

# TPS II

## Single Channel Current Transducer System



### Specifications



# Transducer Specifications

## Transducers with rms-range






Newer LEM transducer types of the IT xx5-S series and the IN series are specified for a maximum rms-range.

Type						
<b>Current Range</b>						
DC	60 A	200 A	400 A	600 A	1000 A	2000 A
AC Sinus	60 A	200 A	400 A	600 A	1000 A	2000 A
Peak	85 A	283 A	566 A	845 A	1414 A	2828 A
<b>100 ms Overload</b>	300 A <sub>pk</sub>	1000 A <sub>pk</sub>	2000 A <sub>pk</sub>	3000 A <sub>pk</sub>	5000 A <sub>pk</sub>	10000 A <sub>pk</sub>
<b>Ratio</b>	600 : 1	1000 : 1	1500 : 1	1500 : 1	1500 : 1	2000 : 1
<b>Output Range</b>	0 ... 100 mA <sub>rms</sub>	0 ... 200 mA <sub>rms</sub>	0 ... 266.67 mA <sub>rms</sub>	0 ... 400 mA <sub>rms</sub>	0 ... 666.67	0 ... 1 A <sub>rms</sub>
<b>Max. Measuring Resistance (Full Range)</b>	50 Ω	20 Ω	15 Ω	5 Ω	4 Ω	3.5 Ω
<b>Bandwidth (-3 dB, Small Signal 0,5 %)</b>	DC ... 800 kHz	DC ... 1 MHz	DC ... 300 kHz	DC ... 300 kHz	DC ... 440 kHz	DC ... 140 kHz
<b>Step Response (0 ... 90 %)</b>	1 μs	1 μs	1 μs	1 μs	1 μs	1 μs
<b>Error (of Full Scale)</b>	< 0.033 %	< 0.0103 %	< 0.0059 %	< 0.0039 %	< 0.0012 %	< 0.0012 %
<b>Temp.-Coefficient (of Full Scale)</b>	< 2.5 ppm/K	< 1 ppm/K	< 1 ppm/K	< 1 ppm/K	< 0.3 ppm/K	< 0.1 ppm/K
<b>Frequency Influence* (of Measured Value)</b>	< 0.025 %/kHz	< 0.1 %/kHz	< 0.175 %/kHz	< 0.3 %/kHz	< 0.1 %/kHz	< 0.1 %/kHz
<b>Angular Accuracy*</b>	< 0.01 ° + 0.02 °/kHz	< 0.01 ° + 0.075 °/kHz	< 0.01 ° + 0.08 °/kHz	< 0.01 ° + 0.175 °/kHz	< 0.01 ° + 0.05 °/kHz	< 0.01 ° + 0.075 °/kHz
<b>Temperature Range</b>	-40 ... 85 °C	-40 ... 85 °C	-40 ... 85 °C	-40 ... 85 °C	-40 ... 85 °C	-40 ... 85 °C
<b>Test Voltage 50 Hz</b>	5.4 kV	5.4 kV	4.6 kV	4.6 kV	4.2 kV	6 kV
<b>Inner Diameter</b>	26 mm	26 mm	30 mm	30 mm	38 mm	70 mm
<b>Mass</b>	0.33 kg	0.35 kg	1.08 kg	1.08 kg	1.3 kg	4.2 kg
<b>Link to LEM Data Sheet for detailed Specifications</b>	<a href="#">IT 65-S</a>	<a href="#">IT 205-S</a>	<a href="#">IT 405-S</a>	<a href="#">IT 605-S</a>	<a href="#">IN 1000-S</a>	<a href="#">IN 2000-S</a>

\* Verified with 50 Arms, DC ... 10 kHz

## Transducers with peak-range

Older LEM transducer types of the IT xx0-S series are specified for a maximum DC-range. They can be used up to the equal AC-rms-range by using a limited burden resistor.

