

ПРЕОБРАЗОВАТЕЛИ СИГНАЛОВ TSA FIL, DMS, Poti, DC, Pt100, TC, ICP, RMS, MATH, IF

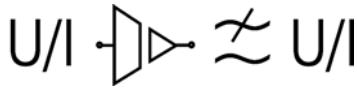
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TSA-Fil



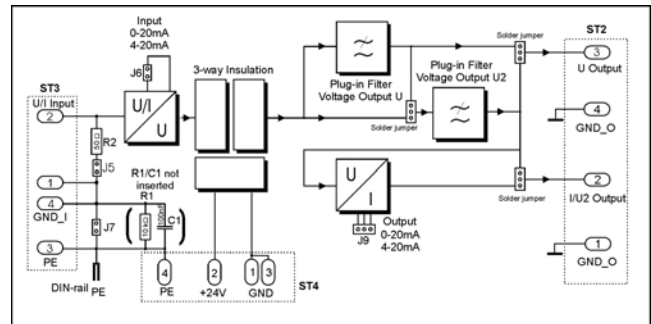
Characteristics

The **TSA-FIL Module** offers isolated signal conversion and filtering of voltage and current signals. Voltage and current inputs can be combined with voltage and current outputs. The desired configuration should be specified with order.

Technical Data

Supply voltage	24 V DC \pm 10 %
Power consumption at nominal voltage (without sensor / without load)	40 mA
Electrical isolation (3-way isolation)	1000 V DC
Accuracy	0.1 %
Cut-off frequency (standard / maximum)	5 kHz / 10 kHz
Linearity (typical)	0.02 %
Input – Voltage Input range (V1 / V2) Input resistance	\pm 10 V / 0..10 V 10 M Ω
Input – Current Input range (A1 / A2 / A3) Input resistance	\pm 20 mA / 0..20 mA / 4..20 mA 50 Ω
Output – Voltage Output range (V1 / V2)	\pm 10 V / 0..10 V
Output – Current Output range (A1 / A2 / A3)	\pm 20 mA / 0..20 mA / 4..20 mA
Max. load current (U output)	\pm 10 mA
Residual ripple @ $f_g = 5$ kHz $f_g = 10$ kHz	typical 2 mV _{pp} typical 5 mV _{pp}
Environmental temperature	0..50 °C
Plug-in filter Standard frequencies in Hz	10, 30, 50, 100, 300, 500, 1 k, 3 k, 5 k, 10 k

Block Diagram



Dimensions

Housing ME 22.5:
22.5 x 99 x 114.5 mm (WxHxD)

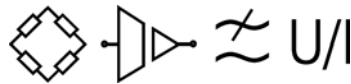
Ordering Code

TSA-FIL 1. 2. 3. 4. 5.

1. Model	
1	1 output
2	2 outputs
2. Input (not all combinations with output feasible)	
V1	\pm 10 V
V2	0..10 V
A1	\pm 20 mA
A2	0..20 mA
A3	4..20 mA
3. Output filter frequencies (Hz)	
XXX	Enter standard values: 10, 30, 50, 100, 300, 500, 1k, 3k, 5k, 10k
	Enter non- standard value: 1..30k
4. Filter characteristics	
BW	Butterworth 4th order
BS	Bessel 4th order
BW8	Butterworth 8th order
BS8	Bessel 8th order
5. Output (not all combinations with input feasible)	
V1	\pm 10 V
V2	0..10 V
A1	\pm 20 mA
A2	0..20 mA
A3	4..20 mA

Example: TSA-FIL1-V1-5k-BW-V1

TSA-DMS



Characteristics

The **TSA-DMS Module** offers signal conditioning of strain gauge bridges with 4-wire or 6-wire technology. Standard ranges are 2, 4, 10 mV/V. Manual offset correction can be done with a Zero trimmer. Sensor supply (standard 5 V DC) is isolated, provided by the module. Depending on the base configuration the module has voltage and current outputs.

