

Optocoupler and Solid-State Relay Selection Guide

Optocouplers are used as interface devices for programmable controllers to isolate input control signals and output loads.

Solid state relays eliminate contact noise and offer long life. Isolated units provide optical isolation.

In this Selection Guide, input interface optocouplers are units with a maximum load current up to 300 mA. They are used primarily to interface to a programmable controller's input. Output interface optocouplers feature load currents from 100 mA to 5 A. Output interface optocouplers are used primarily to interface to a programmable controller's output.

For complete optocoupler and solid state relay specifications, reference the Product Guide page number indicated.

To Use This Guide For Selecting Optocouplers:

- Select the DC or AC optocoupler input voltage.
- Select the maximum DC or AC optocoupler output voltage required based on the load current required.
- Select optocoupler type based on characteristics desired.
- To order, see page specified for optocoupler part number.

To Use This Guide For Selecting Solid State Relays:

- Refer to table on the bottom of page 738.

Input interface optocouplers (Load current 300 mA max.)

		Input Voltage	Output Voltage Max.	Output Current Max. mA	Spacing (mm)	Series	UL/CSA	Type	Page #
		V DC	V DC						
DC INPUT VOLTAGE	DC OUTPUT VOLTAGE	5, 12, 15, 24, 48	55	50	18	10 000		EB03 DC	756
		10.0-32.0	4-6 *	25	18	10 000		EB IDC 5	757
		10.0-32.0	12-18 *	25	18	10 000		EB IDC 15	757
		10.0-32.0	18-30 *	25	18	10 000		EB IDC 24	757
		10.2-28.8	60	15	9	8 000		OBC 0015	747
		10.2-28.8	60	100	9	8 000		OBC 0100	748
		15	58	100	18	10 000		EBO 1	755
		17.64 - 28	140	300	9	8 000		OBC 0300	762
		19.2 - 27.6	58	30	5.08	7 200		OBIC 0030†	739
		21.6-26.4	30	50	254 ***	PLC 16		OIHE 16C	758-759
		24	58	100	18	10 000		EBO 1	755
		24	58**	30**	22 .5	11 000		ROB 121	764
		38.4-55.2	58	30	5.08	7 200		OBIC 0030†	739
		40.8-57.6	60	15	9	8 000		OBC 0015	747
		40.8-57.6	60	100	9	8 000		OBC 0100	748
		43.2-52.8	30	50	254 ***	PLC 16		OIHE 16C	758-759
		48	58	100	18	10 000		EBO 1	755
		93.1 - 140	28	50	11.5	8 000		OBC 0050	762
		127	58	100	18	10 000		EBO 1	755
		220	58	100	18	10 000		EBO 1	755
AC INPUT VOLTAGE	DC OUTPUT VOLTAGE	20.4-26.4	58	30	5.08	7200		OBIA 0030†	740
		21.6-26.4	30	50	254 ***	PLC 16		OIHE 16C	758-759
		24	58	100	18	10 000		EBO 1	755
		40.8-52.8	58	30	5.08	7 200		OBIA 0030†	740
		43.2-52.8	30	50	254 ***	PLC 16		OIHE 16C	758-759
		48	58	100	18	10 000		EBO 1	755
		127	58	100	18	10 000		EBO 1	755
		90-140	4-6 *	25	18	10 000		EB IAC 5	757
		90-140	12-18 *	25	18	10 000		EB IAC 15	757
		94-127	30	50	254 ***	PLC 16		OIHE 16C	758-759
		93.5-127	57 .6	100	9	8 000		OBC 0100R	749
		93.5-152.4	60	100	9	8 000		OBC 0100	749
		98-126.5	58	30	5.08	7 200		OBIA 0030†	740
		220	58	100	18	10 000		EBO 1	755
		184-264.5	60	100	9	8 000		OBC 0100	749
		195.5-253	58	30	5.08	7 200		OBIA 0030†	740
		195.5-276	57 .6	100	9	8 000		OBC 0100R	749
		196-276	30	50	254 ***	PLC 16		OIHE 16C	758-759

* Logic Level Range

** 5 A and 250V with built-in relay output. Contact Entrelec for max. load.

*** 16 Optocoupler assembly

† Pluggable optocoupler

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Output interface optocouplers (Load current = 100 mA to 1 A)

	DC INPUT VOLTAGE	DC OUTPUT VOLTAGE	Input Voltage	Output Voltage Max.	Output Current Max.	Spacing (mm)	Series	UL/CSA	Type	Page #	
			V DC	V DC							
DC INPUT VOLTAGE	DC OUTPUT VOLTAGE	DC OUTPUT VOLTAGE	4.5-5.5	58	100 mA	5.08	7 200	UL/CSA	OBOC 0100†	741	
			4.5-5.5	58	1 A	5.08	7 200		OBOC 1000†	742	
			4.5-5.5	60	1 A	9	8 000		OBC 1000	750	
			4.5-6.0	60	1 A	18	10 000		EB ODC 5	760	
			10.2-28.8	60	1 A	9	8 000	UL/CSA	OBC 1000	750	
			12.0-18.0	60	1 A	18	10 000		EB ODC 15	760	
			19.2-28.8	60	1 A	18	10 000		EB ODC 24	760	
			19.2-27.6	250	5 A *	22.5	11 000		ROB 121	764	
			20.4-28.8	58	100 mA	5.08	7 200	UL/CSA	OBOC 0100†	741	
			20.4-28.8	58	1 A	5.08	7 200		OBOC 1000†	742	
			40.8-57.6	58	100 mA	5.08	7 200	CSA	OBOC 0100†	741	
			40.8-57.6	60	1 A	9	8 000		OBC 1000	750	
	AC OUTPUT VOLTAGE	AC OUTPUT VOLTAGE	AC OUTPUT VOLTAGE	V DC	V AC						
				5	125	400 mA	18	10 000	UL/CSA	EBO 1R**	763
				4.5-5.5	250	1 A	9	8 000		OBA 1000	753
				4.5-6.0	280	1 A	18	10 000		EB OAC 5	760
				10.2-28.8	250	1 A	9	8 000	UL/CSA	OBA 1000	753
				12.0-18.0	280	1 A	18	10 000		EB OAC 15	760
19.2-28.8				280	1 A	18	10 000	EB OAC 24		760	
19.2-27.6				250	5 A *	22.5	11 000	ROB 121		764	
40.8-57.6				250	1 A	9	8 000	CSA	OBA 1000	753	
AC INPUT VOLTAGE				DC OUTPUT VOLTAGE	DC OUTPUT VOLTAGE	V AC	V DC				
	93.5-152.4	60	1 A			9	8 000	UL/CSA	OBC 1000	751	
	184.0-264.5	60	1 A	9	8 000	CSA	OBC 1000	751			
AC OUTPUT VOLTAGE	AC OUTPUT VOLTAGE	AC OUTPUT VOLTAGE	V AC	V AC							
93.5-152.4	250	1 A	9	8 000		OBA 1000	754				

* Relay contact output. Contact Entrelec for max. load.

† Pluggable optocoupler.

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Output interface optocouplers (Load current = 1.25 A to 5 A)

DC INPUT VOLTAGE	DC OUTPUT VOLTAGE	Input Voltage	Output Voltage Max.	Output Current Max.	Spacing (mm)	Series	UL/CSA	Type	Page #
		V DC	V DC						
DC INPUT VOLTAGE	DC OUTPUT VOLTAGE	4.5-5.5	30	2 A	5.08	7 200	CSA/NRTL CSA/NRTL	OBOC 2000†	742
		5	150	1.25 A @ 24 V	18	10 000		EBO 1R**	763
		5, 12, 24	30	1.5 A	9	7 000		OBC 1500	752
		5, 12, 24	60	5 A	9	8 000		OBC 5000	752
		19.2-27.6	60	3 A	12.7	20 000		OM 1C3	761
		20.4-28.8	30	2 A	5.08	7 200		OBOC 2000†	742
		38.4-55.2	60	3 A	12.7	20 000		OM 1C3	761
		19.2-27.6	280	3 A	12.7	20 000		OM 1A3	761
		38.4-55.2	280	3 A	12.7	20 000		OM 1A3	761
		88-126.5	280	3 A	12.7	20 000		OM 1A3	761
AC INPUT VOLTAGE	DC OUTPUT VOLTAGE	V AC	V DC						
		19.2-27.6	60	3 A	12.7	20 000	OM 1C3	761	
		38.4-55.2	60	3 A	12.7	20 000	OM 1C3	761	
		V AC	V AC						
	19.2-27.6	280	3 A	12.7	20 000	OM 1A3	761		
	38.4-55.2	280	3 A	12.7	20 000	OM 1A3	761		
	88-126.5	280	3 A	12.7	20 000	OM 1A3	761		
	SOLID STATE RELAYS	24, 120, 230 VAC	Contact Config.	No. of Relays	Contact Current	Spacing (mm)	Series	UL/CSA	Type
					LxWxH				
1SPST			1	3, 6, 10, 20 A	51x51x28	Isolated	UL/CSA	SIR1/SIR2	765
1SPST			1	1 A	51x51x19	Non-Isolated	UL/CSA	SLR1/SLR2	766
1SPST			1	1, 6, 10, 20 A	51x51x28	Non-Isolated	UL/CSA	SLR1/SLR2	766
1SPST			1	1 A	51x51x19	[Isolated]		NIF1/NIF2	767
1SPST			1	1, 6, 10, 20 A	51x51x28	[Latching]			
1SPST			1	1 A	51x51x19	[Non-Isolated]		NLF1/NLF2	768
1SPST			1	1, 6, 10, 20 A	51x51x28	[Latching]		NLF1/NLF2	768

** Relay contact output. Contact Entrelec for max. load.

† Pluggable optocoupler.

Electronic interfaces

Terminal Block Socket with Pluggable Input Optocouplers Series 7200

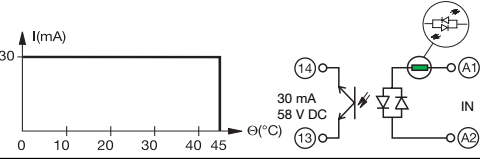
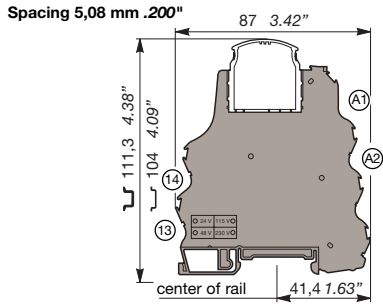
Terminal block sockets are delivered with an optocoupler plug. Terminal block sockets are also available without the optocoupler plug. For details see page 743.

Terminal block socket only
 Type P/N
 D 2.5/5-OBI 0007 223.22
 D 2.5/5-OBO 0007 224.23

Optocoupler plugs are available separately.
 See Accessories below and page 745.

End stop	th 9,1 mm	BAMH	V2	0116 900.27
End stop	th 9,1 mm	BAMH	V0	0194 836.01
End stop	th 12 mm	BADH	V2	0114 836.00
<i>Other end stops : see Accessories section</i>				
Rail	35 x 7,5 x 1	PR3G2		0164 800.03
Rail	35 x 15 x 2,3	PR4		0168 500.12
Rail	35 x 15 x 1,5	PR5		0168 700.22
<i>Other rails : see Accessories section</i>				
<i>Other accessories : see Accessories section</i>				

D 2,5/5-OBIC-0030



Type	P/N	Type	P/N
V2 grey body - Includes input optocoupler plug			
D 2,5/5-OBIC-0030	24 V DC		0007 210.01
D 2,5/5-OBIC-0030	48 V DC		0007 211.26

Characteristics

	24 V DC	48 V DC
INPUT		
Voltage	19,2 V to 27,6 V DC	38,4 V to 55,2 V DC
Max. current	5 mA	4,1 mA
Pull-in voltage at I _s = 100 %	12 V	21 V
Switching time C/O	20 μs / 1,3 ms	20 μs / 1,3 ms
Permissible leakage current	1 mA	0,8 mA
OUTPUT		
Max. voltage / Max. current	58 V / 30 mA per pole	
Residual voltage at I max. and V rated	typical	2,3 V DC
	max.	2,7 V DC
Isolation Input / Output	2,5 kV	
TEMPERATURE		
storage	- 30°C to + 80°C	
operating	- 20°C to + 45°C	

Characteristics

Wire size	Solid wire	IEC		UL		CSA			
		NFC	DIN	pending	pending	NFC	DIN	UL	CSA
		0,2-4 mm ²		24-12 AWG	24-12 AWG				
	Stranded wire	0,22-2,5 mm ²		24-12 AWG	24-12 AWG				
Rated voltage	V	~							
Rated current	A	=							
Rated wire size		2,5 mm ²		12 AWG	12 AWG				
Other characteristics		Wire stripping length	Recommended screwdriver	Recommended torque	Protection	Wire stripping length	Recommended screwdriver	Recommended torque	Protection
		10 mm .394"	3,5 mm .137"	0,4-0,6 Nm 3.5 - 5.3 lb.in	IP 20 NEMA 1				

Accessories

	Type	Part number	Type	Part number
	1 Comb type jumper bar	PCMS V0	2 to 22 poles	see accessories
	2 Optocoupler Plugs	BNMS T24V-1		0031 800.21
	3 Test device	BNMS T48V-1		0031 801.16
	4 Test plug	DCB (1)	blue	0105 028.21
		FC2	DIA. 2 mm	0007 865.26
	R See section on markers marking method	RC55		

(1) Use test device on top stage only.

Electronic interfaces

Terminal Block Sockets with Pluggable Output Optocouplers Series 7200

DIN 3

Terminal block sockets are delivered with an optocoupler plug. Terminal block sockets are also available without the optocoupler plug. For details see page 743.

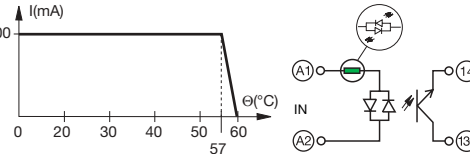
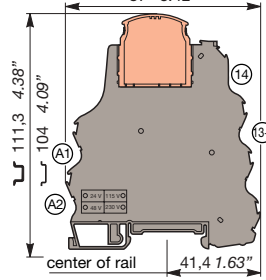
	Type	P/N
Terminal block socket only	D 2.5/5-OBI	0007 223.22
	D 2.5/5-OBO	0007 224.23

Optocoupler plugs are available separately. See Accessories below and page 746.