Type					
<b>Current Range</b>					
DC	60 A	200 A	400 A	700 A	1000 A
AC Sinus	42 A	141 A	282 A	495 A	707 A
Peak	60 A	200 A	400 A	700 A	1000 A
<b>100 ms Overload</b>	300 A <sub>pk</sub>	1000 A <sub>pk</sub>	2000 A <sub>pk</sub>	3500 A <sub>pk</sub>	4000 A <sub>pk</sub>
<b>Ratio</b>	600 : 1	1000 : 1	2000 : 1	1750 : 1	1000 : 1
<b>Output Range</b>	0 ... 100 mA <sub>pk</sub>	0 ... 200 mA <sub>pk</sub>	0 ... 200 mA <sub>pk</sub>	0 ... 400 mA <sub>pk</sub>	0 ... 1000 mA <sub>pk</sub>
<b>Max. Measuring Resistance (Full Range)</b>	60 Ω	30 Ω	2.5 Ω	2.5 Ω	3 Ω
<b>Bandwidth (-3 dB, Small Signal 0,5 %)</b>	DC ... 800 kHz	DC ... 500 kHz	DC ... 500 kHz	DC ... 100 kHz	DC ... 500 kHz
<b>Step Response (0 ... 90 %)</b>	1 μs	1 μs	1 μs	1 μs	1 μs
<b>Error (of Full Scale)</b>	< 0.027 %	< 0.0083 %	< 0.0043 %	< 0.0053 %	< 0.0053 %
<b>Temp.-Coefficient (of Full Scale)</b>	< 2.5 ppm/K	< 2 ppm/K	< 1 ppm/K	< 0.5 ppm/K	< 0.5 ppm/K
<b>Frequency Influence* (of Measured Value)</b>	< 0.025 %/kHz	< 0.075 %/kHz	< 0.05 %/kHz	< 0.1 %/kHz	< 0.3 %/kHz
<b>Angular Accuracy (DC ... 10 kHz)</b>	< 0.01 ° + 0.05 °/kHz	< 0.01 ° + 0.075 °/kHz	< 0.01 ° + 0.075 °/kHz	< 0.01 ° + 0.12 °/kHz	< 0.015 ° + 0.15 °/kHz
<b>Temperature Range</b>	10 ... 50 °C	10 ... 50 °C	10 ... 50 °C	10 ... 50 °C	10 ... 50 °C
<b>Test Voltage 50 Hz</b>	5.4 kV	5.4 kV	5.4 kV	4.6 kV	3.1 kV
<b>Inner Diameter</b>	26 mm	26 mm	26 mm	30 mm	30 mm
<b>Mass</b>	0.3 kg	0.3 kg	0.3 kg	0.8 kg	1 kg
<b>Link to LEM Data Sheet for detailed Specifications</b>	<a href="#">IT 60-S</a>	<a href="#">IT 200-S</a>	<a href="#">IT 400-S</a>	<a href="#">IT 700-S</a>	<a href="#">IT 1000-S/SP1</a>

\* Verified with 50 Arms, DC ... 10 kHz

# Rack Specifications

## Features

- Standard transducer status readout interface
- Supply voltage for active burden modules
- 19"-rack mountable device

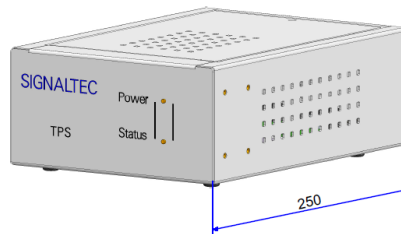
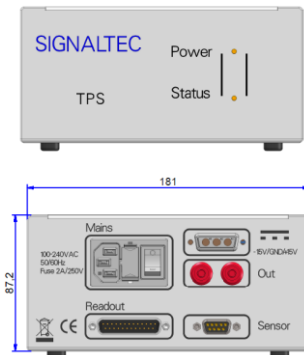


Front



Rear

## Dimensions



Cabinet Width: 181 mm  
 Cabinet Height: 87.2 mm (2 HU)  
 Cabinet Depth: 250 mm  
 Mass: 2.7 kg

## General Data

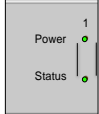
Operation Temperature: -10 ... 60 °C  
 Operation Humidity: 20 ... 90 % RH, noncondensing  
 Warranty period: 36 Months

## Electrical Data

Supply voltage: 110 ... 264 V AC, 47 ... 63 Hz, fused with 2 A slow blow  
 Output voltages: +15 V<sub>DC</sub>, 3.4 A<sub>max</sub> / -15 V<sub>DC</sub>, 2.0 A<sub>max</sub>  
 Max. Power Consumption: The maximum power consumption depends on the number of channels installed, the number of transducers connected and the current consumption per transducer. The maximum power consumption of a six channel MCTS with transducers IN 2000-S at 2000 A<sub>rms</sub> primary current is around 30 W.