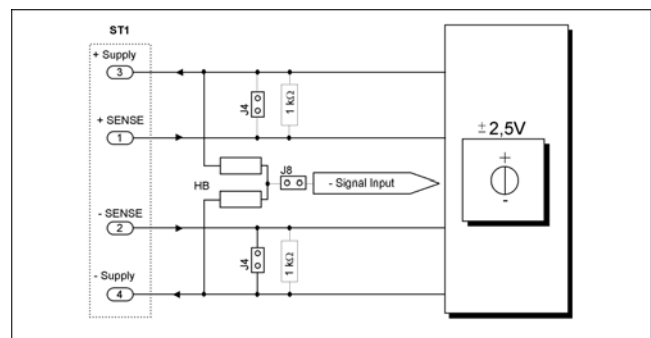
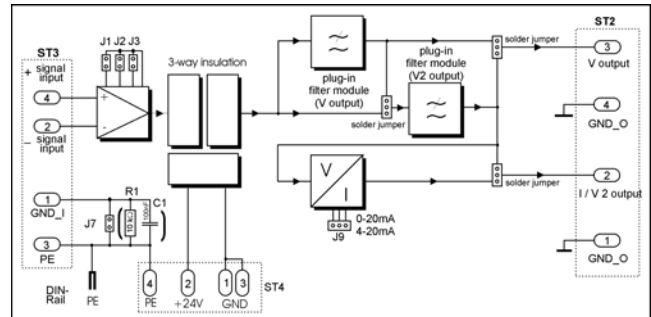
Technical Data

Supply voltage	24 V DC \pm 10 %
Power consumption at nominal voltage (without sensor / without load)	50 mA
Electrical isolation (3-way isolation)	1000 V DC
Accuracy	0.1 %
Cut-off frequency (standard / maximum)	5 kHz / 10 kHz
Linearity (typical)	0.02 %
Input Sensor	Strain gauge 120 Ω to 1 k Ω unipolar, bipolar
Input resistance	10 M Ω
Output – Voltage Output range (V1 / V2)	\pm 10 V / 0..10 V
Output – Current Output range (A1 / A2 / A3)	\pm 20 mA / 0..20 mA / 4..20 mA
Max. load current (U output)	\pm 12 mA
Residual ripple @ $f_g = 5$ kHz $f_g = 10$ kHz	Gain=1: typ. 2 mV _{pp} typ. 5 mV _{pp} Gain>500 3 mV _{pp} x Gain/500
Sensor supply (others on request)	5 V DC symmetrical
Multiple wire technology	4-wire / 6-wire switchable
Bridge types	Full bridge Half bridge (option, manual switch)
Measurement range / Gain	2 mV/V V = 1000 4 mV/V V = 500 10 mV/V V = 200 V = 1 switchable
Environmental temperature	0..50 °C

Plug-in filter
Standard frequencies in Hz

10, 30, 50, 100, 300, 500,
1 k, 3 k, 5 k, 10 k

Block Diagram



Dimensions

Housing ME 22.5:
22.5 x 99 x 114.5 mm (WxHxD)

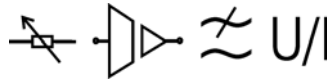
Ordering Code

TSA-DMS 1. - 2. - 3. / - 4. / - 5. /

1. Model	
1	1 output
2	2 outputs
2. Measurement ranges in mV/V (switchable)	
MX	Enter calibrated value: 2, 4, 10
	Enter non- standard value: 1..100 mV/V
3. Output filter frequencies (Hz)	
XXX	Enter standard values: 10, 30, 50, 100, 300, 500, 1k, 3k, 5k, 10k
	Enter non- standard value: 1..30k
4. Filter characteristics	
BW	Butterworth 4th order
BS	Bessel 4th order
BW8	Butterworth 8th order
BS8	Bessel 8th order
5. Output (not all combinations feasible)	
V1	\pm 10 V
V2	0..10 V
A1	\pm 20 mA
A2	0..20 mA
A3	4..20 mA

Example: TSA-DMS1-M2-5k-BW-V1

TSA-Poti



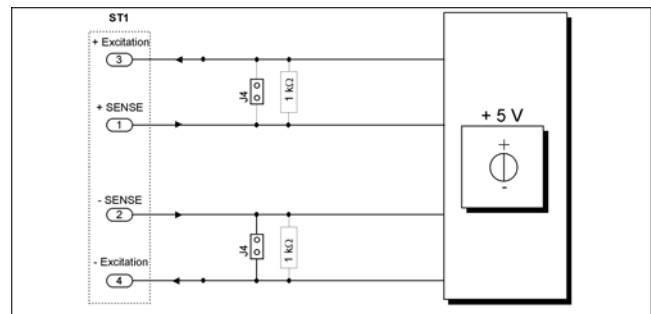
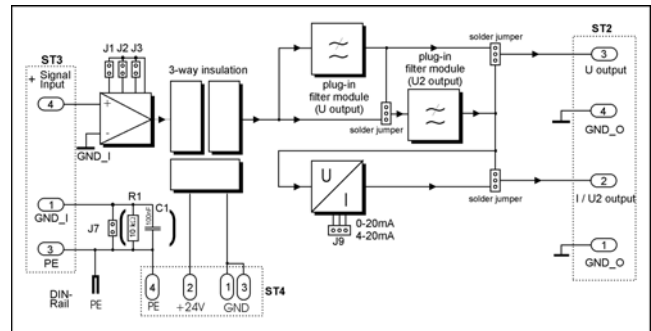
Characteristics

The **TSA-Poti Module** offers signal conditioning of potentiometers in 3-wire or 5-wire technology with resistances from 350..1000 Ω. Standard ranges are 100, 50, 25 and 12,5 %. Manual offset correction can be done with a Zero trimmer. Sensor supply (standard 5 V DC) is isolated, provided by the module. Depending on the base configuration the module has voltage and current outputs.