End stop	th 9,1 mm	BAMH	V2	0116 900.27
End stop	th 9,1 mm	BAMH	V0	0194 836.01
End stop	th 12 mm	BADH	V2	0114 836.00
<i>Other end stops : see Accessories section</i>				
Rail	35 x 7,5 x 1	PR3G2		0164 800.03
Rail	35 x 15 x 2,3	PR4		0168 500.12
Rail	35 x 15 x 1,5	PR5		0168 700.22
<i>Other rails : see Accessories section</i>				
<i>Other accessories : see Accessories section</i>				

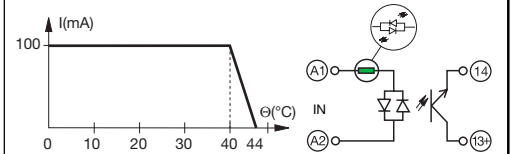
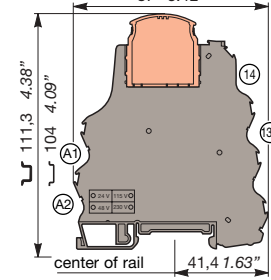
D 2,5/5-OBOC-0100

Spacing 5,08 mm .200"



D 2,5/5-OBOC-0100

Spacing 5,08 mm .200"



Type	P/N
V2 grey body - Includes output optocoupler plug	
D 2,5/5-OBOC-0100	5 V DC 0007 203.07
D 2,5/5-OBOC-0100	24 V DC 0007 204.00

Type	P/N
V2 grey body - Includes output optocoupler plug	
D 2,5/5-OBOC-0100	48 V DC 0007 205.01

Characteristics

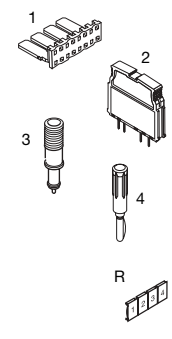
	5 V DC		24 V DC		48 V DC	
	5 V DC	24 V DC	24 V DC	48 V DC	48 V DC	48 V DC
INPUT						
Voltage	4,5 V to 5,5 V DC		20,4 V to 28,8 V DC		40,8 V to 57,6 V DC	
Max. current	8,5 mA		4,8 mA		3,9 mA	
Pull-in voltage	2,9 V DC		16 V DC		26 V DC	
Switching time	C/O		20 µs / 1,3 ms		20 µs / 1,3 ms	
Permissible leakage current			1 mA		1 mA	
OUTPUT						
Max. voltage / Max. current			58 V / 100 mA		58 V / 100 mA	
Residual voltage at I max. and V rated			1 V DC 1,3 V DC typical max.		1 V DC 1,3 V DC typical max.	
Frequency on inductive load			See Note 1		See Note 1	
Isolation Input / Output			2,5 kV		2,5 kV	
TEMPERATURE						
storage			- 40°C to + 80°C		- 40°C to + 80°C	
operating			- 20°C to + 60°C		- 20°C to + 44°C	

Characteristics

Wire size	Solid wire	IEC		UL		CSA	
		NFC	DIN	pending	pending	pending	pending
Wire size	Solid wire	0,2-4 mm ²		24-12 AWG		24-12 AWG	
	Stranded wire	0,22-2,5 mm ²		24-12 AWG		24-12 AWG	
Rated voltage	V	~					
Rated current	A	=					
Rated wire size		2,5 mm ²		12 AWG		12 AWG	
Other characteristics	Wire stripping length	10 mm	3,5 mm	0,4-0,6 Nm	IP 20	10 mm	3,5 mm
	Recommended screwdriver	.394"	.137"	3.5 - 5.3 lb.in	NEMA 1	.394"	.137"
							3.5 - 5.3 lb.in
							NEMA 1

Accessories

	Type	Part number	Type	Part number
1 Comb type jumper bar	PCMS	V0 2 to 22 poles see accessories	PCMS	V0 2 to 22 poles see accessories
2 Optocoupler Plugs	BNMS P5V-3	0031 809.26	BNMS P48V-3	0031 811.07
3 Test device	BNMS P24V-3	0031 810.12		
4 Test plug	DCB (1)	blue 0105 028.21	DCB (1)	blue 0105 028.21
	FC2	DIA. 2 mm 0007 865.26	FC2	DIA. 2 mm 0007 865.26



Note 1 :

or $F_{max} = (1 - 0,007 \times V_s) / (L \times I_s^2)$

or $F_{max} = (1 - 0,007 \times V_s) / (P \times \frac{L}{R})$

V_s = Output voltage
 I_s = Output current
 L = Inductance of load
 P = Power of load
 R = Resistance of load

R See section on markers marking method	RC55	Ⓟ	RC55	Ⓟ
	(1) Use test device on top stage only.			

Electronic interfaces

Terminal Block Sockets with Pluggable Output Optocouplers Series 7200

DIN 3

Terminal block sockets are delivered with an optocoupler plug. Terminal block sockets are also available without the optocoupler plug. For details see page 743.

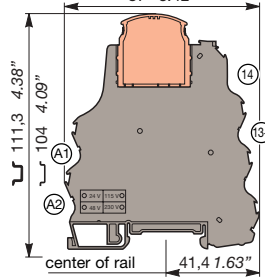
	Type	P/N
Terminal block socket only	D 2.5/5-OBI	0007 223.22
	D 2.5/5-OBO	0007 224.23

Optocoupler plugs are available separately. See Accessories below and page 746.

End stop	th 9,1 mm	BAMH	V2	0116 900.27
End stop	th 9,1 mm	BAMH	V0	0194 836.01
End stop	th 12 mm	BADH	V2	0114 836.00
<i>Other end stops : see Accessories section</i>				
Rail	35 x 7,5 x 1	PR3G2		0164 800.03
Rail	35 x 15 x 2,3	PR4		0168 500.12
Rail	35 x 15 x 1,5	PR5		0168 700.22
<i>Other rails : see Accessories section</i>				
<i>Other accessories : see Accessories section</i>				

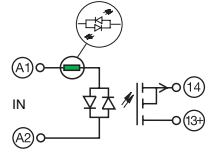
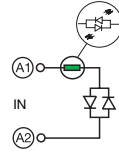
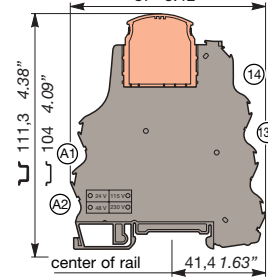
D 2,5/5-OBOC-1000

Spacing 5,08 mm .200"



D 2,5/5-OBOC-2000

Spacing 5,08 mm .200"



Type	P/N	Type	P/N
V2 grey body - Includes output optocoupler plug			
D 2,5/5-OBOC-1000	5 V DC	D 2,5/5-OBOC-2000	5 V DC
D 2,5/5-OBOC-1000	24 V DC	D 2,5/5-OBOC-2000	24 V DC

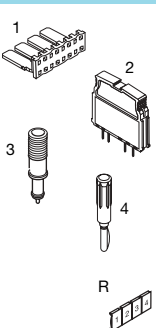
Characteristics

	5 V DC		24 V DC	
	INPUT			
Voltage	4,5 V to 5,5 V DC		20,4 V to 28,8 V DC	
Max. current				
Pull-in voltage				
Switching time	C/O			
Permissible leakage current				
OUTPUT				
Max. voltage / Max. current			58 V / 1 A	
Residual voltage at I max. and V rated			1,3 V max.	
			typical max.	
Frequency on inductive load			See Note 1	
Isolation Input / Output			2,5 kV	
TEMPERATURE				
storage			- 40°C to + 80°C	
operating			- 40°C to + 80°C	

Characteristics

Wire size	IEC			UL			CSA		
	NFC	DIN	pending	pending	pending	pending	pending	pending	
Solid wire	0,2-4 mm ²			24-12 AWG			24-12 AWG		
	0,22-2,5 mm ²			24-12 AWG			24-12 AWG		
Stranded wire	0,22-2,5 mm ²			24-12 AWG			24-12 AWG		
	0,22-2,5 mm ²			24-12 AWG			24-12 AWG		
Rated voltage	V			~			=		
Rated current	A								
Rated wire size	2,5 mm ²			12 AWG			12 AWG		
Other characteristics	Wire stripping length	Recommended screwdriver	Recommended torque	Protection	Wire stripping length	Recommended screwdriver	Recommended torque	Protection	
	10 mm	3,5 mm	0,4-0,6 Nm	IP 20	10 mm	3,5 mm	0,4-0,6 Nm	IP 20	
	.394"	.137"	3.5 - 5.3 lb.in	NEMA 1	.394"	.137"	3.5 - 5.3 lb.in	NEMA 1	

Accessories



Type	Part number	Type	Part number
PCMS V0 2 to 22 poles	see accessories	PCMS V0 2 to 22 poles	see accessories
BNMS P5V-2	0031 818.16	BNMS P5V-1	0031 814.02
BNMS P24V-2	0031 819.17	BNMS P24V-1	0031 815.03
DCB (1) blue	0105 028.21	DCB (1) blue	0105 028.21
FC2 DIA. 2 mm	0007 865.26	FC2 DIA. 2 mm	0007 865.26

Note 1 :

$$F_{max} = (1 - 0,007 \times V_s) / (L \times I_s^2)$$

or

$$F_{max} = (1 - 0,007 \times V_s) / (P \times \frac{L}{R})$$

Note 2 :

$$F_{max} = (1 - 0,012 \times V_s) / (L \times I_s^2)$$

or

$$F_{max} = (1 - 0,012 \times V_s) / (P \times \frac{L}{R})$$

V_s = Output voltage
 I_s = Output current
 L = Inductance of load
 P = Power of load
 R = Resistance of load

RC55 (16) (1) Use test device on top stage only.

Electronic interfaces

Sockets for optocoupler plugs

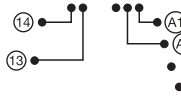
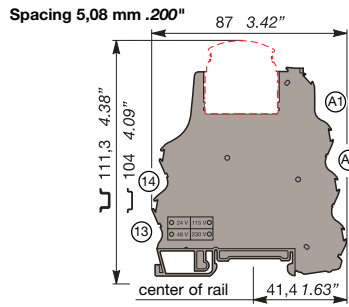
Series 7200

DIN 3

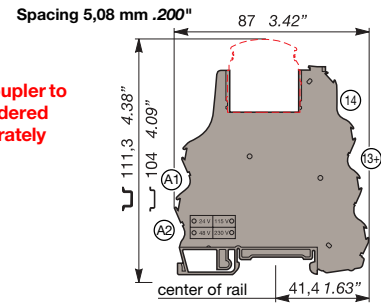
The terminal blocks are delivered without the optocoupler plug.
For terminal blocks delivered with an optocoupler plug, see 739-742.

End stop	th 9,1 mm	BAMH	V2	0116 900.27
End stop	th 9,1 mm	BAMH	V0	0194 836.01
End stop	th 12 mm	BADH	V2	0114 836.00
Other end stops : see Accessories section				
Rail	35 x 7,5 x 1	PR3G2		0164 800.03
Rail	35 x 15 x 2,3	PR4		0168 500.12
Rail	35 x 15 x 1,5	PR5		0168 700.22
Other rails : see Accessories section				
Other accessories : see Accessories section				

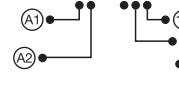
D 2,5/5-OBI



D 2,5/5-OBO



Optocoupler to be ordered separately



		CE			CE
Type	P/N	Type	P/N		
D 2,5/5-OBI	0007 223.22	D 2,5/5-OBO	0007 224.23		

Characteristics

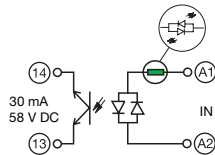
Wire size	Solid wire Stranded wire	IEC		UL	CSA	IEC		UL	CSA
		NFC	DIN	pending	pending	NFC	DIN	pending	pending
		0,2-4 mm ²		24-12 AWG	24-12 AWG	0,2-4 mm ²		24-12 AWG	24-12 AWG
		0,22-2,5 mm ²		24-12 AWG	24-12 AWG	0,22-2,5 mm ²		24-12 AWG	24-12 AWG
Voltage V	Rated	320 V		300 V	300 V	320 V		300 V	300 V
	Pulse	4 kV				4 kV			
	Pollution degree	3				3			
Current A		6 A		6 A	6 A	6 A		6 A	6 A
	Wire size	2,5 mm ²		12 AWG	12 AWG	2,5 mm ²		12 AWG	12 AWG

Other characteristics

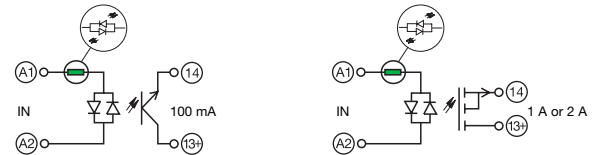
Wire stripping length	Recomm. Screwdriver	Recomm. torque	Protection	Wire stripping length	Recomm. Screwdriver	Recomm. torque	Protection
10 mm .394"	3,5 mm .137"	0,4-0,6 Nm 3.5 - 5.3 lb.in	IP 20 NEMA 1	10 mm .394"	3,5 mm .137"	0,4-0,6 Nm 3.5 - 5.3 lb.in	IP 20 NEMA 1

Optocoupler plugs

Input opto. plug with built-in LED



Output opto. plug with built-in LED



Type	Input voltage	Output current	Part number	Type	Input voltage	Output current	Part number
BNMS T5V-1	5 V DC	30 mA	0031 831.03	BNMS P5V-3	5 V DC	100 mA	0031 809.26
BNMS T24V-1	24 V DC	30 mA	0031 800.21	BNMS P24V-3	24 V DC	100 mA	0031 810.12
BNMS T48V-1	48 V DC	30 mA	0031 801.16	BNMS P48V-3	48 V DC	100 mA	0031 811.07
BNMS T24V-1	24 V AC	30 mA	0031 802.17	BNMS P5V-2	5 V DC	1 A	0031 818.16
BNMS T48V-1	48 V AC	30 mA	0031 803.10	BNMS P24V-2	24 V DC	1 A	0031 819.17
BNMS T115V-1	115 V AC	30 mA	0031 804.11	BNMS P5V-1	5 V DC	2 A	0031 814.02
BNMS T230V-1	230 V AC	30 mA	0031 805.12	BNMS P24V-1	24 V DC	2 A	0031 815.03

Characteristics : NA4-NA5

Characteristics : NA4-NA5

Accessories



- 1 Comb type jumper bar
- 2 Test device
- 3 Test plug



R See section on markers

PCMS	V0	2 to 22 poles	see accessories
DCB (1)		blue	0105 028.21
FC2		DIA. 2 mm	0007 865.26

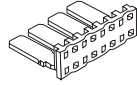
PCMS	V0	2 to 22 poles	see accessories
DCB (1)		blue	0105 028.21
FC2		DIA. 2 mm	0007 865.26

(16) RC55
(1) Use test device on top stage only.

(16) RC55

ACCESSORIES

PCMS



Comb-type jumper

This accessory permits the electrical connection of 2 to 22 blocks.
Allowable current = 24 A

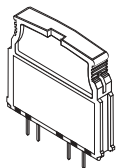
No. of poles	Grey UL94V0	Red UL94V0	Blue UL94V0	Green/Yellow UL94V0
2	0205 491.23	0205 492.24	0205 493.25	0205 494.26
3	0205 495.27	0205 496.20	0205 497.21	0205 498.02
4	0205 499.03	0205 500.10	0205 501.05	0205 502.06
5	0205 503.07	0205 504.00	0205 505.01	0205 506.02
6	0205 507.03	0205 508.14	0205 509.15	0205 510.01
7	0205 511.26	0205 512.27	0205 513.20	0205 514.21
8	0205 515.22	0205 516.23	0205 517.24	0205 518.05
9	0205 519.06	0205 520.03	0205 521.20	0205 522.21
10	0205 523.22	0205 524.23	0205 525.24	0205 526.25
11	0205 527.26	0205 528.07	0205 529.00	0205 530.05
12	0205 531.22	0205 532.23	0205 533.24	0205 534.25
13	0205 535.26	0205 536.27	0205 537.20	0205 538.01
14	0205 539.02	0205 540.17	0205 541.04	0205 542.05
15	0205 543.06	0205 544.07	0205 545.00	0205 546.01
16	0205 547.02	0205 548.13	0205 549.14	0205 550.11
17	0205 551.06	0205 552.07	0205 553.00	0205 554.01
18	0205 555.02	0205 556.03	0205 557.04	0205 558.15
19	0205 559.16	0205 560.13	0205 561.00	0205 562.01
20	0205 563.02	0205 564.03	0205 565.04	0205 566.05
21	0205 567.06	0205 568.17	0205 569.10	0205 570.15
22	0205 571.02	0205 572.03	0205 573.04	0205 574.05

Full modules (socket equipped with plug)

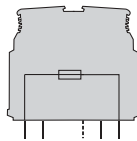
D 2,5/5...