## Power and Transducer Status Functions

The channel and transducer status is visible on the TPS front panel and can be read out via the Status-Readout Interface



Power LED green: Channel installed  
 Power LED off: Channel not installed  
 Status LED green: Transducer ok  
 Status LED red: Transducer overload or open output



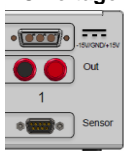
Status-Readout-Interface

This interface gives out the transducer status by means of potential free relay contacts.

Switching voltage: 200 V  
 Switching current: 2 A

A status readout cable is available as an option.

## DC-voltage output for active burden modules



Especially the current transducers for higher primary current levels are not able to drive much more than 1 V at the output. If this is enough, our passive plug-on burden resistors are the right solution to get a mV/A-signal out of the sensor. If the connected measurement instrument demands a higher voltage signal level, our active plug-on voltage modules are the right solution. These deliver 7 V<sub>rms</sub> (9.9 V<sub>pk</sub>) at transducer nominal primary current.

# Optional Burden Modules



The transducer system delivers the transducer output current at the 4 mm output terminals on the back panel of the rack. For those instruments that don't have current input terminals, optional high precision passive and active plug-on burden modules with very low phase angle error are available. The active voltage output modules are supplied by the TPS rack with a 3-pole D-SUB connector.

## Passive plug-on burden resistors



Passive plug-on burden resistors are available from 1 Ω to 50 Ω. The burden resistor is limited by the transducer and the length of the connection cable. For higher output voltages active plug-on burden amplifiers are available.

Order Number	Resistance Value	Accuracy	Max. Output Voltage	Bandwidth	Phase Error	Load Influence
MCTS/BR1/0.02	1 Ω	0.02 % of MV	1.00 V <sub>rms</sub> @ 1000 mA <sub>rms</sub>	> 1 MHz	< 1° @ 100 kHz	< 0.1 ppm/mW
MCTS/BR1.5/0.02	1.5 Ω	0.02 % of MV	1.00 V <sub>rms</sub> @ 667 mA <sub>rms</sub>	> 1 MHz	< 1° @ 100 kHz	< 0.1 ppm/mW
MCTS/BR2.5/0.02	2.5 Ω	0.02 % of MV	1.58 V <sub>rms</sub> @ 632 mA <sub>rms</sub>	> 1 MHz	< 1° @ 100 kHz	< 0.1 ppm/mW
MCTS/BR3.75/0.02	3.75 Ω	0.02 % of MV	1.94 V <sub>rms</sub> @ 516 mA <sub>rms</sub>	> 1 MHz	< 1° @ 100 kHz	< 0.1 ppm/mW
MCTS/BR5/0.02	5 Ω	0.02 % of MV	2.24 V <sub>rms</sub> @ 447 mA <sub>rms</sub>	> 1 MHz	< 1° @ 100 kHz	< 0.1 ppm/mW
MCTS/BR10/0.01	10 Ω	0.01 % of MV	3.16 V <sub>rms</sub> @ 316 mA <sub>rms</sub>	> 1 MHz	< 1° @ 100 kHz	< 0.1 ppm/mW
MCTS/BR25/0.01	25 Ω	0.01 % of MV	5.00 V <sub>rms</sub> @ 200 mA <sub>rms</sub>	> 1 MHz	< 1° @ 100 kHz	< 0.1 ppm/mW
MCTS/BR50/0.01	50 Ω	0.01 % of MV	7.07 V <sub>rms</sub> @ 141 mA <sub>rms</sub>	> 1 MHz	< 1° @ 100 kHz	< 0.1 ppm/mW

