

Interfaces

For analogue signals
Analogue voltage/current transmitters

ABA-6TA analogue transmitters are supplied in the form of compact modules, and are available in 2 widths, 16.5 and 22.5 mm.

In an automated control and monitoring system, these interfaces provide various functions, including :

- adapting signals sent from sensors to make them compatible with the receiving equipment (regulator ; PLC ; measurement station, etc),
- adapting output signals (setpoints) sent from processing units (PLCs ; PCs ; etc) to preactuators (speed controllers ; regulators ; progressive valves, etc),
- increasing the transmission distance and providing good immunity against interference (transforming a voltage signal to a current signal),
- electrical separation between 2 components,
- electrical separation between signals and the power source making it possible to create "floating voltage" assemblies and preventing the generation of transient leakage currents.

The products are characterized by a single 24 V c power supply; a high level of precision and a high passband of up to 100 Hz which is suitable for most industrial process applications.

Composition

The ABA-6TA range comprises 2 families :

Non-isolated transmitters

These interfaces are designed for applications where electrical isolation between the input and the output is not required.



Isolated transmitters


These interfaces are designed for applications where electrical isolation between the transmitting and receiving equipment is necessary. They provide isolation both between the signals themselves and between the signals and the 24 V c interface supply.




Selection guide

Electrical isolation	Analogue signals			
	Input (transmitter)	Output (receiver)		
		± 10 V	0-10 V	4-20 mA
Without	0-10 V			
	4-20 mA			
	0-20 mA			
With	± 10 V			
	0-10 V		(1)	
	4-20 mA		(2)	
	0-20 mA			

(1) By using ± 10 V model
(2) By using 0-20 mA model

 Functions provided by our products

 Functions not provided

Environment

Conforming to standards	IEC 947-1; VDE 0110b			
Product approvals				–
Degree of protection	Conforming to IEC 529 (protection against direct contact)			IP XXB
Protective treatment				“TC”
Flame resistance	Conforming to IEC 695-2-1	Incandescent wire	°C	850
Shock resistance	Conforming to IEC 68-2-27	Semi-sinusoidal waves 11 ms	gn	50
Vibration resistance	Conforming to IEC 68-2-6	10...55 Hz	gn	5
Resistance to electrostatic discharges	Conforming to IEC 801-2	Level 3	kV	8
Resistance to rapid transients	Conforming to IEC 801-4 Level 3	On power supply	kV	2
		On I/O	kV	1
Resistance to shock waves	Conforming to IEC 255-4	Waveforms 1.2/50 µs ; 0.5 J	kV	0.5
Cross-sections which can be connected	Flexible cable, no cable end	1-wire	mm ²	0.5...2.5
	Flexible cable with cable end	1-wire	mm ²	0.22...2.5
		2-wire	mm ²	≤ 1.5
	Rigid cable	1-wire	mm ²	0.5...4
Operating position	Any			
Ambient air temperature around the device	Operation	Mounted vertically, touching	°C	0...50
		Devices 2 cm apart	°C	0...60
	For storage		°C	- 40...+ 85
Insulation voltage	Terminals/fixing rails			kV 2
Installation category	Conforming to IEC 947-1			II
Degree of pollution	Conforming to IEC 947-1			2
Mounting	Standard rails	7 1 4		

