

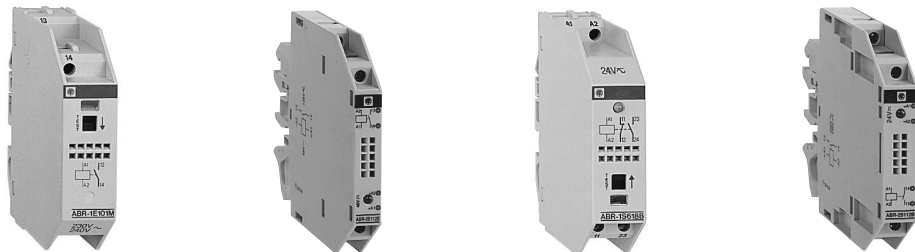
Interfaces

Interfaces for discrete signals

Selection guide

Applications

Electromechanical interface modules



2

2.3



Functions

Input

Output

Width (mm)

17.5

9.5

17.5

12

Contact arrangement

1 N/O
2 N/O
1 C/O

1 N/O

1 N/O
2 N/O
1 C/O
1 N/C + 1 N/O

1 N/O

Thermal current

—

12 A

5 A

Control voltages

~ 230/240 V
~ 24 V, 48 V
= 110...127 V
~ 115...127 V

= 24 V, 48 V
~ 115...127/50 Hz
~ 115...127/60 Hz
~ 230...240/50-60 Hz

= 24 V
~ 24 V, 48 V
~ 115...127 V
~ 110 V

= 24 V

Indication

Mechanical for contacts and/or LED for control

LED for control

Mechanical for contacts and/or LED for control

LED for control

References

ABR-1E

ABR-2E

ABR-1S

ABR-2S

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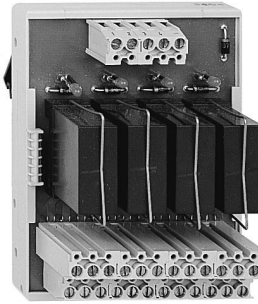
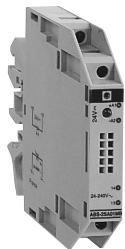
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Solid state interface modules

Sub-bases with electromechanical relays



Input and output Very low level switching	Input	Output	Output sub-base 1, 4, 8 and 16 relays	Output sub-base 1, 4 and 8 relays	Replacement relays
17.5	9.5	9.5/17.5	12.5, 70, 128 and 250	26, 70 and 128	—
1 C/O	—	—	Sub-base with relays 1 C/O	Sub-base with relays 2 C/O	1 C/O and 2 C/O
—	5 A		—		
— 5, 24, 48 V ~ 115...127/50 Hz ~ 120...127/60 Hz ~ 230...240/50 Hz ~ 230...240/60 Hz		— 24 V			
—			1 LED per channel for control	—	
ABR-2●B312B	ABS-2E	ABS-2S	ABE-6R●●S●3	ABE-6R0●S●7	ABR-6S●02B
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For discrete signals
Slim solid state interface modules

Presentation

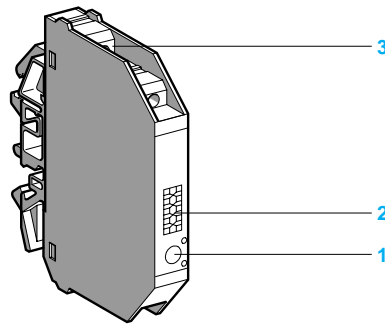
The ABS-2 solid state interface relays are supplied in the form of compact modules which appear identical to the ABR-2 electromechanical family.

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.

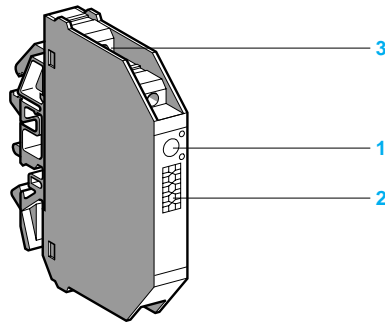
Composition



The ABS-2 range comprises 2 families :

Input interfaces

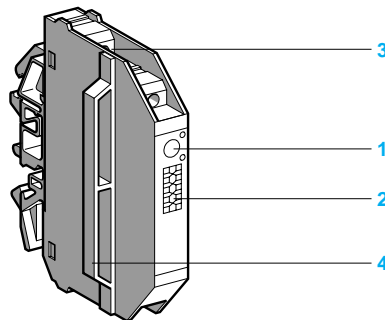
The 9.5 mm wide input interfaces are designed for switching input signals to processors. They offer a wide choice of electrical isolation between signals due to the wide range of input voltages from ≈ 5 V to ~ 230 V.



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.

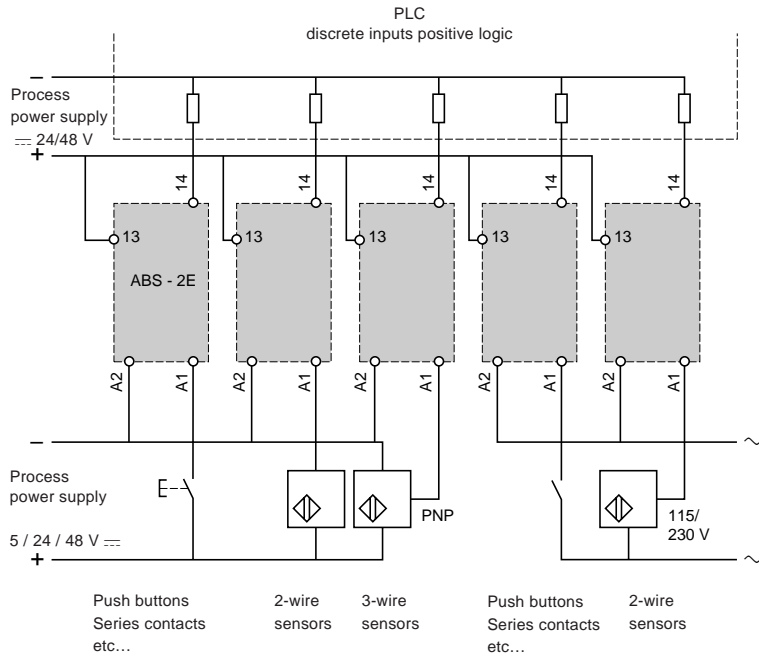
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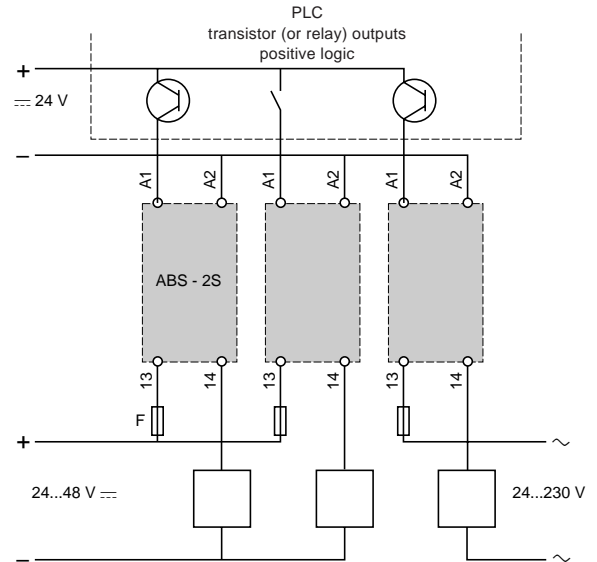
For discrete signals
Slim solid state interface modules
Installation precautions

