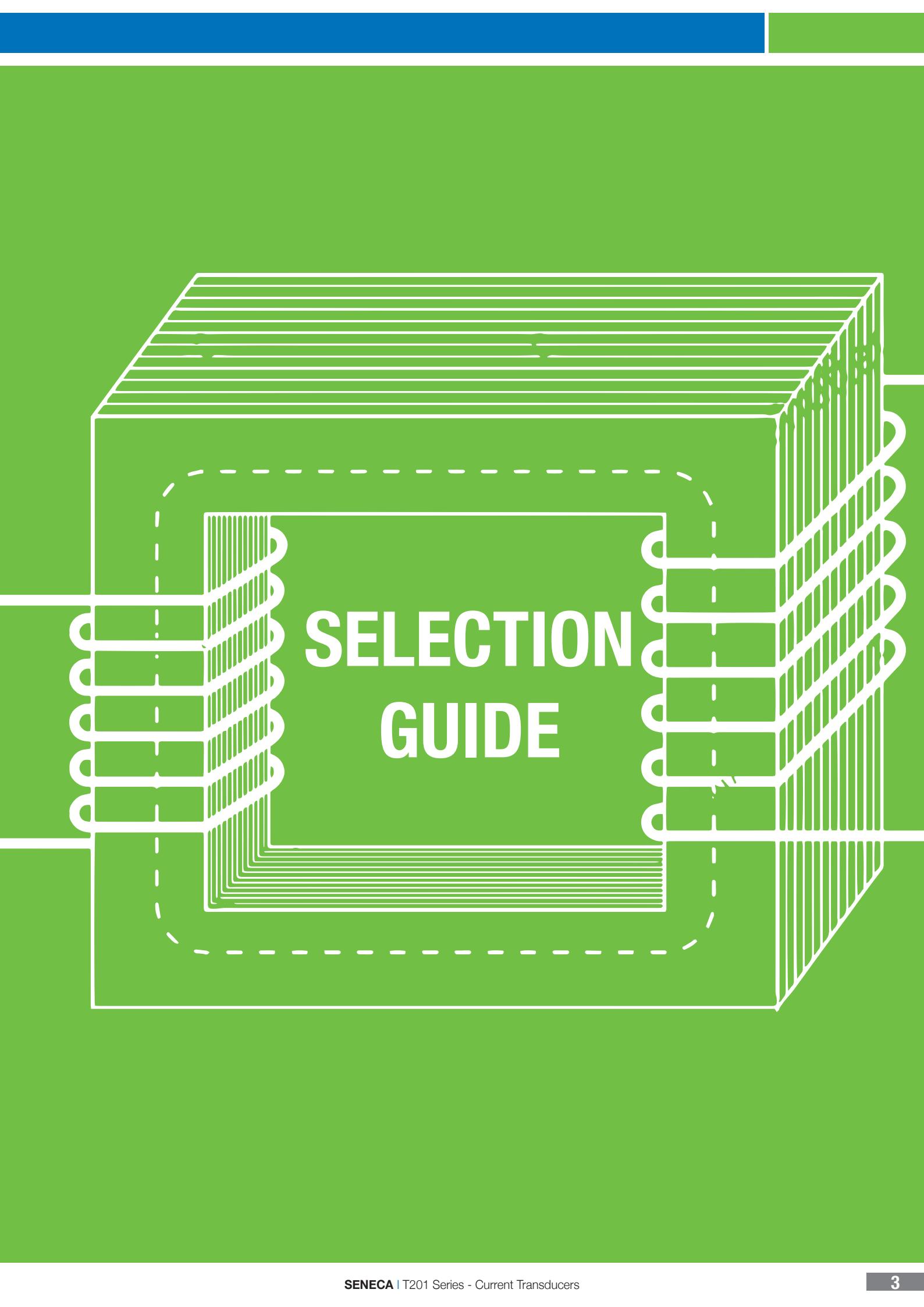
CT WITH PRIMARY WINDING



CT WITH PRIMARY WRAP



TOROIDAL CT



SELECTION GUIDE

T201 SERIES

CURRENT TRANSDUCERS

SELECTION GUIDE

MODELS
T201
T201DC
T201DC100
T201DCH50-LP
T201DCH100-LP
T201DCH300-LP
T201DCH
T2012DCH100
T2012DCH300
T201DCH50-M
T201DCH100-M
T201DCH300-M
T201DCH50-MU
T201DCH100-MU
T201DCH300-MU
T201DCH600-MU
T201DCH100-OPEN
T201DCH300-OPEN
T201DCH600-OPEN

INPUT	AC / AC TRMS				DC / Bipolar DC			
	mA	V	ModBUS	INPUT	mA	V	ModBUS	Contact
T201	X*	-	-	-	-	-	-	-
T201DC	-	-	-	-	X	-	-	-
T201DC100	-	-	-	-	X	-	-	-
T201DCH50-LP	X	-	-	-	X	-	-	-
T201DCH100-LP	X	-	-	-	X	-	-	-
T201DCH300-LP	X	-	-	-	X	-	-	-
T201DCH	-	X	-	-	-	X	-	-
T2012DCH100	-	X	-	-	-	X	-	-
T2012DCH300	-	X	-	-	-	X	-	-
T201DCH50-M	-	X	X	-	-	X	X	
T201DCH100-M	-	X	X	-	-	X	X	
T201DCH300-M	-	X	X	-	-	X	X	
T201DCH50-MU	-	X	X	X	-	X	X	X
T201DCH100-MU	-	X	X	X	-	X	X	X
T201DCH300-MU	-	X	X	X	-	X	X	X
T201DCH600-MU	-	X	X	X	-	X	X	X
T201DCH100-OPEN	-	X	X	X	-	X	X	X
T201DCH300-OPEN	-	X	X	X	-	X	X	X
T201DCH600-OPEN	-	X	X	X	-	X	X	X

