T201 Series

AC/DC CURRENT TRANSDUCERS

100% Made & Designed in Italy

- AC/DC CURRENT TRANSDUCERS WITH 4-20 mA OUTPUT
- AC/DC HALL EFFECT CURRENT TRANSDUCERS WITH 0-10 V OUTPUT
- AC/DC HALL EFFECT CURRENT TRANSDUCERS WITH 4-20 mA OUTPUT
- AC/DC HALL EFFECT CURRENT TRANSDUCERS WITH 0-10 V OUTPUT / MODBUS INTERFACE

SENECA

www.seneca.it

T201 Series

AC/DC Current Transducers

T201 Series includes AC/DC current transducers designed to convert measured current value (up to 300 A) into a 4..20 mA or 0..10 V industrial normalized signal. Most of **T201 Series** is UL certified and it is characterized by low power consumption, measuring range freely settable via DIP-switches and high accuracy class avoiding thermal drift. **T201 Series** is available in 12 models with different measuring principles: average rectified, magnetic balance (patented technology), Hall Effect or TRMS with bipolar input range. Three models include an RS485 port supporting Modbus RTU protocol.

INPUT

SELECTABLE CURRENT

Selectable wide range input through DIP-switches up to 300 A, single or bipolar scales

OUTPUT

NR. 1 CHANNEL

- 4-20 mA (2-wire)
- 0-10 V

APPLICATION

Direct application without shunts even with pulse currents

MODBUS INTERFACE

RS485 / ModBUS RTU

MEASUREMENT OPTIONS

- **Magnetic Induction (patented)**
- **Hall Effect**
- **AC/DC TRMS**
- **Bipolar**

ACCURACY CLASS

High accuracy standard from 0.2% up to 0,5%

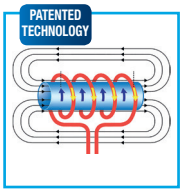
ENERGY EFFICIENCY

- **Loop power supply /auxiliary power supply**
- **Low consumption < 21 mA**

CERTIFICATION

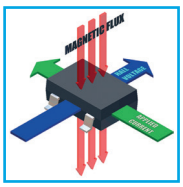
- **C-UL US classification Mark**
- **International Patented technology**

MEASUREMENT PRINCIPLES



MAGNETIC INDUTION

The Transducers that use the measurement based on magnetic induction technology are long life devices thanks to the principle of measurement that avoids thermal drifts and which exploits the generation of an induced current on the transducer output, through the variation of a magnetic field. A direct use will be possible without any external shunts, even for pulsed currents.



HALL EFFECT

When a magnetic field is applied perpendicularly to a conductor, a voltage is generated transversally to the direction of the current flow.
The Hall Effect Current Transducers are used as alternative to shunt when dealing with high voltages and high galvanic isolation.