Application examples

Interfacing PLC discrete inputs



Interfacing PLC discrete outputs



Environment

Conforming to standards	IEC 947-5-1 Draft standard IEC 17 B secretariat 200		-
Product approvals	-		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 Conforming to UL 94	°C 960 V0
Shock resistance	Conforming to IEC 68-2-27	Semi-sinusoidal waves 11 ms	gn 30
Vibration resistance	Conforming to IEC 68-2-6	10...150 Hz	gn 5
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 On I/O	kV 2 kV 1
Resistance to shock waves	Conforming to IEC 947-1 Waveform 1.2/50 ms ; 0.5 J	U < 50 V U < 150 V U < 300 V	kV 0.5 kV 1.5 kV 2.5
Cross-sections which may be connected	Flexible cable with no cable end Flexible cable with cable end Rigid cable	1 or 2-wire 1 or 2-wire 1-wire	mm ² 0.6...2.5 mm ² 0.34...2.5 mm ² 0.27...4
Operating position	Any		
Ambient air temperature around the device	Unrestricted operation Operation at Us Storage		°C - 5...+ 55 °C - 25...+ 70 °C - 40...+ 80
Operating altitude			m ≤ 3000
Installation category	Conforming to IEC 947-1		II
Degree of pollution	Conforming to IEC 947-1		2
Mounting	Standard rails		

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For discrete signals
Slim solid state input modules

Characteristics

Control circuit characteristics (at 55 °C ambient temperature)

Type of interface		ABS-2EC01EA	ABS-2EC01EB	ABS-2EC01EE	ABS-2EA01EF	ABS-2EA02EF	ABS-2EA01EM	ABS-2EA02EM
Rated voltage Us	≡ 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 Us	≡ 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
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
State 1 display		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Internal protection reversed polarity		Yes	Yes	Yes	–	–	–	–

Output circuit characteristics

Rated operating voltage Ue	≡ 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 ≤ 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									
	Response time	ms	0.05	0.05	0.05	10	10	10	10
Maximum switching rate	0 → 1	ms	0.4	0.4	0.4	20	20	20	20
	max Ue ≤ 30 V Ie ≥ 5 mA	ms	0.4	0.4	0.4	20	20	20	20
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	kV rms	4						
- wired interface/earth		kV rms	2.5						

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For discrete signals
Slim solid state input modules

Characteristics

Control circuit characteristics (at 55 °C ambient temperature)

Type of interface		ABS-2SC01EB	ABS-2SC02EB	ABS-2SA01MB	ABS-2SA02MB
Rated voltage U_s	V	24		24	
Maximum voltage	V	28.8		28.8	
Maximum current at U_s	mA	12		13.6	
State 1 assured	V	16.9		16.9	
	mA	7.7		8.3	
State 0 assured	V	5.6		5.3	
	mA	2		2	
State 1 display		Yes		Yes	
Internal protection Reversed polarity		Yes		Yes	

Output circuit characteristics

Rated operating voltage U_e	V	≡ 5...48 V	≡ 5...48 V	~ 24...240 V	~ 24...240 V		
Maximum voltage	V	≡ 57.6 V	≡ 57.6 V	~ 264 V	~ 264 V		
Maximum continuous current (I _{th}) (1) at 40 °C	A	2	3	2.3	3		
Rated operating voltage (I _e) 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		10			
Maximum residual current	mA	1		2.5			
Maximum volt drop	V	1.5		3 (I _e ≥ 10 mA) 1.5 (I _e ≥ 100 mA)			
"0 crossing" voltage	V	–		50 peak			
Solid state dV/dt	V/μs	–		500			
Internal protection	V	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 I _e ≥ 10 mA	0 → 1	ms	0.05			10 (50 Hz) ; 8 (60 Hz)	
	1 → 0	ms	0.6			10 (50 Hz) ; 8 (60 Hz)	
Maximum switching rate at 55 °C ; at I _e : module alone duty cycle 40 %	Hz	DC13	6	6	AC13	0.6	0.7
	Hz	DC14	1	3	AC14	0.6	0.7
	Hz	–	–	–	AC15	0.6	0.7
On resistive load duty cycle 50 %	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 - wired interface/earth	kV rms	4					
	kV rms	2.5					

(1) See temperature derating curves.

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For discrete signals
Slim solid state interface modules

Compatibility with PLCs

PLC inputs

Type of interface	ABS-2EC01EA	ABS-2EC01EB	ABS-2EC01EE	ABS-2EA01EF	ABS-2EA02EF	ABS-2EA01EM	ABS-2EA02EM
Rated voltage --- (output side)	5...48 V						
Type 1							
Type 2							
Discrete input interfaces	TSX DET 812						
	TSX DET 1612						
	TSX DET 3232						
	TSX DET 3242						
	TSX DET 3252						
	TSX DET 813						
	TSX DET 1613						
TSX 17 extension blocks	TSX DMF 242A						
	TSX DMF 342A						
	TSX DMF 344A						
	TSX DMF 400						
	TSX DMF 401						
	TSX DEF 804						
	TSX DEF 812						
Input --- 24 V							
Input counter 5 V							

PLCs outputs

Type of interface	ABS-2EC01EA	ABS-2EC01EB	ABS-EC01EE	ABS-2EA01EF	ABS-2EA02EF	ABS-2EA01EM	ABS-2EA02EM	ABS-2SC0EB	ABS-2SA0MB
d.c. solid state output									
IEC-1131 ≤ 1 A									
TSX DST 882									
TSX DST 1612									
TSX DST 1682									
TSX DST 2472									
TSX DST 2482									
TSX DST 3292									
TSX DST 417/DST 817									
TSX 17●●● non-protected transistors									
TSX 17●●● protected transistors									
d.c. relay outputs									
TSX DST 835									
TSX DST 1634									
TSX DST 1632									
IEC-1131 ≤ 1 A									
TSX 17									
a.c. solid state outputs									
IEC-1131									
TSX DST 804				(1)	(1)				
TSX DST 1604				(1)	(1)				
TSX DST 805				(1)	(1)	(1)	(1)		
a.c. relay outputs									
IEC-1131									
TSX DST 835									
TSX DST 1635									
TSX 17●●●									
TSX DST 1633									
Module AB2-MT●●● ~									

(1) Resistance in parallel on the interface (please consult your Regional Customer Centre).