Type	Voltage	Function	P/N
Relay with socket (grey V2)			
D 2,5/5-R121	24 V CC	base (without LED) with 24 V DC relay	0007 217.24
D 2,5/5-R 121 L	24 V CC	base (with LED) with 24 V DC relay	0007 201.05
Input optocouplers with sockets			
Input optocouplers		Switching power	
D 2,5/5-OBIC-0030	24 V CC	58 V/30 mA	0007 210.01
D 2,5/5-OBIC-0030	48 V CC	58 V/30 mA	0007 211.26
D 2,5/5-OBIA-0030	24 V CA	58 V/30 mA	0007 212.27
D 2,5/5-OBIA-0030	48 V CA	58 V/30 mA	0007 213.20
D 2,5/5-OBIA-0030	115 V CA	58 V/30 mA	0007 214.21
D 2,5/5-OBIA-0030	230 V CA	58 V/30 mA	0007 215.22
Output optocouplers with sockets			
D 2,5/5-OB0C-0100	5 V CC	58 V/100 mA	0007 203.07
D 2,5/5-OB0C-0100	24 V CC	58 V/100 mA	0007 204.00
D 2,5/5-OB0C-0100	48 V CC	58 V/100 mA	0007 205.01
D 2,5/5-OB0C-1000	5 V CC	58 V/1 A	0007 206.02
D 2,5/5-OB0C-1000	24 V CC	58 V/1 A	0007 207.03
D 2,5/5-OB0C-2000	5 V CC	30 V/2 A	0007 208.14
D 2,5/5-OB0C-2000	24 V CC	30 V/2 A	0007 209.15

Fuse and strap plugs

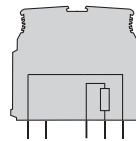


Fuse plugs



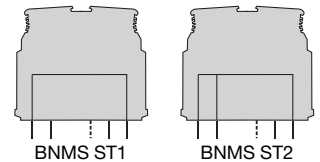
Grey body

Fuse plugs



Grey body

Strap plugs

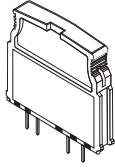


Grey body

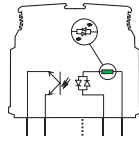
Part number

Type	P/N	Type	P/N	Type	P/N
BNMS F125mA-1	125V / 125 mA	0031 821.01	BNMS F125mA-3	125V / 125 mA	0031 827.07
BNMS F500mA-1	125V / 500 mA	0031 838.12	BNMS F125mA-4	250V / 125 mA	0031 828.10
BNMS F2A-1	125V / 2 A	0031 822.02			
BNMS F5A-1	125V / 5 A	0031 823.03			
BNMS F125mA-2	250V / 125 mA	0031 824.04			
BNMS F2A-2	250V / 2 A	0031 825.05			
BNMS F5A-2	250V / 5 A	0031 826.06			
				BNMS ST1	0031 829.11
				BNMS ST2	0031 830.16

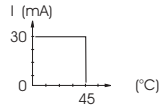
Input optocoupler plugs



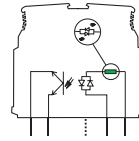
5 V DC



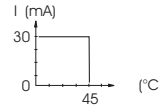
Derating curve



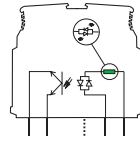
24 V DC



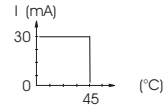
Derating curve



48 V DC



Derating curve



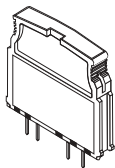
Part number

Type	P/N	Type	P/N	Type	P/N
BNMS T5V-1	0031 831.03	BNMS T24V-1	0031 800.21	BNMS T48V-1	0031 801.16

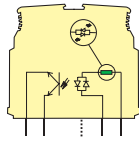
Characteristics

INPUT					
Voltage	4,5 V to 5,5 V DC	19,2 V to 27,6 V DC	38,4 V to 55,2 V DC		
Max. current	6 mA	5 mA	4,1 mA		
Typical triggering threshold at Is = 100%	3,5 V	12 V DC	21 V DC		
Switching time	20 µs / 1,3 ms	20 µs / 1,3 ms	20 µs / 1,3 ms		
Leakage current		1 mA	0,8 mA		
OUTPUT					
Max. voltage. / Max. current	58 V / 30 mA	58 V / 30 mA	58 V / 30 mA		
Residual voltage max. I and rated V standard	2,3 V DC	2,3 V DC	2,3 V DC		
max.	2,7 V DC	2,7 V DC	2,7 V DC		
Input / Output isolation	2,5 kV	2,5 kV	2,5 kV		
TEMPERATURE					
Storage	- 30°C to + 80°C	- 30°C to + 80°C	- 30°C to + 80°C		
Operating	- 20°C to + 45°C	- 20°C to + 45°C	- 20°C to + 45°C		
Body color	White	White	White		

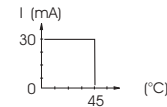
Input optocoupler plugs



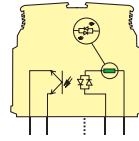
24 V AC



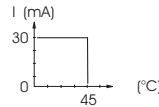
Derating curve



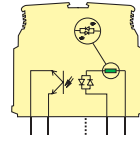
48 V AC



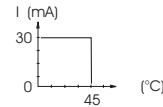
Derating curve



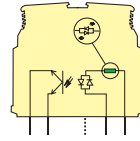
115 V AC



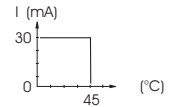
Derating curve



230 V AC



Derating curve



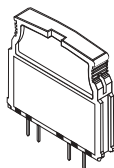
Part number

Type	P/N	Type	P/N	Type	P/N	Type	P/N
BNMS T24V-1	0031 802.17	BNMS T48V-1	0031 803.10	BNMS T115V-1	0031 804.11	BNMS T230V-1	0031 805.12

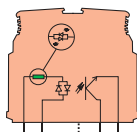
Characteristics

INPUT							
Voltage	20,4 V to 26,4 V AC	40,8 V to 52,8 V AC	98 V to 126,5 V AC	195,5 V to 253 V AC			
Max. current	8,5 mA	4,5 mA	8 mA	7 mA			
Typical triggering threshold at Is = 100%	13 V AC	22 V AC	50 V AC	95 V AC			
Switching time	6 ms / 10 ms	6 ms / 10 ms	6 ms / 10 ms	6 ms / 10 ms			
Leakage current	1 mA	1 mA	2 mA	2 mA			
OUTPUT							
Max. voltage. / Max. current	58 V / 30 mA	58 V / 30 mA	58 V / 30 mA	58 V / 30 mA			
Residual voltage max. I and rated V standard	2,3 V DC	2,3 V	2,3 V	2,3 V			
max.	2,7 V DC	2,7 V	2,7 V	2,7 V			
Input / Output isolation	2,5 kV	2,5 kV	2,5 kV	2,5 kV			
TEMPERATURE							
Storage	- 30°C to + 80°C	- 30°C to + 80°C	- 30°C to + 80°C	- 30°C to + 80°C			
Operating	- 20°C to + 45°C	- 20°C to + 45°C	- 20°C to + 45°C	- 20°C to + 45°C			
Body color	Yellow	Yellow	Yellow	Yellow			

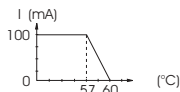
Output optocoupler plugs CE



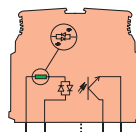
100 mA - 5 V DC



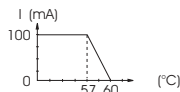
Derating curve



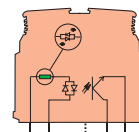
100 mA - 24 V DC



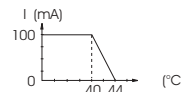
Derating curve



100 mA - 48 V DC



Derating curve



Note 1 :

$$F_{max} = (1 - 0,007 \times V_s) / (L \times I_s^2)$$

or

$$F_{max} = (1 - 0,007 \times V_s) / (P \times \frac{L}{R})$$

Note 2 :

$$F_{max} = (1 - 0,012 \times V_s) / (L \times I_s^2)$$

or

$$F_{max} = (1 - 0,012 \times V_s) / (P \times \frac{L}{R})$$

Part number

Type	P/N
BNMS P5V-3	0031 809.26

Type	P/N
BNMS P24V-3	0031 810.12

Type	P/N
BNMS P48V-3	0031 811.07

Characteristics

INPUT				
Voltage		4,5 V to 5,5 V DC	20,4 V to 28,8 V DC	40,8 V to 57,6 V DC
Max. current		8,5 mA	4,8 mA	3,9 mA
Typical triggering threshold		2,9 V DC	16 V DC	26 V DC
Switching time	C/O	20 μ s / 1,3 ms	20 μ s / 1,3 ms	20 μ s / 1,3 ms
Leakage current		1 mA	1 mA	1 mA
OUTPUT				
Max. voltage. / Max. current		58 V / 100 mA	58 V / 100 mA	58 V / 100 mA
Residual voltage max. I and rated V standard		1 V DC	1 V DC	1 V DC
	max.	1,3 V DC	1,3 V DC	1,3 V DC
Frequency with inductive load		See Note 1	See Note 1	See Note 1
Input / Output isolation		2,5 kV	2,5 kV	2,5 kV
TEMPERATURE				
Storage		-30°C to +80°C	-30°C to +80°C	-30°C to +80°C
Operating		-20°C to +60°C	-20°C to +60°C	-20°C to +44°C
Body color		Red	Red	Red

V_s = Output voltage supply

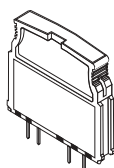
I_s = Output current

L = Inductive load

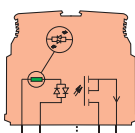
P = Load power

R = Load resistance

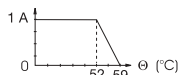
Output optocoupler plugs CE



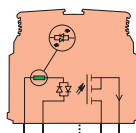
1 A - 5 V DC



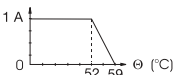
Derating curve



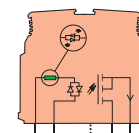
1 A - 24 V DC



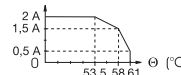
Derating curve



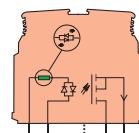
2 A - 5 V DC



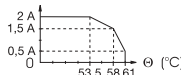
Derating curve



2 A - 24 V DC



Derating curve



Part number

Type	P/N
BNMS P5V-2	0031 818.16

Type	P/N
BNMS P24V-2	0031 819.17

Type	P/N
BNMS P5V-1	0031 814.02

Type	P/N
BNMS P24V-1	0031 815.03

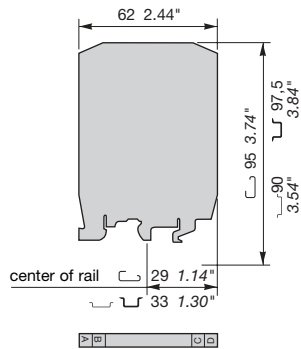
Characteristics

INPUT					
Voltage		4,5 V to 5,5 V DC	20,4 V to 28,8 V AC	4,5 V to 5,5 V DC	20,4 V to 28,8 V DC
Max. current		12,5 mA	7 mA	12,5 mA	7 mA
Typical triggering threshold at $I_s = 100\%$		3,5 V DC	10 V DC	3,5 V DC	10 V DC
Switching time	C/O	20 μ s / 250 μ s	50 μ s / 35 μ s	20 μ s / 250 μ s	50 μ s / 350 μ s
Leakage current		1 mA	1 mA	1 mA	1 mA
OUTPUT					
Max. voltage / Max. current		58 V / 1 A	58 V / 1 A	30 V DC / 2 A	30 V / 2 A
Residual voltage max. I		1,3 V	1,3 V	1,3 V	1,3 V
Frequency with inductive load		See Note 1	See Note 1	See Note 2	See Note 2
Input / Output isolation		2,5 kV	2,5 kV	2,5 V	2,5 kV
TEMPERATURE					
Storage		-30°C to +80°C	-30°C to +80°C	-30°C to +80°C	-30°C to +80°C
Operating		-20°C to +59°C	-20°C to +59°C	-20°C to +61°C	-20°C to +61°C
Body color		Red	Red	Red	Red

Electronic interfaces

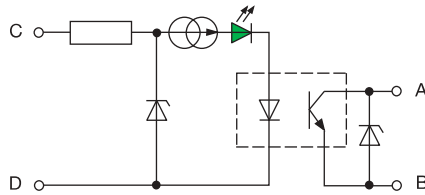
Optocoupler modules
Series 8000

 **DIN 1 - 3**



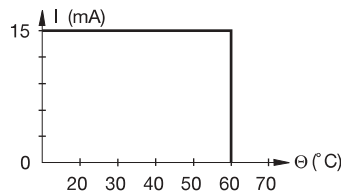
OBC 0015
24, 48 V DC

Spacing 9 mm .354"



- Allows isolation of DC input voltage and DC output voltage
- Input and output are overvoltage protected

Ambient temperature derating curve



Part numbers

Type	P/N
OBC 0015 24 V DC	0008 016.27
OBC 0015 48 V DC	0008 020.07
Comb-type jumper bar	
PC9 10 poles 15 A	0210 160.12

Approvals (Contact Entelec)



Characteristics

INPUT

Input voltage	10.2 V DC to 28.8 V DC	48 V DC + 20%, - 15%
Pull-in voltage	10.2 V DC	40.8 V DC
Input current	13 mA to 24 V - 10 mA to 12 V	11 mA
Switching time C / O	20 μs / 30 μs	

OUTPUT

Output voltage max.	60 V DC
Output current min.	
Output current max.	15 mA
Residual voltage at I max.	3 V (1 V at 10 mA)
Isolation input / output	3000 V rms

TEMPERATURE

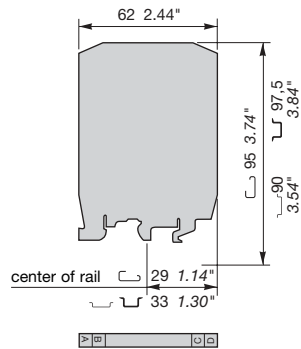
Ambient temperature	
Storage	- 40°C to + 80°C
Operating temperature	- 20°C to + 60°C

Accessories, marking, wire size : see Accessories section.

Electronic interfaces

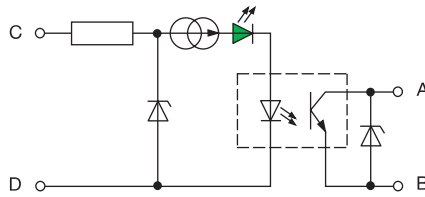
Optocoupler modules
Series 8 000

DIN 1 - 3



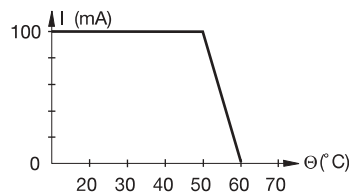
OBC 0100
 24 V DC

Spacing 9 mm .354"



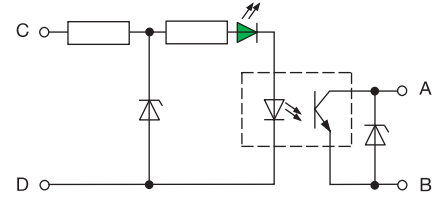
- Allows isolation of DC input voltage and DC output voltage
- Input and output are overvoltage protected

Ambient temperature derating curve



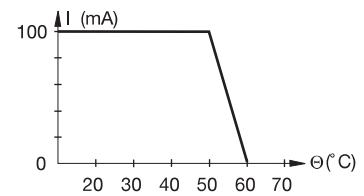
OBC 0100
 48 V DC

Spacing 9 mm .354"



- Allows isolation of DC input voltage and DC output voltage
- Input and output are overvoltage protected

Ambient temperature derating curve



Part numbers

Type	P/N	Type	P/N
OBC 0100 24 V DC	0008 017.20	OBC 0100 48 V DC	0008 021.24
Comb-type jumper bar PC 9 10 poles 15 A	0210 160.12	Comb-type jumper bar PC 9 10 poles 15 A	0210 160.12

Approvals (Contact Entelec)



Characteristics

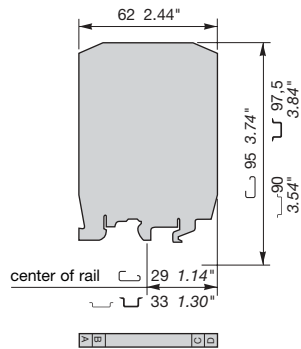
INPUT	
Input voltage	10.2 V DC to 28.8 V DC
Pull-in voltage	10.2 V DC
Input current	7 mA at 12 V 10 mA at 24 V
Switching time C / O	20 μs / 50 μs
OUTPUT	
Output voltage max.	60 V DC
Output current min.	60 V DC
Output current max.	100 mA
Residual voltage at I max.	< 1.5 V
Isolation input / output	3000 V rms
TEMPERATURE	
Ambient temperature	
Storage	- 40°C to + 80°C
Operating temperature	- 20°C to + 60°C

Accessories, marking, wire size : see Accessories section.

