

Interfaces

For discrete signals

Slim solid-state interface modules

The ABS-2 solid-state interface relays are supplied in the form of compact modules which appear identical to the ABR-2 electromechanical family.

They are designed for interfacing discrete digital control signals exchanged within an automated system between the processor (PLC, numerical controller, etc) and the other components (contactors, solenoid valves, indicator lamps, proximity sensors, etc).

They are suitable for use in equipment which requires the benefits of electronic technology : a high operating rate, virtually unlimited durability, silent operation, etc. These products are notable for their high performance and excellent adaptation to industrial environments, ensured by the fact that they conform to the most recent IEC standards.

Composition

The ABS-2 range comprises 2 families :

Input interfaces

The 9.5 mm wide input interfaces are designed for switching input signals to processors. They offer a wide choice of electrical isolation between signals due to the wide range of input voltages from \sim 5 V to \sim 230 V.

Output interfaces

Output interfaces are designed for the control of preactuators (contactors, solenoid valves, etc) for the signalling devices (indicator lamps, audible warnings, etc). Two widths are available, 9.5 and 17.5 mm, depending on the switched current.

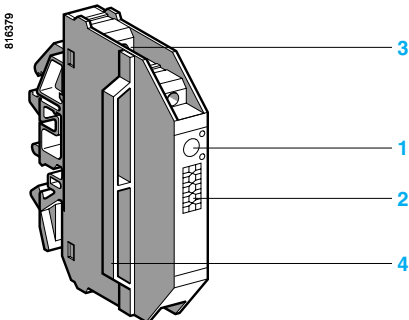
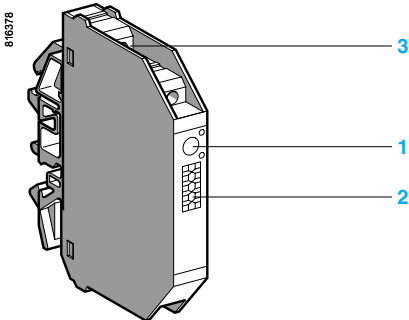
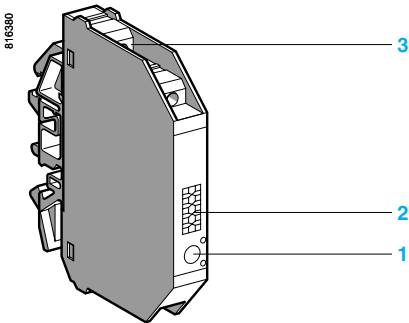
The 17.5 mm version comprises a 9.5 mm interface and an integrated 8 mm spacer. This device can, with its increased ventilation, switch high levels of currents.

The front panel of the ABS-2 slim solid-state interface modules comprises:

- 1 LED indicating the state of the control signal.
- 2 Channel identification : 5 individual characters for AB1-/G or one AB1-SA2 marker tag.
- 3 Connection by screw clamp terminal enabling easy attachment of 2 wires per terminal.

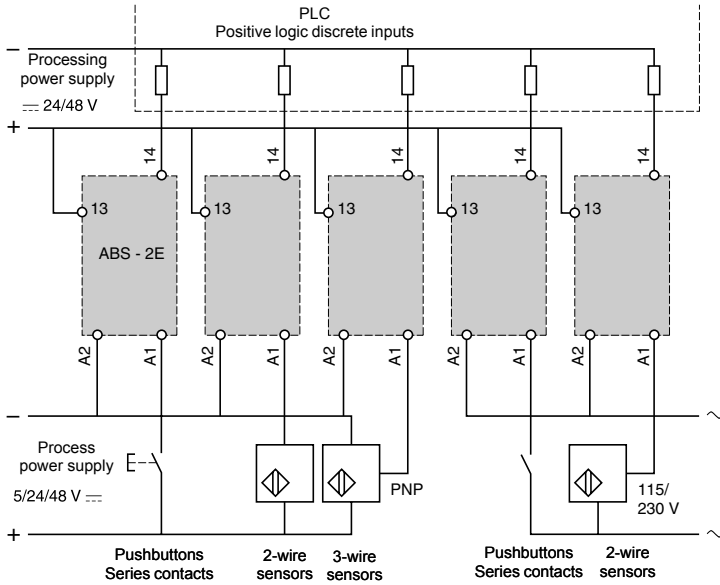
The layout of the connection terminals for both families (input and output) is designed for rational wiring and a clear separation between the incoming (processing) and outgoing (power and process control) circuits.