 Compatible  Not compatible  Not applicable

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For discrete signals
Slim solid state interface modules

Compatibility with contactors
and solenoid actuators

a.c. (50/60 Hz) (1)

Type of interface	ABS-2SC01EB		ABS-2SC02EB		ABS-2SA01MB				ABS-2SA02MB			
Output current (40 °C)	2 A		3 A		2.3 A				3 A			
Operating voltage	24 V	48 V	24 V	48 V	24 V	48 V	115 V	230 V	24 V	48 V	115 V	230 V

Contactors

CA2-D												
LC1-K / LC7-K / CA2-K												
LC1-D09...D18												
LC1-D25...D32												
LC1-D40...D95												
Integral 18												
Integral 32												
Integral 63												
CC1-F115/F150						(2)				(2)		

Solenoid actuators

PVA-F101												
PVA-H249												

d.c. (1)



Contactors

CA3-D												
LP1-K, CA3-K												
LP1-D09...D18/D25...D32/D40...D80												
LC1-F115/F150												

Solenoid actuators

PVA-F102												
PVA-H249												

(1) With protection using recommended fuse in series.
(2) Only at 50 Hz.

 Compatible  Not compatible  Not applicable

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For discrete signals
Slim solid state interface modules

Compatibility with Telemecanique
inductive and capacitive sensors

a.c.

Type of interface	ABS-2EC 01EA	ABS-2EC 01EB	ABS-2EC 01EE	ABS-2EA 01EF	ABS-2EA 02EF	ABS-2EA 01EM	ABS-2EA 02EM	ABS-2SC 01EB	ABS-2SC 02EB	ABS-2SA 01MB	ABS-2SA 02MB
2-wire circuit type											
XSA-V●●●51				(1)	(1)						
XSA-V●●●61						(1)	(1)				
XS1/XS2-M●●●/XS4-P/M●●●											
XSA-V●●●71											
XSC-AM/XSD-A/M				(1)	(1)	(1)	(1)				
XSD-T				(1)	(1)	(1)	(1)				
XSG-A				(1)	(1)	(1)	(1)				
XSB-A258				(1)	(1)						
XSB-A259				(1)	(1)	(1)	(1)				
XTA-A				(1)	(1)	(1)	(1)				
XSF-A											
XTC-T				(1)	(1)	(1)	(1)				
XSB-A104											
XSB-A105				(1)	(1)						
XSB-A106						(1)	(1)				

d.c.

2-wire circuit type											
XSB-C		U mini : 24 V	44 V					24 V		24 V	
XS1/XS2-M●●●		23 V	43 V					23 V		23 V	
XS1-M/D●●●		22 V	43 V					22 V		22 V	
XSC-C		25 V	45 V					25 V		25 V	
XSC-M		22 V	42 V					22 V		22 V	
XSD-C		24 V	44 V					24 V		24 V	
XSD-M		23 V	43 V					23 V		23 V	
XSE-C		22 V	42 V					22 V		22 V	
XSE-C (short version)		25 V	45 V					25 V		25 V	
XS4-P/M●●●		23 V	43 V					23 V		23 V	
3-wire - 4-wire circuit type : PNP or NPN											
XS1-L04●●●/XS1-N05●●●											
XS1/XS2-L06●●●/XS1/XS2-N											
XS4-P and XS1/XS2-M											
XSA-V/XSC/XSD/XSG/-J/-H											
XSF-H/J and XTA-H											

(1) Resistance in parallel on the interface (please consult your Regional Customer Centre).

 Compatible  Not applicable

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For discrete signals
Slim solid state interface modules

Compatibility with Telemecanique photo-electric sensors
Other products with discrete inputs

Photo-electric sensors

Type of interface	ABS-2EC 01EA	ABS-2EC 01EB	ABS-2EC 01EE	ABS-2EA 01EF	ABS-2EA 02EF	ABS-2EA 01EM	ABS-2EA 02EM	ABS-2SC 01EB	ABS-2SC 02EB	ABS-2SA 01MB	ABS-2SA 02MB
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2-wire d.c. circuit type

XUE-A		23 V	43 V					23 V	23 V	23 V	23 V
XUL-A		23 V	47 V					23 V	23 V	23 V	23 V

3-wire PNP/NPN d.c. circuit type

XUI-H●●●/-J/-K											
XUE-H											
XUR-H											

5-wire relay output circuit type

XU●-F/MT/S●●●	≡										
	~										
XUV-F/-T	≡										

2-wire a.c. circuit type

XUE-A				(1)	(1)	(1)	(1)				
XUB-A●●●				(1)	(1)	(1)	(1)				
XUG-A●●●				(1)	(1)	(1)	(1)				
XUL-A											

Other products with discrete inputs

Electronic power switching

ATV16-●● (FW, RU)											
ATV-452V (FW, RV, DCB)											
ATV-452 (FW, RV, DCB, LI1, LI2) U min = 21 V if external supply											
RTV64 (RUN, FW, RV, LS) U min = 17 V if external supply											
RTV74/84 (RUN, LI1-4) U min = 8 V if external supply											

Communication interface system

AB2-MT●●●	U ≥ 26 V										
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(1) Resistance in parallel on the interface (please consult your Regional Customer Centre).

 Compatible  Not applicable

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For discrete signals
Slim solid state interface modules

Compatibility with APRIL Series 2000/5000/7000 cards

Type of interface	ABS-2EC 01EA	ABS-2EC 01EB	ABS-2EC 01EE	ABS-2EA 01EF	ABS-2EA 02EF	ABS-2EA 01EM	ABS-2EA 02EM	ABS-2SC 01EB	ABS-2SC 02EB	ABS-2SA 01MB	ABS-2SA 02MB
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Output cards

APRIL 2000 PLCs

QDA2320											
QDA2160											
QMA2160/2161											
IQA2128											

APRIL 5000/7000 PLCs

QMA2420/QMB2420											
QMA3202/QMB3202											
QMA1620/QMB1620											
QMA3205/QMB3205											
QDA1620/QDB1620											
QAA1610/QAB1610											
IQA0808											
QBA1620											

Input cards

APRIL 2000 PLCs

IDA2320/IDA2321											
IDA2322/IDA2323											
IMA2160											
IAA2160											
IAA2161											
IDA2160											
IQA2128											

APRIL 5000/7000 PLCs

IMB3224/IMB3248											
IDB3224/IDB3248											
IDA2411/IDB2411											
IAA2422/IAB2422											
ITA1624/ITA1648											
IDA1612/IDB1612											
IDA3205/IDB3205											

Compatible Not compatible Not applicable

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For discrete signals
Slim solid state interface modules

Compatibility with TBX remote I/O
Compatibility with NUM remote cards

Type of interface	ABS-2EC 01EA	ABS-2EC 01EB	ABS-2EC 01EE	ABS-2EA 01EF	ABS-2EA 02EF	ABS-2EA 01EM	ABS-2EA 02EM	ABS-2SC 01EB	ABS-2SC 02EB	ABS-2SA 01MB	ABS-2SA 02MB
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TBX remote I/O modules

