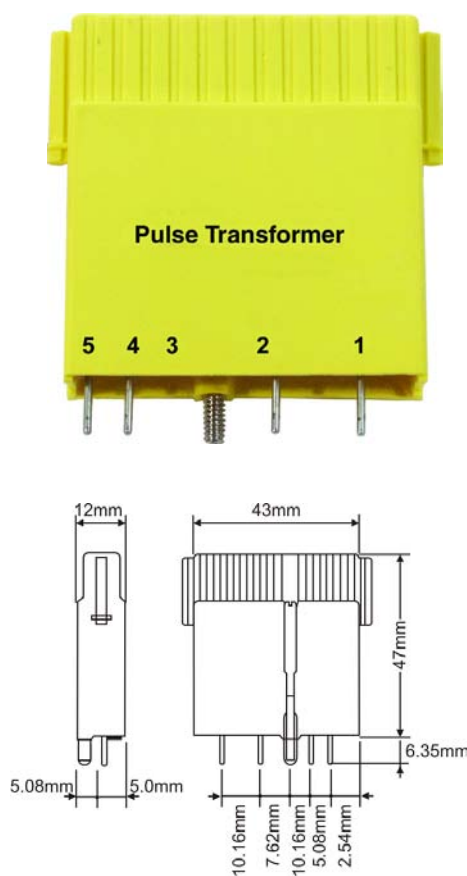


Pulse Transformer

Digital I/O Modules



Pulse transformer technology for isolating I/O signals offers significant advantages over optical isolation and electromechanical relays. Most notably, pulse transformer I/O modules provide higher transient immunity, and high input-to-output isolation.

The high transient immunity means the Weidmüller - Delcon I/O modules are ideal for I/O applications where electrical noise is a problem. No additional suppression components are needed even when used with long unshielded signal cables, inductive loads or 'noisy' power lines.

The limitations of optocoupler based solid state relays disappear when Pulse Transformer I/O modules are used. For instance, the standard AC output module SLO 24TR has near zero leakage current; requires no minimum load; can be used with any power factor 0 to 1; is rated for both general use and pilot duty at 3A; and is immune to both load line and signal line spikes.

Features:

- virtually no off-state leakage currents
- high current and high voltage DC output versions
- compact packaging
- optional rail mounting base
- high surge current rating
- fast switching
- large selection of input and output types
- industry standard pin connection
- UL recognized, cUL or CSA approved (not all modules are CSA approved)

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Pulse Transformer - Digital I/O Modules