- 4 Integrated spacer.

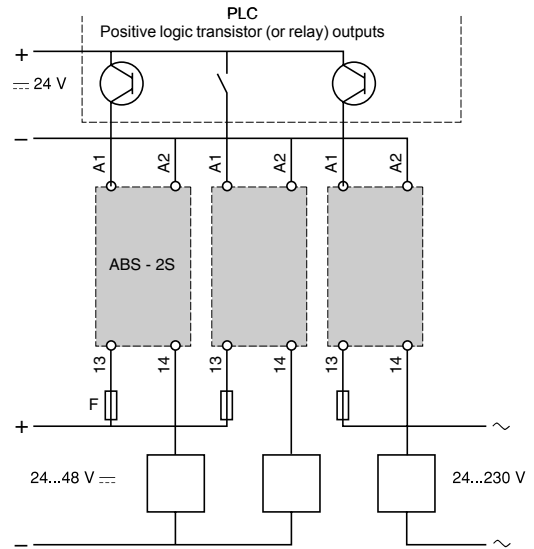


Examples of applications with PLCs

Interfacing PLC discrete inputs



Interfacing PLC discrete outputs



Environment

Conforming to standards				IEC 947-5-1 Draft standard IEC 17 B secretariat 200
Product certifications				UL, CSA, BV, LROS, DNV
Degree of protection	Conforming to IEC 529 (protection against direct contact)			IP 20
Protective treatment				"TC"
Flame resistance	Conforming to IEC 695-2-1	Incandescent wire	°C	960
		Conforming to UL 94		V0
Shock resistance	Conforming to IEC 68-2-27	Semi-sinusoidal waves 11 ms		30 gn
Vibration resistance	Conforming to IEC 68-2-6	10...150 Hz		5 gn
Resistance to electrostatic discharges	Conforming to IEC 801-2	Level 3	kV	8
Resistance to electromagnetic fields	Conforming to IEC 801-3	Level 3 ; 27...1000 MHz	V/m	10
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 947-1	Waveform 1.2/50 ms ; 0.5 J	U < 50 V kV	0.5
			U < 150 V kV	1.5
			U < 300 V kV	2.5
Cross-sections which may be connected	Flexible cable with no cable end	1 or 2-wire	mm ²	0.6...2.5
	Flexible cable with cable end	1 or 2-wire	mm ²	0.34...2.5
	Rigid cable	1-wire	mm ²	0.27...4
Operating position				Any
Ambient air temperature around the device	Unrestricted operation		°C	- 5...+ 55
	Operation at Us		°C	- 25...+ 70
	Storage		°C	- 40...+ 80
Operating altitude			m	≤ 300
Installation category	Conforming to IEC 947-1			II
Degree of pollution	Conforming to IEC 947-1			2
Mounting				Standard rails 1 2 5 6