Inputs

TBX DES1622/DES16C22	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Not applicable	Not applicable
TBX CEP1622	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Not applicable	Not applicable
TBX DES16F22/DES1633	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Not applicable	Not applicable
TBX DMS1025	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Not applicable	Not applicable
TBX DMS1625	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Not applicable	Not applicable
TBX DMS16C22	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Not applicable	Not applicable
TBX DMS16C222	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Not applicable	Not applicable
TBX DMS16P22	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Not applicable	Not applicable

Outputs

TBX DSS1622	Not applicable	Compatible	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Compatible	Compatible	Compatible	Compatible
TBX DSS16C22	Not applicable	Compatible	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Compatible	Compatible	Compatible	Compatible
TBX CSP1622	Not applicable	Compatible	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Compatible	Compatible	Compatible	Compatible
TBX DSS1235	Not applicable	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
TBX DSS1625	Not applicable	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
TBX CSP1625	Not applicable	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
TBX DMS1025	Not applicable	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
TBX DMS1625	Not applicable	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
TBX DMS16C22	Not applicable	Compatible	Compatible	Not applicable	Not applicable	Not applicable	Not applicable	Compatible	Compatible	Compatible	Compatible
TBX DMS16C222	Not applicable	Compatible	Compatible	Not applicable	Not applicable	Not applicable	Not applicable	Compatible	Compatible	Compatible	Compatible
TBX DMS16P22	Not applicable	Compatible	Compatible	Not applicable	Not applicable	Not applicable	Not applicable	Compatible	Compatible	Compatible	Compatible

Transistor outputs

NUM 1060 619	Not applicable	Compatible	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Compatible	Compatible	Compatible	Compatible
NUM 750/760/800 612	Not applicable	Compatible	Compatible	Not applicable	Not applicable	Not applicable	Not applicable	Compatible	Compatible	Compatible	Compatible

NUM remote cards

Relay outputs

NUM 1060 618	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
NUM 750/760/800 620	Compatible	Compatible	Compatible	Compatible	Compatible	Not applicable	Not applicable	Compatible	Compatible	Compatible	Compatible
NUM 750/760/800 621	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible

Inputs

NUM 1060 617	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Not applicable	Not applicable
NUM 1060 619	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Not applicable	Not applicable
NUM 750/760/800 610	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Not applicable	Not applicable
NUM 750/760/800 612	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Not applicable	Not applicable

 Compatible  Not applicable

Presentation :
pages 2/100 and 2/101
Characteristics :
pages 2/102 and 2/103
Compatibility :
pages 2/104 to 2/109
Dimensions :
page 2/111

For discrete signals
Slim solid state interface modules

References, 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

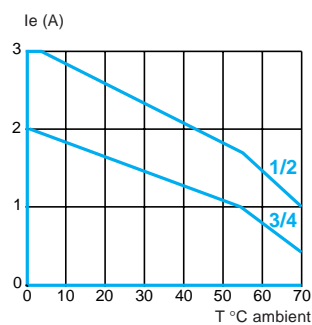
Width mm	Control circuit		Output circuit		Sold in lots of	Unit reference	Weight kg
	Current	Nominal voltage V	Current A	Nominal voltage V			
9.5	---	24	---	24...48	5	ABS-2SC01EB	0.034
			~ 2.3	24...230	5	ABS-2SA01MB	0.034
17.5	---	24	---	24...48	1	ABS-2SC02EB	0.043
			~ 3	24...230	1	ABS-2SA02MB	0.044

Accessories

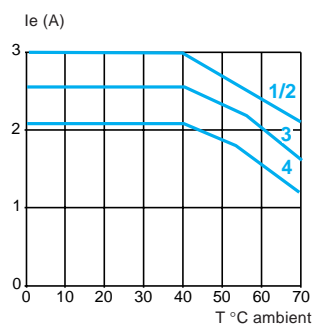
For connecting commons, use **ABF-C08●●●** flexible combs (see page 2/117)

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

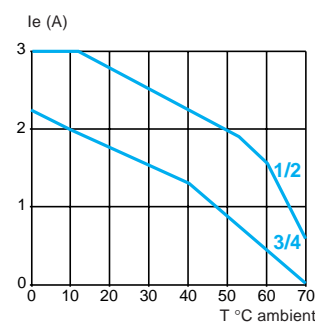
ABS-2SC01EB d.c.



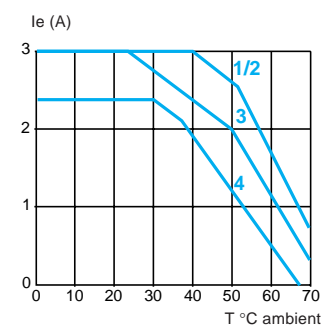
ABS-2SC02EB d.c.



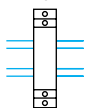
ABS-2SA01MB a.c.



ABS-2SA02MB a.c.

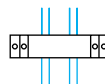


1 Vertical module alone or adjacent to modules with low heat dissipation.



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

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



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

Interfaces

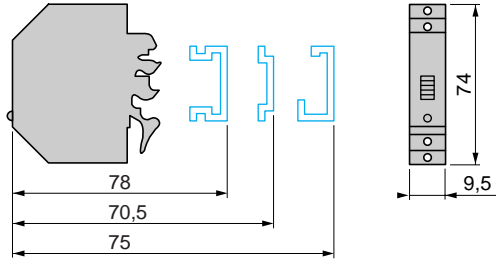
Presentation :
pages 2/100 and 2/101
Characteristics :
pages 2/102 and 2/103
Compatibility :
pages 2/104 and 2/109
References :
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For discrete signals
Slim solid state interface modules