*NO TRMS

T201 SERIES

CURRENT TRANSDUCERS

SELECTION GUIDE

Model	Power Supply	INPUT		OUTPUT			DIMENSION		CONDUCTOR SIZING			Approvals	Accuracy class
		RATED CURRENT	TYPE OF MEASURE	mA / V	ModBUS	Alarm	Overall	Through hole	Max cable section	Max cable diameter	Max thoroughbar dimension		
T201	Loop powered (5..28 Vdc)	40 A	AC	4..20 mA	-	-	41x44x26 mm	12,3 mm	25 mm ²	10 mm	-	CE, UL	0,2
T201DC	Loop powered (6..100 V)	40 A	DC	4..20 mA	-	-	41x44x26 mm	12,3 mm	25 mm ²	10 mm	-	CE, UL, EU Patent	0,2
T201DC100	Loop powered (6..100 V)	100 A	DC	4..20 mA	-	-	95x68x26 mm	20,8 mm	120 mm ²	20 mm	12x5 mm (x2)*	CE, UL, EU Patent	0,2
T201DCH	10..28 Vdc	± 50 A	AC/DC TRMS or DC Bipolar DC	0..10 V	-	-	54x 41x30 mm	12,3 mm	25 mm ²	10 mm	-	CE, UL	0,5
T2012DCH100	12..28 Vdc	± 100 A	AC/DC TRMS or DC Bipolar DC	0..10 V	-	-	95x68x26 mm	20,8 mm	120 mm ²	20 mm	12x5 mm (x2)*	CE, UL	0,5 (AC) / 1 (DC)
T2012DCH300	12..28 Vdc	± 300 A	AC/DC TRMS or DC Bipolar DC	0..10 V	-	-	95x68x26 mm	20,8 mm	120 mm ²	20 mm	12x5 mm (x2)*	CE, UL	0,5 (AC) / 1 (DC)
T201DCH50-LP	Loop powered (9..28 Vdc)	± 50 A	AC/DC TRMS or DC Bipolar DC	4..20 mA	-	-	95x68x26 mm	12,3 mm	25 mm ²	10 mm	-	CE, UL	0,5 (AC) / 1 (DC)
T201DCH100-LP	Loop powered (9..28 Vdc)	± 100 A	AC/DC TRMS or DC Bipolar DC	4..20 mA	-	-	41x44x26 mm	20,8 mm	120 mm ²	20 mm	12x5 mm (x2)*	CE, UL	0,5 (AC) / 1 (DC)
T201DCH300-LP	Loop powered (9..28 Vdc)	± 300 A	AC/DC TRMS or DC Bipolar DC	4..20 mA	-	-	95x68x26 mm	20,8 mm	120 mm ²	20 mm	12x5 mm (x2)*	CE, UL	0,5 (AC) / 1 (DC)
T201DCH50-M	12..28 Vdc	± 50 A	AC/DC TRMS or DC Bipolar DC	0..10 V	x	-	95x68x26 mm	20,8 mm	120 mm ²	20 mm	12x5 mm (x2)*	CE	0,5
T201DCH100-M	12..28 Vdc	± 100 A	AC/DC TRMS or DC Bipolar DC	0..10 V	x	-	95x68x26 mm	20,8 mm	120 mm ²	20 mm	12x5 mm (x2)*	CE	0,5
T201DCH300-M	12..28 Vdc	± 300 A	AC/DC TRMS or DC Bipolar DC	0..10 V	x	-	95x68x26 mm	20,8 mm	120 mm ²	20 mm	12x5 mm (x2)*	CE	0,5
T201DCH50-MU	11,5..28 Vdc	± 100 A	AC/DC TRMS or DC Bipolar DC	0..10 V	x	x	95x68x26 mm	20,8 mm	120 mm ²	20 mm	12x5 mm (x2)*	CE	0,5
T201DCH100-MU	11,5..28 Vdc	± 100 A	AC/DC TRMS or DC Bipolar DC	0..10 V	x	x	95x68x26 mm	20,8 mm	120 mm ²	20 mm	12x5 mm (x2)*	CE	0,5
T201DCH300-MU	11,5..28 Vdc	± 300 A	AC/DC TRMS or DC Bipolar DC	0..10 V	x	x	95x68x26 mm	20,8 mm	120 mm ²	20 mm	12x5 mm (x2)*	CE	0,5
T201DCH600-MU	11,5..28 Vdc	± 600 A	AC/DC TRMS or DC Bipolar DC	0..10 V	x	x	95x75x35 mm	35 mm	300 mm ²	33 mm	32x5 mm (x2)**	CE	0,5
T201DCH100-OPEN	11,5..28 Vdc	± 100 A	AC/DC TRMS or DC Bipolar DC	0..10 V	x	x	95x75x35 mm	35 mm	300 mm ²	33 mm	32x5 mm (x2)**	CE	0,5
T201DCH300-OPEN	11,5..28 Vdc	± 300 A	AC/DC TRMS or DC Bipolar DC	0..10 V	x	x	95x75x35 mm	35 mm	300 mm ²	33 mm	32x5 mm (x2)**	CE	0,5
T201DCH600-OPEN	11,5..28 Vdc	± 600 A	AC/DC TRMS or DC Bipolar DC	0..10 V	x	x	95x75x35 mm	35 mm	300 mm ²	33 mm	32x5 mm (x2)**	CE	0,5

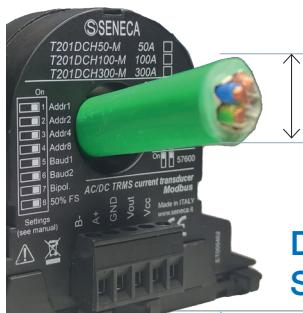
(*) Coupled with max. flow rate 334 A (T 30°C) or 440 A (T 50°C)

(**) Coupled with max flow rate 695 A (T 30°C) or 920 A (T 50°C)

T201 SERIES

CURRENT TRANSDUCERS

CONDUCTOR - CABLE SIZING



$$D=2\sqrt{\frac{S}{\pi}}$$

D=diameter
S=diameter

For the determination of current carrying capacity and cable installation method, we have reference was made to IEC 60364-5-52, which considers the reference temperature of the conductor at 70°C and the ambient temperature at 30°C. It should be noted, however, that the determination of the sizing of cables and insulated bars (cross section, thickness, diameter, length) in relation to the intensity of the current flowing through them should be related to various parameters and criteria such as heat balance, insulations, feeds, materials, the voltage drop and power loss of each specific installation. Therefore, the data in these tables should be interpreted and contextualized in the context of electrical design, wiring and analysis of the electrical features of the devices and components used.

CURRENT CAPACITY TABLE (AMPERES)

Installation methods B.52.1

PVC insulation, copper conductors, conductor temp. 70°C, reference temp. 30°C

Rated area of conductor cross-section mm ²	Multi-core cables		Single-core cables					
	2 loaded conductors	3 loaded conductors	2 contact conductors	3 stranded conductors	3 stranded conductors		Horizontal	Vertical
					Contact	Spacing		
1	Method E	Method E	Method F	Method F	Method F	Method G	Method G	Method G
1,5	22	18,5	-	-	-	-	-	-
2,5	30	25	-	-	-	-	-	-
4	40	34	-	-	-	-	-	-
6	51	43	-	-	-	-	-	-
10	70	60	-	-	-	-	-	-
16	94	80	-	-	-	-	-	-
25 (*)	119	101	131	110	114	146	130	
35	148	126	162	137	143	181	162	
50	180	153	196	167	174	219	197	
70	232	196	251	216	225	281	254	
95	282	238	304	264	275	341	311	
120 (**)	328	276	352	308	321	396	362	
150	379	319	406	356	372	456	419	
185	434	364	463	409	427	521	480	
240	514	430	546	485	507	615	569	
300 (***)	593	497	629	561	587	709	659	
400	-	-	754	656	689	852	795	
500	-	-	878	749	789	982	920	
630	-	-	1005	855	905	1138	1070	

Circular conductors are considered for sizes up to and including 16 mm². Values for larger sizes refer to conductors shaped and can be safely applied to circular conductors.

(*) T201DCH

(**) T201DCH100..300

(***) T201DCH600

T201 SERIES

CURRENT TRANSDUCERS

CONDUCTOR – INSULATED BUSBAR SIZING



Solid Copper bars are used in electrical panels, for power distributions and when pre-defined connection, branch and fastening points are not available. Solid Copper Bars with rounded edges are excellent electrical conductors and are valued for ductility, sturdiness and strength. In addition to electrical panels, they are used for distribution or transportation of electricity, in the production of blinds, conduits electrical and power supply lines in industrial electrical installation with thicknesses typical of 4, 5, 10 mm and lengths of 1750 and 4200 mm.

CURRENT CAPACITY TABLE (AMPERES) SOLID COPPER BARS

Thermal rise T according to DIN 43671. Reference ambient temperature Ta = 35°C

Dimension	Sez mm ²	T 30° C				T 50° C			
		I	II	III	II II	I	II	III	II II
Number of bars in parallel									
12 x 4	48	160				212			
12 x 5	60	183	334 (*)	460	514	241	440	607	679
15 x 5	75	218	405 (*)	567	635	289	537	751	841
20 x 5	100	274	500	690	772	363	663	914	1023
25 x 5	125	327	586	795	890	433	776	1053	1179
30 x 5	150	379	672 (**)	896	1003	502	890	1187	1329
32 x 5	160	400	695 (**)	931	1043	530	920	1234	1382
40 x 5	200	482	836	1090	1220	639	1108	1444	1617
50 x 5	250	583	994	1260	1411	772	1317	1670	1870
60 x 5	300	688	1150	1440	1613	912	1524	1908	2137
63 x 5	315	718	1197	1494	1673	951	1586	1980	2217
80 x 5	400	885	1450	1750	1960	1173	1921	2319	2597
100 x 5	500	1080	1730	2050	2296	1431	2292	2716	3042
125 x 5	625	1300	2022	2381	2666	1723	2679	3155	3532
20 x 10	200	427	734	959	1151	564	970	1269	1522
30 x 10	300	573	986	1289	1547	756	1300	1701	2041
40 x 10	400	715	1230	1609	1931	944	1624	2124	2549
50 x 10	500	852	1510	2040	2448	1129	2001	2703	3243
60 x 10	600	985	1720	2300	2760	1305	2279	3048	3658
80 x 10	800	1240	2110	2790	3124	1643	2796	3697	4140
100 x 10	1000	1490	2480	3260	3651	1974	3286	4320	4838
120 x 10	1200	1740	2860	3740	4188	2306	3790	4956	5500
160 x 10	1600	2220	3590	4680		2942	4757	6201	
200 x 10	2000	2690	4310	5610		3564	5711	7433	

Example of bar selection. For In = 800 A; maximum operating temperature Tmax = 85°C; number of bars in parallel = 1.