Interfaces

For discrete signals
Slim solid-state interface modules

Control circuit characteristics (55°C ambient temperature)									
Type of interface			ABS 2EC01EA	ABS 2EC01EB	ABS 2EC01EE	ABS 2EA01EF	ABS 2EA02EF	ABS 2EA01EM	ABS 2EA02EM
Rated voltage U_s	≡	V	5	24	48	–	–	–	–
	~	V	–	–	–	115/127 50 Hz	120/127 60 Hz	230/240 50 Hz	230/240 60 Hz
Maximum voltage	≡	V	Negative logic 6 (TTL)	28.8	57.6	–	–	–	–
	~	V	–	–	–	140	140	264	264
Maximum current at U_s	≡	mA	13.6	12	10.5	–	–	–	–
	~	mA	–	–	–	14	17	12.5	15
State 1 assured	≡	V	3.75	16.9	36	–	–	–	–
		mA	4.5	7.7	7.5	–	–	–	–
	~	V	–	–	–	86.3	90	173	173
		mA	–	–	–	8.4	9.7	7.9	9.3
State 0 assured	≡	V	2	5.6	10.8	–	–	–	–
		mA	0.09	2	2	–	–	–	–
	~	V	–	–	–	25.4	25.4	48	48
		mA	–	–	–	2.5	2.5	2.5	2.5
State 1 display			Yes	Yes	Yes	Yes	Yes	Yes	
Internal protection reversed polarity			Yes	Yes	Yes	–	–	–	–
Output circuit characteristics									
Rated operating voltage U_e	≡	V	5...48						
Min/max voltage	≡	V	2/60						
Min/max current switched		mA	1/50						
Maximum residual current at state 0		mA	0.1						
Maximum volt drop at state 1		V	1						
Internal protection			Reversed polarity						
External protection			Against short-circuits for $I_k \leq 100$ A (≡) Quick-blow fuse, ref. : HA21 0.25 A or equivalent						
Other characteristics									
Type of interface			ABS 2EC01EA	ABS 2EC01EB	ABS 2EC01EE	ABS 2EA01EF	ABS 2EA02EF	ABS 2EA01EM	ABS 2EA02EM
Time delay characteristics	0 → 1	ms	0.05	0.05	0.05	10	10	10	10
	1 → 0	ms	0.4	0.4	0.4	20	20	20	20
Maximum switching rate		Hz	1000	1000	1000	25	25	25	25
Duty cycle 50 % $U_e \leq 30$ V $I_e \geq 5$ mA									
Rated insulation voltage			Conforming to IEC 947-1 : 300 V						
			Conforming to VDE 0110 : 250 V group C						
Insulation test voltage for 1 minute	I/O	kVrms	4						
	Wired interface/earth	kVrms	2.5						

Control circuit characteristics (55°C ambient temperature)						
Type of interface		ABS 2SC01EB	ABS 2SC02EB	ABS 2SA01MB	ABS 2SA02MB	
Rated voltage U_s	---	V	24	24	24	
Maximum voltage		V	28.8	28.8	28.8	
Maximum current at U_s		mA	12	13.6	13.6	
State 1 assured		V	16.9	16.9	16.9	
		mA	7.7	8.3	8.3	
State 0 assured		V	5.6	5.3	5.3	
		mA	2	2	2	
State 1 display			Yes	Yes	Yes	
Internal protection reversed polarity			Yes	Yes	Yes	
Output circuit characteristics						
Rated operating voltage U_e		V	--- 5...48	--- 5...48	~ 24...240	~ 24...240
Maximum voltage		V	--- 57.6	--- 57.6	~ 264	~ 264
Maximum continuous current (Ith) (1) at 40 °C		A	2	3	2.3	3
Rated operating voltage (Ie) Conforming to IEC 947-5-1 Single/touching product at 55 °C vertical position		A	DC12 1.5/0.9	2.5/2.2	AC12 1.9/0.5	2.1/1.5
		A	DC13 1.5/0.9	2.5/2.2	AC13 1.6/0.5	1.6/1.5
		A	DC14 0.6/0.6	0.6/0.6	AC14 1.6/0.5	1.6/1.5
		A	– –	–	AC15 1/0.5	1/1
Minimum current	---/~	mA	1	1	10	10
Maximum residual current	---/~	mA	1	1	2.5	2.5
Maximum volt drop		V	1.5	1.5	3 (Ie ≥ 10 mA) 1.5 (Ie ≥ 100 mA)	3 (Ie ≥ 10 mA) 1.5 (Ie ≥ 100 mA)
"0 crossing" voltage		V	–	–	50 peak	50 peak
Solid-state dV/dt		V/μs	–	–	500	500
Internal protection			Reversed polarity			
External protection			Against short-circuits for I _k ≤ 1 kA (~) and ≤ 100 A (---)			
			Quick-blow fuse with high breaking capacity: 3.15 A			
Other characteristics						
Maximum response time at Ie 10 mA	0 → 1	ms	0.05		10 (50 Hz) ; 8 (60Hz)	
	1 → 0	ms	0.6		10 (50 Hz) ; 8 (60Hz)	
Maximum switching rate At 55 °C ; at Ie: module alone duty cycle 40 % On resistive load duty cycle 50 %		Hz	DC13 6	6	AC13 0.6	0.7
		Hz	DC14 1	3	AC14 0.6	0.7
		Hz	– –	–	AC15 0.6	0.7
		Hz	700		50	
Rated operating voltage			Conforming to IEC 947-1 : ~ 300 V			
			Conforming to VDE 0110 : 250 V group C			
Rated Insulation voltage for 1 minute	I/O	kVrms	4			
	Wired interface/earth	kVrms	2.5			