Electronic interfaces

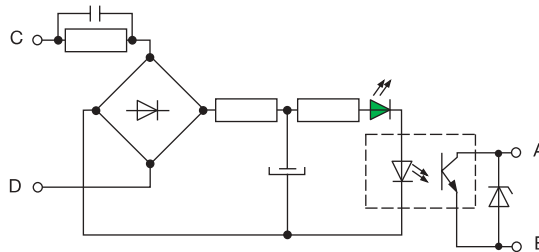
Optocoupler modules
Series 8 000

DIN 1 - 3



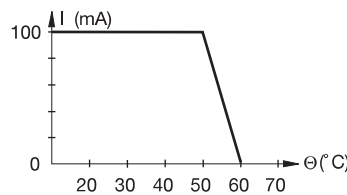
OBC 0100
110, 230 V AC

Spacing 9 mm .354"



- Allows isolation of AC input voltage and DC output voltage
- Output protected against overvoltage
- Input protected against overvoltage (consult us)

Ambient temperature derating curve

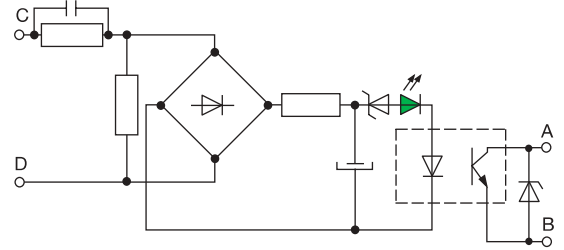


Opto coupler protected against leakage current

OBC 0100 R

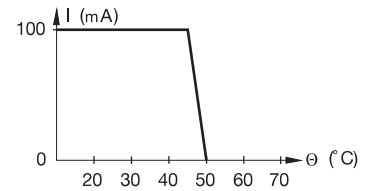
110, 230 V AC

Spacing 9 mm .354"



- Allows isolation of AC input voltage and DC output voltage
- Protected against leakage current ≤ 5 mA

Ambient temperature derating curve



Part numbers

Type	P/N	Type	P/N
OBC 0100	110 V AC 0008 024.27	OBC 0100 R	110 V AC 0008 076.03
OBC 0100	230 V AC 0008 027.22	OBC 0100 R	230 V AC 0008 077.04
Comb-type jumper bar		Comb-type jumper bar	
PC 9	10 poles 15 A 0210 160.12	PC 9	10 poles 15 A 0210 160.12

Approvals (Contact Entrellec)



Characteristics

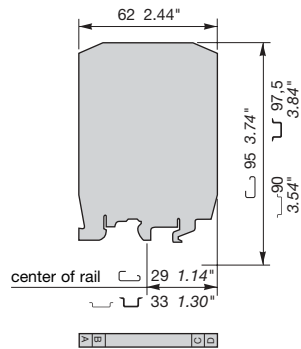
INPUT	110 V AC		230 V AC	
Input voltage	93.5 V AC to 152.4 V AC	230 V AC + 15%, - 20%	93.5 V to 152.4 V (50 Hz)	93.5 V to 127 V (60 Hz)
Pull-in voltage	93.5 V AC	184 V AC	93.5 V	195.5 V
Input current	8 mA	8 mA	12 mA	15 mA
Switching time C / O	5 ms / 5 ms		10 ms / 25 ms	
Permissible leakage current			5 mA	
OUTPUT	60 V DC		57.6 V	
Output voltage max.	60 V DC		57.6 V	
Output current min.			57.6 V	
Output current max.	100 mA		100 mA	
Residual voltage at I max. and V rated	< 1.5 V		< 1.5 V	
Isolation input / output	3000 V rms		3000 V rms	
TEMPERATURE	- 40°C to + 80°C		- 40°C to + 80°C	
Ambient temperature	- 40°C to + 80°C		- 40°C to + 80°C	
Storage	- 20°C to + 60°C		- 20°C to + 50°C	
Operating temperature	- 20°C to + 60°C		- 20°C to + 50°C	

Accessories, marking, wire size : see Accessories section.

Electronic interfaces

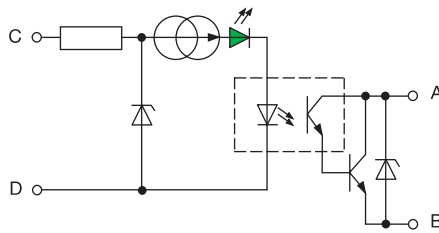
Optocoupler modules
Series 8 000

DIN 1 - 3



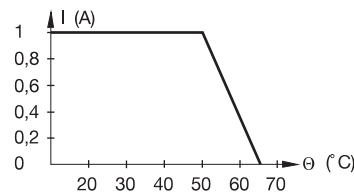
OBC 1000
24 V DC

Spacing 9 mm .354"



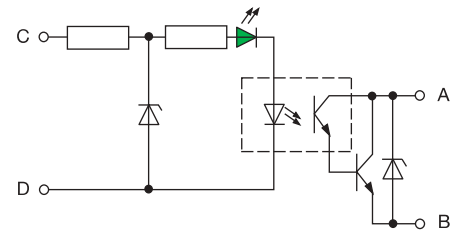
- Allows isolation of DC input voltage and DC output voltage
- Input and output are overvoltage protected

Ambient temperature derating curve



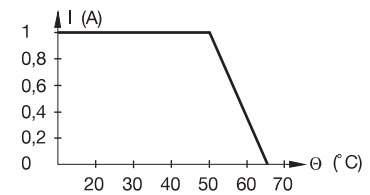
OBC 1000
5, 48 V DC

Spacing 9 mm .354"



- Allows isolation of DC input voltage and DC output voltage
- Input and output are overvoltage protected

Ambient temperature derating curve



Part numbers

Type	P/N	Type	P/N
OBC 1000 24 V DC	0008 018.01	OBC 1000 5 V DC	0008 014.25
		OBC 1000 48 V DC	0008 022.25
Comb-type jumper bar		Comb-type jumper bar	
PC 9 10 poles 15 A	0210 160.12	PC 9 10 poles 15 A	0210 160.12

Approvals (Contact Entelec)



Characteristics

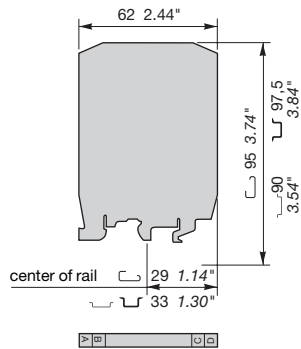
INPUT		5 V DC + 10 %, - 10 %		48 V DC + 20 %, - 15 %	
Input voltage	10.2 V DC to 28.8 V DC				
Pull-in voltage	10.2 V DC	4.5 V DC		40.8 V DC	
Input current	6.5 mA to 12 V 9.5 mA to 24 V	6.5 mA		4.5 mA	
Switching time C / O	20 μs / 50 μs			20 μs / 50 μs	
OUTPUT		60 V DC		60 V DC	
Output voltage max.	60 V DC				
Output current min.					
Output current max.	1 A			1 A	
Residual voltage at I max.	< 1 V			< 1 V	
Isolation input / output	3000 V rms			3000 V rms	
TEMPERATURE		- 40°C to + 80°C		- 40°C to + 80°C	
Ambient temperature					
Storage	- 40°C to + 80°C			- 40°C to + 80°C	
Operating temperature	- 20°C to + 65°C			- 20°C to + 65°C	

Accessories, marking, wire size : see Accessories section.

Electronic interfaces

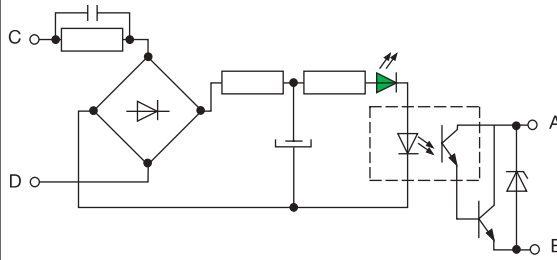
Optocoupler modules
Series 8 000

DIN 1 - 3

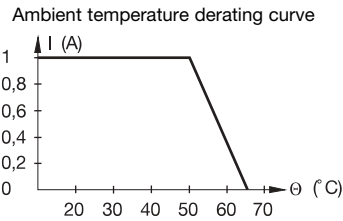


OBC 1000
 110, 230 V AC

Spacing 9 mm .354"



- Allows isolation of AC input voltage and DC output voltage
- Output overvoltage protected
- Input overvoltage protected (consult us)



Part numbers

Type	P/N
OBC 1000 110 V AC	0008 025.20
OBC 1000 230 V AC	0008 028.03
Comb-type jumper bar	
PC 9 10 poles 15 A	0210 160.12

Approvals (Contact Entelec)



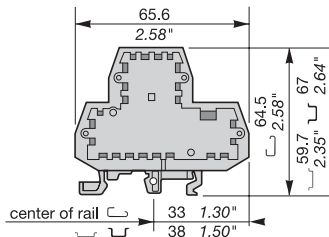
Characteristics

INPUT	
Input voltage	93.5 V AC to 152.4 V AC 230 V AC + 15%, - 20%
Pull-in voltage	93.5 V AC 184 V AC
Input current	8 mA 7 mA
Switching time C / O	2 ms / 5 ms 1 ms / 5 ms
OUTPUT	
Output voltage max.	60 V DC
Output current min.	
Output current max.	1 A
Residual voltage at I max.	< 1 V
Isolation input / output	3000 V rms
TEMPERATURE	
Ambient temperature	
Storage	- 40°C to + 80°C
Operating temperature	- 20°C to + 65°C

Accessories, marking, wire size : see Accessories section.

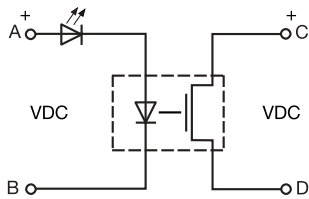
Electronic interfaces

Power Optocoupler modules - 1.5 A
Series 7 000



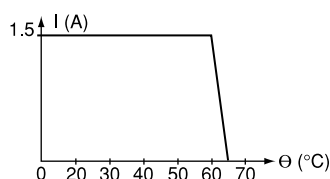
OBC 1500 5, 12, 24 V DC

Spacing 9mm .354"



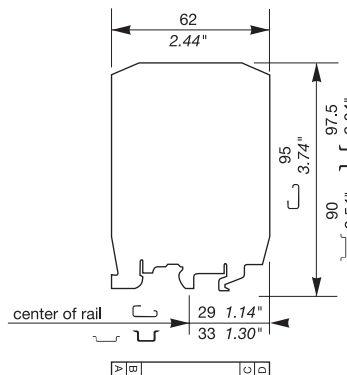
- Compact overall dimensions
- Transient protection on input and output
- Can be used to multiplex analog signals

Ambient temperature derating curve



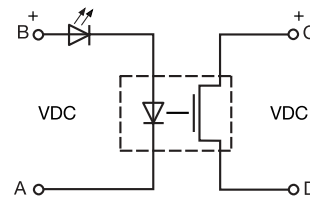
Electronic Interfaces

Power Optocoupler modules - 5 A
Series 8 000



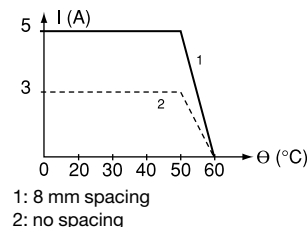
OBC 5000 5, 12, 24 V DC

Spacing 9 mm .354"



- High power in a 9mm wide module
- Transient protection on input and output
- Can be used to multiplex analog signals

Ambient temperature derating curve



Part numbers	Type	P/N	Part numbers	Type	P/N
	OBC 1500			OBC 5000	
	5 V DC	0306 161.04		5 V DC	0306 277.10
	12 V DC	0306 162.05		12 V DC	0306 164.07
	24 V DC	0306 163.06		24 V DC	0008 045.04

Approvals (Contact Entelec)	☞/NRTL			Approvals (Contact Entelec)	☞/NRTL		
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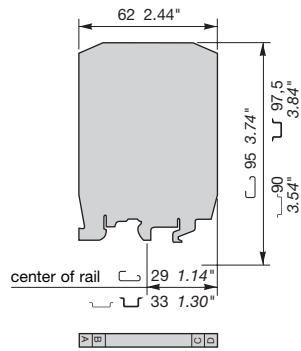
Characteristics	OBC 1500			Characteristics	OBC 5000		
	5 V DC	12 V DC	24 V DC		5 V DC	12 V DC	24 V DC
Input voltage, ± 10%				Input, ± 10%			
Input current	15 mA	11.5 mA	10.5 mA	Input current	35 mA	35 mA	35 mA
Switching time C/O	1 ms/0.225 µs	1 ms/0.225 µs	1 ms/0.225 µs	Switching time C/O	5 ms/2.5 ms	5 ms/2.5 ms	5 ms/2.5 ms
Status device	Red LED	Red LED	Red LED	Device status	Red LED	Red LED	Red LED
Output voltage max	30 V DC	30 V DC	30 V DC	Output voltage max	60 V DC	60 V DC	60 V DC
Output current max	1.5 A	1.5 A	1.5 A	Output current max	5 A	5 A	5 A
Residual voltage at I max	< 150 mV	< 150 mV	< 150 mV	Residual voltage at I max	< 0.2 V	< 0.2 V	< 0.2 V
Isolation Input/Output	2500 V rms	2500 V rms	2500 V rms	Isolation Input/Output	2500 V rms	2500 V rms	2500 V rms
Ambient temperature				Ambient temperature			
Storage	-40°C to +80°C	-40°C to +80°C	-40°C to +80°C	Storage	-40°C to +80°C	-40°C to +80°C	-40°C to +80°C
Operating	-40°C to +60°C	-40°C to +60°C	-40°C to +60°C	Operating	-40°C to +60°C	-40°C to +60°C	-40°C to +60°C

Installation	OBC 1500			Installation	OBC 5000		
	33.8	33.8	33.8		33.8	33.8	33.8
Density per foot				Density per foot			
Field wiring capacity	22 - 14 AWG	22 - 14 AWG	22 - 14 AWG	Field wiring capacity	22 - 14 AWG	22 - 14 AWG	22 - 14 AWG
Recommended marking method	RC610	RC610	RC610	Recommended marking method	RC65	RC65	RC65
				Jumper comb, 10 points, isolated, P/N	0210 160.12	0210 160.12	0210 160.12
Accessories, marking, wire size : see Accessories section.				Accessories, marking, wire size : see Accessories section.			

Electronic interfaces

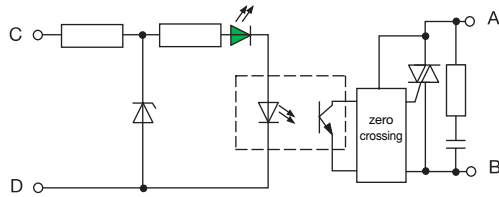
Optocoupler modules
Series 8 000

DIN 1 - 3



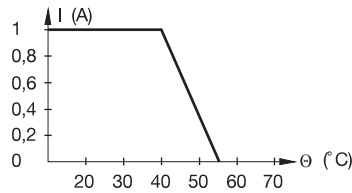
OBA 1000
 5, 48 V DC

Spacing 9 mm .354"



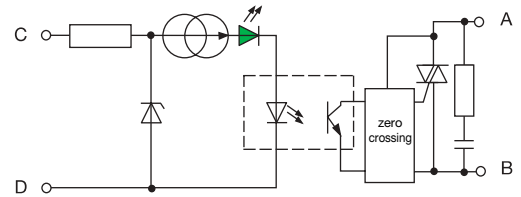
- Allows isolation of DC input voltage and AC output voltage
- Input and output are overvoltage protected

Ambient temperature derating curve



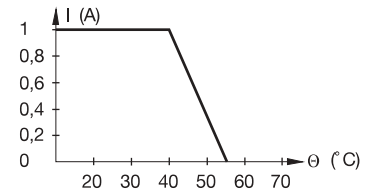
OBA 1000
 24 V DC

Spacing 9 mm .354"



- Allows isolation of DC input voltage and AC output voltage
- Input and output are overvoltage protected

Ambient temperature derating curve



Part numbers

Type	P/N	Type	P/N
OBA 1000 5 V DC	0008 015.26	OBA 1000 24 V DC	0008 019.02
OBA 1000 48 V DC	0008 023.26		
Comb-type jumper bar		Comb-type jumper bar	
PC 9 10 poles 15 A	0210 160.12	PC 9 10 poles 15 A	0210 160.12

Approvals (Contact Entelec)



Characteristics

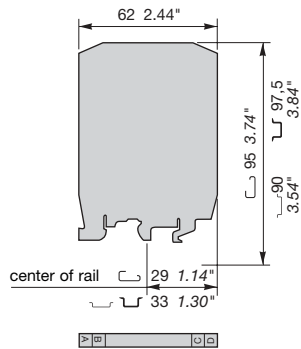
INPUT			
Input voltage	5 V DC + 10%, - 10%	48 V DC + 20%, - 15%	10.2 V DC to 28.8 V DC
Pull-in voltage	4.5 V DC	40.8 V DC	10.2 V DC
Input current	10 mA	7 mA	8 mA to 12 mA
Switching time C / O	10 ms / 10 ms		10 ms / 10 ms
OUTPUT			
Output voltage min. / max.	24 to 250 V AC		24 to 250 V AC
Output current min.	25 mA		25 mA
Output current max.	1 A		1 A
Residual voltage at I max.	< 1.6 V		< 1.6 V
Isolation input / output	3000 V rms		3000 V rms
TEMPERATURE			
Ambient temperature			
Storage	- 40°C to + 80°C		- 40°C to + 80°C
Operating temperature	- 20°C to + 55°C		- 20°C to + 55°C

Accessories, marking, wire size : see Accessories section.