AC Input Modules	Cat.No.	SLI25CR	SLI120CRP	SLI120CR / SLI 120CH	SLI230CRP
Input					
Voltage	min./typ./max.	18Vac/24Vac/32Vac	95Vac/120Vac/140Vac	95Vac/120Vac/140Vac	190Vac/220-240Vac/265Vac
	switch-on typ./max.	16Vac/18Vac	80Vac/95Vac	80Vac/95Vac	170Vac/190Vac
	switch off typ./max.	12Vac/14Vac	55Vac/75Vac	50Vac/70Vac	120Vac/140Vac
Current	typ./max.	12mA/15mA	6mA/8mA	6mA/8mA	5mA/6mA
	switch-off (leakage immunity) min.	-	3.5mA	-	3.5mA
Impedance	typ.	2.0k Ω	20.0k Ω	20.0k Ω	45.0k Ω
Noise immunity	typ.	5mJ	10mJ	15mJ	30mJ
Crosstalk attenuation		50dB		50dB / -	
Output					
Switching device		transistor	transistor	transistor	transistor
Load voltage	min./max.	0Vdc/60Vdc	0Vdc/60Vdc	0Vdc/60Vdc	0Vdc/60Vdc
Load current continuous	max.	50mA	50mA	50mA	50mA
Loadcurrent 20,sec.	max.				
Voltage drop at max. load	typ./max.	0.2Vdc/0.4Vdc	0.2Vdc/0.4Vdc	0.2Vdc/0.4Vdc	0.2Vdc/0.4Vdc
Power factor	min.				
Leakage current	typ.				
Off state voltage transient protection, dv/dt	typ.				
General					
Switch-on delay	typ./max.	20ms	15ms	20ms	25ms
Switch-off delay	typ./max.	50ms	15ms	50ms	50ms
Isolation		4000Vac RMS	4000Vac RMS	4000Vac RMS	4000Vac RMS
Isolation degree		IEC 380/VDE0806, class II	IEC 380/VDE0806, class II	IEC 380/VDE0806, class II	IEC 380/VDE0806, class II
Clearance/creepage distance		8mm	8mm	8mm	8mm
Insulation		10 ¹⁰ Ω	10 ¹⁰ Ω	10 ¹⁰ Ω	10 ¹⁰ Ω
Coupling capacitance		3pF	3pF	3pF	3pF
Colour/material		yellow thermoplastic	yellow thermoplastic	yellow thermoplastic	yellow thermoplastic
Flammability		UL 94V-0	UL 94V-0	UL 94V-0	UL 94V-0
Temperature	storage	-40° to 70°C	-40° to 70°C	-40° to 70°C	-40° to 70°C
	operation	-20° to 55°C (70°C ¹⁾)	-20° to 55°C (70°C ¹⁾)	-20° to 55°C (70°C ¹⁾)	-20° to 40°C (70°C ¹⁾)
Weight	typ.	40g	40g	40g	40g
Dimensions	L x H x W	43 x 47 x 12.5mm	43 x 47 x 12.5mm	43 x 47 x 12.5mm	43 x 47 x 12.5mm

CR versions are for standard use
 CH versions are for signal lines with exceptionally high and sharp voltage spikes (MOV on input)
 CRP versions are for AC field signals (two wire proximity switch with leakage)
 CRI versions are inverted logic (NC - normally closed)
 CRF versions are for fast switching applications
 CRL versions are for high leakage immunity

DC Input Modules	Cat.No.	SLI24CR / SLI24CRF	SLI24CRL	SLI125CR / SLI125CH	SLI250CR / SLI250CH
Input					
Voltage	min./typ./max.	18Vdc/24Vdc/32Vdc	18Vdc/24Vdc/32Vdc	95Vdc/125Vdc/140Vdc	190Vdc/200-250Vdc/265Vdc
	switch-on typ./max.	16Vdc/18Vdc	16Vdc/18Vdc	80Vdc/95Vdc	170Vdc/190Vdc
	switch off typ./max.	12Vdc/14Vdc	12Vdc/14Vdc	50Vdc/70Vdc	80Vdc/110Vdc
Current	typ./max.	6mA/8mA	18mA	3.7mA / 4.0mA	3.7mA/4.0mA
	switch-off (leakage immunity) min.	-	15mA	-	-
Impedance	typ.	4.0k Ω	1.3k Ω	32k Ω	64.0k Ω
Noise immunity	typ.	15 μ J/0.7 μ J	45 μ J	0.2mJ	1.0mJ
Crosstalk attenuation		50dB	50dB	50dB	50dB
Output					
Switching device		transistor	transistor	transistor	transistor
Load voltage	min./max.	0Vdc/60Vdc	0Vdc/60Vdc	0Vdc/60Vdc	0Vdc/60Vdc
Load current continuous	max.	50mA	50mA	50mA	
Loadcurrent 20,sec.	max.				0.2Vdc/0.4Vdc
Voltage drop at max. load	typ./max.	0.2Vdc/0.4Vdc	0.2Vdc/0.4Vdc	0.2Vdc/0.4Vdc	
Power factor	min.				
Leakage current	typ.				
Off state voltage transient protection, dv/dt	typ.				
General					
Switch-on delay	typ./max.	0.1ms / 5 μ s	0.1ms	0.5ms	1.0ms
Switch-off delay	typ./max.	0.5ms / 20 μ s	2.05ms	2.0ms	2.0ms
Isolation		4000Vac RMS	4000Vac RMS	4000Vac RMS	4000Vac RMS
Isolation degree		IEC 380/VDE0806, class II	IEC 380/VDE0806, class II	IEC 380/VDE0806, class II	IEC 380/VDE0806, class II
Clearance/creepage distance		8mm	8mm	8mm	8mm
Insulation		10 ¹⁰ Ω	10 ¹⁰ Ω	10 ¹⁰ Ω	10 ¹⁰ Ω
Coupling capacitance		3pF	3pF	3pF	3pF
Colour/material		white thermoplastic	white thermoplastic	white thermoplastic	white thermoplastic
Flammability		UL 94V-0	UL 94V-0	UL 94V-0	UL 94V-0
Temperature	storage	-40° to 70°C	-40° to 70°C	-40° to 70°C	-40° to 70°C
	operation	-20° to 55°C (70°C ¹⁾)	-20° to 55°C (70°C ¹⁾)	-20° to 55°C (70°C ¹⁾)	-20° to 55°C (70°C ¹⁾)
Weight	typ.	40g	40g	40g	40g
Dimensions	L x H x W	43 x 47 x 12.5mm	43 x 47 x 12.5mm	43 x 47 x 12.5mm	43 x 47 x 12.5mm