Presentation :
page 14006/2

Compatibility :
page 14006/5

References, dimensions :
page 14006/6

Schemes :
page 14006/7

Specific characteristics

Type of interface			ABA-6TA _{ppA}	ABA-6TA _{ppB}			
Supply	Supply voltage		V	24 ± 20 % including ripple	24 ± 20 % including ripple		
		Maximum voltage without damage	V	± 30	± 30		
	Maximum current	Voltage output	mA	27	102/73/57		
		19/24/29 V	Current output (20)	mA	42	117/88/72	
		Built-in protection		Reversed polarity	Reversed polarity		
Input	Voltage	Range	V	0 - 10	0 - 10 ; - 10, + 10		
		Filtering		LC filter	LC filter		
		Passband	Hz	100	100		
		Attenuation (F > 100 Hz)	%/kHz	1	1		
		Maximum voltage in common mode	V	–	± 15		
		Maximum voltage in serial mode	V	± 60	± 60		
		d.c. input impedance	kΩ	≥ 200	≥ 200		
		Built-in protection		Reversed polarity	Reversed polarity		
		Current	Range	mA	0 - 20 ; 4 - 20	0 - 20 ; 4 - 20	
			Filtering		LC filter	LC filter	
	Passband		Hz	100	100		
	Maximum voltage in common mode		V	–	± 15		
	Maximum voltage in serial mode		V	3.5	3.5		
	d.c. input impedance		Ω	50	50		
	Built-in protection			Reversed polarity	Reversed polarity		
	Output		Voltage	Range	V	0 - 10	0 - 10 ; - 10, + 10
				Maximum voltage in common mode	V	–	630
				Maximum voltage in serial mode	V	± 60	± 60
		d.c. output impedance		Ω	100	100	
		Load impedance		kΩ	≥ 2	≥ 2	
Error introduced by the load		V		U _s = U - I _s x 100 Ω	U _s = U - I _s x 100 Ω		
Residual ripple				–	30 mV ; 40 kHz		
Built-in protection			Reversed polarity Short-circuits Overvoltages	Reversed polarity Short-circuits Overvoltages			
Current		Range	mA	0 - 20 ; 4 - 20	0 - 20 ; 4 - 20		
		Maximum voltage in common mode	V	–	630		
	Maximum voltage in serial mode	V	3.5	3.5			
	d.c. output impedance	MΩ	5	5			
	Load impedance	Ω	≤ 500	≤ 500			
	Residual ripple		–	30 mV ; 40 kHz			
	Built-in protection		Reversed polarity Short-circuits Overvoltages	Reversed polarity Short-circuits Overvoltages			
Transfer (with 100 kΩ load on "voltage" output)	Error at 20 °C	%	± 0.2 full scale	± 0.1 full scale			
	Error on 0 - 60 °C range	%	± 0.8 full scale	± 0.9 full scale			
	Temperature error coefficient	%/°K	± 0.015 full scale	± 0.02 full scale			
Isolation	I/O	kV	–	1.5			
	Input and output/supply	kV	–	1.5			

Compatibility with PLCs and AB2-MT system

Analogue input modules

Transmitter	TSX 7 modular PLC							TSX 17 micro-PLC		Communication interface system		
	Threshold detector			Analogue input module				TSX AEG4110	TSX AEG4111	AB2-MT2814	AB2-MT2021	
	TSX ADT201			TSX AEM411/AEM811/AEM821							AB2-MT2021	AB2-MT2021
	0-10 V	0-20 mA	4-20 mA	± 10 V	0-20 mA	4-20 mA	0-10 V	± 10 V	4-20 mA	4-20 mA	0-10 V	4-20 mA
ABA-6TAp1p								(2)				
ABA-6TAp2p												
ABA-6TAp3p			(3)			(3)			(3)	(3)		(3)
ABA-6TA00B	(1)										(1)	

Analogue output modules

Transmitter	TSX 7 modular PLC							TSX 17 micro-PLC			
	Analogue output module										
	TSX AST200			TSX ASR200				TSX ASR401	TSX ASR402	TSX ASG2000	TSX ASG2001
	± 10 V	0-20 mA	4-20 mA	0-10 V	± 10 V	0-20 mA	4-20 mA	± 10 V	4-20 mA	±10 V	4-20 mA
ABA-6TA1pp				(2)				(2)		(2)	
ABA-6TA2pp											
ABA-6TA31p											
ABA-6TA3pB											
ABA-6TA00B											

Compatibility with electronic power switching devices

Speed reference input

Transmitter	Altivar 5			Rectivar						Gradipak			
	ATV15, ATV15-1, ATV45-2, ATV45-2V			RTV04, RTV44	RTV54 -1, RTV64-1			RTV74, RTV84			LH1		
	0-10 V	0-20mA	4-20mA	0-10 V	± 10 V	0-20mA	4-20mA	0-10 V	0-20mA	4-20mA	0-10 V	0-20mA	4-20mA
	ABA-6TAp1p												
ABA-6TAp2p													
ABA-6TAp3p			(3)				(3)			(3)			(3)
ABA-6TA00B	(1)							(1)			(1)		

Analogue output

Transmitter	Altivar 5			Rectivar			
	ATV45-2, ATV45-2V			RTV74, RTV84			
	0-20mA	4-20mA	0-20mA	± 10 V			
ABA-6TAp1p							
ABA-6TAp2p							
ABA-6TAp3p							
ABA-6TA00B							

- (1) With 0-10 V input signal range
(2) Limited to 0 to 10 V
(3) With 4...20 mA input signal range