Electronic interfaces

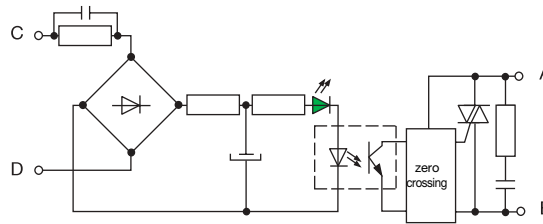
Optocoupler modules
Series 8 000

DIN 1 - 3



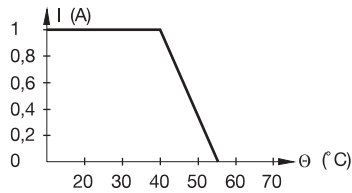
OBA 1000
 110 V AC

Spacing 9 mm .354"



- Allows isolation of AC input voltage and DC output voltage
- Output overvoltage protected
- Input overvoltage protected (consult us)

Ambient temperature derating curve



Part numbers

Type	P/N
OBA 1000 110 V AC	0008 026.21
Comb-type jumper bar PC 9 10 poles 15 A	0210 160.12

Approvals (Contact Entelec)



Characteristics

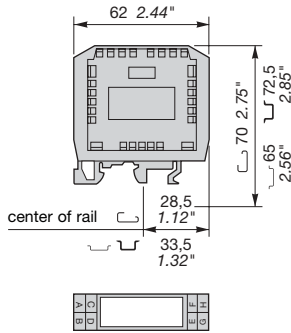
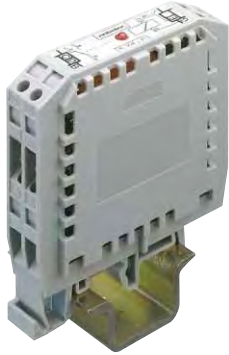
INPUT	
Input voltage	93.5 V AC to 152.4 V AC
Pull-in voltage	93.5 V AC
Input current	7 to 10 mA
Switching time C / O	10 ms / 10 ms
OUTPUT	
Output voltage min. / max.	24 to 250 V AC
Output current min.	25 mA
Output current max.	1 A
Residual voltage at I max.	< 1.6 V
Isolation input / output	3000 V rms
TEMPERATURE	
Ambient temperature	
Storage	- 40°C to + 80°C
Operating temperature	- 20°C to + 55°C

Accessories, marking, wire size : see Accessories section.

Electronic interfaces

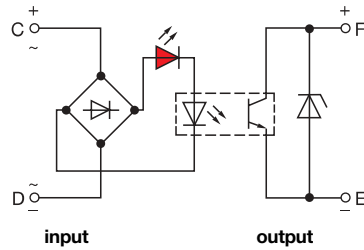
Optocoupler modules
Series 10 000

DIN 1 - 3

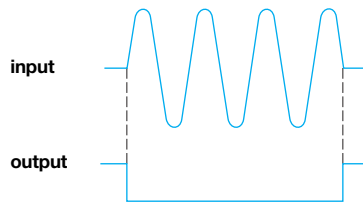


EBO1 15 V DC, 24, 48 V AC/DC

Spacing 18 mm .709"

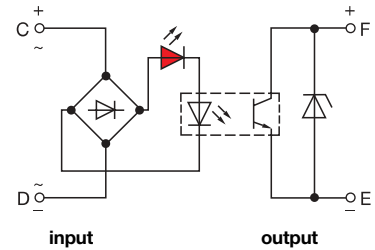


- Decoupling between :
input 15 V DC and output 12 to 48 V DC
input 24 V AC/DC and output 12 to 48 V DC
input 48 V AC/DC and output 12 to 48 V DC

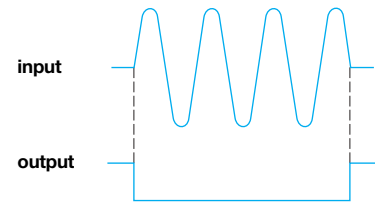


EBO1 127, 220 V AC/DC

Spacing 18 mm .709"



- Decoupling between :
input 127 V AC/DC and output 12 to 48 V DC
input 220 V AC/DC and output 12 to 48 V DC



Part numbers

Type	P/N	Type	P/N
EBO1 15 V DC	0010 119.20	EBO1 127 V AC/DC	0010 108.06
EBO1 24 V AC/DC	0010 022.12	EBO1 220 V AC/DC	0010 023.13
EBO1 48 V AC/DC	0010 048.04		

Approvals (Contact Entelec)



Characteristics

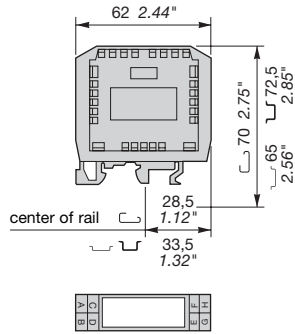
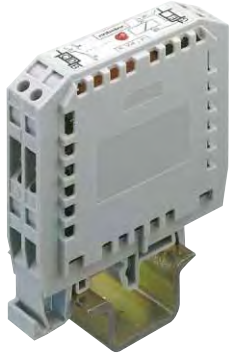
INPUT	15 V DC					127 V AC/DC		220 V AC/DC	
	24 V AC	48 V AC	24 V DC	48 V DC					
Nominal voltage	15 V DC	24 V AC	48 V AC	24 V DC	48 V DC	127 V AC/DC	220 V AC/DC		
Pull-in voltage	11 V DC	12 V AC	20 V AC	16 V DC	29 V DC	88 V AC	128 V AC		
Input current	8 mA	10 mA	5 mA	8 mA	5 mA	6 mA	5 mA		
Switching time C / O	10 ms / 7 ms								
Power requirements	0.12 W	0.24 VA	0.24 W			1.4 W - 1.4 VA	1.1 W - 1.1 VA		
OUTPUT									
	Output voltage max.			58 V DC			58 V DC		
	Output current			100 mA			100 mA		
	Residual voltage at I max.			1.3 V			1.3 V		
	Isolation input / output			2500 V rms			2500 V rms		
Peak current			1 A / 1 ms			1 A / 1 ms			
TEMPERATURE									
	Ambient temperature								
	Storage			- 40°C to + 80°C			- 40°C to + 80°C		
Operating temperature			- 20°C to + 40°C			- 20°C to + 40°C			

Accessories, marking, wire size : see Accessories section.

Electronic interfaces

Optocoupler modules
Series 10 000

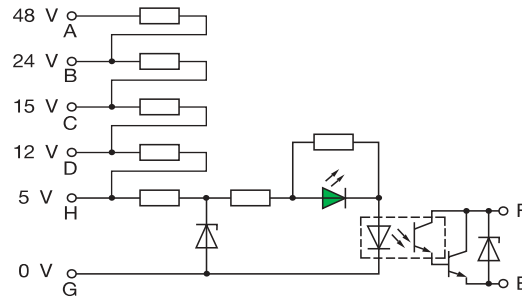
DIN 1 - 3



EBO3 DC

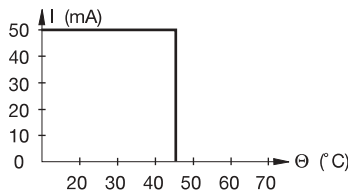
5, 12, 15, 24, 48 V DC

Spacing 18 mm .709"



- Decoupling between :
input 5 to 48 V DC and output 12 to 48 V DC
- Input and output are overvoltage protected

Ambient temperature derating curve



Part numbers

Type	P/N
EBO3 DC	0010 230.03

Approvals (Contact Entelec)



Characteristics

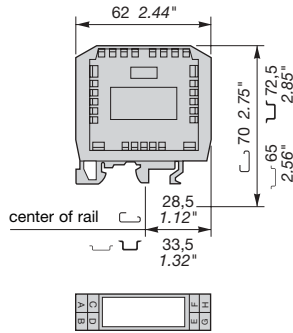
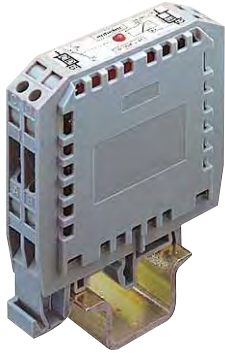
INPUT					
Input voltage $\pm 10\%$ on DC	5 V DC	12 V DC	15 V DC	24 V DC	48 V DC
Pull-in voltage	4 V DC	9.6 V DC	12 V DC	19.2 V DC	38.4 V DC
Input current	11 mA				
Switching time C / O	< 20 μ s / < 80 μ s				
OUTPUT					
Output voltage	55 V DC				
Output current max.	50 mA				
Residual voltage	1.3 V				
Isolation input / output	2400 V rms				
TEMPERATURE					
Ambient temperature					
Storage	- 40°C to + 80°C				
Operating temperature	- 20°C to + 45°C				

Accessories, marking, wire size : see Accessories section.

Electronic interfaces

Optocoupler modules
Series 10 000

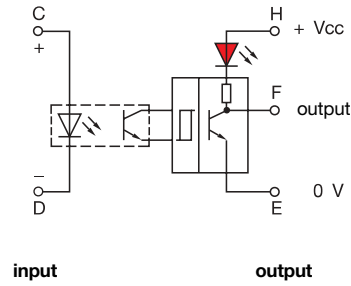
DIN 1 - 3



EB IDC

Input interface for logic
TTL, CMOS, HLL

Spacing 18 mm .709"



input

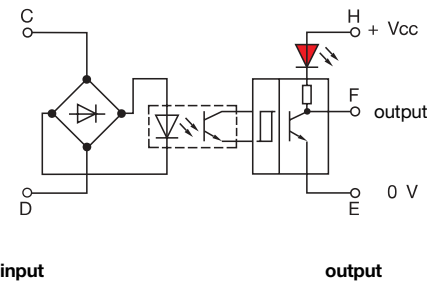
output

- Interface between a 10 to 32 V DC input and a logic circuit TTL, CMOS or HLL.

EB IAC

Input interface for logic
TTL, CMOS, HLL

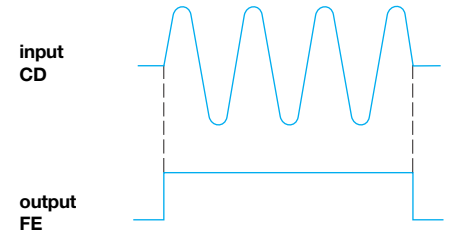
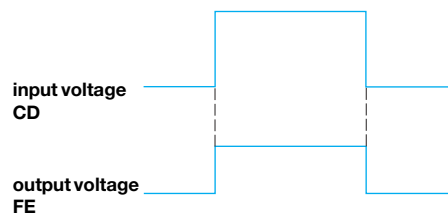
Spacing 18 mm .709"



input

output

- Interface between an AC input and a logic circuit TTL, CMOS or HLL
Input 90 to 140 V AC.



Part numbers

Type P/N	Type P/N	Type P/N	Type P/N	Type P/N
EB IDC 5 0010 031.13	EB IDC 15 0010 032.14	EB IDC 24 0010 033.15	EB IAC 5 0010 026.16	EB IAC 15 0010 028.20
TTL	CMOS	HLL	TTL	CMOS

Approvals (Contact Enteltec)



Characteristics

INPUT	EB IDC 5	EB IDC 15	EB IDC 24	EB IAC 5	EB IAC 15
Input voltage	10 to 32 V DC	10 to 32 V DV	10 to 32 V DC	90 to 140 V AC	90 to 140 V AC
Input current	32 mA to 32 V	32 mA to 32 V	32 mA to 32 V	10 mA	10 mA
Non-functioning current	1.5 mA	1.5 mA	1.5 mA	1.5 mA	1.5 mA
Switching time	5 ms	5 ms	5 ms	5 ms	5 ms
Input resistance				44 kΩ	44 kΩ
Power requirement	60 mW	225 mW	430 mW	60 mW	225 mW
OUTPUT					
Logic voltage supply HE	5 V ± 1 V	15 V ± 3 V	24 V ± 6 V	5 V ± 1 V	15 V ± 3 V
Residual voltage FE	0.4 V to 25 mA	0.4 V to 25 mA	0.4 V to 25 mA	0.4 V to 25 mA	0.4 V to 25 mA
Output current max. F → E	25 mA	25 mA	25 mA	25 mA	25 mA
Leakage current	100 μA	100 μA	100 μA	100 μA	100 μA
Logic current supply HE	12 mA	15 mA	18 mA	12 mA	15 mA
Isolation input / output	2500 V rms	2500 V rms	2500 V rms	2500 V rms	2500 V rms
TEMPERATURE					
Ambient temperature					
Storage	- 40°C to + 80°C	- 40°C to + 80°C	- 40°C to + 80°C	- 40°C to + 80°C	- 40°C to + 80°C
Operating temperature	- 20°C to + 40°C	- 20°C to + 40°C	- 20°C to + 40°C	- 20°C to + 40°C	- 20°C to + 40°C

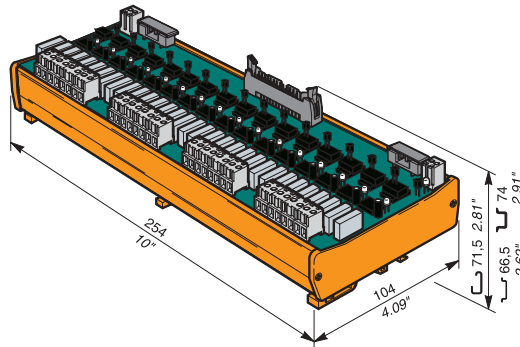
Accessories, marking, wire size : see Accessories section.

interfast

Decoupling interface for PLC 16 optocoupler module with an HE 10/26 flat connector

16 optocoupler two-wire interface protected against leakage current

Width 254 mm 10"



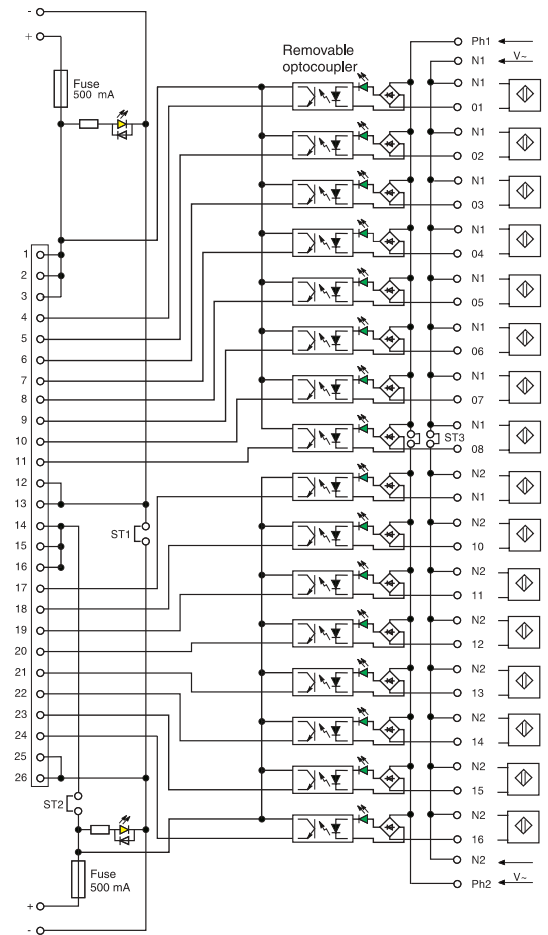
Note: See Section 6, PLC Wiring Systems, for additional optocoupler interfaces.

Comes with 5 x 20 mm fuses - High interrupting capacity - Rating 500 mA - 250 V.

Wiring diagram

- Permits electrical isolation between an AC input and a DC output.
- Protected against leakage current ≤ 5 mA.
- Indicating LED for PLC card supply.
- Inputs are mutually isolated for multi-source applications Input voltage.

