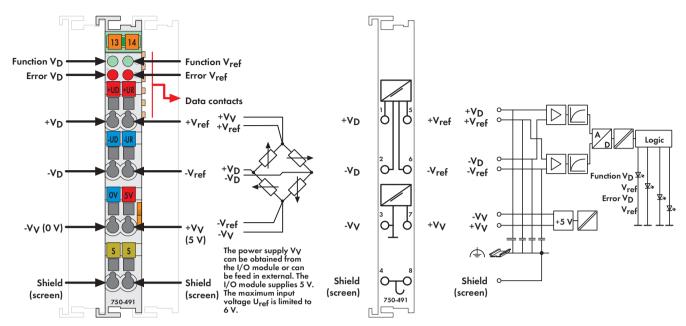
## 1-Channel Analog Input Module for Resistor Bridges (Strain Gauge)



Delivered without miniature WSB markers

The I/O module enables the direct connection of a resistor measurement bridge. The bridge voltage VD and supply voltage Vref of the bridge are digitized with a resolution of 16 bits.

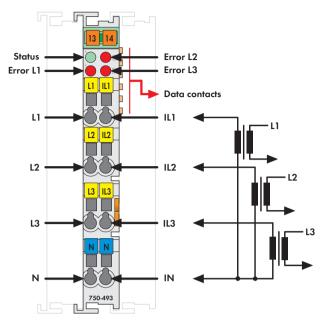
The two input channels for the resistor bridge are available as two 16 bit values for further processing. The result of measurement can be calculated by the formula: Measured value =  $V_{\rm D}$  /  $V_{\rm ref}$ .

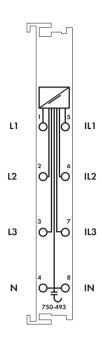
 $\label{thm:problem} \mbox{Field and system levels are electrically isolated}.$ 

Description			Item No.	Pack. Unit
1AI for Resistor Bridges			750-491	1
1AI for Resistor Bridges/ 125ms			750-491/000-001	1
Conversion time 12	5 ms, Filter 200 Hz			
Accessories			Item No.	Pack. Unit
Miniature WSB G	uick marking syster	n		
Communication	plain		248-501	5
SHOULD SHOULD	with marking		see pages 352 353	
Approvals				
Conformity marking	1	C€		

Technical Data	
Number of inputs	2, for one resistor bridge
Power supply	via system voltage DC/DC
Current consumption typ. (internal)	65 mA
Signal voltage V <sub>D</sub>	-15mV +15mV
Signal voltage V <sub>ref</sub>	+2V +6V
Internal resistance	$> 200 \text{ k}\Omega \text{ (V}_{\text{ref}}\text{),} > 1 \text{ M}\Omega \text{ (V}_{\text{D}}\text{)}$
Voltage supply Vv	5 V DC, 20 mA
Resolution	16 bits
Conversion time	500ms
Measuring error	$V_D$ : $\pm$ 30 $\mu$ V; $V_{ref}$ : $\pm$ 10 mV
Filter	50 Hz
Isolation	500 V system/supply
Bit width	2 x 16 bits data
	2 x 8 bits control/status (optional)
Wire connection	CAGE CLAMP®
Cross sections	$0.08~\text{mm}^2 \dots 2.5~\text{mm}^2$ / AWG 28 14
Stripped lengths	8 9 mm / 0.33 in
Width	12 mm
Weight	53 g
EMC: C € - immunity to interference	acc. to EN 61000-6-2 (2005)
EMC: C€ - emission of interference	acc. to EN 61000-6-4 (2007)

## 3-Phase Power Measurement Module





Delivered without miniature WSB markers

The 3-phase power measurement module measures the electrical data in a three-phase supply network.

The voltage is measured via network connection to L1, L2, L3 and N. The current of the three phases is fed to IL1, IL2, IL3 and IN via current transformers.

The 3-phase power measurement module transmits the root mean square values into the process image without requiring high computing power from the controller. For each phase, the effective power (P) and the energy consumption (W) are calculated by the 3-phase power measurement module using the root mean square values for all measured voltages (V) and currents (I). For example, both the apparent power (S) and phase shift angle ( $\phi$ ) can be easily derived from these values.

Therefore, the 3-phase power measurement module provides comprehensive network analysis via fieldbus. By means of values such as voltage, current, effective and apparent power consumption or load condition, the operator is able to optimally regulate the supply to a drive or machine and protect the installation from damage and failure.