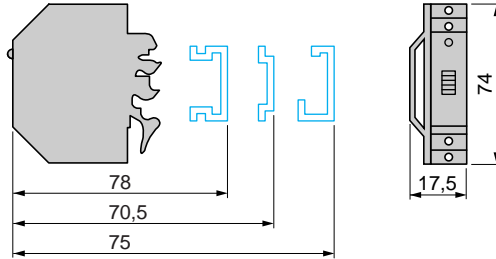
Dimensions, schemes

Dimensions

ABS-2E/ABS-2S0100



ABS-2S0200

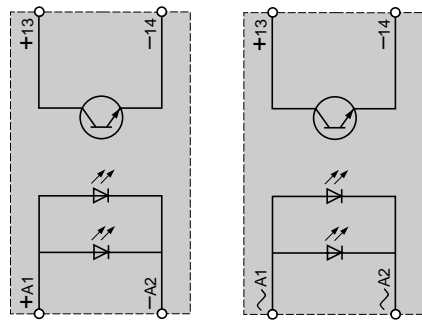


Circuit diagram

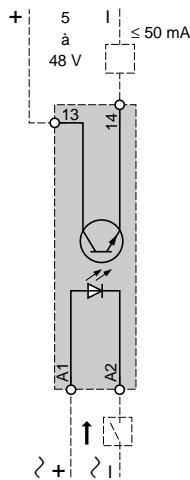
Solid state input modules

ABS-2EC0000

ABS-2EA0000



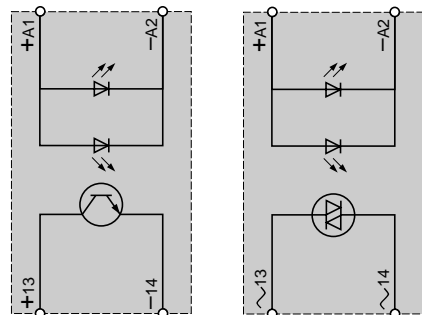
ABS-2E0000



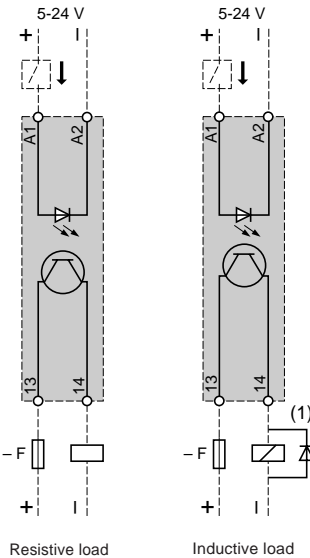
Solid state output modules

ABS-2SC00EB

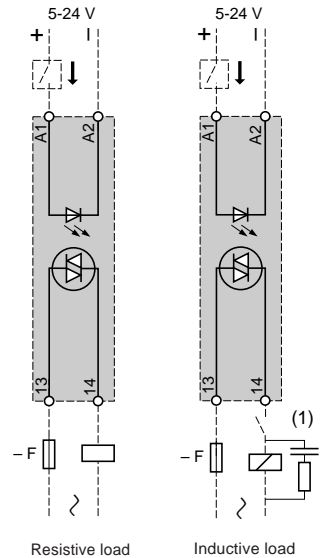
ABS-2SA00MB



ABS-2SC00EB



ABS-2SA00MB



F : Fuse DF1-SS15302
(1) or peak limiter

Interfaces

Characteristics :
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Compatibility :
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References :
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Dimensions, schemes :
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For discrete signals
Sub-bases with plug-in electromechanical relays

Presentation

ABE-6R sub-bases with plug-in electromechanical relays are in the form of an electronic card and have 1 to 16 plug-in relays with 1 or 2 C/O contacts.

This card is fixed on an insulated support which snaps onto standard rails.

These units are designed for interfacing ± 24 V discrete outputs in a processor (PLC, numerical controller, industrial PC, etc). The common on the coils of these units means that the relay wiring time is reduced.

Each channel indicates the control signal, via LED, in parallel with the coil. Each relay has a "freewheel" diode which prevents the production of interference when the control circuit is broken. A diode protects the control circuit against reversed polarity.

Composition

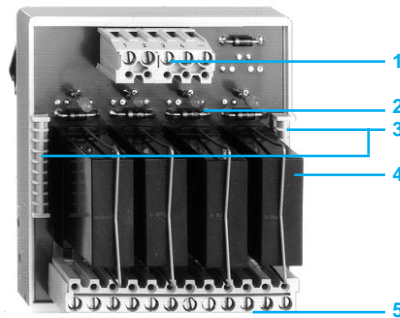
The ABE-6R range comprises sub-bases with 1, 4, 8 or 16 plug-in relays.

There are two families of products in the range :

Sub-bases with relays with 1 changeover contact

There are 4 versions in this family :

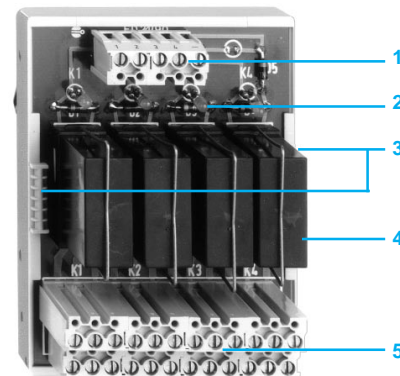
- sub-base with 1 relay.
- sub-bases with 4, 8 or 16 relays.
 - Connected to the processor by screw terminals. Common connected to ± 24 V of the power supply to the processor outputs for negative logic control.
 - Connected to the processor by screw terminals. Common connected to 0 V of the power supply to the processor outputs for positive logic control.



Sub-bases with relays with 2 changeover contacts

There are 3 versions in this family :

- sub-base with 1 relay.
- sub-bases with 4 relays.
 - Connected to the processor by screw terminals. Common connected to 0 V of the power supply to the processor for positive logic control.
- sub-bases with 8 relays.
 - Connected to the processor by an HE10 type ribbon cable connector and screw terminals. Common connected to 0 V of the power supply to the processor for positive logic control.



- 1 Connection terminals for control signals.
- 2 Green LED.
- 3 Identification using AB1 snap-on labels.
- 4 Plug-in relay which can be locked using a spring clip.
- 5 Output terminal block.

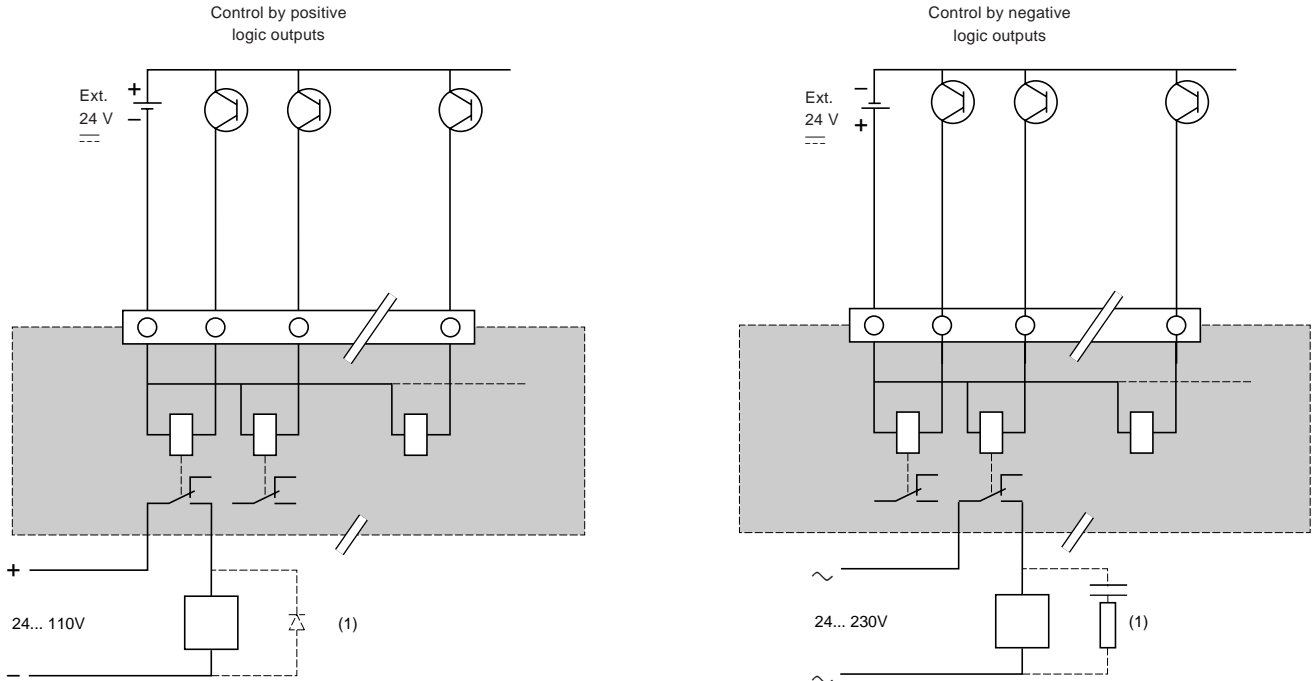
Interfaces


Presentation :
page 2/112
Compatibility :
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References :
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Dimensions, schemes :
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For discrete signals
Sub-bases with plug-in electromechanical relays