Wiring diagram



References

Type		Ref.
OI HE16C-050-B	24 VAC / VDC	0020 547.27
OI HE16C-050-B	48 VAC / VDC	0020 541.21
OI HE16C-050-B	110 VAC	0020 237.20
OI HE16C-050-B	230 VAC	0020 370.11

Approval

Characteristics

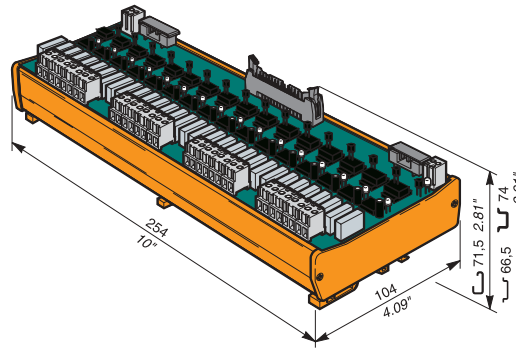
INPUT	24 VAC/VDC	48 VAC/VDC	110VAC 50Hz	110VAC/60Hz	230 VAC
Input voltage	21,6 to 26,4 V	43,2 to 52,8 V	94 to 152 V	94 to 127 V	196 to 276 V
Typical triggering threshold	15 V	30 V	94 V	94 V	196 V
Input current	9 to 12 mA	9 to 11 mA	15 to 25 mA	15 to 25 mA	18 to 26 mA
Switching time C/O	1ms/25ms	1ms/55ms	10ms/25ms	10ms/25ms	10ms/25ms
Leakage current	1,5 mA	1,5 mA	5 mA	5 mA	5 mA
OUTPUT					
Max. output voltage	30 V				
Max. output current	50 mA				
Residual voltage max. I and rated V					
standard V	< 1,5 V / 50 mA				
max.	< 2,3 V / 50 mA				
Input / Output isolation	2000 V rms				
Isolation between each input channel	2000 V rms				
TEMPERATURE					
Ambient temperature					
Storage	- 40°C to + 80°C				
Operating	- 20°C to + 50°C				

interfast

Decoupling interface for PLC 16 optocoupler module with an HE 10/26 flat connector

16 optocoupler two-wire interface protected against leakage current

Width : 254 mm 10"



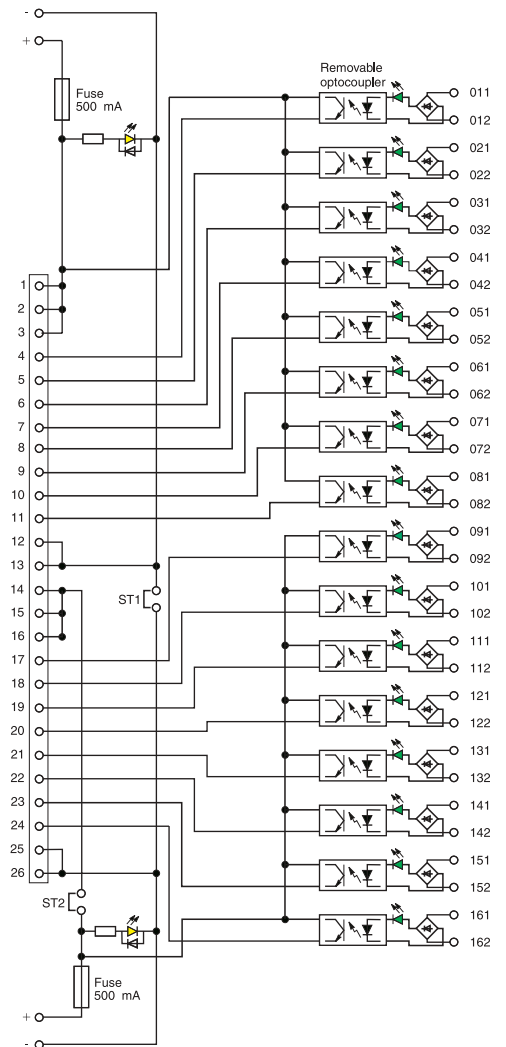
Note: See Section 6, PLC Wiring Systems, for additional optocoupler interfaces.

Comes with 5 x 20 mm fuses - High interrupting capacity - Rating 500 mA - 250 V.

Wiring diagram

- Permits electrical isolation between an AC input and a DC output.
- Protected against leakage current ≤ 5 mA.
- Indicating LED for PLC card supply.
- Inputs are mutually isolated for multi-source applications Input voltage.

Wiring diagram



References

Type		Ref.
OI HE16C-050	24 VAC / VDC	0020 545.25
OI HE16C-050	48 VAC / VDC	0020 597.12
OI HE16C-050	110 VAC	0020 233.24
OI HE16C-050	230 VAC	0020 235.26

Approval

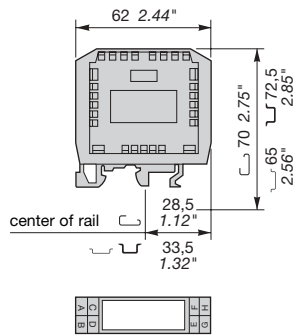
Characteristics

INPUT	24 VAC/VDC	48 VAC/VDC	110VAC 50Hz	110VAC/60Hz	230 VAC
Input voltage	21,6 to 26,4 V	43,2 to 52,8 V	94 to 152 V	94 to 127 V	196 to 276 V
Typical triggering threshold	15 V	30 V	94 V	94 V	196 V
Input current	9 to 12 mA	9 to 11 mA	15 to 25 mA	15 to 25 mA	18 to 26 mA
Switching time C/O	1ms/25ms	1ms/55ms	10ms/25ms	10ms/25ms	10ms/25ms
Leakage current	1,5 mA	1,5 mA	5 mA	5 mA	5 mA
OUTPUT					
Max. output voltage	30 V				
Max. output current	50 mA				
Residual voltage max. I and rated V					
standard V	< 1,5 V / 50 mA				
max.	< 2,3 V / 50 mA				
Input / Output isolation	2000 V rms				
Isolation between each input channel	2000 V rms				
TEMPERATURE					
Ambient temperature					
Storage	- 40°C to + 80°C				
Operating	- 20°C to + 50°C				

Electronic interfaces

Optocoupler modules
Series 10 000

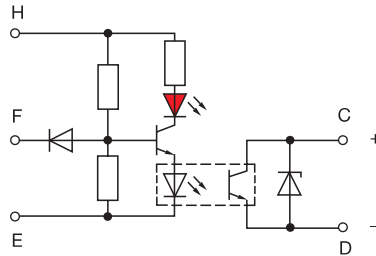
DIN 1 - 3



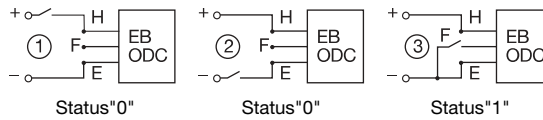
EB ODC

Output interface for logic
TTL, CMOS, HLL

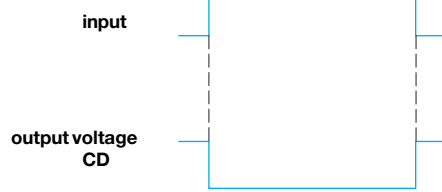
Spacing 18 mm .709"



- Interface between a logic circuit TTL, CMOS or HLL and a 12 to 60 V DC output
- 3 connection modes:



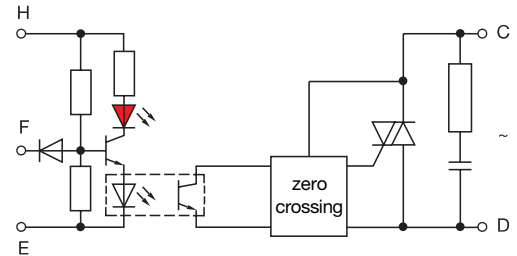
- These 3 modes can be combined.



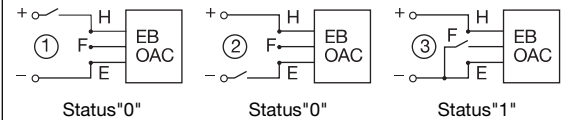
EB OAC

Output interface for logic
TTL, CMOS, HLL

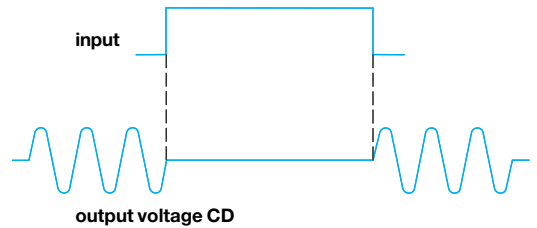
Spacing 18 mm .709"



- Interface between a logic circuit TTL, CMOS or HLL and a 24 to 280 V AC output
- 3 connection modes:



- Zero voltage detection on output circuit.



Part numbers

Type P/N	Type P/N	Type P/N	Type P/N	Type P/N	Type P/N
EB ODC 5	EB ODC 15	EB ODC 24	EB OAC 5	EB OAC 15	EB OAC 24
0010 037.11	0010 038.22	0010 039.23	0010 034.16	0010 035.17	0010 036.10
TTL	CMOS	HLL	TTL	CMOS	HLL

Approvals (Contact Entelec)



Characteristics

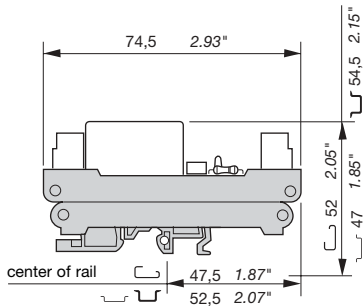
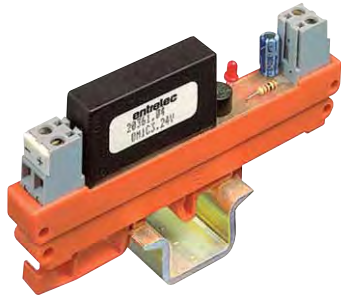
INPUT	EB ODC 5	EB ODC 15	EB ODC 24	EB OAC 5	EB OAC 15	EB OAC 24
Voltage HE	5 V + 1 V, - 0.5 V	15 V ± 20 %	24 V ± 20 %	5 V + 1 V, - 0.5 V	15 V ± 20 %	24 V ± 20 %
Current HE	11 mA	15 mA	14 mA	28 mA	12 mA	12 mA
FE current in mode 3				- 1.5 mA	- 0.7 mA	- 0.7 mA
Switching time	≤ 250 μs	≤ 250 μs	≤ 250 μs	10 ms	10 ms	10 ms
Input resistance						
Power requirement	55 mW	225 mW	340 mW	140mW	180 mW	290 mW
OUTPUT						
Voltage	12 to 60 V DC	12 to 60 V DC	12 to 60 V DC	24 to 280 V AC	24 to 280 V AC	24 to 280 V AC
Residual voltage	2.6 V max. to 1 A	2.6 V max. to 1 A	2.6 V max. to 1 A	± 1.4 V	± 1.4 V	± 1.4 V
Max. output current	1 A derating 20 mA / °C			1 A derating 20 mA / °C		
Leakage current	3 mA to 60 V	3 mA to 60 V	3 mA to 60 V	4 mA max.	4 mA max.	4 mA max.
Peak current	4 A / 1 s	4 A / 1s	4 A / 1s	30 A / 20 ms	30 A / 20 ms	30 A / 20 ms
Isolation input / output	2500 V rms	2500 V rms	2500 V rms	2500 V rms	2500 V rms	2500 V rms
Min. output current	50 mA	50 mA	50 mA	25 mA rms	25 mA rms	25 mA rms
TEMPERATURE						
Ambient temperature						
Storage	- 40°C to + 80°C	- 40°C to + 80°C	- 40°C to + 80°C	- 40°C to + 80°C	- 40°C to + 80°C	- 40°C to + 80°C
Operating temperature	- 20°C to + 40°C	- 20°C to + 40°C	- 20°C to + 40°C	- 20°C to + 40°C	- 20°C to + 40°C	- 20°C to + 40°C

Accessories, marking, wire size : see Accessories section.

Electronic interfaces

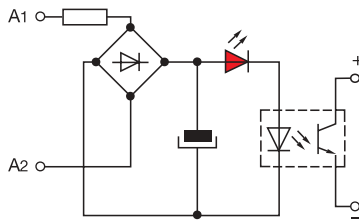
Optocoupler modules
Series 20 000

DIN 1 - 3



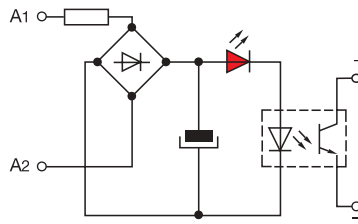
**Power optocoupler
 OM1C3**

Spacing 12.7 mm .500"

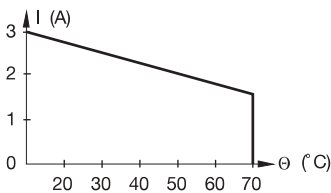


**Power optocoupler
 OM1A3**

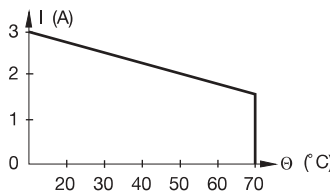
spacing 12,7 mm .500"



Ambient temperature derating curve



Ambient temperature derating curve



Part numbers

Type	P/N	Type	P/N
OM1C3 24 V AC/DC	0020 361.04	OM1A3 24 V AC/DC	0020 365.00
OM1C3 48 V AC/DC	0020 362.05	OM1A3 48 V AC/DC	0020 366.01
		OM1A3 110 V AC/DC	0020 367.02

Approvals (Contact Entelec)



Characteristics

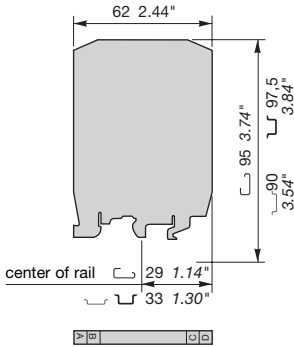
INPUT						
Input voltage + 15%, - 20%	24 V AC/DC	48 V AC/DC	24 V AC/DC	48 V AC/DC	110 V AC/DC	
Pull-in voltage	4.8 V	6.5 V	4.8 V	6.5 V	14.4 V	
Input current	11 mA		11 mA	11 mA	7 mA	
Power requirements	0.27 W	0.53 W	0.27 W	0.53 W	0.77 W	
Switching time	C/O	< 20 µs / < 600 µs	< 20 µs / < 600 µs			
OUTPUT						
Output voltage	3 to 60 V DC		24 to 280 V AC			
Output current	3 A		3 A			
Input / output isolation	2500 V rms		2500 V rms			
TEMPERATURE						
Ambient temperature	- 40°C to + 80°C		- 40°C to + 80°C			
Storage	- 20°C to + 70°C		- 20°C to + 70°C			
Operating temperature						

Accessories, marking, wire size : see Accessories section.

Electronic interfaces

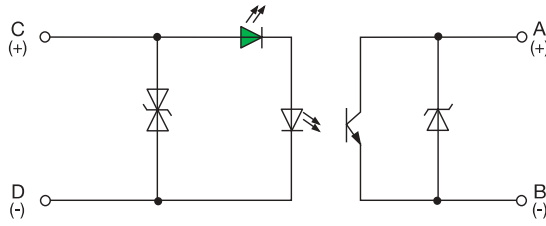
Optocoupler modules
Series 8 000

DIN 1 - 3



**OBC 0300-24 VDC/125 VDC
24 V DC**

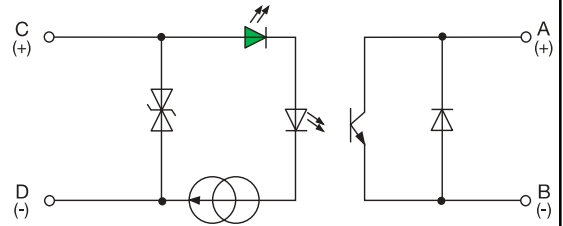
Spacing 9 mm .354"



- Allows isolation of DC input voltage and DC output voltage
- Input and output are overvoltage protected
- Input protected against polarity inversion

**OBC 0050-125 VDC/24 VDC
125 V DC**

Spacing 11.5 mm .453"



- Allows isolation of DC input voltage and DC output voltage
- Input and output are overvoltage protected
- Input protected against polarity inversion

Part numbers

Type	P/N	Type	P/N
OBC 0300-24 VDC/125 VDC	0008 079.16	OBC 0050-125 VDC/24 VDC	0030 040.04

Approvals (Contact Entrelec)

Characteristics

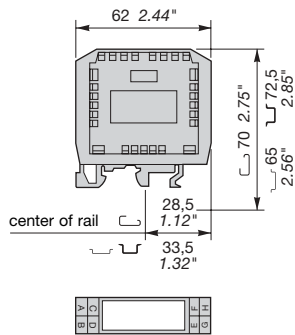
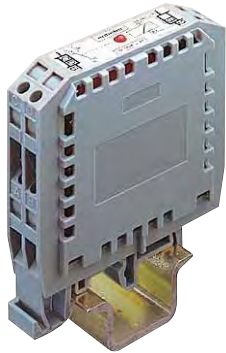
INPUT			
Input voltage	17.64 to 28 V DC		93.1 to 140 V DC
Pull-in voltage	17.64 to 18.36 V DC		93.1 to 96.9 V DC
Input current max.	14.5 mA		7.1 mA
Switching time C / O	500 µsec/950 µsec		4 msec/950 µsec
Hysteresis	2.4 V to 3.6 V		4 V to 6 V
OUTPUT			
Output voltage	140 V DC		28 V DC
Output current max.	300 mA		50 mA
Residual voltage at Imax.	1.5 V DC max.		2.1 V DC max.
Isolation input / output	3000 V rms		3000 V rms
TEMPERATURE			
Ambient			
Operating	+ 5°C to + 40°C		+ 5°C to + 40°C
Storage	- 40°C to + 80°C		- 40°C to + 20°C

Accessories, marking, wire size : see Accessories section.