### Mechanical Data

Width:	51 mm
Height:	51 mm
Depth:	62 mm (Connectors included)
Mass:	85 g

## Resulting scaling with passive burden resistors

Transducer	Passive BR	Scaling	Output Voltage
IT 60-S	MCTS/BR50/0.01	83.333 mV/A	5.000 V <sub>pk</sub> @ 60 A <sub>pk</sub>
IT 200-S	MCTS/BR25/0.01	25.000 mV/A	5.000 V <sub>pk</sub> @ 200 A <sub>pk</sub>
IT 400-S	MCTS/BR1/0.02	0.500 mV/A	0.200 V <sub>pk</sub> @ 400 A <sub>pk</sub>
IT 700-S	MCTS/BR1/0.02	0.571 mV/A	0.400 V <sub>pk</sub> @ 700 A <sub>pk</sub>
IT 1000-S/SP1	MCTS/BR1/0.02	1.000 mV/A	1.000 V <sub>pk</sub> @ 1000 A <sub>pk</sub>
IT 65-S	MCTS/BR25/0.01	41.667 mV/A	2.500 V <sub>rms</sub> @ 60 A <sub>rms</sub>
IT 205-S	MCTS/BR10/0.01	10.000 mV/A	2.000 V <sub>rms</sub> @ 200 A <sub>rms</sub>
IT 405-S	MCTS/BR10/0.01	6.667 mV/A	2.667 V <sub>rms</sub> @ 400 A <sub>rms</sub>
IT 605-S	MCTS/BR2.5/0.02	1.667 mV/A	1 V <sub>rms</sub> @ 600 A <sub>rms</sub>
IN 1000-S	MCTS/BR1.5/0.02	1.000 mV/A	1 V <sub>rms</sub> @ 1000 A <sub>rms</sub>
IN 2000-S	MCTS/BR1/0.02	0.500 mV/A	1 V <sub>rms</sub> @ 2000 A <sub>rms</sub>

## Active plug-on voltage output modules



The output voltage level the transducer can drive is limited. The active plug-on burden modules combine a very precise burden resistor with a highly accurate voltage amplifier. The plug-on burden voltage modules deliver 7 V<sub>rms</sub> (9.9 V<sub>pk</sub>) at transducer nominal value.

Order Number	Input Resistance	Accuracy	Max. Output Voltage	Bandwidth	Phase Error	Load Influence
MCTS/VM1/0.02	1 Ω	0.01 % of MV + 0.01 % of MR	7 V <sub>rms</sub> @ 1000 mA <sub>rms</sub>	> 300 kHz	< 1° @ 100 kHz	< 0.1 ppm/mW
MCTS/VM0.66/0.02	1.5 Ω	0.01 % of MV + 0.01 % of MR	7 V <sub>rms</sub> @ 667 mA <sub>rms</sub>	> 300 kHz	< 1° @ 100 kHz	< 0.1 ppm/mW
MCTS/VM0.4/0.02	2.5 Ω	0.01 % of MV + 0.01 % of MR	7 V <sub>rms</sub> @ 400 mA <sub>rms</sub>	> 300 kHz	< 1° @ 100 kHz	< 0.1 ppm/mW
MCTS/VM0.26/0.02	3.75 Ω	0.01 % of MV + 0.01 % of MR	7 V <sub>rms</sub> @ 267 mA <sub>rms</sub>	> 300 kHz	< 1° @ 100 kHz	< 0.1 ppm/mW
MCTS/VM0.2/0.02	5 Ω	0.01 % of MV + 0.01 % of MR	7 V <sub>rms</sub> @ 200 mA <sub>rms</sub>	> 300 kHz	< 1° @ 100 kHz	< 0.1 ppm/mW
MCTS/VM0.1/0.02	10 Ω	0.01 % of MV + 0.01 % of MR	7 V <sub>rms</sub> @ 100 mA <sub>rms</sub>	> 300 kHz	< 1° @ 100 kHz	< 0.1 ppm/mW