Installation precautions

Application examples



(1) Essential on inductive loads (can be replaced by a peak limiter )

Environment

Conforming to standards	IEC 947-5-1			
Product approvals				-
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 Conforming to UL 94	°C	850 V0 (relay)
Shock resistance	Conforming to IEC 68-2-27	Semi-sinusoidal wave 11 ms	gn	50
Vibration resistance	Conforming to IEC 68-2-6	Severity 55 A : 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	Waveform 1.2/50 μ s ; 0.5 J	kV	1
Cross-sections which may be connected	Flexible cable with no cable end	1 or 2-wire	mm ²	1...2.5
	Flexible cable with cable end	1-wire	mm ²	0.5...2.5
		2-wire	mm ²	0.5...1.5
	Rigid cable	1 or 2-wire	mm ²	1...2.5
Operating position	Any			
Ambient air temperature around the device	Unrestricted operation		°C	- 5...+ 40
	Permissible at Un		°C	- 20...+ 60
	Storage		°C	- 40...+ 70
Operating altitude			m	≤ 3000
Mounting	Standard rails			
Installation category	Conforming to IEC 947-1			II
Degree of pollution	Conforming to IEC 947-5-1			2

Interfaces

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For discrete signals
Sub-bases with plug-in electromechanical relays

Characteristics

Control circuit characteristics

Type of interface		ABE-6R01S23	ABE-6R00S03	ABE-6R00S13	ABE-6R01S27	ABE-6R04S17	ABE-6R08S47
Number of relays per sub-base		1	4/8/16	4/8/16	1	4	8
Number of contacts per relay		1 C/O	1 C/O	1 C/O	2 C/O	2 C/O	2 C/O
Rated voltage (Un)/limits	V	± 24 - 10 % ; + 10 %					
Rated current per relay	mA	25	25	25	26	26	26
Minimum holding current at 20 °C	mA	2.1	2.1	2.1	2.3	2.3	2.3
Maximum drop-out voltage at 20 °C	V	3.1	3.1	3.1	3.1	3.1	3.1
Power dissipated per relay	W	0.6	0.6	0.6	0.7	0.7	0.7
Rated energization voltage at 20 °C	V	17.5	17.5	17.5	18.2	18.2	18.2
Polarity of common		Not applicable	+	-	Not applicable	-	-
Connection		Screw terminal			Screw terminal		HE10 10 pin male connector (1)
Built-in protection		Reversed polarity, "freewheel" diode on each relay					
Control signal indication		Green LED in parallel with each relay					
Power supply indication		-					
Power supply protection		-					

(1) plus screw terminals.
(2) on 16 relay unit.

Relay characteristics

Type of relay	Plug-in electromechanical	
Composition	1 C/O	2 C/O
Product approvals	VDE 0860, Semko, Nemko, UL, CSA	

Contact characteristics

Composition		1 C/O	2 C/O
Max rated operating voltage Ue	V	~ 250	~ 250
Conforming to IEC 947-5	V	± 110	± 110
Operating current frequency	Hz	50/60	50/60
Thermal current Ith			
Conforming to IEC 947-1	A	5	5 4/3 (3)
Rated operating current	A	AC-12 : 2	AC-12 : 2
Conforming to IEC 947-5-1 Ue ~ 230 V	A	AC-14 : 1.5	AC-14 : 1.1
for 10 ⁶ operating cycles	A	AC-15 : 1.5	AC-15 : 1.1
Conforming to IEC 947-5-1 Ue ± 24 V	A	DC-12 : 1	DC-12 : 1
for 10 ⁶ operating cycles	A	DC-13 : 0.75	DC-13 : 0.6
Minimum switching capacity	mVA	120	120
	V	U min : 12	U min : 12
	mA	I min : 10	I min : 10
Protection against short-circuits	kA	For I _k ≤ 2.5 Type and value of recommended fuse : gl/gF : 10 A	For I _k ≤ 2.5 Type and value of recommended fuse : gl/gF : 10 A
Low power switching reliability of contacts (Maximum number of contact faults)		Number of faults per "n" million operating cycles 17 V 10 mA : 1 per million	Number of faults per "n" million operating cycles 17 V 10 mA : 1 per million
Time delay characteristics	ms	Between energization of coil and operation of contacts ≤ 10	Between energization of coil and operation of contacts ≤ 10
Operating time at Un and at 20 °C	ms	Between de-energization of coil and operation of contacts ≤ 10	Between de-energization of coil and operation of contacts ≤ 8
Duration of bounce	ms	≤ 3	≤ 3
Maximum operating rate		40 cycles/s (resistive load) ; 1200 cycles/h (AC-15 ; DC-13)	40 cycles/s (resistive load)
Durability at Un (operating cycles)		30 million	30 million
Rated insulation voltage			
- Conforming to IEC 947-1	V	250	250
- Conforming to VDE 0110	V	250 group C	250 group C
Insulation test voltage			
- coil circuit/contact circuits	kV	4	4
- wired interface/earth	kV	2.5	2.5
- between independent contacts	kV	-	1.5
- between independent channels	kV	2.5	2.5

(3) Vertical relay/horizontal relay.

Interfaces

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For discrete signals
Sub-bases with plug-in electromechanical relays

Characteristics

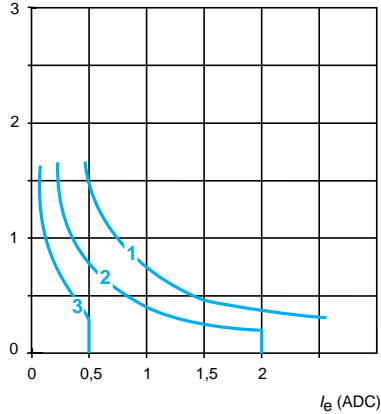
Electrical durability of ABE-6R●●S3 contacts

Test conditions :

In accordance with standard IEC 947-5-1 set up for rated control voltage, operating rate : 1800 cycles/hour. (0.5 Hz).