 Compatible  Not compatible or not applicable

Interfaces

For analogue signals
Analogue voltage/current transmitters



ABA-6TA21A

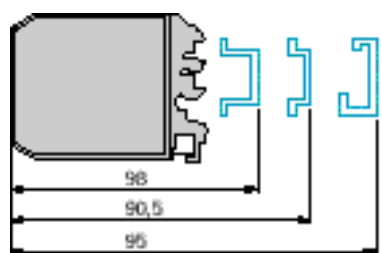


ABA-6TA31B

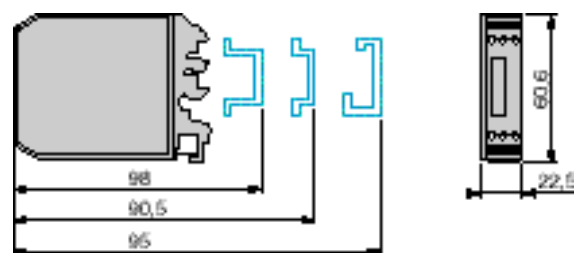
Electrical isolation	Input signal	Output signal	Reference	Weight kg	
Without	0-10 V	0-20 mA	ABA-6TA13A	0.065	
		4-20 mA	ABA-6TA12A	0.065	
	4-20 mA	0-10 V	ABA-6TA21A	0.065	
		0-20 mA	ABA-6TA31A	0.070	
	With	±10 V	± 10 V	ABA-6TA00B	0.065
			0-10 V	ABA-6TA13B	0.065
4-20 mA		0-10 V	ABA-6TA21B	0.065	
		0-20 mA	ABA-6TA23B	0.065	
0-20 mA		0-10 V	ABA-6TA31B	0.070	
		0-20 mA	ABA-6TA33B	0.070	
		4-20 mA	ABA-6TA32B	0.070	

Dimensions

ABA-6TAappA



ABA-6TAappB



Presentation :
page 14006/2

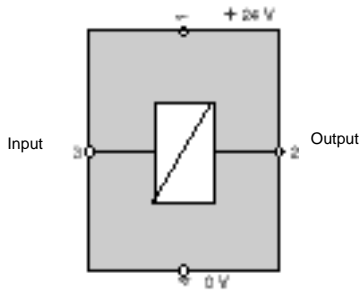
Selection guide,
characteristics :

pages 14006/3 and 14006/4

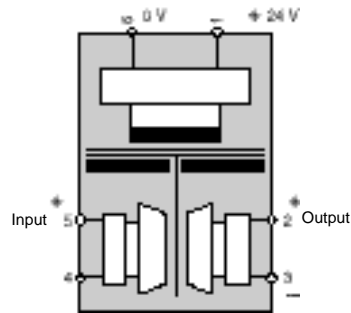
Compatibility :
page 14006/5

Schemes :
page 14006/7

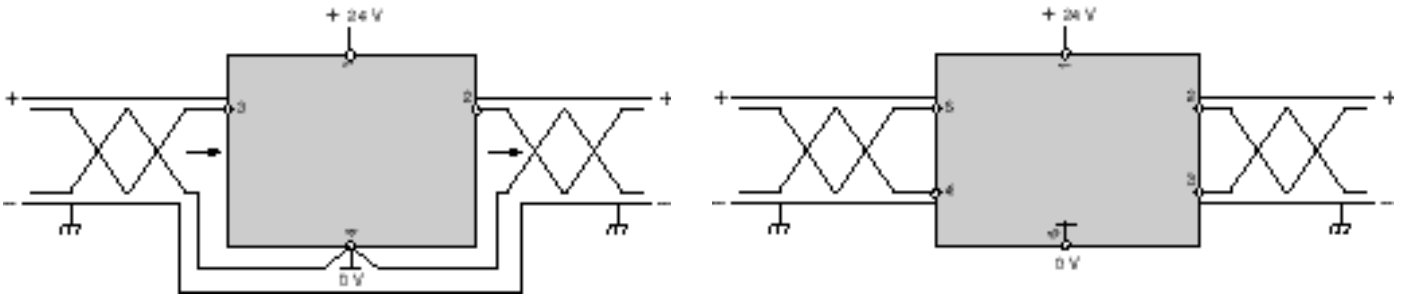
Non-isolated transmitter
ABA-6TAppA



Isolated transmitter
ABA-6TAppB



Connection of screen



The principles of analogue measurement must be observed, in particular :

- p Screened twisted pairs should be used, minimum cross-section 0.22 mm².
- p Only circuits with the same earth reference should be connected in the same multipair cable.
- p The measurement cables should be kept separate from the discrete I/O cables (especially those of relay outputs) and power cables.
- p Parallel routing should be avoided (there should be at least 20 cm between cables) and intersections should be at right angles.
- p Connect the screen to the earth of the receiver component.