Technical Data

Supply voltage	24 V DC ± 10 %
Power consumption at nominal voltage (without sensor / without load)	50 mA
Electrical isolation (3-way isolation)	1000 V DC
Accuracy	0.1 %
Cut-off frequency (standard / maximum)	5 kHz / 10 kHz
Linearity (typical)	0.02 %
Input	
Sensor	Potentiometer 350 Ω ..1 kΩ unipolar, bipolar
Input resistance	10 MΩ
Output – Voltage	
Output range (V1 / V2)	± 10 V / 0..10 V
Output – Current	
Output range (A1 / A2 / A3)	± 20 mA / 0..20 mA / 4..20 mA
Max. load current (U output)	± 12 mA
Residual ripple @	
$f_g = 5$ kHz	Gain=1: typ. 2 mV _{pp}
$f_g = 10$ kHz	typ. 5 mV _{pp}
	Gain>500 3 mV _{pp} x Gain/500
Sensor supply (others on request)	5 V DC not symmetrical
Multi-wire technology	3-wire / 5-wire switchable
Gain / Measurement range	V = 1 (100 %) V = 2 (50 %) V = 4 (25 %) V = 8 (12,5 %) switchable
Environmental temperature	0..50 °C
Plug-in filter Standard frequencies in Hz	10, 30, 50, 100, 300, 500, 1 k, 3 k, 5 k, 10 k

Block Diagram



Dimensions

Housing ME 22.5:
22.5 x 99 x 114.5 mm (WxHxD)

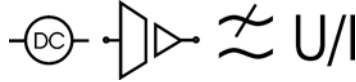
Ordering Code

TSA-POTI 1. - 2. - 3. - 4. - 5.

1. Model		
1	1 output	
2	2 outputs	
2. Measuring ranges in %		
PX	Enter calibrated value: 12.5, 25, 50, 100	
3. Output filter frequencies (Hz)		
XXX	Enter standard values: 10, 30, 50, 100, 300, 500, 1k, 3k, 5k, 10k	
	Enter non- standard value: 1..30k	
4. Filter characteristics		
BW	Butterworth 4th order	
BS	Bessel 4th order	
BW8	Butterworth 8th order	
BS8	Bessel 8th order	
5. Output (not all combinations feasible)		
V1	± 10 V	
V2	0..10 V	
A1	± 20 mA	
A2	0..20 mA	
A3	4..20 mA	

Example: TSA-Poti1-100-5k-BW-V1

TSA-DC



Characteristics

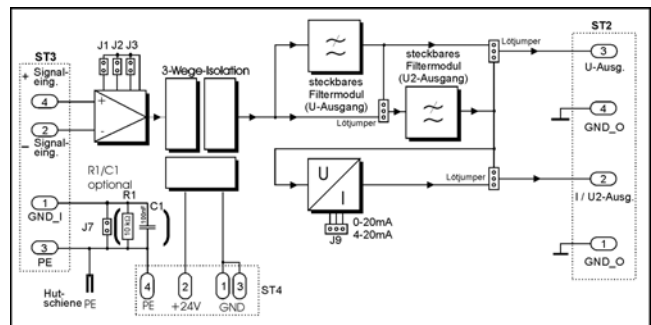
The **TSA-DC Module** offers signal conditioning of Shunt sensors or other arbitrary DC and AC sources. Switchable standard ranges are 150 mV, 500 mV, 1 V and 10 V. The input is differential. Depending on the base configuration the module has voltage and current outputs.

Technical Data

Supply voltage	24 V DC \pm 10 %
Power consumption at nominal voltage (without sensor / without load)	50 mA
Electrical isolation (3-way isolation)	1000 V DC
Accuracy	0.1 %
AC coupling at input	min. appr. 1 Hz
Cut-off frequency (standard / maximum)	5 kHz / 10 kHz
Linearity (typical)	0,02 %
Input Sensor Input resistance	DC or AC source 10 M Ω
Output – Voltage Output range (V1 / V2)	\pm 10 V / 0..10 V
Output – Current Output range (A1 / A2 / A3)	\pm 20 mA / 0..20 mA / 4..20 mA
Max. load current (U output)	\pm 12 mA
Residual ripple @ $f_g = 5$ kHz $f_g = 10$ kHz	Gain=1: typ. 2 mV _{pp} typ. 5 mV _{pp} Gain>500 3 mV _{pp} x Gain/500
Measurement range / Gain	150 mV V = 66,66 500 mV V = 20 1,0 V V = 10 10 V V = 1 switchable
Environmental temperature	0..50 °C
Plug-in filter Standard frequencies in Hz	10, 30, 50, 100, 300, 500, 1 k, 3 k, 5 k, 10 k