d.c. loads

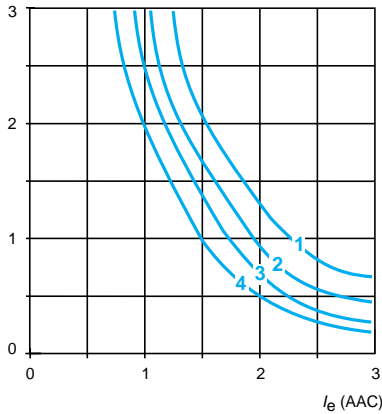
Operating cycles in millions



DC-13 : control of electromagnets
 $L/R \leq 2 \times (U_e \times I_e)$ in ms.
 U_e : rated operating voltage
 I_e : rated operating current

a.c. loads

Operating cycles in millions

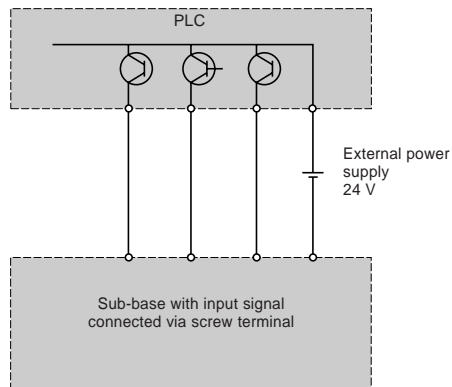


AC-14 : control of weak electromagnetic loads for electromagnets ≤ 72 VA
make : $\cos \varphi = 0.3$. break : $\cos \varphi = 0.3$
AC-15 : control of electromagnetic loads of electromagnets > 72 VA
make : $\cos \varphi = 0.7$. break : $\cos \varphi = 0.4$

- 1 24 V
- 2 48 V
- 3 115 V
- 4 230 V

Examples of connection to PLCs

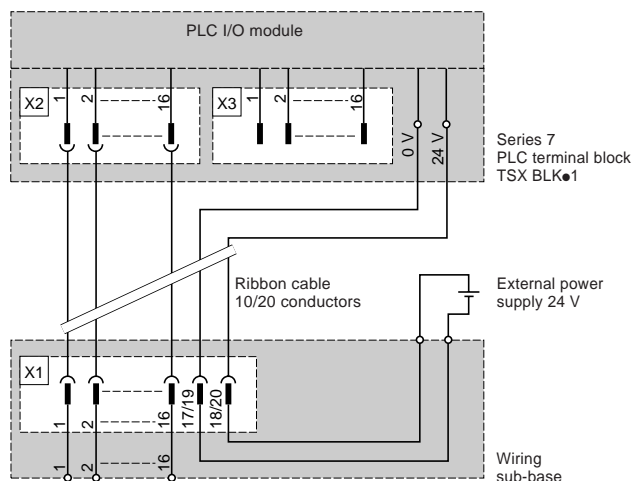
Signal connected via screw terminal



Connection possible to :

- modular PLC interfaces : \equiv 24 V transistor, type TSX DST3292, DST2472, DST2482,
- TSX 17 micro PLCs with \equiv 24 V power supply, type TSX 171●002F, 172●012F and to discrete extension blocks, type TSX DMF40●,
- other discrete outputs with 24 V d.c. current emission (I output : 0.1 A) conforming to IEC 65A (CO) 22.

Signal connection with terminal/connector wiring interface for sub-base with HE10 (1) connector



Connection possible to :

- \equiv 24 V modular PLC transistor interfaces, type TSX DST3292, DST2472, DST2482.

(1) See TELEFAST pre-wired system pages 2/146 to 2/155.

Interfaces

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For discrete signals
Sub-bases with plug-in electromechanical relays

Compatibility with contactors
and solenoid actuators

a.c. (50/60 Hz)

Type of interface	ABE-6R●●S●3			
Operating voltage	24 V	48 V	115 V	230 V

Contactors

CA2-D				
LC1-K/LC7-K/CA2-K				
LC1-D09...D18/D25...D32				
LC1-D40, D95				
integral 18				
integral 32				
integral 63				
LC1-F115/F150				
LC1-F185/F265				
LC1-F400/F500				
LC1-F630				
LC1-F780				
LC1-FJ5/FK5 LX1-F coil				
LC1-FL5 LX1-F coil				

Solenoid actuators

PVA-F101				
PVA-H249				

d.c.

Type of interfaces	ABE-6R●●S●3		
Operating voltage	24 V	48 V	110 V

Contactors

CA3-D/ LP1-K/CA3-K			
LP1-D09...D18/D25...D32/D40...D80			
LC1-F115/F150			
LC1-F185/F265			
LC1-F400/F500			
LC1-F630			
LC1-FJ5/FK5 LX4-F coil			
LC1-FL5 LX4-F coil			
LC1-FJ5/FK5/FL5 LX9-F coil			

Solenoid actuators

PVA-F102			
PVA-H249			

(1) Durability in operating cycles at a rate of ≤ 1800 cycles/hour

Compatible $\geq 1.10^6$ (1) Compatible $\geq 1.10^5$ (1) Not compatible Not applic.

Interfaces

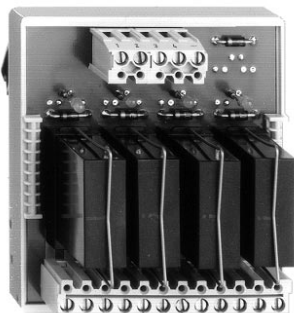
Presentation :
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For discrete signals
Sub-bases with plug-in electromechanical relays

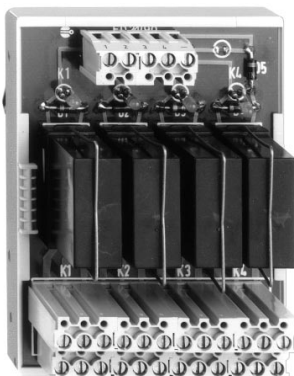
Control circuit : 24 V d.c.
References



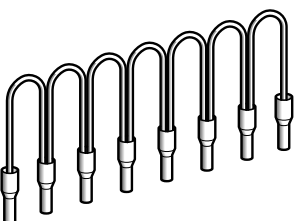
ABE-6R01S23



ABE-6R04S03



ABE-6R04S17



ABF-C08R●●●

Sub-bases with plug-in electromechanical relays (as supplied) (1)

Indication via LED

Number of relays per sub-base	Number of contacts per relay	Connection if input signal	Polarity of coil common	Reference	Weight kg
1	1 C/O	Screw terminals	None	ABE-6R01S23	0.065
	2 C/O	Screw terminals	None	ABE-6R01S27	0.070
4	1 C/O	Screw terminals	+	ABE-6R04S03	0.175
			-	ABE-6R04S13	0.175
8	1 C/O	Screw terminals	+	ABE-6R08S03	0.380
			-	ABE-6R08S13	0.380
16	1 C/O	Screw terminals	-	ABE-6R04S17	0.220
			+	ABE-6R08S47	0.390
16	1 C/O	Screw terminals	+	ABE-6R16S03	0.630
			-	ABE-6R16S13	0.630

Plug-in electromechanical relays (replacement parts)

Composition	Sold in lots of	Unit reference	Weight kg
1 C/O	5	ABR-6S302B	0.015
2 C/O	5	ABR-6S702B	0.015

Flexible comb accessories

Description	For common	Colour	Distance between cable ends in cm	Reference	Weight kg
Flexible comb modularity 8 x 1 mm ²	Coil	White	12	ABF-C08R12W	0.020
			2	ABF-C08R02W	0.010
	~	Red	12	ABF-C08R12R	0.020
			2	ABF-C08R02R	0.010
	---	Blue	12	ABF-C08R12B	0.020
			2	ABF-C08R02B	0.010

(1) Other relay sub-bases on page 2/146 and 2/147.