Electronic interfaces

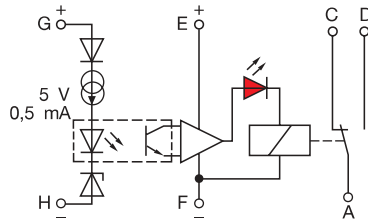
Optocoupler + relay modules
Series 10 000

DIN 1 - 3



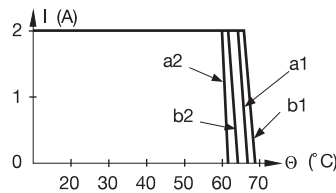
**With TTL compatible input
 EBO 1R**

Spacing 18 mm .709"



- Relay with TTL compatible control, low energy and low-power switching.

Ambient temperature derating curve



a2. horizontal at 30 V
 a1. horizontal at 24 V
 b2. vertical at 30 V
 b1. vertical at 24 V

Part numbers

Type		P/N
EBO 1R	5 V DC	0010 131.14

Approvals (Contact Entelec)



Characteristics

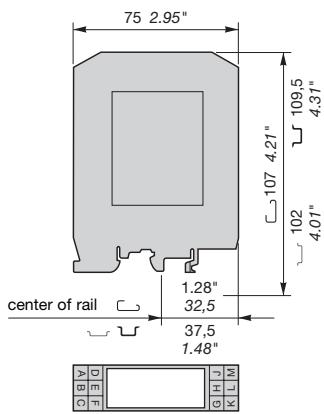
COIL	INPUT GH	POWER SUPPLY EF
Rated voltage	5 V DC	24 V to 30 V DC
Pull-in voltage	2.2 V DC	17 V DC
Power requirements	2.5 mW	0.83 W
Rated current	0.5 mA	25 mA
Drop-out voltage	2.2 V	7 V
Input / output isolation	2000 V rms	
CONTACT		
Type	1 SPDT	
Max. voltage	125 V AC / 150 V DC	
Switching current	0.4 A at 125 V AC/1.25 A at 24 V DC	
Load switching range	50 VA / 30 W	
	max.	10 ⁻⁵ VA
	min.	10 ⁻⁶ W
Min. load	10 ⁻⁶ W	
Number of on-load operations	10 ⁶	
Number of off-load operations	2 x 10 ⁷	
Operating speed	C	30 ms
	O	11 ms
Bounce	0.2 ms	
Isolation coil / contact	1400 V rms	
Resistance to shock-wave	2 kV	
TEMPERATURE		
Ambient temperature		
Storage	- 40°C to + 80°C	
Operating temperature	- 20°C to + 60°C	

Accessories, marking, wire size : see Accessories section.

Electronic interfaces

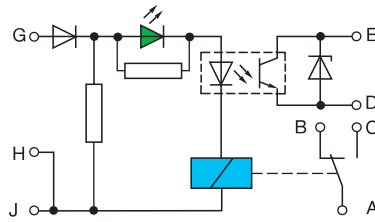
Optocoupler + relay modules
Series 11 000

DIN 1 - 3



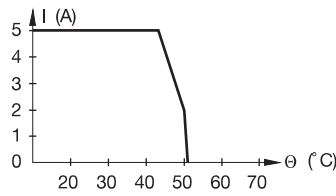
ROB 121

Spacing 22.5 mm .886"



- Power output via SPDT relay contact (control of 110 V AC load for example).
- Low current output via optocoupler (control of 24 or 48 V DC PLC input).

Ambient temperature derating curve



Part numbers

Type	P/N
ROB 121 24 V DC	0011 093.07

Approvals (Contact Entelec)



Characteristics

INPUT

Rated voltage	+ 15%, - 20% on DC ± 10% on AC	24 V DC
Power		0.96 W
Rated current		40 mA
Drop-out voltage		15 V
Permissible leakage current		2.9 mA

OPTOCOUPLER OUTPUT

Max. current		30 mA
Max. voltage		58 V
Voltage drop at I max.		0.6 V
Operating speed C		50 μ s
O		1.5 ms
Isolation input / output		2500 V rms

RELAY OUTPUT

Max. thermal current		5 A (see derating relay curve)
Min. / max. voltage		12 V / 250 V
Number of on-load operations		2×10^5
Number of off-load operations		3×10^7
Operating speed C		5 ms
O		3 ms
Bounce		2 ms
Isolation coil / contact		3500 V rms
Opto output / relay contact isolation		3500 V rms

TEMPERATURE

Ambient temperature		
Storage		- 40°C to + 80°C
Operating temperature		- 20°C to + 51°C

Accessories, marking, wire size : see Accessories section.

Isolated SIR1/SIR2 Series Solid-State Relay



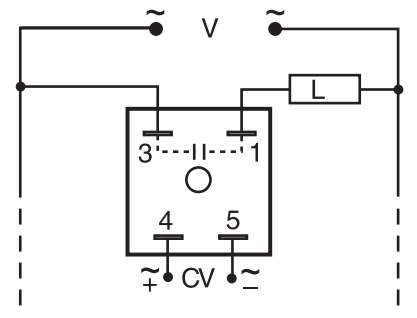
- 3 ... 20 A with up to 200 A Inrush
- Encapsulated Circuitry
- Optically Isolated Output
- 0.25 in. (6.35 mm) Terminals with Single Hole Mounting

Description

Designed for industrial applications requiring rugged reliable operation. Provides an optically isolated high capacity solid-state output, with power switching capability up to 20 A steady state, 200 A inrush. Zero voltage switching SIR2 extends the life of an incandescent lamp up to 10 times. Random switching SIR1 is ideal for inductive loads. When fully insulated female terminals are used on the connection wires, the system meets the requirements for touch-proof connections.

Operation

The solid-state output is located between terminals 1 and 3, and is normally open or normally closed without control voltage applied to terminals 4 and 5. When control voltage is applied to terminals 4 and 5, the solid-state output opens or closes respectively. **Reset:** Removing control voltage resets the output. The unit is also reset if output voltage is removed.



Load may be connected to terminal 3 or 1.

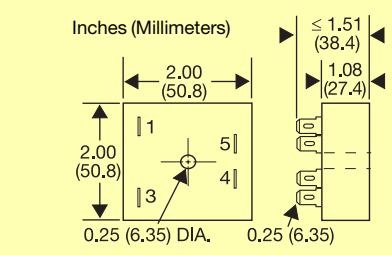
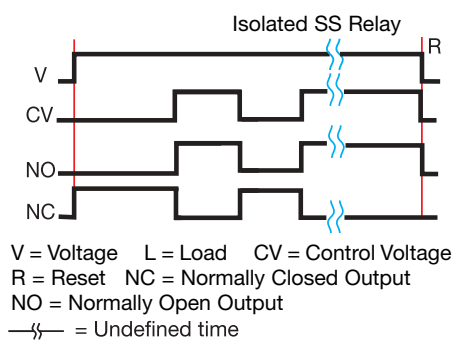
Ordering Table

		Solid-State Output Contact		
X Series	X Control Voltage	X Rating	X Form	X Voltage
-Y SIR1 (Random Switching)	-A - 9 ... 30 V AC or DC -B - 90 ... 150 V AC or DC	-1 - 3 A -6 - 6 A -10 - 10 A -20 - 20 A	-A - Normally Open -B - Normally Closed	-2 - 24 V AC -4 - 120 V AC -6 - 230 V AC
-Y SIR2 (Zero Voltage Switching)	-C - 190 ... 290 V AC or DC			

Example P/N: **Y SIR1A10A6**

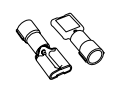
Technical Data

Output			
Type	Optical isolation, totally solid-state		
Form	SPST, normally open or normally closed		
Voltage	24, 120, or 230 V AC		
Tolerance	+/-20%		
Ratings	Steady State	Inrush*	Output Device
	3 A	30 A	Triac
	6 A	60 A	Triac
	10 A	100 A	Triac
	20 A	200 A	Triac
Minimum Load Current	50 mA		
Voltage Drop	≅ 2.0 V at rated current		
Leakage Current (Open State)	≅ 6 mA		
Input			
Type	Optical isolation LED/photo transistor		
Control Voltage	9 ... 290 V AC/DC in 3 Ranges		
Power Consumption	≤ 0.5 W		
Protection			
Circuitry	Encapsulated		
Dielectric Breakdown	≥ 2000 V RMS terminals to mounting surface		
Insulation Resistance	≥ 100 MΩ		
Mechanical			
Mounting*	Surface mount with one #10 (M5 x 0.8) screw		
Package	2 x 2 x 1.51 in. (50.8 x 50.8 x 38.4 mm)		
Termination	0.25 in. (6.35 mm) male quick connect terminals		
Environmental			
Operating Temperature	-20°C ... +60°C		
Storage Temperature	-40°C ... +85°C		
Humidity	95% relative, non-condensing		
Weight	≅ 3.9 oz (111 g)		



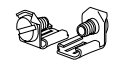
Accessories

Female Quick Connect Terminals
These 0.25 in. (6.35 mm) female terminals are constructed with an insulator barrel to provide strain relief.



P/N:	Wire Size
Y P1015 13	AWG 10/12 (5.3/3.2 mm ²)
Y P1015 64	AWG 14/16 (2.5/1.3 mm ²)
Y P1015 14	AWG 18/22 (0.93/0.33 mm ²)

Quick Connect to Screw Adaptor
Converts 0.25 in. (6.35 mm) female quick connect terminal to screw terminal.



P/N: Y P1015 18

*Must be bolted to a metal surface using the included heat sink compound. The maximum mounting surface temperature is 90°C. Inrush: Non-repetitive for 16 ms.

Non Isolated SLR1/SLR2 Series Solid-State Relay



- SLR1 - Random Switching for Resistive Loads
- SLR2 - Zero Voltage Switching for Resistive Loads
- Normally Open or Normally Closed Output
- 1 ... 20 A with up to 200 A Inrush
- 0.25 in. (6.35 mm) Termination with Single Hole Mounting
- Noiseless Switching, Reliability, and Long Life

Description

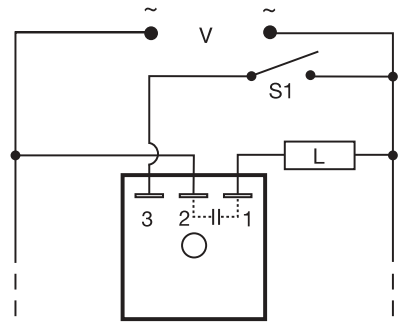
The SLR Series has no isolation between the control switch input and the solid-state output. Select the SLR for applications where the control switch is the same voltage source as the load. Provides the noiseless, reliability and long life of a solid-state relay without the cost of isolation circuitry. Zero voltage switching SLR2 can extend the life of an incandescent lamp up to 10 times its normal life. Random switching SLR1 is normally used for inductive loads. When fully insulated female terminals are used on the connection wires, the system meets the requirements for touch-proof connections.

Operation

The solid-state output is located between terminals 1 and 2 and can be ordered as either normally open or normally closed, when voltage is applied and S1 is open. When S1 is closed, the solid-state output between terminals 1 and 2 closes (or opens). If S1 is opened, the solid-state output will open (or close).

Reset: Opening S1 resets the output to its original state. Reset is also accomplished by removing input voltage

Approvals:

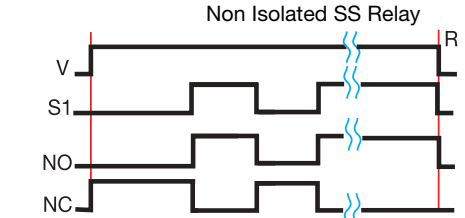


Note: Normally open output is shown. Normally closed output is also available.

Ordering Table

X Series	X Voltage	X Rating	X Form
-Y SLR1 (Random Switching)	-2 - 24 V AC -4 - 120 V AC -6 - 230 V AC	- 1 A - 6 A -10 A -20 A	-A - Normally Open -B - Normally Closed
-Y SLR2 (Zero Voltage Switching)			

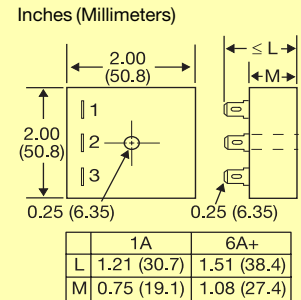
Example P/N: **Y SLR1410A**



V = Voltage S1 = Initiate Switch R = Reset
NO = Normally Open Output L = Load
NC = Normally Closed Output
—/— = Undefined time

Technical Data

Output (Contact)			
Type	Non-isolated solid-state		
Form	SPST, normally open or normally closed		
Voltage	24, 120, or 230 V AC		
Tolerance	+/-20%		
Ratings	Steady State	Inrush*	Output Device
	1 A	10 A	SCR & Bridge Rectifier
	6 A	60 A	Triac
	10 A	100 A	Triac
	20 A	200 A	Triac
Minimum Load Current	50 mA		
Voltage Drop (at Rated Current)	≅ 2.0 V - 6, 10, & 20 A units; ≅ 2.5 V - 1 A units		
Leakage Current (Open State)	≤ 5 mA		
Initiate Switch Voltage	Same as the output voltage		
Power Consumption	≤ 0.5 W		
Protection			
Circuitry	Encapsulated		
Dielectric Breakdown	≥ 2000 V RMS terminals to mounting surface		
Insulation Resistance	≥ 100 MΩ		
Mechanical			
Mounting*	Surface mount with one #10 (M5 x 0.8) screw		
Termination	0.25 in. (6.35 mm) male quick connect terminals		
Environmental			
Operating Temperature	-20°C ... +60°C		
Storage Temperature	-40°C ... +85°C		
Humidity	95% relative, non-condensing		
Weight	≅ 3.9 oz (111 g)		



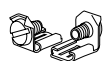
Accessories

Female Quick Connect Terminals
These 0.25 in. (6.35 mm) female terminals are constructed with an insulator barrel to provide strain relief.



P/N:	Wire Size
Y P1015 13	AWG 10/12 (6.3/3.2 mm ²)
Y P1015 64	AWG 14/16 (2.5/1.3 mm ²)
Y P1015 14	AWG 18/22 (0.93/0.33 mm ²)

Quick Connect to Screw Adaptor
Converts 0.25 in. (6.35 mm) female quick connect terminal to screw terminal.



P/N: Y P1015 18

*Must be bolted to a metal surface using the included heat sink compound. The maximum mounting surface temperature is 90°C. Inrush: Non-repetitive for 16 ms.

Latching Relay NIF1/NIF2 Series Solid-State Relay

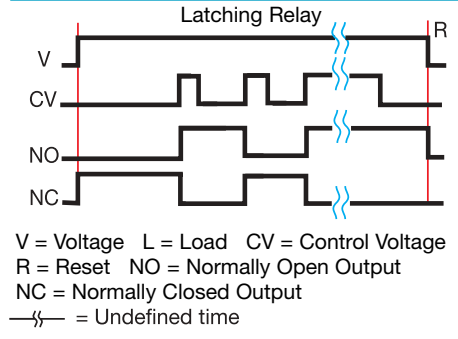
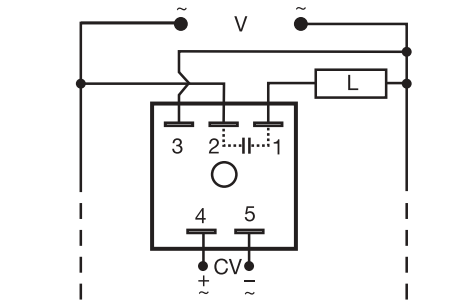


- Totally Solid-State Latching Relay--Encapsulated
- 1 ... 20 A with up to 200 A Inrush
- Optically Isolated Output, Either N.O. or N.C.
- NIF1--Random Switching for Inductive Loads
- NIF2--Zero Voltage Switching for Lamp & Resistive Loads

Description
The NIF Series provides a *Flip-Flop* latching function with optical isolation between the solid-state output and the control voltage. If voltage to the output is maintained, each time a control voltage is applied, the output changes state and latches. Designed for industrial applications requiring rugged, reliable operation and long, silent operation. Zero voltage switching NIF2 extends the life of an incandescent lamp up to 10 times. Random switching NIF1 is ideal for inductive loads. When fully insulated female terminals are used on the connection wires, the system meets the requirements for touch-proof connections.