Block Diagram

Differential input



Optional AC coupling at input

Dimensions

Housing ME 22.5:
22.5 x 99 x 114.5 mm (WxHxD)

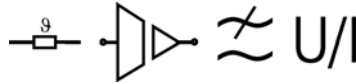
Ordering Code

TSA-DC 1. - 2. - / - 4. - / - 5.

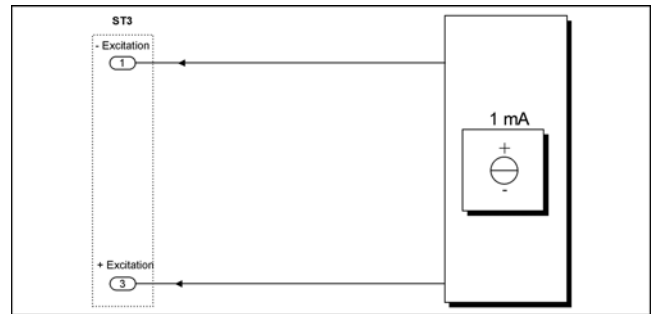
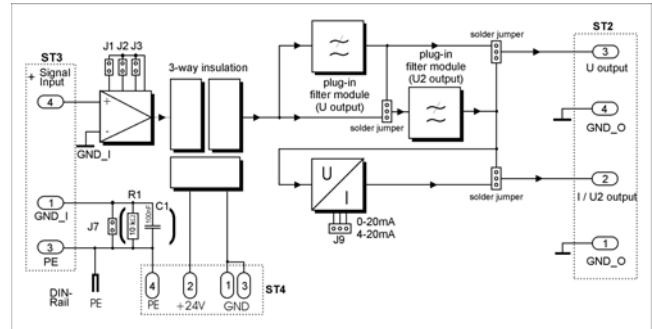
1. Model	
1	1 output
2	2 outputs
2. Measuring ranges in V (switchable)	
VX	Enter calibrated value: 0.15, 0.5, 1, 10
	Enter non- standard value: 0.1..10
3. Output filter frequencies (Hz)	
XXX	Enter standard values: 10, 30, 50, 100, 300, 500, 1k, 3k, 5k, 10k
	Enter non- standard value: 1..30k
4. Filter characteristics	
BW	Butterworth 4th order
BS	Bessel 4th order
BW8	Butterworth 8th order
BS8	Bessel 8th order
5. Output (not all combinations feasible)	
V1	\pm 10 V
V2	0..10 V
A1	\pm 20 mA
A2	0..20 mA
A3	4..20 mA

Example: TSA-DC1-10-3k-BS-V1

TSA-Pt100



Block Diagram



Characteristics

The **TSA-Pt100 Module** offers signal conditioning of Pt100 sensors in 4-wire technology. Linearisation is done by the module, with a fixed range of -100 to +100, +200, or +500°C, to be specified with order. Sensor supply of 1 mA constant is isolated, provided by the module. Depending on the base configuration the module has voltage and current outputs.

Technical Data

Supply voltage	24 V DC \pm 10 %
Power consumption at nominal voltage (without sensor / without load)	65 mA
Electrical isolation (3-way isolation)	1000 V DC
Accuracy	0.2 %
Cut-off frequency (standard / maximum)	5 Hz / 10 kHz
Linearity (typical)	0.1 %
Input	
Sensor	Pt100 RTD
Input resistance	10 M Ω
Output – Voltage	
Output range (V1 / V2)	\pm 10 V / 0..10 V
Output – Current	
Output range (A1 / A2 / A3)	\pm 20 mA / 0..20 mA / 4..20 mA
Max. load current (U output)	\pm 12 mA
Residual ripple @	
$f_g = 5$ kHz	typ. 2 mV _{pp}
$f_g = 10$ kHz	typ. 5 mV _{pp}
Sensor supply	Constant current 1 mA
Multi-wire technology	4-wire
Range	
1 fixed range to be specified with order	-100°C..+100°C -100°C..+200°C -100°C..+500°C
Environmental temperature	0..50 °C
Plug-in filter Standard frequencies in Hz	10, 30, 50, 100, 300, 500, 1 k, 3 k, 5 k, 10 k

Dimensions

Housing ME 22.5:
22.5 x 99 x 114.5 mm (WxHxD)

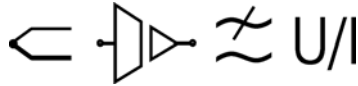
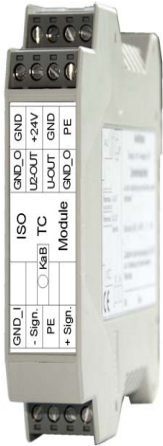
Ordering Code

TSA-PT100 1. - 2. - / - 4. - / - 5.