AC/DC CURRENT TRANSDUCERS WITH 4-20 mA OUTPUT

	T201	T201DC	T201DC100
		Patended Technology 	Patended Technology 
	AC current transducer to DC current (4..20 mA - loop powered)	**DC current transducer to DC current (4..20 mA - loop powered)**	**Passive current transducer 100 Adc for 4..20 mA current loop**
GENERAL DATA			
Power Supply	Loop powered (5..28 Vdc)	Loop powered (6..100 V)	Loop powered (6..100 V)
Power Consumtption	< 21 mA	< 21 mA	< 21 mA
Isolation / Protection	3 kVdc (on bare conductors)	3 kVdc (on bare conductors)	3 kVdc (on bare conductors)
LED Status Indicators	-	-	-
Overvoltage category	300 V CAT III (bare conductor) 600 V CAT III (isolated conductor)	300 V CAT III (bare conductor) 600 V CAT III (isolated conductor)	300 V CAT III (bare conductor) 600 V CAT III (isolated conductor)
Measurement polarity	Positive (incoming current on label side)	Positive (incoming current on label side)	Positive (incoming current on label side)
Protection degree	IP20	IP20	IP20
Accuracy class	AC: 0,2% f.s.	DC: 0,2% f.s.	DC: 0,2% f.s.
Settings	DIP switch	DIP switch	DIP switch
Log Data	-	-	-
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.
Connections	Removable terminals (5 poles), pitch 5 mm for cable up to 2,5 mm2	Removable terminals (5 poles), pitch 5 mm for cable up to 2,5 mm2	Removable terminals (5 poles), pitch 5 mm for cable up to 2,5 mm2
Max diameter conductor	12,3 mm	12,3 mm	20,8 mm
Dimension (wxhxd)	41x44x26 mm	41x44x26 mm	95x68x26 mm
Mounting	Free or on DIN rail IEC EN 60715 (35 mm) with accessories	Free or on DIN rail IEC EN 60715 (35 mm) with accessories	Free or on DIN rail IEC EN 60715 (35 mm) with accessories
Case	PA6, black	PA6, black	PA6, black
Weight	47 g	47 g	120 g
COMMUNICATION			
Communcation port	-	-	-
Protocol	-	-	-
Speed	-	-	-
INPUT DATA			
Channels	1	1	1
Range	5, 10, 15, 20, 25, 30, 35, 40 A	"Monopolar: 0..5, 0..10, 0..20,0.. 40 A Bipolar: -5..5, -10..10, -5..20, -10..40 A"	Monopolar: 0..10, 0..25, 0..50, 0..100 A Bipolar: -10..10, -25..25, -10..50, -25..100 A
Measurement type	Average adjusted	Magnetic balance	Magnetic balance
Bipolar measurement	No	Yes	Yes
Hysteresis			
Max instantaneous overcurrent	800 A	800 A	2000 A (impulsive)
Bandwidth / frequency	20..1.000 Hz	n.d.	n.d.
Crest factor	2	1,2	1,2
OUTPUT DATA			
Channels	1	1	1
Range	4..20 mA (2 fili)	4..20 mA (2 fili)	4..20 mA (2 fili)
Resolution	Unlimited	12 bit	12 bit
Max load	< 5000 Ohm @ 100 Vdc		
EMI Error	< 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)
STANDARD			
Approvals	CE, UL-UR	CE, UL-UR, european patent	CE, UL-UR, european patent
Norms	EN60688 EN61000-6-4 EN61000-6-2 EN61010-1	EN61000-6-4 EN61000-6-2 EN61010-1	EN61000-6-4 EN61000-6-2 EN61010-1

Technical data, diagrams and drawings in this catalog are indicative only and not binding