Since the thermal rise T = Tmax - Ta = (85 - 35) = 50 °C, bars with In ≥ 800 A are selected from the tables with T 50 °C:

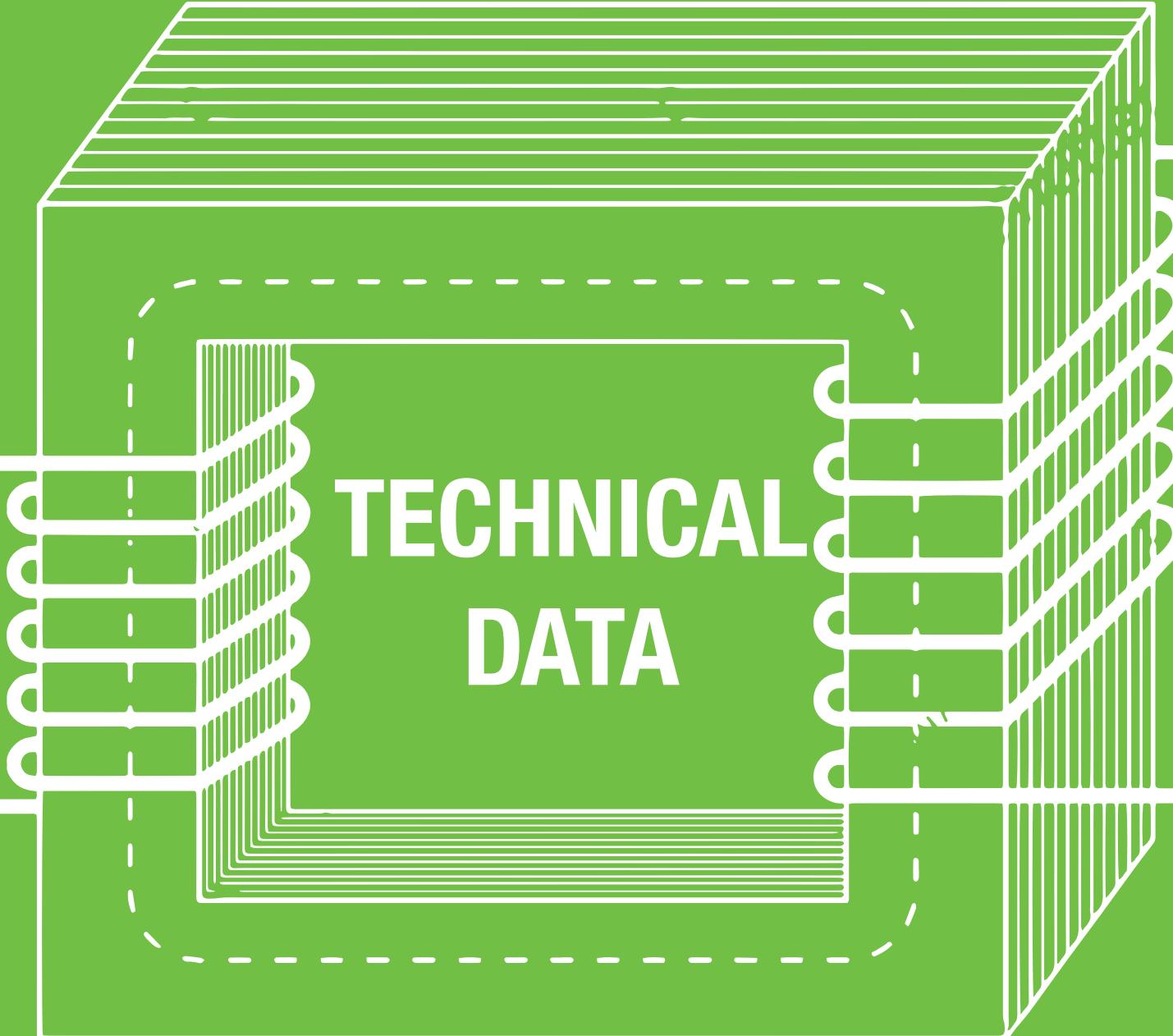
pre-drilled copper bar: 63x5 (In = 951 A)

copper solid bar: 63x5 (In = 951 A), 40 x 10 (In = 944 A)

aluminum solid bar: 50 x 10 (In = 874 A)

(*) T201DCH100..300

(**) T201DCH600



TECHNICAL DATA

AC/DC Current Transducers



T201 Series AC/DC current transducers are devices converting the measured current value (up to 600 A) into a 4..20 mA or 0..10 V normalized industrial signal. Most models of **T201** Series are UL certified and feature low power consumption, measurement scales that can be set via DIP-switches or software (-M, -MU versions) and high accuracy guaranteed by lack of thermal drift. There are 19 models available with different measurement principles, patented technology, Effect Hall or TRMS with bipolar input range. Some models are equipped with RS485 ModBUS RTU and open core housing.

INPUT

Up to 600 A



OUTPUT

mA, V, PNP (Alarm))



MEASUREMENT TYPES

AC TRMS / BIPOLE DC

Hall Effect



HIGH ACCURACY CLASS

0,2..05%



BASIC CONFIGURATION BY DIP-SWITCH



FULL CONFIGURATION VIA SOFTWARE (-M/-MU VERSIONS)



POWER SUPPLY

Direct
By Loop



LOW POWER CONSUMPTION

No thermal drift <25mA



DATA MANAGEMENT STANDARD (VERSIONS -M /-MU)