1. Model	
1	1 output
2	2 outputs
2. Measuring ranges (°C)	
T1	-100..+100
T2	-100..+200
T5	-100..+500
	Non-standard value
3. Output filter frequencies (Hz)	
XXX	Enter standard values: 10, 30, 50, 100, 300, 500, 1k, 3k, 5k, 10k
	Enter non- standard value: 1..30k
4. Filter characteristics	
BW	Butterworth 4th order
BS	Bessel 4th order
BW8	Butterworth 8th order
BS8	Bessel 8th order
5. Output (not all combinations feasible)	
V1	\pm 10 V
V2	0..10 V
A1	\pm 20 mA
A2	0..20 mA
A3	4..20 mA

Example: TSA-PT100 1-T5-1k-BW-V1

TSA-TC



Characteristics

The **TSA-TC Module** offers signal conditioning of thermocouples (standard types J, K and T). Linearisation is done by the module. Maximum measurement range (type K) is -100°C to 1200°C. The standard module has a fixed range (-100°C to +100°C, or +200°C, +500°C, +1000°C, +1200°C) plus type to be specified with order. Calibration is done for this range. Optionally up to three switchable ranges are selectable. The CJC is integrated in the connector, cable break is indicated by an LED. Depending on the base configuration the module has voltage and current outputs.

Technical Data

Supply voltage	24 V DC \pm 10 %
Power consumption at nominal voltage (without sensor / without load)	90 mA
Electrical isolation (3-way isolation)	1000 V DC
Accuracy ^{*1}	0.2 %
Cut-off frequency (standard / maximum)	10 Hz / 5 kHz
Linearity (typical)	0.1 %
Input Thermocouple Input resistance	Type K, J, T ² , R ³ 10 M Ω
Output – Voltage Output range (V1 / V2)	\pm 10 V / 0..10 V
Output – Current Output range (A1 / A2 / A3)	\pm 20 mA / 0..20 mA / 4..20 mA
Max. load current (U output)	\pm 10 mA
Residual ripple @ $f_g = 5$ kHz	typ. 2 mV _{pp}
Cable break	red LED
Ranges Maximum range Standard ranges (selectable) Minimum range Ranges per module (standard) Maximum numbers	-250°C..+1200°C 200, 500, 1000, 1200°C -100°C..+100°C 1 4
Environmental temperature	0..50 °C
Plug-in filter Standard frequencies in Hz	10, 30, 50, 100, 300, 500, 1 k, 3 k, 5 k, 10 k

Remarks to technical data:

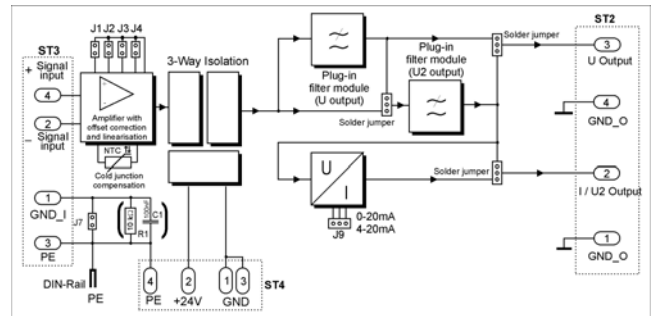
*¹ Input connector must be attached for 30 minutes to module.

A possible offset can be corrected with trimmer ZERO-A

*² Accuracy for type T is only met up to -230°C with negative range.

*³ Accuracy for type R is only met with positive range, with negative range deviation is < 1%.