AC/DC HALL EFFECT CURRENT TRANSDUCERS WITH 0-10 V OUTPUT

	T201DCH	T201DCH100	T201DCH300
	HALL EFFECT 	HALL EFFECT 	HALL EFFECT 
	AC/DC contactless TRMS direct and alternate current transducer	**AC/DC contactless TRMS direct and alternate current (± 100 A) transducer, Hall Effect**	**AC/DC contactless TRMS direct and alternate current (± 300 A) transducer, Hall Effect**
GENERAL DATA			
Power Supply	10..28 Vdc	12..28 Vdc	12..28 Vdc
Power Consumtption	< 25 mA	< 25 mA	< 25 mA
Isolation / Protection	3 kVdc (on bare conductors)	3 kVdc (on bare conductors)	3 kVdc (on bare conductors)
LED Status Indicators	-	-	-
Overvoltage category	300 V CAT III (bare conductor) 600 V CAT III (isolated conductor)	300 V CAT III (bare conductor) 600 V CAT III (isolated conductor)	300 V CAT III (bare conductor) 600 V CAT III (isolated conductor)
Measurement polarity	Positive (incoming current on label side)	Positive (incoming current on label side)	Positive (incoming current on label side)
Protection degree	IP20	IP20	IP20
Accuracy class	0,3% f.s. (DC bipolare, AC TRMS)	0,3% f.s. (DC bipolare, AC TRMS)	0,3% f.s. (DC bipolar, AC TRMS)
Settings	DIP switch	DIP switch	DIP switch
Log Data	-	-	-
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.
Connections	Removable terminals (5 poles), pitch 5 mm for cable up to 2,5 mm2	Removable terminals (5 poles), pitch 5 mm for cable up to 2,5 mm2	Removable terminals (5 poles), pitch 5 mm for cable up to 2,5 mm2
Max diameter conductor	12,3 mm	20,8 mm	20,8 mm
Dimension (wxhxd)	54 x 41 x 30 mm	95x68x26 mm	95x68x26 mm
Mounting	Free or on DIN rail IEC EN 60715 (35 mm) with accessories	Free or on DIN rail IEC EN 60715 (35 mm) with accessories	Free or on DIN rail IEC EN 60715 (35 mm) with accessories
Case	PA6, black	PA6, black	PA6, black
Weight	47 g	120 g	120 g
COMMUNICATION			
Communcation port	-	-	-
Protocol	-	-	-
Speed	-	-	-
INPUT DATA			
Channels	1	1	1
Range	0..25, 0..50 Aac/dc TRMS	"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
Measurement type	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.
Max instantaneous overcurrent	2000 A (impulsive)	2000 A (impulsive)	2000 A (impulsive)
Bandwidth / frequency	1 kHz	1 kHz	1 kHz
Crest factor	1,2	2	2
OUTPUT DATA			
Channels	1	1	1
Range	0..10 V	0..10 V	0..10 V
Resolution	12 bit	12 bit	12 bit
Max load	> 2 kOhm	> 2 kOhm	> 2 kOhm
EMI Error			
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
STANDARD			
Approvals	CE, UL-UR	CE, UL-UR	CE, UL-UR
Norms	EN61000-6-4 EN61000-6-2 EN61010-1	EN61000-6-4 EN61000-6-2 EN61010-1	EN61000-6-4 EN61000-6-2 EN61010-1

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AC/DC HALL EFFECT CURRENT TRANSDUCERS WITH 4-20 mA OUTPUT

	T201DCH50-LP	T201DCH100-LP	T201DCH300-LP
	HALL EFFECT 	HALL EFFECT 	HALL EFFECT 
	AC/DC current transducer (± 50 A), Hall Effect, Loop Powered, 4-20 mA output	**AC/DC current transducer (± 100 A), Hall Effect, Loop Powered, 4-20 mA output**	**AC/DC current transducer (± 300 A), Hall Effect, Loop Powered, 4-20 mA output**
GENERAL DATA			
Power Supply	Loop powered (9..28 Vdc)	Loop powered (9..28 Vdc)	Loop powered (9..28 Vdc)
Power Consumtption	< 22 mA	< 22 mA	< 22 mA
Isolation / Protection	3 kVdc (on bare conductors)	3 kVdc (on bare conductors)	3 kVdc (on bare conductors)
LED Status Indicators	-	-	-
Overvoltage category	300 V CAT III (bare conductor) 600 V CAT III (isolated conductor)	300 V CAT III (bare conductor) 600 V CAT III (isolated conductor)	300 V CAT III (bare conductor) 600 V CAT III (isolated conductor)
Measurement polarity	Positive (incoming current on label side)	Positive (incoming current on label side)	Positive (incoming current on label side)
Protection degree	IP20	IP20	IP20
Accuracy class	AC: 0,5% f.s, DC: 1% f.s.	AC: 0,5% f.s, DC: 1% f.s.	AC: 0,5% f.s, DC: 1% f.s.
Settings	DIP switch	DIP switch	DIP switch
Log Data	-	-	-
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.
Connections	Removable terminals (5 poles), pitch 5 mm for cable up to 2,5 mm2	Removable terminals (5 poles), pitch 5 mm for cable up to 2,5 mm2	Removable terminals (5 poles), pitch 5 mm for cable up to 2,5 mm2
Max diameter conductor	12,3 mm	20,8 mm	20,8 mm
Dimension (wxhxd)	41x44x26 mm	95x68x26 mm	95x68x26 mm
Mounting	Free or on DIN rail IEC EN 60715 (35 mm) with accessories	Free or on DIN rail IEC EN 60715 (35 mm) with accessories	Free or on DIN rail IEC EN 60715 (35 mm) with accessories
Case	PA6, black	PA6, colore nero	PA6, black
Weight	47 g	120 g	120 g
COMMUNICATION			
Communcation port	-	-	-
Protocol	-	-	-
Speed	-	-	-
INPUT DATA			
Channels	1	1	1
Range	0..50 Aac/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
Measurement type	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.
Max instantaneous overcurrent	300 A direct 2.000 A (impulsive)	500 A direct 2.000 A (impulsive)	500 A direct 2.000 A (impulsive)
Bandwidth / frequency	1 kHz	1 kHz	1 kHz
Crest factor	1,3	1,3	1,3
OUTPUT DATA			
Channels	1	1	1
Range	4..20 mA rated value 3,6 mA fault 22 mA max	4..20 mA rated value 3,6 mA fault 22 mA max	4..20 mA rated value 3,6 mA fault 22 mA max
Resolution	12 bit	12 bit	12 bit
Max load	< 1.000 Ohm @ 28 Vdc	< 1.000 Ohm @ 28 Vdc	< 1.000 Ohm @ 28 Vdc
EMI Error	< 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
STANDARD			
Approvals	CE, UL-UR	CE, UL-UR	CE, UL-UR
Norms	EN 61326, EN 61010-1	EN 61326, EN 61010-1	EN 61326, EN 61010-1