ModBUS
IEEE 754



WIDE TEMPERATURE RANGE

-20..+70°C



PATENTED TECHNOLOGY T201DC / T201DC100

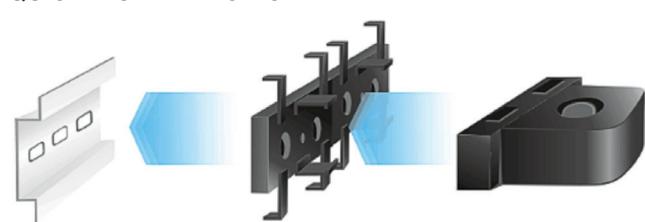


INTERNATIONAL CERTIFICATION

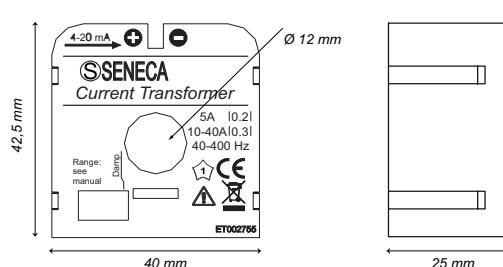


MOUNTING AND DIMENSION

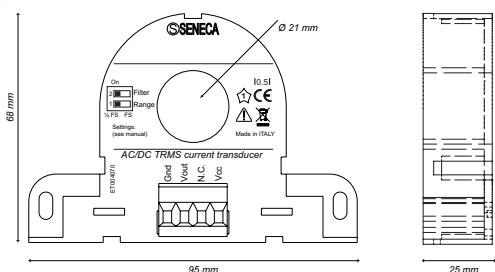
QUICK INSTALLATION ON DIN RAIL



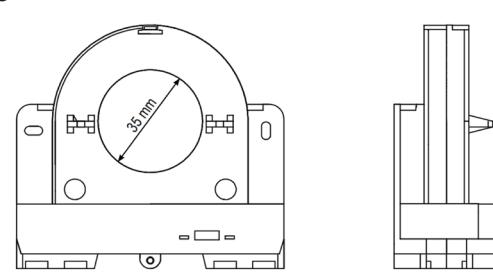
SIZE 1



SIZE 2



SIZE 3



T201 SERIES - CURRENT TRANSDUCERS

AC/DC CURRENT TRANSDUCERS WITH 4-20 mA OUTPUT

	T201	T201DC	T201DC100
	 	 	 
	AC current transducer 0..40 Aac, 4..20 mA loop powered output	Bipolar DC current transducer 0..40 Adc, 4..20 mA output, patented inductive measurement technology	Bipolar DC current transducer 0..100 Adc, 4..20 mA output, patented inductive measurement technology
GENERAL DATA			
Power supply	Loop powered (5..28 Vdc)	Loop powered (6..100 V)	Loop powered (6..100 V)
Power consumption	< 21 mA	< 21 mA	< 21 mA
Isolation and protections	3 kVac (on bare conductors)	3 kVac (on bare conductors)	3 kVac (su conduttori nudi)
LED status indicators	-	-	-
Overvoltage category	300 V CAT III (bare conductor); 600 V CAT III (insulated conductor)	300 V CAT III (bare conductor); 600 V CAT III (insulated conductor)	300 V CAT III (bare conductor); 600 V CAT III (insulated conductor)
Polarità di misura	Positivo (corrente entrante lato etichetta)	Positivo (corrente entrante lato etichetta)	Positivo (corrente entrante lato etichetta)
Polarity measurement	Positive (label-side incoming current)	Positive (label-side incoming current)	Positive (label-side incoming current)
Settings	DIP Switch	DIP Switch	DIP Switch
Data export and archiving	-	-	-
Protection degree	IP20	IP20	IP20
Accuracy class	0.2% f.s. (AC)	0.2% f.s. (DC)	0.2% f.s. (DC)
Operating temperature	-20..+65°C	-10..+65°C	-10..+65°C
Storage temperature	-40..+85°C	-40..+85°C	-40..+85°C
Humidity	10RH..90% non condensing	10RH..90% non condensing	10RH..90% non condensing
Altitude	Up to 2,000 m a.s.l.	Up to 2,000 m a.s.l.	Up to 2,000 m a.s.l.
Core	Closed	Closed	Closed
Connections	Removable terminals (5-pole), 5 mm pitch for cables up to 2.5 mm ²	Removable terminals (5-pole), 5 mm pitch for cables up to 2.5 mm ²	Removable terminals (5-pole), 5mm pitch for cables up to 2.5mm ²
Through-hole diameter	12.3 mm	12.3 mm	20.8 mm
Dimension (wxhxd)	41x44x26 mm	41x44x26 mm	95x68x26 mm
Mounting	Free mounting or on IEC EN 60715 DIN rail (35 mm) with supplied accessories	Free mounting or on IEC EN 60715 DIN rail (35 mm) with supplied accessories	Free mounting or on IEC EN 60715 DIN rail (35 mm) with supplied accessories
Case	PA6, color black	PA6, color black	PA6, color black
Weight	47 g	47 g	120 g
Approvals	CE, UL-UR	CE, UL-UR, European patent	CE, UL-UR, European patent
COMMUNICATION			
Communication port	-	-	-
Protocol	-	-	-
Speed	-	-	-
INPUT DATA			
Channels	1	1	1
Range	0-5/10/15/20/25/30/35/40 Aac	Single-pole 0-5/10/20/40 Adc Bipolar ±5/10±20/40 Adc	Single-pole 0-10/25/50/100 Adc Bipolar ±10, 25, -10-50, -25-100 Adc
Type of measurement	Adjusted average	Magnetic balancing	Magnetic balancing
Bipolar measurement	No	Yes	Yes
Hysteresis			
Overload	800 A	800 A	2000 A (impulsive)
Bandwidth	20..1,000 Hz	n.d.	n.d.
Crest factor	2	1,2	1,2
OUTPUT DATA			
Analog channels	1	1	1
Range	4..20 mA (2 wires)	4..20 mA (2 wires)	4..20 mA (2 wires)
Resolution	infinite	12 bits	12 bits
Max load	< 5000 Ohms @ 100 Vdc		
Error for EMI	< 40µA	< 50µA	< 50µA
Thermal drift	< 150 ppm/K	< 150 ppm/K	< 150 ppm/K
Response time	100 ms (without filter) 2.5 s (with filter)	100 ms (without filter) 600 ms (with filter)	100 ms (without filter) 600 ms (with filter)
CONDUCTOR SIZING			
Max cable cross section	25 mm ²	25 mm ²	120 mm ²
Max cable diameter	10 mm (H07V-K)	10 mm (H07V-K)	20 mm (H07V-K)
Max through-bar size	-		2 coupled 12x5 mm bars with a maximum capacity of 334 A (T 30°C) or 440 A (T 50°C)

Technical data, diagrams and images are to be considered indicative and not binding

HALL EFFECT CURRENT TRANSDUCERS WITH 0-10 V OUTPUT

	T201DCH	T201DCH100	T201DCH300
 			
	AC/DC Hall-effect TRMS current transducer (± 50 A) with 0..10 V output	AC/DC (± 100 A) Hall-effect TRMS current transducer with 0..10 V output	AC/DC (± 300 A) Hall-effect TRMS current transducer with 0..10 V output
GENERAL DATA			
Power supply	10..28 Vdc	12..28 Vdc	12..28 Vdc
Power consumption	< 25 mA	< 25 mA	< 25 mA
Isolation and protections	3 kVac (on bare conductors)	3 kVac (on bare conductors)	3 kVac (on bare conductors)
LED status indicators	-	-	-
Oversupply category	300 V CAT III (bare conductor); 600 V CAT III (insulated conductor)	300 V CAT III (bare conductor); 600 V CAT III (insulated conductor)	300 V CAT III (bare conductor); 600 V CAT III (insulated conductor)
Polarity measurement	Positive (label-side incoming current)	Positive (label-side incoming current)	Positive (label-side incoming current)
Settings	DIP Swtich	DIP Swtich	DIP Swtich
Data export and archiving	-	-	-
Protection degree	IP20	IP20	IP20
Accuracy class	0.5% f.s. (bipolar DC, AC TRMS)	0.5% f.s. (bipolar DC, AC TRMS)	0.5% f.s. (bipolar DC, AC TRMS)
Operating temperature	-10..+65°C	-20..+70°C	-20..+70°C
Storage temperature	-40..+85°C	-40..+85°C	-40..+85°C
Humidity	10RH..90% non condensing	10RH..90% non condensing	10RH..90% non condensing
Altitude	Up to 2,000 m a.s.l.	Up to 2,000 m a.s.l.	Up to 2,000 m a.s.l.
Core	Closed	Closed	Closed
Connections	Removable terminals (5-pole), 5 mm pitch for cables up to 2.5 mm ²	Removable terminals (5-pole), 5 mm pitch for cables up to 2.5 mm ²	Removable terminals (5-pole), 5 mm pitch for cables up to 2.5 mm ²
Through-hole diameter	12.3 mm	20.8 mm	20.8 mm
Dimension (wxhxd)	54 x 41 x 30 mm	95x68x26 mm	95x68x26 mm
Mounting	Free mounting or on IEC EN 60715 DIN rail (35 mm) with supplied accessories	Free mounting or on IEC EN 60715 DIN rail (35 mm) with supplied accessories	Free mounting or on IEC EN 60715 DIN rail (35 mm) with supplied accessories
Case	PA6, color black	PA6, color black	PA6, color black
Weight	47 g	120 g	120 g
Approvals	CE, UL-UR	CE, UL-UR	CE, UL-UR
COMMUNICATION			
Communication port	-	-	-
Protocol	-	-	-
Speed	-	-	-
INPUT DATA			
Channels	1	1	1
Range	0..25/50 Aac/dc TRMS	0-50/100 Aac/dc TRMS; $\pm 50/100$ A Bipolar	0-150/300 Aac/dc TRMS; $\pm 150/300$ A Bipolar
Type of measurement	AC/DC TRMS	AC/DC TRMS or DC Bipolar	AC/DC TRMS or DC Bipolar
Bipolar measurement	No	Yes	Yes
Hysteresis	0.1 % f.s.	0.1 % f.s.	0.1 % f.s.
Overload	300 A continuous; 2.000 A (impulsive)	300 A continuous; 2.000 A (impulsive)	500 A continuous; 2.000 A (impulsive)
Bandwidth	1 kHz	1 kHz	1 kHz
Crest factor	1,2	2	2
OUTPUT DATA			
Analog channels	1	1	1
Range	0..10 V	0..10 V	0..10 V
Resolution	12 bits	12 bits	12 bits
Max load	> 2 kOhm	> 2 kOhm	> 2 kOhm
Error for EMI			
Thermal drift	< 200 ppm/K	< 200 ppm/K	< 200 ppm/K
Response time	Fast filter: 800 ms Slow filter: 2 s	Fast filter: 800 ms Slow filter: 2 s	Fast filter: 800 ms Slow filter: 2 s
CONDUCTOR SIZING			
Max cable cross section	25 mm ²	120 mm ²	120 mm ²
Max cable diameter	10 mm (H07V-K)	20 mm (H07V-K)	20 mm (H07V-K)
Max through-bar size	-	2 coupled 12x5 mm bars with max. flow rate 334 A (T 30°C) or 440 A (T 50°C)	2 coupled 12x5 mm bars with max. flow rate 334 A (T 30°C) or 440 A (T 50°C)