### Mechanical Data

Width:	51 mm
Height:	51 mm
Depth:	62 mm (Connectors included)
Mass:	105 g

## Resulting scaling with active burden modules

Transducer	Active VM	Scaling	Output Voltage
IT 60-S	MCTS/VM0.1/0.02	116.667 mV/A	7.000 V <sub>pk</sub> @ 60 A <sub>pk</sub>
IT 200-S	MCTS/VM0.2/0.02	35.000 mV/A	7.000 V <sub>pk</sub> @ 200 A <sub>pk</sub>
IT 400-S	MCTS/VM1/0.02	3.500 mV/A	1.400 V <sub>pk</sub> @ 400 A <sub>pk</sub>
IT 700-S	MCTS/VM1/0.02	4.000 mV/A	2.800 V <sub>pk</sub> @ 700 A <sub>pk</sub>
IT 1000-S/SP1	MCTS/VM1/0.02	7.000 mV/A	7.000 V <sub>pk</sub> @ 1000 A <sub>pk</sub>
IT 65-S	MCTS/VM0.1/0.02	116.667 mV/A	7.000 V <sub>rms</sub> @ 60 A <sub>rms</sub>
IT 205-S	MCTS/VM0.2/0.02	35.000 mV/A	7.000 V <sub>rms</sub> @ 200 A <sub>rms</sub>
IT 405-S	MCTS/VM0.26/0.02	17.500 mV/A	7.000 V <sub>rms</sub> @ 400 A <sub>rms</sub>
IT 605-S	MCTS/VM0.4/0.02	11.667 mV/A	7.000 V <sub>rms</sub> @ 600 A <sub>rms</sub>
IN 1000-S	MCTS/VM0.66/0.02	7.000 mV/A	7.000 V <sub>rms</sub> @ 1000 A <sub>rms</sub>
IN 2000-S	MCTS/VM1/0.02	3.500 mV/A	7.000 V <sub>rms</sub> @ 2000 A <sub>rms</sub>

## Connection Cables

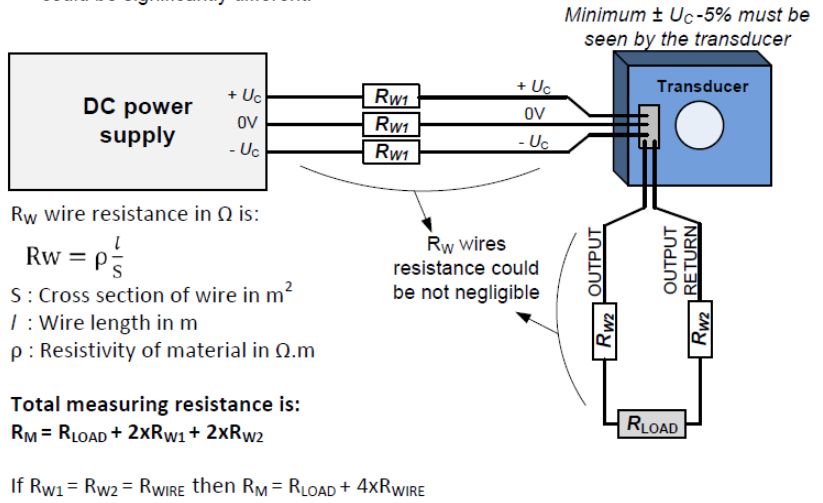


Connection cables from the MCTS rack to the transducers are available in various cable lengths. Special cable lengths can be manufactured according demand. Be aware that the cable resistance is part of the maximum burden resistance mentioned in the transducer data sheets. The cables are available with two different wire cross sections, 0.34 mm<sup>2</sup> and 0.75 mm<sup>2</sup>.

### Power supply and load

In order to reach the measuring range according to the maximum measuring resistor, be careful with the setup measurement when wires length are high. It means that:

- the wires resistance could be not negligible
- the voltage at the output of the DC power supply and the voltage at the transducer could be significantly different.