(1) See temperature derating curves.

Solid-state input modules

Width mm	Input circuit		Output circuit		Sold in lots of	Unit reference	Weight kg
	Current	Nominal voltage V	Current	Nominal voltage V			
9.5	—	5	—	5...48	5	ABS 2EC01EA	0.029
		24	—	5...48	5	ABS 2EC01EB	0.029
		48	—	5...48	5	ABS 2EC01EE	0.029
	~	115...127 (50 Hz)	—	5...48	5	ABS 2EA01EF	0.032
		120...127 (60 Hz)	—	5...48	5	ABS 2EA02EF	0.032
		230...240 (50 Hz)	—	5...48	5	ABS 2EA01EM	0.033
		230...240 (60 Hz)	—	5...48	5	ABS 2EA02EM	0.033

Solid-state output modules

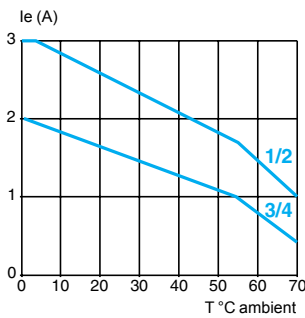
Width mm	Input circuit		Output circuit		Sold in lots of	Unit reference	Weight kg
	Current	Nominal voltage V	Current A	Nominal voltage V			
9.5	—	24	— 2	24...48	5	ABS 2SC01EB	0.034
			~ 2.3	24...230	5	ABS 2SA01MB	0.034
17.5	—	24	— 3	24...48	1	ABS 2SC02EB	0.043
			~ 3	24...230	1	ABS 2SA02MB	0.044

Accessories

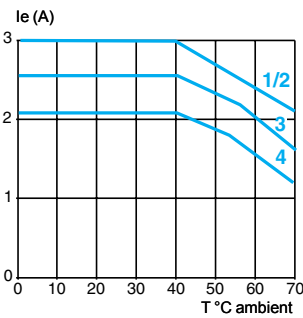
For connecting commons, use **ABF C08●●●** flexible combs (Please consult your Regional Sales Offices).

Temperature derating curve for solid-state output modules $U_c = U_s = \text{—} 24 \text{ V}$

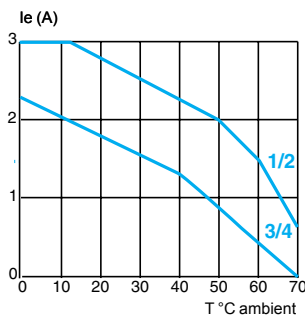
ABS 2SC01EB d.c.