Block Diagram



Dimensions

Housing ME 22.5: 22.5 x 99 x 114.5 mm (WxHxD)

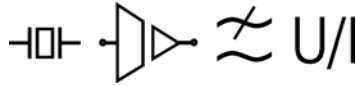
Ordering Code

TSA-TC - - - / - / - /

1. Model	
1	1 output
2	2 outputs
2. Type	
ABC	enter J, K, R, T
	other linearisation
3. Measuring ranges (°C)	
T1	-100..+100
T2	-100..+200
T5	-100..+500
T10	-100..+1000
T12	-100..+1200
	Non-standard value -250..+1200 °C
4. Output filter frequencies (Hz)	
XXX	Enter standard values:10, 30, 50, 100, 300, 500,1k, 3k, 5k, 10k
	Enter non- standard value: 1..30k
5. Filter characteristics	
BW	Butterworth 4th order
BS	Bessel 4th order
BW8	Butterworth 8th order
BS8	Bessel 8th order
6. Output (not all combinations feasible)	
V1	\pm 10 V
V2	0..10 V
A1	\pm 20 mA
A2	0..20 mA
A3	4..20 mA

Example: TSA-TC1-K-T10-10-BW-V1

TSA-ICP



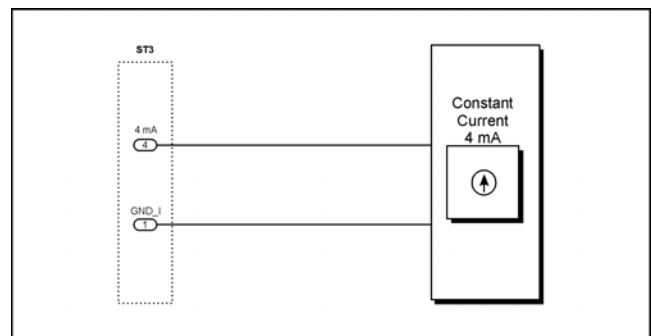
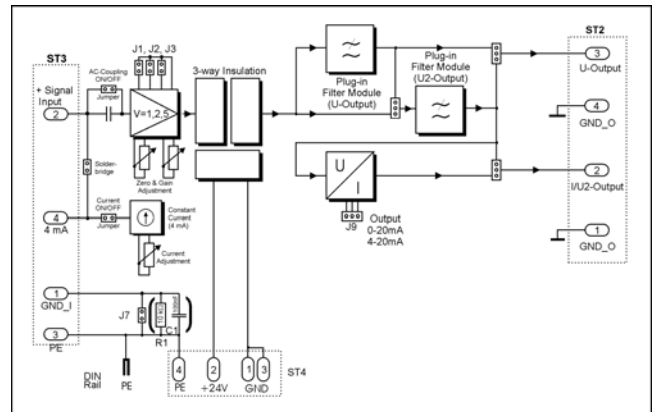
Characteristics

The **TSA-ICP Module** offers signal conditioning of piezoelectric sensors. Minimum input frequency (standard) is 2 Hz. Standard gains are 1, 2 and 5. Sensor supply with 4 mA constant current is isolated, provided by the module. A red LED at the front indicates a cable break or exceeding a sensor resistance of 6.5 kΩ. Depending on the base configuration the module has voltage and current outputs.

Technical Data

Supply voltage	24 V DC ± 10 %
Power consumption at nominal voltage (without sensor / without load)	50 mA
Electrical isolation (3-way isolation)	1000 V DC
Accuracy	0.1 %
Cut-off frequency (standard / maximum)	5 kHz / 32 kHz
Linearity (typical)	0.02 %
Input	
Sensor	Piezoelectric
Min. Input frequency	appr. 2 Hz
Output – Voltage	
Output range (V1 / V2)	± 10 V / 0..10 V
Output – Current	
Output range (A1 / A2 / A3)	± 20 mA / 0..20 mA / 4..20 mA
Max. load current (U output)	± 12 mA
Residual ripple @ $f_g = 5 \text{ kHz}$ $f_g = 10 \text{ kHz}$	Gain=1: typ. 2 mV _{pp} typ. 5 mV _{pp}
Sensor supply max. sensor resistance	Constant current 4 mA 5.5 kΩ
Cable break Sensitivity	Yes $R_{\text{sensor}} < 6.5 \text{ k}\Omega$
Input gain (others on request)	V = 1 V = 2 V = 5 switchable
Environmental temperature	0..50 °C
Plug-in filter Standard frequencies in Hz	10, 30, 50, 100, 300, 500, 1 k, 3 k, 5 k, 10 k

Block Diagram



Dimensions

Housing ME 22.5: 22.5 x 99 x 114.5 mm (WxHxD)

Ordering Code

TSA-ICP 1. - 2. - 3. - 4. - 5.