Technical data, diagrams and images are to be considered indicative and not binding

T201 SERIES - CURRENT TRANSDUCERS

HALL EFFECT CURRENT TRANSDUCERS WITH 4-20 MA OUTPUT

T201DCH50-LP

HALL
EFFECT



AC/DC (± 50 A) Hall-effect TRMS current transducer with 4..20 mA loop powered

T201DCH100-LP

HALL
EFFECT



AC/DC (± 100 A) Hall-effect TRMS current transducer with 4..20 mA loop powered

T201DCH300-LP

HALL
EFFECT



AC/DC (± 100 A) Hall-effect TRMS current transducer with 4..20 mA loop powered

GENERAL DATA

Power supply	Loop powered (9..28 Vdc)	Loop powered (9..28 Vdc)	Loop powered (9..28 Vdc)
Power consumption	< 22 mA	< 22 mA	< 22 mA
Isolation and protections	3 kVac (on bare conductors)	3 kVac (on bare conductors)	3 kVac (on bare conductors)
LED status indicators	-	-	-
Oversupply category	300 V CAT III (bare conductor); 600 V CAT III (insulated conductor)	300 V CAT III (bare conductor); 600 V CAT III (insulated conductor)	300 V CAT III (bare conductor); 600 V CAT III (insulated conductor)
Polarity measurement	Positive (label-side incoming current)	Positive (label-side incoming current)	Positive (label-side incoming current)
Settings	DIP Swtch	DIP Swtch	DIP Swtch
Data export and archiving	-	-	-
Protection degree	IP20	IP20	IP20
Accuracy class	0.5% f.s. (AC); 1% f.s. (DC)	0.5% f.s. (AC); 1% f.s. (DC)	0.5% f.s. (AC); 1% f.s. (DC)
Operating temperature	-20..+70°C	-20..+70°C	-20..+70°C
Storage temperature	-40..+85°C	-40..+85°C	-40..+85°C
Humidity	10RH..90% non condensing	10RH..90% non condensing	10RH..90% non condensing
Altitude	Up to 2,000 m a.s.l.	Up to 2,000 m a.s.l.	Up to 2,000 m a.s.l.
Core	Closed	Closed	Closed
Connections	Removable terminals (5-pole), 5 mm pitch for cables up to 2.5 mm ²	Removable terminals (5-pole), 5 mm pitch for cables up to 2.5 mm ²	Removable terminals (5-pole), 5 mm pitch for cables up to 2.5 mm ²
Through-hole diameter	12.3 mm	20.8 mm	20.8 mm
Dimension (wxhxd)	41x4x26 mm	95x68x26 mm	95x68x26 mm
Mounting	Free mounting or on IEC EN 60715 DIN rail (35 mm) with supplied accessories	Free mounting or on IEC EN 60715 DIN rail (35 mm) with supplied accessories	Free mounting or on IEC EN 60715 DIN rail (35 mm) with supplied accessories
Case	PA6, color black	PA6, color black	PA6, color black
Weight	47 g	120 g	120 g
Approvals	CE, UL-UR	CE, UL-UR	CE, UL-UR

COMMUNICATION

Communication port	-	-	-
Protocol	-	-	-
Speed	-	-	-

INPUT DATA

Channels	1	1	1
Range	0-50 Ac/dc TRMS; ± 50 Adc bipolar	0-50 A, 0-100 Aac/dc TRMS; ± 50 A, ± 100 A Bipolar	0-150 A, 0-300 Aac/dc TRMS; ± 150 A, ± 300 A Bipolar
Type of measurement	AC/DC TRMS or DC Bipolar	AC/DC TRMS or DC Bipolar	AC/DC TRMS or DC Bipolar
Bipolar measurement	No	No	No
Hysteresis	0.3% f.s.	0.3% f.s.	0.3% f.s.
Overload	300 A continuous; 2.000 A (impulsive)	300 A continuous; 2.000 A (impulsive)	500 A continuous; 2.000 A (impulsive)
Bandwidth	1 kHz	1 kHz	1 kHz
Crest factor	1,3	1,3	1,3

OUTPUT DATA

Analog channels	1	1	1
Range	4..20 mA rated; 3.6 mA fault indication; 22 mA max. indication	4..20 mA rated; 3.6 mA fault indication; 22 mA max. indication	4..20 mA rated; 3.6 mA fault indication; 22 mA max. indication
Resolution	12 bits	12 bits	12 bits
Max load	< 1.000 Ohms @ 28 Vdc	< 1.000 Ohms @ 28 Vdc	< 1.000 Ohms @ 28 Vdc
Error for EMI	< 1%	< 1%	< 1%
Thermal drift	< 200 ppm/K	< 200 ppm/K	< 200 ppm/K
Response time	Fast filter: 500 ms Slow filter: 1 s	Fast filter: 500 ms Slow filter: 1 s	Fast filter: 500 ms Slow filter: 1 s

CONDUCTOR SIZING

Max cable cross section	25 mm ²	120 mm ²	120 mm ²
Max cable diameter	10 mm (H07V-K)	20 mm (H07V-K)	20 mm (H07V-K)
Max through-bar size		2 coupled 12x5 mm bars with max. flow rate 334 A (T 30°C) or 440 A (T 50°C)	2 coupled 12x5 mm bars with max. flow rate 334 A (T 30°C) or 440 A (T 50°C)

Technical data, diagrams and images are to be considered indicative and not binding