Operation
The solid-state output is located between terminals 1 and 2 and is normally open (or closed) without control voltage applied to terminals 4 and 5. When momentary or maintained control voltage is applied to terminals 4 and 5, the output closes (or opens) and latches. If control voltage is removed, and then reapplied, the output opens (or closes) and latches. The output transfers each time the control voltage is applied.

Reset: Remove and reapply control voltage. Reset is also accomplished by removing output voltage.



Ordering Table

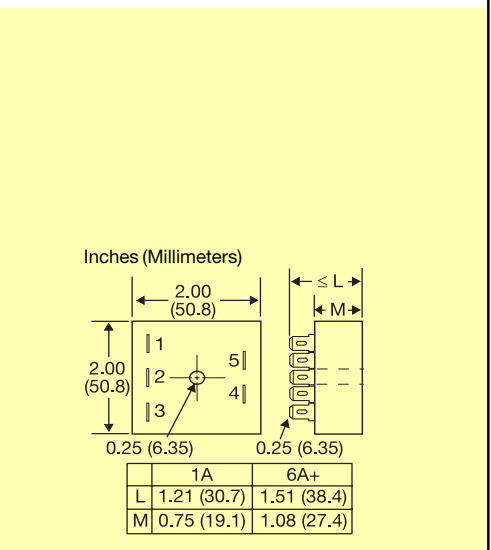
X Series	X Control Voltage	X Output Rating	X Output Form	X Output Voltage
Y NIF1 (Random Switching)	A - 9 ... 30 V AC or DC B - 90 ... 150 V AC or DC C - 190 ... 290 V AC or DC	1 A 6 A 10 A 20 A	A - Normally Open B - Normally Closed	2 - 24 V AC 4 - 120 V AC 6 - 230 V AC
Y NIF2 (Zero Voltage Switching)				

Example P/N: **Y NIF1A10A6**

Technical Data

Output																
Type	Optical isolation, totally solid-state															
Form	SPST, normally open or normally closed															
Voltage	24, 120, or 230 V AC															
Tolerance	+/-20%															
Ratings	<table border="1"> <thead> <tr> <th>Steady State</th> <th>Inrush*</th> <th>Output Device</th> </tr> </thead> <tbody> <tr> <td>1 A</td> <td>10 A</td> <td>SCR & Bridge Rectifier</td> </tr> <tr> <td>6 A</td> <td>60 A</td> <td>Triac</td> </tr> <tr> <td>10 A</td> <td>100 A</td> <td>Triac</td> </tr> <tr> <td>20 A</td> <td>200 A</td> <td>Triac</td> </tr> </tbody> </table>	Steady State	Inrush*	Output Device	1 A	10 A	SCR & Bridge Rectifier	6 A	60 A	Triac	10 A	100 A	Triac	20 A	200 A	Triac
Steady State	Inrush*	Output Device														
1 A	10 A	SCR & Bridge Rectifier														
6 A	60 A	Triac														
10 A	100 A	Triac														
20 A	200 A	Triac														
Minimum Load Current	50 mA															
Voltage Drop (at Rated Current)	≅ 2.0 V - 6, 10, & 20 A units; ≅ 2.5 V - 1 A units															
Leakage Current (Open State)	≤ 5 mA															
Input																
Type	Optical isolation, LED/photo transistor															
Control Voltage	9 ... 290 V AC/DC in 3 Ranges															
Power Consumption	≤ 0.5 W															
Operations Per Second	≤ 5															
Protection																
Circuitry	Encapsulated															
Dielectric Breakdown	≥ 2000 V RMS terminals to mounting surface															
Insulation Resistance	≥ 100 MΩ															
Mechanical																
Mounting *	Surface mount with one #10 (M5 x 0.8) screw															
Package	6, 10, 20 A units: 2 x 2 x 1.51 in. (50.8 x 50.8 x 38.4 mm) 1 A units: 2 x 2 x 1.21 in. (50.8 x 50.8 x 30.7 mm)															
Termination	0.25 in. (6.35 mm) male quick connect terminals															
Environmental																
Operating Temperature	-20°C ... +60°C															
Storage Temperature	-40°C ... +85°C															
Humidity	95% relative, non-condensing															
Weight	1 A unit: ≅ 2.4 oz (68 g) 6, 10, 20 A units: ≅ 3.9 oz (111 g)															

*Units rated ≥ 6 A must be bolted to a metal surface using the included heat sink compound. The maximum mounting surface temperature is 90°C. Inrush: Non-repetitive for 16 ms.



Accessories

Female Quick Connect Terminals
These 0.25 in. (6.35 mm) female terminals are constructed with an insulator barrel to provide strain relief.

P/N: Y P1015 13 **Wire Size** AWG 10/12 (5.3/3.2 mm²)
Y P1015 64 AWG 14/16 (2.5/1.3 mm²)
Y P1015 14 AWG 18/22 (0.93/0.33 mm²)

Quick Connect to Screw Adaptor
Converts 0.25 in. (6.35 mm) female quick connect terminal to screw terminal.

P/N: Y P1015 18

Impulse Latching Relay NLF1/NLF2 Series Solid-State Relay

TEN YEAR WARRANTY



Description
The NLF1 and NLF2 provide a *Flip-Flop* latching function. Each time the control switch is closed, the solid-state output changes state and latches. The NLF Series has no isolation between the control switch and the solid-state output, which lowers cost and reduces the number of connections required. For use where the control switch is the same voltage source as the load. Zero voltage switching NLF2 extends the life of an incandescent lamp up to 10 times. Random switching NLF1 is ideal for inductive loads. When fully insulated female terminals are used on the connection wires, the system meets the requirements for touch-proof connections.

Operation
The solid-state output is located between terminals 1 and 2, and can be ordered as either normally open or normally closed, when voltage is applied. When S1 is closed, the solid-state output between terminals 1 and 2 closes (or opens). If S1 is opened and reclosed, the solid-state output will open (or close).
Reset: Open and reclose S1. Reset is also accomplished by removing and reapplying input voltage.

- Totally Solid-State Latching Relay--Encapsulated
- Non-Isolation to Reduce Cost
- 1 ... 20 A with 200 A Inrush
- 24, 120, or 230 V AC Input Voltages
- NLF1--Random Switching for Inductive Loads
- NLF2--Zero Voltage Switching for Lamp and Resistive Loads

Ordering Table

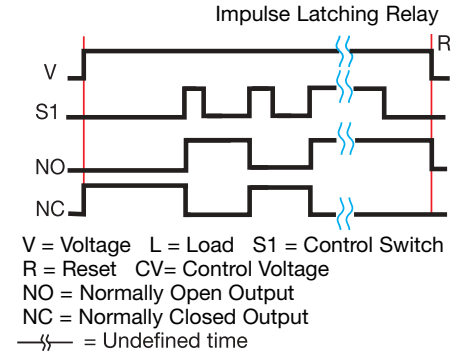
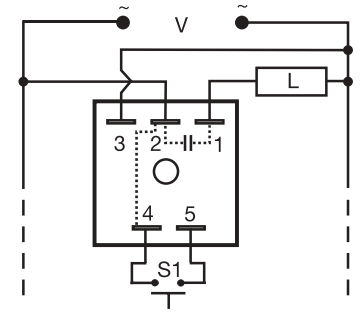
X Series	X Input	X Output Rating	X Output Form
Y NLF1 (Random Switching)	2 - 24 V AC	1 A	A - Normally Open
Y NLF2 (Zero Voltage Switching)	4 - 120 V AC	6 A	B - Normally Closed
	6 - 230 V AC	10 A	
		20 A	

Example P/N: **Y NLF1410A**

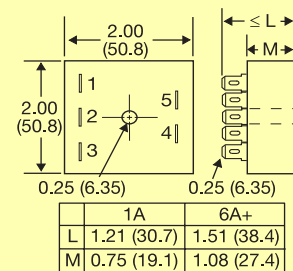
Technical Data

Output																
Type	Non-isolated solid-state															
Form	SPST, normally open or normally closed															
Ratings	<table border="0"> <tr> <th>Steady State</th> <th>Inrush*</th> <th>Output Device</th> </tr> <tr> <td>1 A</td> <td>10 A</td> <td>SCR & Bridge Rectifier</td> </tr> <tr> <td>6 A</td> <td>60 A</td> <td>Triac</td> </tr> <tr> <td>10 A</td> <td>100 A</td> <td>Triac</td> </tr> <tr> <td>20 A</td> <td>200 A</td> <td>Triac</td> </tr> </table>	Steady State	Inrush*	Output Device	1 A	10 A	SCR & Bridge Rectifier	6 A	60 A	Triac	10 A	100 A	Triac	20 A	200 A	Triac
Steady State	Inrush*	Output Device														
1 A	10 A	SCR & Bridge Rectifier														
6 A	60 A	Triac														
10 A	100 A	Triac														
20 A	200 A	Triac														
Minimum Load Current	50 mA															
Voltage Drop (at Rated Current)	≅ 2.0 V - 6, 10, & 20 A units; ≅ 2.5 V - 1 A units															
Leakage Current (Open State)	≤ 5 mA															
Input																
Type	Non-isolated, common with output															
Voltage	24, 120, or 230 V AC +/-20%															
Power Consumption	≤ 0.5 W															
Operations Per Second	≤ 5															
Protection																
Circuitry	Encapsulated															
Dielectric Breakdown	≥ 2000 V RMS terminals to mounting surface															
Insulation Resistance	≥ 100 MΩ															
Mechanical																
Mounting *	Surface mount with one #10 (M5 x 0.8) screw															
Package	6, 10, 20 A units: 2 x 2 x 1.51 in. (50.8 x 50.8 x 38.4 mm)															
	1 A units: 2 x 2 x 1.21 in. (50.8 x 50.8 x 30.7 mm)															
Termination	0.25 in. (6.35 mm) male quick connect terminals															
Environmental																
Operating Temperature	-20°C ... +60°C															
Storage Temperature	-40°C ... +85°C															
Humidity	95% relative, non-condensing															
Weight	1 A units: ≅ 2.4 oz (68 g)															
	6, 10, 20 A units: ≅ 3.9 oz (111 g)															

*Units rated ≥ 6 A must be bolted to a metal surface using the included heat sink compound. The maximum mounting surface temperature is 90°C. Inrush: Non-repetitive for 16 ms.



Inches (Millimeters)



Accessories

Female Quick Connect Terminals
These 0.25 in. (6.35 mm) female terminals are constructed with an insulator barrel to provide strain relief.



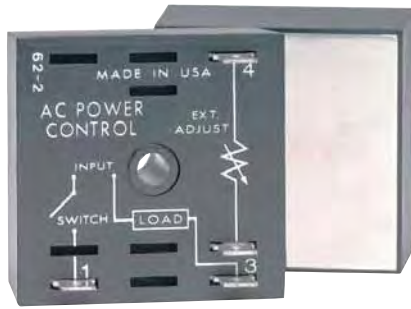
P/N:	Wire Size
Y P1015 13	AWG 10/12 (5.3/3.2 mm ²)
Y P1015 64	AWG 14/16 (2.5/1.3 mm ²)
Y P1015 14	AWG 18/22 (0.93/0.33 mm ²)

Quick Connect to Screw Adaptor
Converts 0.25 in. (6.35 mm) female quick connect terminal to screw terminal.



P/N: Y P1015 18

Phase Control PHS Series AC Phase Control



- External Adjustment - 230 V AC Rated Potentiometer
- 120 or 230 V AC Input Voltages Available
- Up to 20 A Steady State - 200 A Inrush
- Single Hole Surface Mounting

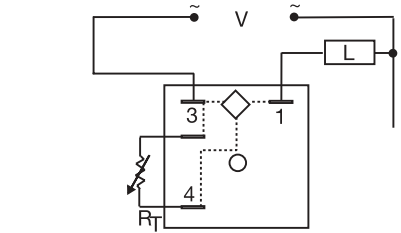
Description

The PHS Series is an ideal method of changing lamp intensity, varying the speed of a fan/motor, or controlling the temperature of a heater. The effective output voltage is adjusted with an accessory external potentiometer suitable for line voltage applications.

Operation

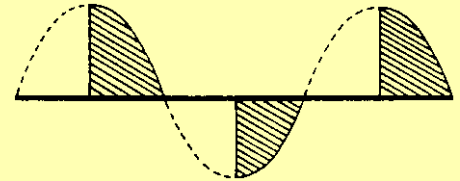
Upon application of input voltage, effective output voltage can be varied by changing the external adjustment value. As the external resistance increases, the effective output voltage decreases. The inverse is also true.

■ Approvals:



V = Voltage L = Load R_T = External Adjustment

Typical Output Waveform



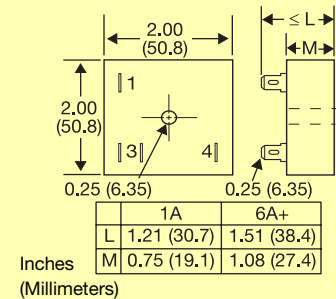
Ordering Table

Y PHS Series	X Input	X Rating
	-120A - 120 V AC	1 A
	-230A - 230 V AC	6 A
		10 A
		20 A

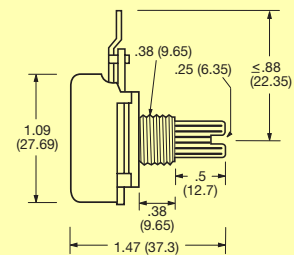
Example P/N: **Y PHS120A10**

Technical Data

Output	
Type	Variable voltage phase control
Rating	Steady State (at 100% On) Inrush*
	1 A 10 A
	6 A 60 A
	10 A 100 A
	20 A 200 A
Minimum Load Current	100 mA
Voltage Drop	≅ 2.0 V at rated current
Input	
Voltage	120 or 230 V AC
Tolerance	+/-20%
Frequency	50 ... 60 Hz
Protection	
Dielectric Breakdown	≥ 2000 V RMS terminals to mounting surface
Insulation Resistance	≥100 MΩ
Mechanical	
Mounting *	Surface mount with one #10 (M5 x 0.8) screw
Termination	0.25 in. (6.35 mm) male quick connect terminals
Environmental	
Operating Temperature	-20°C ... +60°C
Storage Temperature	-40°C ... +85°C
Humidity	95% relative, non-condensing
Weight	1A: ≅ 2.4 oz (68 g) 6, 10, & 20A: ≅ 3.9 oz (111 g)
External Adjustment Potentiometer	
120 V AC	100K Ω rated at 1 W
230 V AC	200K Ω rated at 2 W
	Must have insulation resistance suitable for line voltage applications



Potentiometer



Part Number	Value (Ohms)
Y P1004 174	100K
Y P1004 175	200K

A durable conductive plastic potentiometer. Recommended for use with the PHS Series. It is designed to withstand high temperature and harsh environments. The shaft is slotted for screwdriver adjustment and can be panel mounted.

- Resistance values 100K and 200K +/-10%
- Rated 2 W at 70°C
- Linear taper
- Shaft rotation: 312° +/-3° (effective rotation 275° +/-5°)

Accessories

Female Quick Connect Terminals

These 0.25 in. (6.35 mm) female terminals are constructed with an insulator barrel to provide strain relief.



P/N:	Wire Size
Y P1015 13	AWG 10/12 (5.3/3.2 mm ²)
Y P1015 64	AWG 14/16 (2.5/1.3 mm ²)
Y P1015 14	AWG 18/22 (0.93/0.33 mm ²)

Versa-Knob
Fits 0.25 in (6.35 mm) shaft of Y P1004 174 and Y P1004 175 potentiometers. Semi-Gloss industrial black finish.



Quick Connect to Screw Adaptor
Converts 0.25 in. (6.35 mm) female quick connect terminal to screw terminal.



P/N: Y P0700 7

P/N: Y P1015 18

*Units rated ≥ 6A must be bolted to a metal surface using the included heat sink compound. The maximum mounting surface temperature is 90°C. Inrush: Non-repetitive for 16 ms.