1. Model	
1	1 output
2	2 outputs
2. Measuring ranges	
G1	Gain 1
G2	Gain 2
G5	Gain 5
GX	Non-standard value
3. Output filter frequencies (Hz)	
XXX	Enter standard values: 10, 30, 50, 100, 300, 500, 1k, 3k, 5k, 10k
	Enter non-standard value: 1..30k
4. Filter characteristics	
BW	Butterworth 4th order
BS	Bessel 4th order
BW8	Butterworth 8th order
BS8	Bessel 8th order
5. Output (not all combinations feasible)	
V1	± 10 V
V2	0..10 V
A1	± 20 mA
A2	0..20 mA
A3	4..20 mA

Example: TSA-ICP1-G2-10k-BW-V1

TSA-RMS



$$\text{RMS} \approx U/U$$

Characteristics

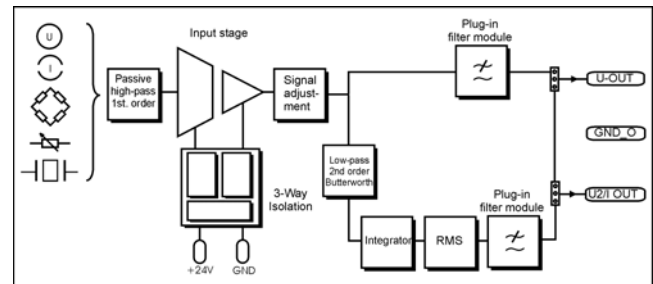
The **TSA-XX-RMS Modules** offer signal conditioning of FIL, DMS (strain gauge), Poti, DC, and ICP® applications with parallel (True) RMS processing of the output signal. Matching sensor supply is provided by the module. It has two voltage outputs (signal ± 10 V and RMS 0..7.07 V).

Technical Data

Supply voltage	24 V DC ± 10 %
Power consumption at nominal voltage (without sensor / without load)	55 mA
Electrical isolation (3-way isolation)	1000 V DC
Accuracy U1 (Signal) U2 (RMS value)	0.1 % 2 %
Cut-off frequency (standard / maximum)	5 kHz / 20 kHz
Linearity (typical)	0.02 %
Input Sensor Min. Input frequency (HP)	Sensor with U output, piezoelectric 10 Hz
Output – Voltage U1 (Signal) U2 (RMS value)	± 10 V 0..7.07 V
Max. load current (U output)	± 12 mA
Residual ripple @ f _g = 5 kHz f _g = 10 kHz	Gain=1: typ. 2 mV _{pp} typ. 5 mV _{pp}
Sensor supply (others on request)	5 V DC, 4 mA
Input gain (others on request)	V = 1 V = 2 V = 5 switchable
Environmental temperature	0..50 °C
Plug-in filter Standard frequencies in Hz	10, 30, 50, 100, 300, 500, 1 k, 3 k, 5 k, 10 k

Block Diagram

Schematic for various applications



Dimensions

Housing ME 22.5:
22.5 x 99 x 114.5 mm (WxHxD)

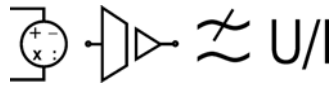
Ordering Code

TSA-RMS - 1. - 2. / - 3. /

1. Model	
FIL2	Filter
DMS2	Strain gauge
POTI2	Potentiometer
DC2	DC Voltage
ICP2	ICP, IEPE sensors
2. Output filter frequencies (Hz)	
XXX	Enter standard values: 10, 30, 50, 100, 300, 500, 1k, 3k, 5k, 10k
	Enter non- standard value: 1..20k
3. Filter characteristics	
BW	Butterworth 4th order
BS	Bessel 4th order

Example: TSA-RMS-DC2-10k/10k BS

TSA-MATH



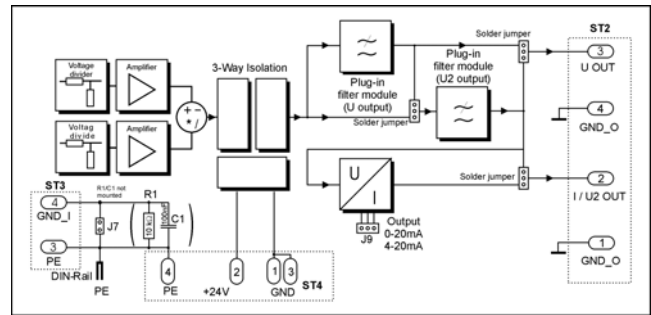
Characteristics

The **TSA-Arithmetic Modules** offer isolated combination of voltage signals. One of the four basic arithmetic operations as well as power (multiplication with adjacent averaging) are available. Depending on the base configuration the module has voltage and current outputs.