### Standard Connection Cables

Order Number	Cable Length	Wire Cross Section	Single Wire Resistance	Loop Resistance (4 x R <sub>WIRE</sub> )	Mass
MCTS/TPS/1.5	1.5 m	0.34 mm <sup>2</sup>	0.08 $\Omega$	0.31 $\Omega$	0.21 kg
MCTS/TPS/2.5	2.5 m	0.34 mm <sup>2</sup>	0.13 $\Omega$	0.52 $\Omega$	0.28 kg
MCTS/TPS/3	3 m	0.34 mm <sup>2</sup>	0.16 $\Omega$	0.63 $\Omega$	0.32 kg
MCTS/TPS/5	5 m	0.34 mm <sup>2</sup>	0.26 $\Omega$	1.05 $\Omega$	0.47 kg
MCTS/TPS/10	10 m	0.34 mm <sup>2</sup>	0.52 $\Omega$	2.09 $\Omega$	0.84 kg
MCTS/TPS/15	15 m	0.34 mm <sup>2</sup>	0.79 $\Omega$	3.14 $\Omega$	1.21 kg
MCTS/TPS/20	20 m	0.34 mm <sup>2</sup>	1.05 $\Omega$	4.19 $\Omega$	1.58 kg
MCTS/TPS/25	25 m	0.34 mm <sup>2</sup>	1.31 $\Omega$	5.24 $\Omega$	1.95 kg
MCTS/TPS/30	30 m	0.34 mm <sup>2</sup>	1.57 $\Omega$	6.28 $\Omega$	2.32 kg
MCTS/TPS/5/0.75	5 m	0.75 mm <sup>2</sup>	0.12 $\Omega$	0.47 $\Omega$	0.65 kg
MCTS/TPS/10/0.75	10 m	0.75 mm <sup>2</sup>	0.24 $\Omega$	0.95 $\Omega$	1.15 kg
MCTS/TPS/15/0.75	15 m	0.75 mm <sup>2</sup>	0.36 $\Omega$	1.42 $\Omega$	1.70 kg
MCTS/TPS/20/0.75	20 m	0.75 mm <sup>2</sup>	0.47 $\Omega$	1.90 $\Omega$	2.30 kg
MCTS/TPS/30/0.75	30 m	0.75 mm <sup>2</sup>	0.71 $\Omega$	2.85 $\Omega$	3.30 kg

### Total Measuring Resistance at Full Scale

Transducer	Measuring Resistance
IT 60-S	60 $\Omega$
IT 200-S	30 $\Omega$
IT 400-S	2.5 $\Omega$
IT 700-S	2.5 $\Omega$
IT 1000-S/SP1	3 $\Omega$
IT 65-S	50 $\Omega$
IT 205-S	20 $\Omega$
IT 405-S	15 $\Omega$
IT 605-S	5 $\Omega$
IN 1000-S	4 $\Omega$
IN 2000-S	3.5 $\Omega$

### Maximum Burden Resistor depending on Transducer and Connection Cable

The remaining burden resistance can be calculated by the subtraction of the connection cable loop resistance from the transducer total measuring resistance.

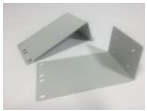
Example IN 1000-S with 15 meters cable 0.34 mm<sup>2</sup> and 0.75 mm<sup>2</sup>:

IN 1000-S total measuring resistance: 4  $\Omega$  at 1000 A<sub>rms</sub>

MCTS/TPS/15 loop resistance: 3.14  $\Omega$  → Maximum allowed burden resistor = 4  $\Omega$  - 3.14  $\Omega$  = 0.86  $\Omega$

MCTS/TPS/15/0.75 loop resistance: 1.42  $\Omega$  → Maximum allowed burden resistor = 4  $\Omega$  - 1.42  $\Omega$  = 2.58  $\Omega$

## Accessories



**TPS/RMB**  
Rack mounting brackets for installation into a 19" cabinet



**BPL0.5**  
4 mm banana-plug test lead set, length 0.5 m



**TPS/CB**  
Carrying bag for rack, transducers, cables and burden modules



**BPL01**  
4 mm banana-plug test lead set, length 1 m



**TSC**  
Transducer soft case for use with carrying bag  
**TSC1** for IT 60-S, 65-S, 200-S, 205-S, 400-S  
**TSC2** for IT 405-S, 605-S, 700-S  
**TSC3** for IT 1000-S/SP1  
**TSC4** for IT 2000-S



