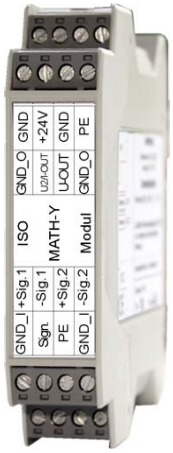
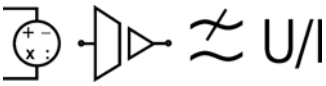
GHM Messtechnik GmbH - Location IMTRON
Carl-Benz-Str. 11 ● D-88696 Owingen ● Germany
Fon +49(0)7551/9290-0 ● Fax -90
www.ghm-messtechnik.de ● vertrieb@imtrongmbh.de

TSA-MATH





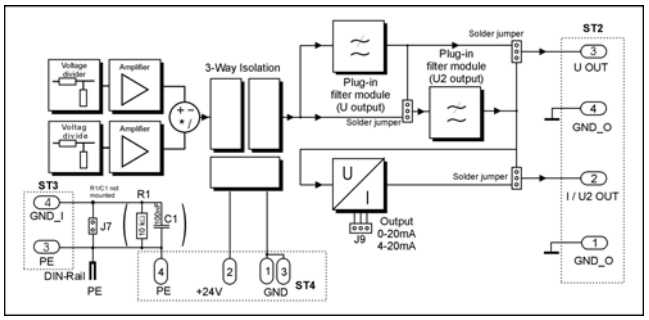
Characteristics

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 ± 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·•·Sig1 + y •·Sig2 x •·Sig1 − y •·Sig2 (x •·Sig1 •·y •·Sig2) / 10 V x •·Sig1 / y •·Sig2
Output – Voltage Output range (V1 / V2) **Output – Current** Output range (A1 / A2 / A3)	 ± 10 V / 0..10 V ± 20 mA / 0..20 mA / 4..20 mA
Max. load current (U output)	± 12 mA
Residual ripple @ f_g = 5 kHz f_g = 10 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

	1.		2.		3.		4.		5.
TSA-MATH1-		-		-	/	-	/		/

1.	**Model**	
	A	Addition x·•·Sig1 + y •·Sig2
	S	Subtraction x •·Sig1 − y •·Sig2
	M	Multiplication (x •·Sig1 •·y •·Sig2) / 10V
	D	Division x •·Sig1 / y •·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 (for 1 output only)
	BS8	Bessel 8th order (for 1 output only)
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-MATH1-M-.15/20-5k BW-V2

also available with 2 outputs as TSA-MATH2