HALL EFFECT CURRENT TRANSDUCERS WITH 0-10 V / MODBUS OUTPUT

	T201DCH50-M	T201DCH100-M	T201DCH300-M		
HALL EFFECT					
ModBUS	AC/DC (± 50 A) Hall-effect TRMS current transducer with 0..10 V output, ModBUS interface	AC/DC (± 100 A) Hall-effect TRMS current transducer with 0..10 V output, ModBUS interface	AC/DC (± 300 A) Hall-effect TRMS current transducer with 0..10 V output, ModBUS interface		
GENERAL DATA					
Power supply	12..28 Vdc	12..28 Vdc	12..28 Vdc		
Power consumption	< 25 mA	< 25 mA	< 25 mA		
Isolation and protections	3 kVac (on bare conductors)	3 kVac (on bare conductors)	3 kVac (on bare conductors)		
LED status indicators	Power supply RS485 communication	Power supply RS485 communication	Power supply RS485 communication		
Overvoltage category	300 V CAT III (bare conductor); CAT III (insulated conductor)	600 V	300 V CAT III (bare conductor); CAT III (insulated conductor)	600 V	600 V
Polarity measurement	Positive (label-side incoming current)	Positive (label-side incoming current)	Positive (label-side incoming current)		
Settings	DIP Switch, EASY Setup	DIP Switch, EASY Setup	DIP Switch, EASY Setup		
Data export and archiving	Yes	Yes	Yes		
Protection degree	IP20	IP20	IP20		
Accuracy class	0.5% f.s. (bipolar DC, AC TRMS)	0.5% f.s. (bipolar DC, AC TRMS)	0.5% f.s. (bipolar DC, AC TRMS)		
Operating temperature	-20..+70°C	-20..+70°C	-20..+70°C		
Storage temperature	-40..+85°C	-40..+85°C	-40..+85°C		
Humidity	10RH..90% non condensing	10RH..90% non condensing	10RH..90% non condensing		
Altitude	Up to 2,000 m a.s.l.	Up to 2,000 m a.s.l.	Up to 2,000 m a.s.l.		
Core	Closed	Closed	Closed		
Connections	Removable terminals (5-pole), 5 mm pitch for cables up to 2.5 mm ²	Removable terminals (5-pole), 5 mm pitch for cables up to 2.5 mm ²	Removable terminals (5-pole), 5 mm pitch for cables up to 2.5 mm ²		
Through-hole diameter	20.8 mm	20.8 mm	20.8 mm		
Dimension (wxhxd)	95x68x26 mm	95x68x26 mm	95x68x26 mm		
Mounting	Free mounting or on IEC EN 60715 DIN rail (35 mm) with supplied accessories	Free mounting or on IEC EN 60715 DIN rail (35 mm) with supplied accessories	Free mounting or on IEC EN 60715 DIN rail (35 mm) with supplied accessories		
Case	PA6, color black	PA6, color black	PA6, color black		
Weight	120 g	120 g	120 g		
Approvals	CE	CE	CE		
COMMUNICATION					
Communication port	RS485	RS485	RS485		
Protocol	ModBUS RTU slave	ModBUS RTU slave	ModBUS RTU slave		
Speed	1,200..115200 bps	1,200..115200 bps	1,200..115200 bps		
INPUT DATA					
Channels	1	1	1		
Range	0..25, 0..50 Aac/dc TRMS; ± 25 A, ± 50 Adc Bipolar	0..50/100 Aac/dc TRMS; $\pm 50/\pm 100$ Adc Bipolar	0..150/300 Aac/dc TRMS; $\pm 150/300$ Adc Bipolar		
Type of measurement	AC/DC TRMS or DC Bipolar	AC/DC TRMS or DC Bipolar	AC/DC TRMS or DC Bipolar		
Bipolar measurement	Yes	Yes	Yes		
Hysteresis	0.3% f.s.	0.3% f.s.	0.3% f.s.		
Overload	300 A (continuous); 2,000 A (impulsive)	500 A (continuous); 2,000 A (impulsive)	800 A (continuous); 2,000 A (impulsive)		
Bandwidth	1 kHz	1 kHz	1 kHz		
Crest factor	2	2	2		
OUTPUT DATA					
Analog channels	1	1	1		
Range	0..10 V	0..10 V	0..10 V		
Resolution	13 bits (10,000 points)	13 bits (10,000 points)	13 bits (10,000 points)		
Max load	> 2 kOhm	> 2 kOhm	> 2 kOhm		
Error for EMI	<0.5%	<0.5%	<0.5%		
Thermal drift	< 200 ppm/K	< 200 ppm/K	< 200 ppm/K		
Response time	Fast filter: 800 ms Slow filter: 2 s	Fast filter: 800 ms Slow filter: 2 s	Fast filter: 800 ms Slow filter: 2 s		
CONDUCTOR SIZING					
Max cable cross section	120 mm ²	120 mm ²	120 mm ²		
Max cable diameter	20 mm (H07V-K)	20 mm (H07V-K)	20 mm (H07V-K)		
Max through-bar size	2 paired 12x5 mm bars with max. flow rate 334 A (T 30°C) or 440 A (T 50°C)	2 paired 12x5 mm bars with max. flow rate 334 A (T 30°C) or 440 A (T 50°C)	2 paired 12x5 mm bars with max. flow rate 334 A (T 30°C) or 440 A (T 50°C)		

Technical data, diagrams and images are to be considered indicative and not binding