Description		Item No.	Pack. Unit
3-Phase Power Med	surement Module (1 A	750-493	1
3-Phase Power Mea	surement Module (5 A	750-493/000-001	1
A		i. M	Pack.
Accessories		Item No.	Unit
Miniature WSB Qu	ick marking system		
Communical States	plain	248-501	5
SHADOWAY.	with marking	see pages 352 35	3
Approvals	Approvals Also see "Approvals Overview" in Section 1		Section 1
Conformity marking	CE		
.®∞ UL 508			

Technical Data	
Number of inputs	6 (3 voltage inputs, 3 current inputs)
Measuring voltage (max.)	500 VAC 3~
Input resistance voltage path (typ.)	500 kΩ
Measuring current (max.)	1 A (750-493)
	5 A (750-493/000-001)
Input resistance current path (typ.)	33 mΩ (750-493)
	6.8 mΩ (750-493/000-001)
Resolution	16 bits
Frequency range with activated DC filter	10 - 500Hz
Frequency range with deactivated DC	0 - 500Hz
Max. operating frequency	approx. 2 kHz
Signal form	any (in consideration of the frequency
	range and max. operating frequency)
Measuring error for current and voltage	0.5 % (of the upper range value)
Measuring procedure	True RMS with 64,000 samples/s
Measuring cycle time	configurable, preset at 50 ms per
	measured value
Measured values	Effective power, energy, power
	factor (cos φ)
Power supply	via system voltage internal bus (5 V)
Current consumption (internal)	115 mA
Isolation	1500 V system/supply
Bit width	2 x 48 bits data
	2 x 24 bits control/status (optional)
Wire connection	CAGE CLAMP®
Cross sections	$0.08~\text{mm}^2 \dots 2.5~\text{mm}^2$ / AWG 28 14
Stripped lengths	8 9 mm / 0.33 in
Width	12 mm
Weight	48.5 g
EMC: C € - immunity to interference	acc. to EN 61000-6-2 (2005)
EMC: C € - emission of interference	acc. to EN 61000-6-3 (2007)



## 4-Channel Analog Output Module 0/4-20 mA

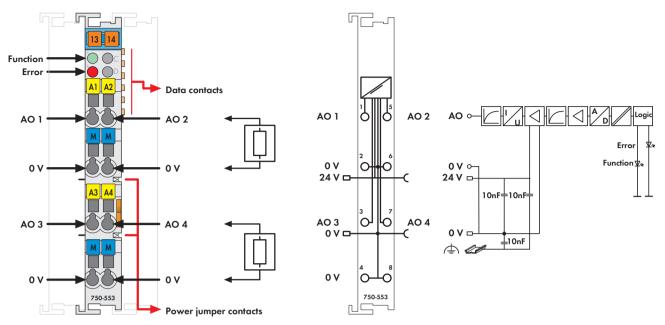


Fig. 750 Series/Technical data see page 24/Delivered without miniature WSB markers 750/753 Series marking see pages 10 ... 11 / 12 ... 13

The analog output module generates signals of a standard magnitude  $0-20\,\text{mA}$ .

The output signal is electrically isolated and transmitted with a resolution of 12 bits.

Power is derived from the field side.

The output channels of the module have a common ground potential.

Description		Item No.	Pack. Unit		
4AO 0-20mA		750-553	1		
4AO 4-20mA		750-555	1		
4AO 0-20mA (without connector)		753-553	1		
4AO 4-20mA (without connector)		753-555	1		
Accessories		Item No.	Pack. Unit		
- Territoria	753 Series Conn	ectors 753-110	25		
SENSENCED SELV	Coding element	s 753-150	100		
	Miniature WSB Quick marking system				
Lecturines	plain	248-501	5		
SHADOW SAN	with marking	see pages 352 3	53		
Approvals	Al	so see "Approvals Overview" i	n Section 1		
Conformity marking	C				
Shipbuilding	Al	BS, BV, DNV, GL, KR, LR*, NKI	<*, PRS*, RINA*		
	* 7	753 Series, pending			
ം®∞ UL 508					
-®- ANSI/ISA 12.12.01		Class I, Div. 2, Grp. ABCD, T4			
® ANSI/ISA 12.1		acc i, 2 iii 2, 0 pi i 12 c2 , i i	I M2 / II 3 GD Ex nA IIC T4		
Massing ANSI/ISA 12.1 EN 60079-0, -15					

Technical Data		
No. of outputs	4	
Current consumption typ. (internal)	60 mA	
Power supply	via system voltage DC/DC	
Signal current	0 - 20mA (750-553, 753-553)	
	4 - 20mA (750-555, 753-555)	
Load impedance	either 0 300 $\Omega$ or 300 600 $\Omega$	
	(use same range of impedance for all	
	loads!)	
Resolution	12 bits	
Conversion time (typ.)	10 ms	
Recovery time (typ.)	100 ms	
Measuring error (25°C)	$< \pm 0.1$ % of the full scale value	
Temperature coefficient	$< \pm 0.01 \%$ /K of the full scale value	
Isolation	500 V system/supply	
Bit width	4 x 16 bits data	
	4 x 8 bits control/status (option)	
Wire connection	CAGE CLAMP®	
Cross sections	0.08 mm <sup>2</sup> 2.5 mm <sup>2</sup> / AWG 28 14	
Stripped lengths, 750/753 Series	8 9 mm / 0.33 in	
	9 10 mm / 0.37 in	
Width	12 mm	
Weight	53.5 g	
EMC: C € - immunity to interference	acc. to EN 61000-6-2 (2005)	
EMC: C € - emission of interference	acc. to EN 61000-6-4 (2007)	
EMC: marine applications		
- immunity to interference	acc. to Germanischer Lloyd (2003)	
EMC: marine applications		
- emission of interference	acc. to Germanischer Lloyd (2003)	