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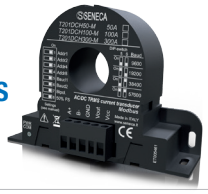
AC/DC HALL EFFECT CURRENT TRANSDUCERS WITH 0-10 V / MODBUS INTERFACE

	T201DCH50-M	T201DCH100-M	T201DCH300-M
	HALL EFFECT ModBUS 	HALL EFFECT ModBUS 	HALL EFFECT ModBUS 
	AC/DC contactless TRMS direct and alternate current (±50 A) transducer, Hall Effect, ModBUS interface	**AC/DC contactless TRMS direct and alternate current (±100 A) transducer, Hall Effect, ModBUS interface**	**AC/DC contactless TRMS direct and alternate current (±300 A) transducer, Hall Effect, ModBUS interface**
GENERAL DATA			
Power Supply	10..28 Vdc	12..28 Vdc	12..28 Vdc
Power Consumtption	< 25 mA	< 25 mA	< 25 mA
Isolation / Protection	3 kVdc (on bare conductors)	3 kVdc (on bare conductors)	3 kVdc (on bare conductors)
LED Status Indicators	Power Supply / RS485 commmunication	Power Supply / RS485 commmunication	Power Supply / RS485 commmunication
Overvoltage category	300 V CAT III (bare conductor) 600 V CAT III (isolated conductor)	300 V CAT III (bare conductor) 600 V CAT III (isolated conductor)	300 V CAT III (bare conductor) 600 V CAT III (isolated conductor)
Measurement polarity	Positive (incoming current on label side)	Positive (incoming current on label side)	Positive (incoming current on label side)
Protection degree	IP20	IP20	IP20
Accuracy class	0,3% f.s. (DC bipolar, AC TRMS)	0,3% f.s. (DC bipolar, AC TRMS)	0,3% f.s. (DC bipolar, AC TRMS)
Settings	DIP switch, Software (EASY SETUP)	DIP switch, Software (EASY SETUP)	DIP switch, Software (EASY SETUP)
Log Data	Sì	Si	Si
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.
Connections	Removable terminals (5 poles), pitch 5 mm for cable up to 2,5 mm2	Removable terminals (5 poles), pitch 5 mm for cable up to 2,5 mm2	Removable terminals (5 poles), pitch 5 mm for cable up to 2,5 mm2
Max diameter conductor	20,8 mm	20,8 mm	20,8 mm
Dimension (wxhxd)	95x68x26 mm	95x68x26 mm	95x68x26 mm
Mounting	Free or on DIN rail IEC EN 60715 (35 mm) with accessories	Free or on DIN rail IEC EN 60715 (35 mm) with accessories	Free or on DIN rail IEC EN 60715 (35 mm) with accessories
Case	PA6, black	PA6, black	PA6, black
Weight	120 g	120 g	120 g
COMMUNICATION			
Communcation 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 A, 0-100 Aac/dc TRMS ±50 A, ±100 Adc bipolar	0-150 A, 0-300 Aac/dc TRMS ±150 A, ±300 Adc bipolar
Measurement type	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.
Max instantaneous overcurrent	300 A (direct) 2.000 A (impulsive)	300 A (direct) 2.000 A (impulsive)	300 A (direct) 2.000 A (impulsive)
Bandwidth / frequency	1 kHz	1 kHz	1 kHz
Crest factor	2	2	2
OUTPUT DATA			
Channels	1	1	1
Range	0..10 V	0..10 V	0..10 V
Resolution	13 bit (10.000 points)	13 bit (10.000 points)	13 bit (10.000 points)
Max load	> 2 kOhm	> 2 kOhm	> 2 kOhm
EMI Error	<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
STANDARD			
Approvals	CE	CE	CE
Norms	EN61000-6-4 EN61000-6-2 EN61010-1	EN61000-6-4 EN61000-6-2 EN61010-1	EN61000-6-4 EN61000-6-2 EN61010-1