T201 SERIES - CURRENT TRANSDUCERS

HALL EFFECT CURRENT TRANSDUCERS WITH 0-10 V / ALARM / MODBUS / USB OUTPUT

	T201DCH50-MU	T201DCH100-MU	T201DCH300-MU	T201DCH600-MU
				
	HALL EFFECT	HALL EFFECT	HALL EFFECT	HALL EFFECT
	 	 	 	 
AC/DC (± 50 A) Hall-effect TRMS current transducer with 0..10 V output, Alarm, ModBUS / USB interface				
AC/DC (± 100 A) Hall-effect TRMS current transducer with 0..10 V output, Alarm, ModBUS / USB interface				
AC/DC (± 300 A) Hall-effect TRMS current transducer with 0..10 V output, Alarm, ModBUS / USB interface				
Trasduttore di corrente AC/DC (± 600 A) effetto Hall, bipolare / TRMS, uscita 0..10V o alarme, ModBUS / USB				
GENERAL DATA				
Power supply	12..28 Vdc	12..28 Vdc	12..28 Vdc	12..28 Vdc
Power consumption	21 mA excluding load	21 mA excluding load	21 mA excluding load	21 mA excluding load
Isolation and protections	3 kVac (on bare conductors)	3 kVac (su conduttori nudi)	3 kVac (su conduttori nudi)	3 kVac (su conduttori nudi)
LED status indicators	Power supply communication RS485	Power supply communication RS485	Power supply communication RS485	Power supply communication RS485 Digital Output
Oversupply category	300 V CAT III (bare conductor); 600 V CAT III (insulated conductor)	300 V CAT III (bare conductor); 600 V CAT III (insulated conductor)	300 V CAT III (bare conductor); 600 V CAT III (insulated conductor)	300 V CAT III (bare conductor); 600 V CAT III (insulated conductor)
Polarity measurement	Positive (label-side incoming current)	Positive (label-side incoming current)	Positive (label-side incoming current)	Positive (label-side incoming current)
Settings	DIP Switch, EASY Setup	DIP Switch, EASY Setup	DIP Switch, EASY Setup	DIP Switch, EASY Setup
Data export and archiving	Yes	Si	Si	Si
Protection degree	IP20	IP20	IP20	IP20
Accuracy class	0.5% f.s. (bipolar DC, AC TRMS)	0.5% f.s. (bipolar DC, AC TRMS)	0.5% f.s. (bipolar DC, AC TRMS)	0.5% f.s. (bipolar DC, AC TRMS)
Operating temperature	-20..+70°C	-20..+70°C	-20..+70°C	-25..+70°C
Storage temperature	-40..+85°C	-40..+85°C	-40..+85°C	-40..+85°C
Humidity	10RH..90% non condensing	10RH..90% non condensing	10RH..90% non condensing	10RH..90% non condensing
Altitude	Up to 2,000 m a.s.l.	Up to 2,000 m a.s.l.	Up to 2,000 m a.s.l.	Up to 2,000 m a.s.l.
Core	Closed	Closed	Closed	Closed
Connections	Removable terminals (5-pole), 5 mm pitch for cables up to 2.5 mm ²	Removable terminals (5-pole), 5 mm pitch for cables up to 2.5 mm ²	Removable terminals (5-pole), 5 mm pitch for cables up to 2.5 mm ²	Removable terminals (5-pole), 5 mm pitch for cables up to 2.5 mm ²
Through-hole diameter	20.8 mm	20.8 mm	20.8 mm	35 mm
Dimension (wxhxd)	95x68x26 mm	95x68x26 mm	95x68x26 mm	95x68x26 mm
Mounting	Free mounting or on IEC EN 60715 DIN rail (35 mm) with supplied accessories	Free mounting or on IEC EN 60715 DIN rail (35 mm) with supplied accessories	Free mounting or on IEC EN 60715 DIN rail (35 mm) with supplied accessories	Free mounting or on IEC EN 60715 DIN rail (35 mm) with supplied accessories
Case	PA6, color black	PA6, color black	PA6, color black	PA6, color black
Weight	120 g	120 g	120 g	120 g
Approvals	CE	CE	CE	CE
COMMUNICATION				
Communication port	RS485 / USB	RS485 / USB	RS485 / USB	RS485 / USB
Protocol	ModBUS RTU slave	ModBUS RTU slave	ModBUS RTU slave	ModBUS RTU slave
Speed	1,200..115200 bps	1,200..115200 bps	1,200..115200 bps	1,200..115200 bps
INPUT DATA				
Channels	1	1	1	1
Range	0..25/50 Aac/dc TRMS; $\pm 25/50$ Adc Bipolar	0..50/100 Aac/dc TRMS; $\pm 50/100$ Adc Bipolar	0..150/300 Aac/dc TRMS; $\pm 150/300$ Adc Bipolar	0..300/600 Aac/dc TRMS; $\pm 300/600$ Adc Bipolar
Type of measurement	AC/DC TRMS or DC Bipolar	AC/DC TRMS or DC Bipolar	AC/DC TRMS or DC Bipolar	AC/DC TRMS or DC Bipolar
Bipolar measurement	Yes	Si	Si	Si
Hysteresis	0.3% f.s.	0.3% f.s.	0.3% f.s.	0.3% f.s.
Overload	3xIIN continuous; 2,000 A (pulsed)	3xIIN continuous; 2,000 A (pulsed)	3xIIN continuous; 2,000 A (pulsed)	3xIIN continuous; 2,000 A (pulsed)
Bandwidth	1 kHz	1 kHz	1 kHz	1 kHz
Crest factor	2	2	2	2
OUTPUT DATA				
Analog channels	1	1	1	1
Range	0..10 V	0..10 V	0..10 V	0..10 V
Resolution	13 bits (10,000 points)	13 bits (10,000 points)	13 bits (10,000 points)	13 bits (10,000 points)
Max load	> 2 kOhm	> 2 kOhm	> 2 kOhm	> 2 kOhm
Error for EMI	<0,5%	<0,5%	<0,5%	<0,5%
Thermal drift	< 200 ppm/K	< 200 ppm/K	< 200 ppm/K	< 200 ppm/K
Response time	Fast filter: 800 ms Slow filter: 2 s	Fast filter: 800 ms Slow filter:	Fast filter: 800 ms Slow filter: 2 s	Fast filter: 800 ms Slow filter: 2 s
Digital channels	1	1	1	1
Function	Alarm (as alternative to analog channel)	Alarm (as alternative to analog channel)	Alarm (as alternative to analog channel)	Alarm (as alternative to analog channel)
Type	PNP active output, 40 mA max.	PNP active output, 40 mA max.	PNP active output, 40 mA max.	PNP active output, 40 mA max.
Tipo	Uscita attiva PNP, carico max 50 mA	Uscita attiva PNP, carico max 50 mA	Uscita attiva PNP, carico max 50 mA	Uscita attiva PNP, carico max 50 mA
CONDUCTOR SIZING				
Max cable cross section	120 mm ²	120 mm ²	120 mm ²	300 mm ²
Max cable diameter	20 mm (H07V-K)	20 mm (H07V-K)	20 mm (H07V-K)	33 mm (FG16R16)
Max through-bar size	2 paired 12x5 mm bars with max. flow rate 334 A (T 30°C) or 440 A (T 50°C)	2 paired 12x5 mm bars with max. flow rate 334 A (T 30°C) or 440 A (T 50°C)	2 paired 12x5 mm bars with max. flow rate 334 A (T 30°C) or 440 A (T 50°C)	2 coupled 32x5 mm bars with a maximum capacity of 695 A (T 30°C) or 920 A (T 50°C)

Technical data, diagrams and images are to be considered indicative and not binding

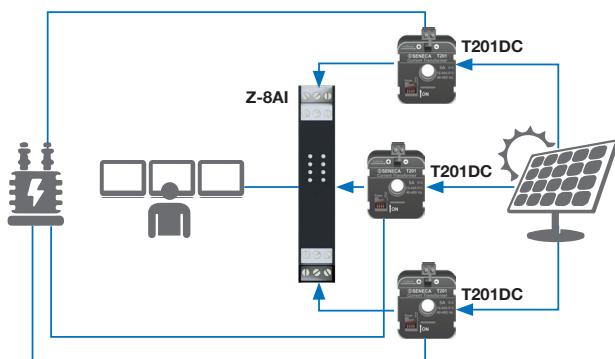
HALL EFFECT OPEN CORE CURRENT TRANSDUCERS WITH 0-10 V OUTPUT

	T201DCH100-OPEN	T201DCH300-OPEN	T201DCH600-OPEN	
	 HALL EFFECT ModBUS	 HALL EFFECT ModBUS	 HALL EFFECT ModBUS	
	AC/DC (± 100 A) Hall-effect open core current transducer, bipolar/TRMS, 0..10 V output	AC/DC (± 300 A) Hall-effect open core current transducer, bipolar/TRMS, 0..10 V output	AC/DC (± 600 A) Hall-effect open core current transducer, bipolar/TRMS, 0..10 V output	
GENERAL DATA				
Power supply	12..28 Vdc	12..28 Vdc	12..28 Vdc	
Power consumption	38 mA excluding load	38 mA excluding load	38 mA excluding load	
Isolation and protections	3 kVac (su conduttori nudi)	3 kVac (su conduttori nudi)	3 kVac (su conduttori nudi)	
LED status indicators	Power supply RS485 / USB communication Digital Outpt	Power supply RS485 / USB communication Digital Outpt	Power supply RS485 / USB communication Digital Outpt	
Oversvoltage category	300 V CAT III (bare conductor); III (insulated conductor)	600 V CAT	300 V CAT III (bare conductor); III (insulated conductor)	600 V CAT
Polarity measurement	Positive (label-side incoming current)	Positive (label-side incoming current)	Positive (label-side incoming current)	
Settings	DIP Switch, EASY Setup	DIP Switch, EASY Setup	DIP Switch, EASY Setup	
Data export and archiving	Si	Si	Si	
Protection degree	IP20	IP20	IP20	
Accuracy class	0.5% f.s. (bipolar DC, AC TRMS)	0.5% f.s. (bipolar DC, AC TRMS)	0.5% f.s. (bipolar DC, AC TRMS)	
Operating temperature	-25..+70°C	-25..+70°C	-25..+70°C	
Storage temperature	-40..+85°C	-40..+85°C	-40..+85°C	
Humidity	10RH..90% non condensing	10RH..90% non condensing	10RH..90% non condensing	
Altitude	Up to 2,000 m a.s.l.	Up to 2,000 m a.s.l.	Up to 2,000 m a.s.l.	
Core	Open	Open	Open	
Connections	Removable 5-way screw terminals, 5mm pitch for cables up to 2.5mm ²	Removable 5-way screw terminals, 5mm pitch for cables up to 2.5mm ²	Removable 5-way screw terminals, 5mm pitch for cables up to 2.5mm ²	
Through-hole diameter	35 mm	35 mm	35 mm	
Dimension (wxhxd)	95x75x35 mm	95x75x35 mm	95x75x35 mm	
Mounting	35mm DIN rail IEC EN60715 or fixing by plastic strips	35mm DIN rail IEC EN60715 or fixing by plastic strips	35mm DIN rail IEC EN60715 or fixing by plastic strips	
Case	PA6, color black	PA6, color black	PA6, color black	
Weight	145 g	145 g	145 g	
Approvals	CE, UKCA	CE, UKCA	CE, UKCA	
COMMUNICATION				
Communication port	RS485 / USB	RS485 / USB	RS485 / USB	
Protocol	ModBUS RTU slave	ModBUS RTU slave	ModBUS RTU slave	
Speed	1.200..115200 bps	1.200..115200 bps	1.200..115200 bps	
INPUT DATA				
Channels	1	1	1	
Range	0..50 A, 0..100 Aac/dc TRMS; ± 25 A, ± 50 A, ± 100 Adc Bipolar	0..75/150/300 Aac/dc TRMS; $\pm 150/300$ Adc Bipolar	0..150/300/600 Aac/dc TRMS; $\pm 300/300$ Adc Bipolar	
Type of measurement	AC/DC TRMS or DC Bipolar	AC/DC TRMS or DC Bipolar	AC/DC TRMS or DC Bipolar	
Bipolar measurement	Si	Si	Si	
Hysteresis	0,2% f.s.	0,2% f.s.	0,2% f.s.	
Overload	3xIIN continuous; 2.000 A (pulsed)	3xIIN continuous; 2.000 A (pulsed)	3xIIN continuous; 2.000 A (pulsed)	
Bandwidth	1 kHz	1 kHz	1 kHz	
Crest factor	2	2	2	
OUTPUT DATA				
Analog channels	1	1	1	
Range	0..10 V	0..10 V	0..10 V	
Resolution	13 bits (10,000 points)	13 bits (10,000 points)	13 bits (10,000 points)	
Max load	> 2 kOhm	> 2 kOhm	> 2 kOhm	
Error for EMI	<0,5%	<1%	<1%	
Thermal drift	< 200 ppm/K	< 200 ppm/K	< 200 ppm/K	
Response time	Fast filter: 800 ms Slow filter: 2 s	Fast filter: 800 ms Slow filter: 2 s	Fast filter: 800 ms Slow filter: 2 s	
Digital channels	1	1	1	
Function	Alarm (as alternative to analog channel)	Alarm (as alternative to analog channel)	Alarm (as alternative to analog channel)	
Type	PNP active output, 50 mA max.	PNP active output, 50 mA max.	PNP active output, 50 mA max.	
CONDUCTOR SIZING				
Max cable cross section	300 mm ²	300 mm ²	300 mm ²	
Max cable diameter	33 mm (FG16R16)	33 mm (FG16R16)	33 mm (FG16R16)	
Max through-bar size	2 coupled 32x5 mm bars with a maximum capacity of 695 A (T 30°C) or 920 A (T 50°C)	2 coupled 32x5 mm bars with a maximum capacity of 695 A (T 30°C) or 920 A (T 50°C)	2 coupled 32x5 mm bars with a maximum capacity of 695 A (T 30°C) or 920 A (T 50°C)	