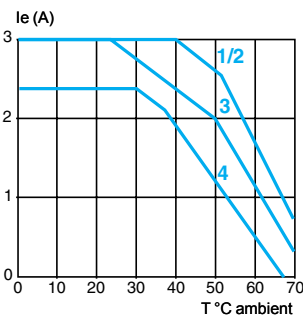
ABS 2SC02EB d.c.



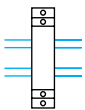
ABS 2SA01MB a.c.



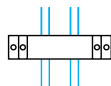
ABS 2SA02MB a.c.



1 Vertical module alone or adjacent to modules with low heat dissipation.



2 Horizontal module alone or adjacent to modules with low heat dissipation.

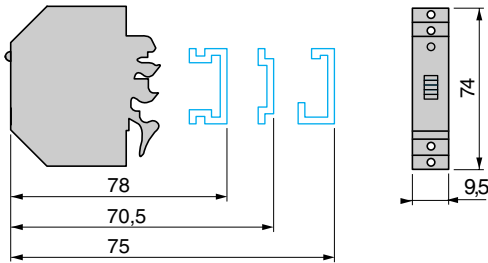


3 Vertical module mounted with 2 modules with identical heat dissipation on both sides.

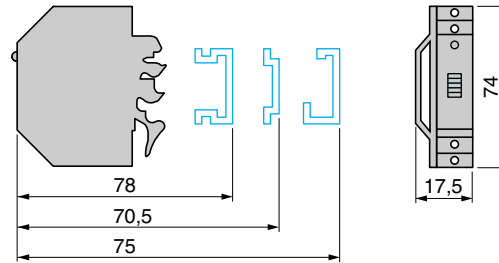
4 Horizontal module mounted with 2 modules with identical heat dissipation on both sides.

Dimensions

ABS 2E/ABS 2S●01●●



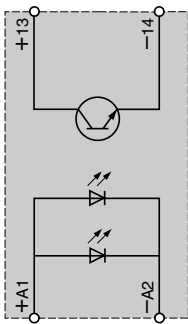
ABS 2S●02●●



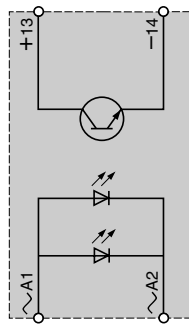
Circuit diagrams

Solid-state input modules

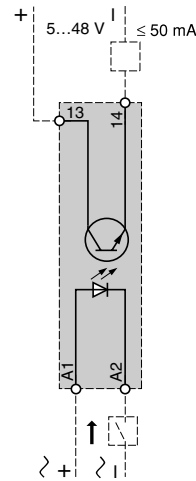
ABS 2EC●●●●



ABS 2EA●●●●

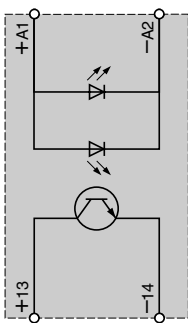


ABS 2E●●●●

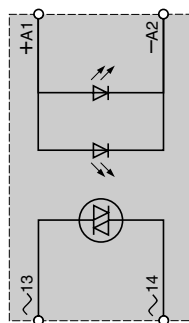


Solid-state output modules

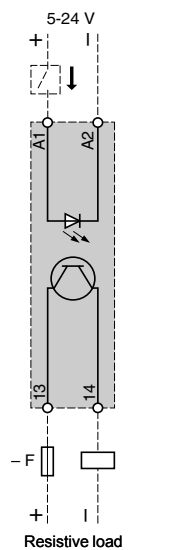
ABS 2SC0●EB



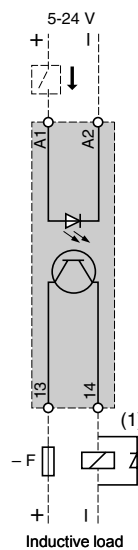
ABS 2SA0●MB



ABS 2SC0●EB



F: fuse DF1 SS133.2
(1) or peak limiter



ABS 2SA0●MB