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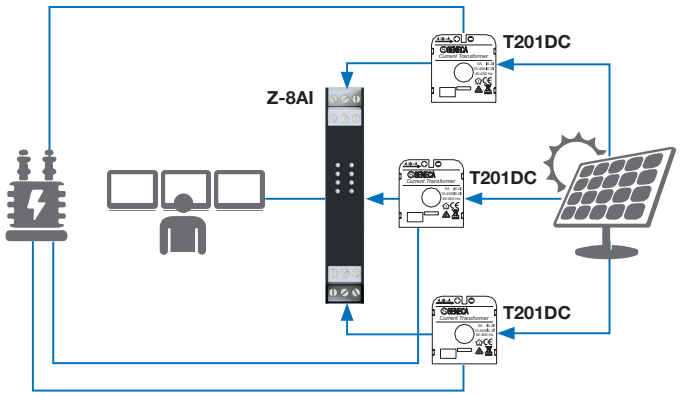
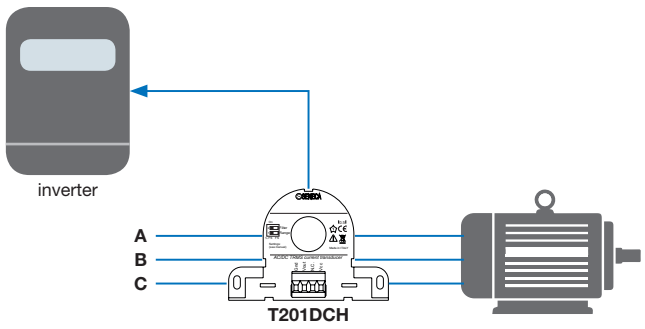
APPLICATION EXAMPLES