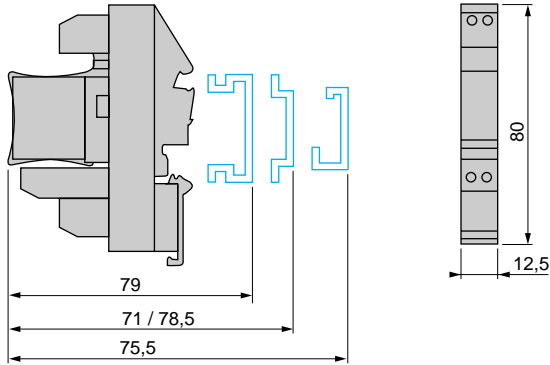
Interfaces

Presentation :
page 2/112
Characteristics :
pages 2/113 and 2/114
Compatibility :
page 2/116
References :
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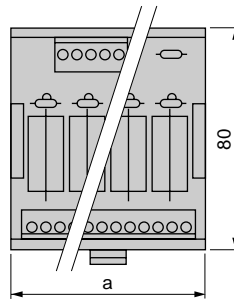
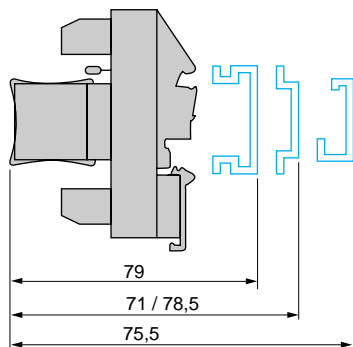
For discrete signals
Sub-bases with plug-in electromechanical relays

Dimensions

ABE-6R01S23



View ABE-6R●●S03 ABE-6R●●S13



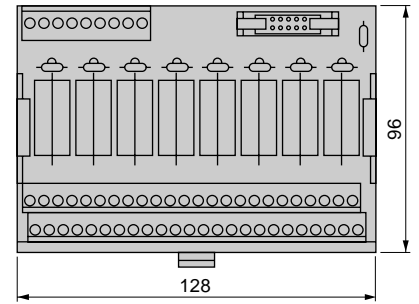
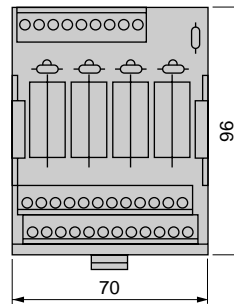
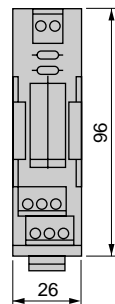
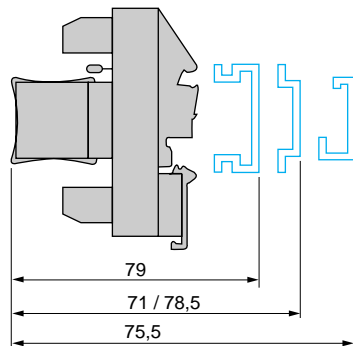
Number of channels	a
4	70
8	128
16	250

View from common side

ABE-6R01S27

ABE-6R04S17

ABE-6R08S47



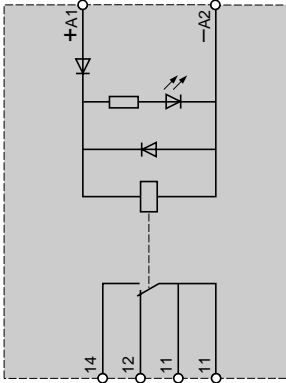
Interfaces

Presentation :
 page 2/112
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 Compatibility :
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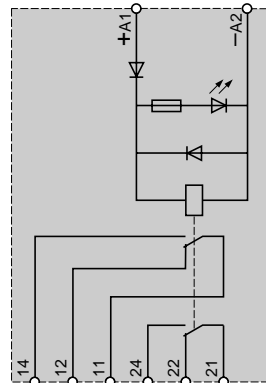
For discrete signals
 Sub-bases with plug-in electromechanical relays

Schemes

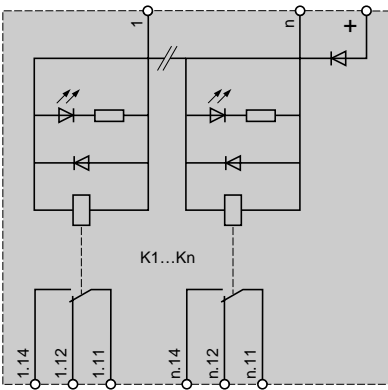
ABE-6R01S23



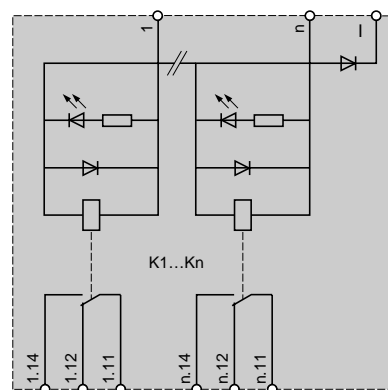
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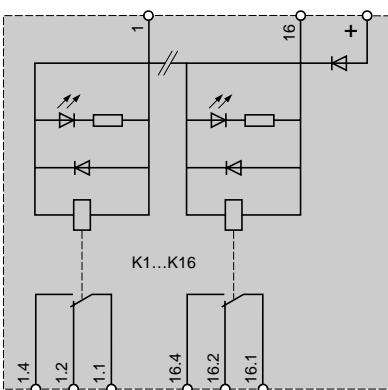
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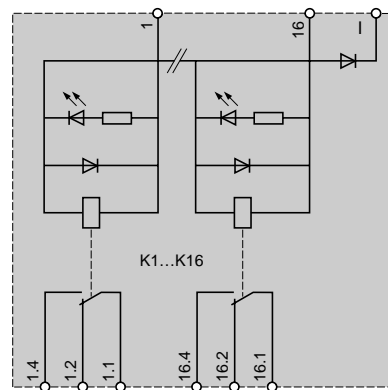
ABE-6R04S13, ABE-6R08S13



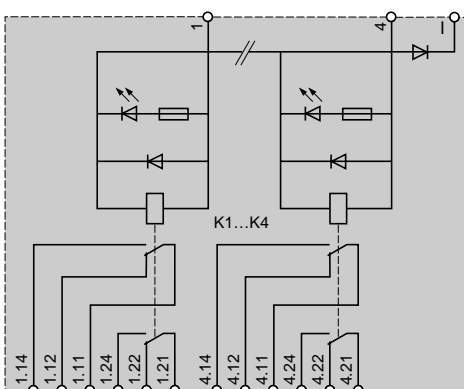
ABE-6R16S03



ABE-6R16S13



ABE-6R04S17



ABE-6R08S47