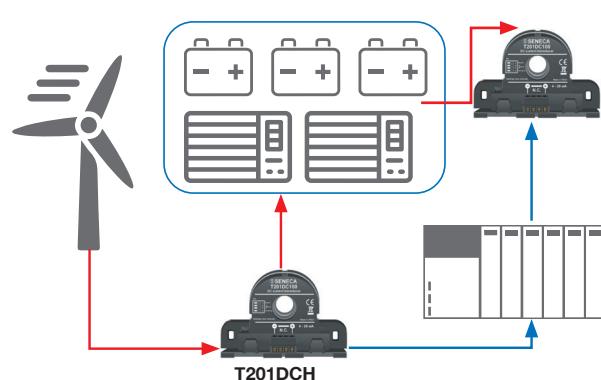
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APPLICATION SCENARIOS

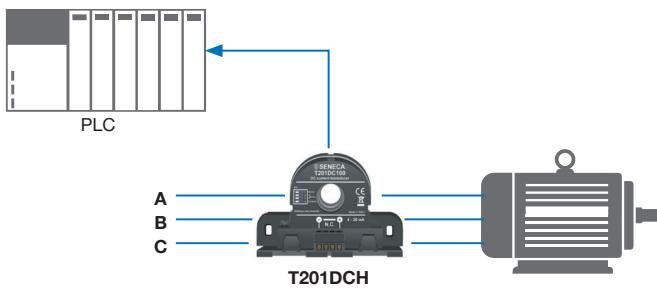
PHOTOVOLTAIC SYSTEMS



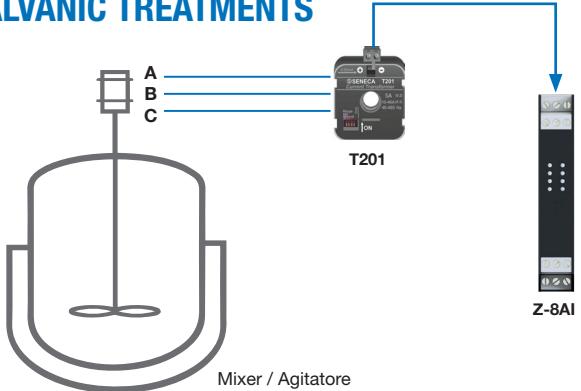
WIND INDUSTRY



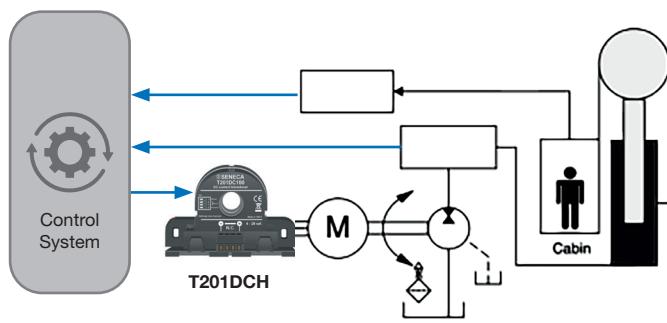
ELECTRIC MOTORS



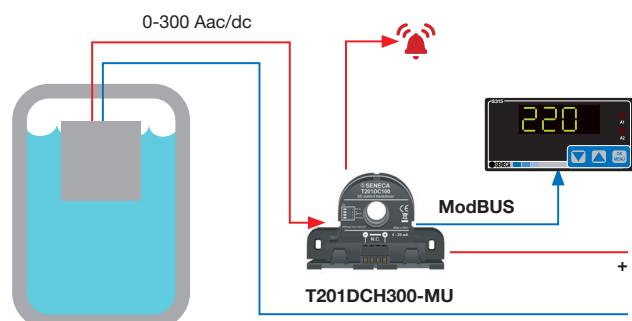
GALVANIC TREATMENTS



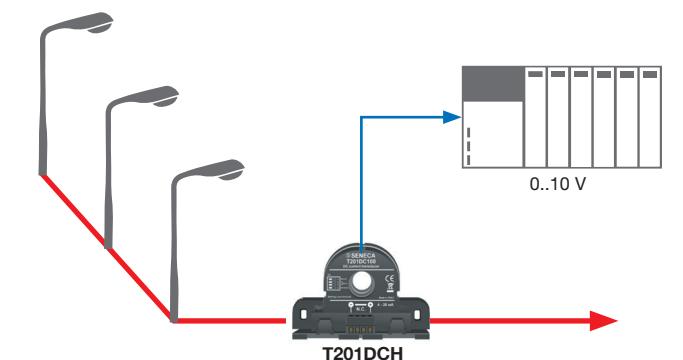
ELEVATORS



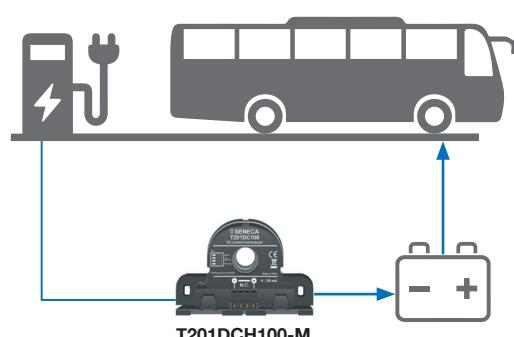
GALVANIC TREATMENTS



PUBLIC LIGHTING



ELECTRIC MOBILITY



Technical data, diagrams and images are to be considered indicative and not binding