LOOP POWERED DC CURRENT TRANSDUCERS WITH 4..20 MA DIRECT OUTPUT

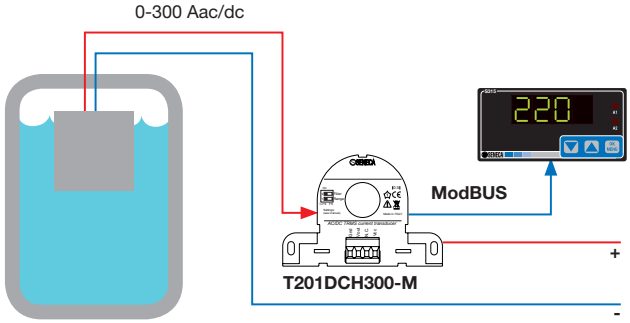
PATENDED TECHNOLOGY



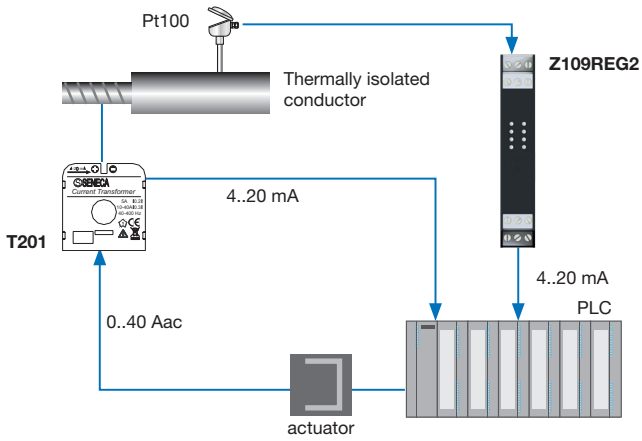
AC/DC TRMS HALL EFFECT CURRENT TRANSDUCER



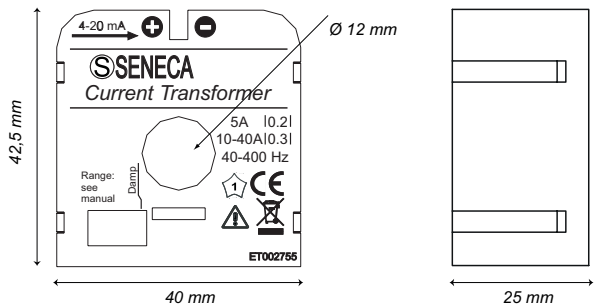
GALVANIC SURFACE TREATMENT



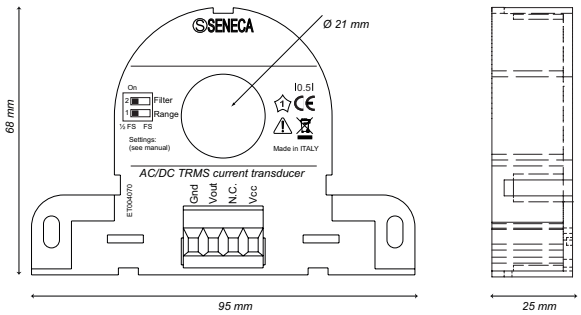
INDUCED CURRENT MEASUREMENT



DIMENSION



T201 / T201DC / T201DCH / T201DCH-LP



T201DC100 / T201DCH100 / T201DCH300 / T201DCH100-LP / T201DCH300-LP / T201DCH50-M / T201DCH100-M / T201DCH300-M

ORDER CODES	
T201	AC current transducer to DC current (4..20 mA - loop powered)
T201DC	DC current transducer to DC current (4..20 mA - loop powered)
T201DC100	Passive current transducer 100 Adc for 4..20 mA current loop
T201DCH	AC/DC contactless TRMS direct and alternate current transducer
T201DCH100	AC/DC contactless TRMS direct and alternate current (± 100 A) transducer, Hall Effect
T201DCH300	AC/DC contactless TRMS direct and alternate current (± 300 A) transducer, Hall Effect
T201DCH50-LP	AC/DC current transducer (± 50 A), Hall Effect, Loop Powered, 4-20 mA output
T201DCH100-LP	AC/DC current transducer (± 100 A), Hall Effect, Loop Powered, 4-20 mA output
T201DCH300-LP	AC/DC current transducer (± 300 A), Hall Effect, Loop Powered, 4-20 mA output
T201DCH50-M	AC/DC contactless TRMS direct and alternate current (±50 A) transducer, Hall Effect, ModBUS interface
T201DCH100-M	AC/DC contactless TRMS direct and alternate current (±100 A) transducer, Hall Effect, ModBUS interface
T201DCH300-M	AC/DC contactless TRMS direct and alternate current (±300 A) transducer, Hall Effect, ModBUS interface
ACCESSORIES	
A-DIN-T201	DIN rail plastic clip for T201 Series
S107USB	RS485/USB serial converter, portable version
S117P1	RS232/USB, TTL/USB, RS485/USB asynchronous serial converter
SOFTWARE	
EASY SETUP	Plug&Play software suite for SENECA programmable instruments (ModBUS versions)

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