Technical Data

Supply voltage	24 V DC \pm 10 %
Power consumption at nominal voltage (without sensor / without load)	45 mA
Electrical isolation (3-way isolation)	1000 V DC
Accuracy	0.1 %
Cut-off frequency (standard / maximum)	5 kHz / 10 kHz
Linearity (typical)	0.02 %
Input / Output Addition Subtraction Multiplication (Power) Division	$x \cdot \text{Sig1} + y \cdot \text{Sig2}$ $x \cdot \text{Sig1} - y \cdot \text{Sig2}$ $(x \cdot \text{Sig1} \cdot y \cdot \text{Sig2}) / 10 \text{ V}$ $x \cdot \text{Sig1} / y \cdot \text{Sig2}$
Output – Voltage Output range (V1 / V2)	$\pm 10 \text{ V} / 0..10 \text{ V}$
Output – Current Output range (A1 / A2 / A3)	$\pm 20 \text{ mA} / 0..20 \text{ mA} / 4..20 \text{ mA}$
Max. load current (U output)	$\pm 12 \text{ mA}$
Residual ripple @ $f_g = 5 \text{ kHz}$ $f_g = 10 \text{ kHz}$	typ. 2 mV _{pp} typ. 5 mV _{pp}
Environmental temperature	0..50 °C
Plug-in filter Standard frequencies in Hz	10, 30, 50, 100, 300, 500, 1 k, 3 k, 5 k, 10 k

Block Diagram



Dimensions

Housing ME 22.5:
22.5 x 99 x 114.5 mm (WxHxD)

Ordering Code

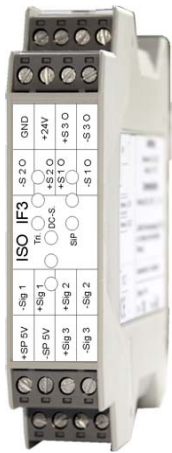
TSA-MATH1 - - - - -

1. Model	
A	Addition $x \cdot \text{Sig1} + y \cdot \text{Sig2}$
S	Subtraction $x \cdot \text{Sig1} - y \cdot \text{Sig2}$
M	Multiplication $(x \cdot \text{Sig1} \cdot y \cdot \text{Sig2}) / 10 \text{ V}$
D	Division $x \cdot \text{Sig1} / y \cdot \text{Sig2}$
2. Input voltages	
VX/VY	0.06, 0.15, 10, 20 V
3. Output filter frequencies (Hz)	
XXX	Enter standard values: 10, 30, 50, 100, 300, 500, 1k, 3k, 5k, 10k
	Enter non- standard value: 1..30k
4. Filter characteristics	
BW	Butterworth 4th order
BS	Bessel 4th order
BW8	Butterworth 8th order
BS8	Bessel 8th order
5. Output (not all combinations feasible)	
V1	$\pm 10 \text{ V}$
V2	0..10 V
A1	$\pm 20 \text{ mA}$
A2	0..20 mA
A3	4..20 mA

Example: TSA-MATH1-M-.15/20-5k BW-V2

also available with 2 outputs as TSA-MATH2

TSA-IF



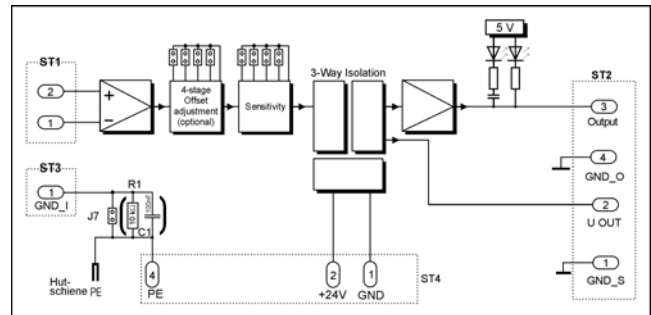
Characteristics

The **TSA-IF Module** offers isolated pulse forming of signals from inductive speed indicators, Hall devices, incremental transducers and other pulse generators. Sensor supply (5 V DC) is isolated, provided by the module. It has a TTL output and optionally an Open Collector output. There is a 2-channel and 3-channel version available.

Technical Data

Supply voltage	24 V DC \pm 10 %
Power consumption at nominal voltage (without sensor / without load)	2-channel / 3-channel 70 mA / 135 mA
Electrical isolation (3-way isolation)	1000 V DC
Input Frequency (DC) Voltage	0 .. 50 kHz 50 mV _{pp} .. 60 V _{pp}
Sensitivity	max. 50 mV
Rise delay (max.)	3 μ s
Output Output level Output current (max.) Optional Open Collector (for max. 2 channels) Integrated pull-up R P _{max} Output transistor U _{max} Transistor	TTL 12 mA 24 V 500 Ω / 2 W 300 mW 30 V
Isolated supply Output voltage Output current	5 V DC \pm 10 % 90 mA / 40 mA
Environmental temperature	0..50 °C

Block Diagram



Dimensions

Housing ME 22.5:
22.5 x 99 x 114.5 mm (WxHxD)

Ordering Code

TSA-IF 1. - 2.

1. Model	
1	1 channel
2	2 channels
3	3 channels
2. Output	
24V	Option open collector only 1- or 2-channel model

Example: TSA-IF2

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