**BNCL1**  
BNC to BNC test lead, length 1 m



**TPS/ROC**  
18-pole D-SUB-cable for status-readout-interface, length 3 m



**BNC4L1**  
BNC to 4 mm banana-plug test lead, length 1 m



**BNC4A**  
BNC to 4 mm banana-plug adapter

## Order Numbers

<b>TPS Rack</b>	
TPS2	Single channel power supply including power cord and manual
<b>Current Transducers</b>	
IT 65-S	AC/DC current transducer 60 A <sub>rms</sub>
IT 205-S	AC/DC current transducer 200 A <sub>rms</sub>
IT 405-S	AC/DC current transducer 400 A <sub>rms</sub>
IT 605-S	AC/DC current transducer 600 A <sub>rms</sub>
IN 1000-S	AC/DC current transducer 1000 A <sub>rms</sub>
IN 2000-S	AC/DC current transducer 2000 A <sub>rms</sub>
IT 60-S	AC/DC current transducer 60 A <sub>pk</sub>
IT 200-S	AC/DC current transducer 200 A <sub>pk</sub>
IT 400-S	AC/DC current transducer 400 A <sub>pk</sub>
IT 700-S	AC/DC current transducer 700 A <sub>pk</sub>
IT 1000-S/SP1	AC/DC current transducer 1000 A <sub>pk</sub>
<b>Connection Cables</b>	
MCTS/TPS/1.5	1.5 meters connection cable, 0.34 mm <sup>2</sup>
MCTS/TPS/2.5	2.5 meters connection cable, 0.34 mm <sup>2</sup>
MCTS/TPS/3	3 meters connection cable, 0.34 mm <sup>2</sup>
MCTS/TPS/5	5 meters connection cable, 0.34 mm <sup>2</sup>
MCTS/TPS/10	10 meters connection cable, 0.34 mm <sup>2</sup>
MCTS/TPS/15	15 meters connection cable, 0.34 mm <sup>2</sup>
MCTS/TPS/20	20 meters connection cable, 0.34 mm <sup>2</sup>
MCTS/TPS/25	25 meters connection cable, 0.34 mm <sup>2</sup>
MCTS/TPS/30	30 meters connection cable, 0.34 mm <sup>2</sup>
MCTS/TPS/5/0.75	5 meters connection cable, 0.75 mm <sup>2</sup>
MCTS/TPS/10/0.75	10 meters connection cable, 0.75 mm <sup>2</sup>
MCTS/TPS/15/0.75	15 meters connection cable, 0.75 mm <sup>2</sup>
MCTS/TPS/20/0.75	20 meters connection cable, 0.75 mm <sup>2</sup>
MCTS/TPS/30/0.75	30 meters connection cable, 0.75 mm <sup>2</sup>
<b>Passive Burden Resistors</b>	
MCTS/BR1/0.02	1 Ω plug-on burden resistor for MCTS/TPS
MCTS/BR1.5/0.02	1.5 Ω plug-on burden resistor for MCTS/TPS
MCTS/BR2.5/0.02	2.5 Ω plug-on burden resistor for MCTS/TPS
MCTS/BR3.75/0.02	3.75 Ω plug-on burden resistor for MCTS/TPS
MCTS/BR5/0.02	5 Ω plug-on burden resistor for MCTS/TPS
MCTS/BR10/0.01	10 Ω plug-on burden resistor for MCTS/TPS
MCTS/BR25/0.02	25 Ω plug-on burden resistor for MCTS/TPS
MCTS/BR50/0.02	50 Ω plug-on burden resistor for MCTS/TPS
<b>Active Voltage Output Modules</b>	
MCTS/VM1/0.02	Plug-on output current amplifier 1A/7V
MCTS/VM0.66/0.02	Plug-on output current amplifier 667mA/7V
MCTS/VM0.4/0.02	Plug-on output current amplifier 400mA/7V
MCTS/VM0.26/0.02	Plug-on output current amplifier 267mA/7V
MCTS/VM0.2/0.02	Plug-on output current amplifier 200mA/7V
MCTS/VM0.1/0.02	Plug-on output current amplifier 100mA/7V
<b>Accessories</b>	
TPS/RMB	19" rack mounting brackets
TPS/CB	Carrying bag for TPS rack, transducers and cables (coming soon)
TSC1	Transducer soft case for IT 60-S, IT 65-S, IT200-S, IT 205-S and IT 400-S
TSC2	Transducer soft case for IT 405-S, IT 605-S and IT 700-S
TSC3	Transducer soft case for IT 1000-S/SP1
TSC4	Transducer soft case for IN 2000-S
TPS/ROC	Status readout interface cable, length 3 m
BPL0.5	4mm banana-plug test lead set for MCTS current output terminals, red and black, length 0.5 m
BPL1	4mm banana-plug test lead set for MCTS current output terminals, red and black, length 1 m
BNCL1	BNC to BNC test lead, length 1 m
BNC4L1	BNC to 4 mm banana-plug test lead, length 1 m
BNC4A	BNC to 4 mm banana-plug adapter