1) adjacent modules separated by 12.5mm

Pulse Transformer - Digital I/O Modules

SLI230CR / SLI230CRI /
SLI230CH

190Vac/220-240Vac/265Vac
170Vac/190Vac
80Vac/110Vac
5mA/6mA
-
45.0kΩ
60mJ
50dB / 50dB / -

transistor
0Vdc/60Vdc

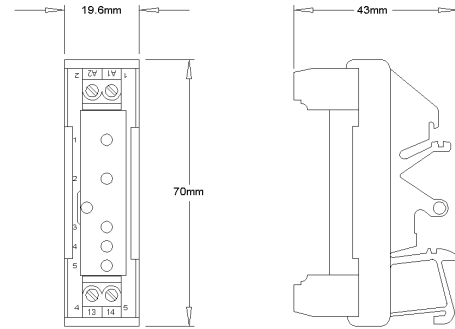
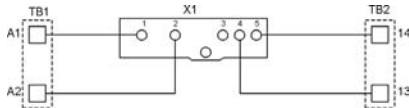
0.2Vdc/0.4Vdc

50ms
50ms
4000Vac RMS
IEC 380/VDE0806, class II
8mm
10¹⁰Ω
3pF
yellow thermoplastic
UL 94V-0
-40° to 70°C
-20° to 55°C (70°C 1)
40g
43 x 47 x 12.5mm

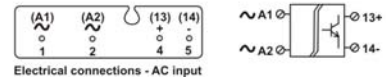
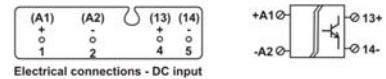
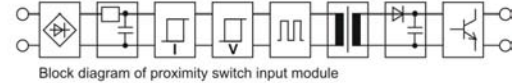
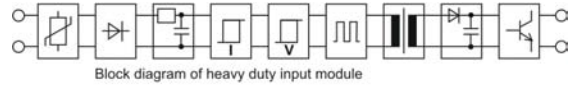
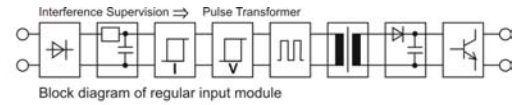


1 channel - Input rail mountable base

Cat.No. 990891 0000



Input Modules



Pulse Transformer - Digital I/O Modules

AC Output Modules	Cat.No.	SLO5IRA	SLO24IRA	SLO5TR	SLO24TR
Input					
Voltage	min./typ./max.	3Vdc/5Vdc/7Vdc	18Vdc/24Vdc/32Vdc	3Vdc/5Vdc/7Vdc	18Vdc/24Vdc/32Vdc
	switch-on typ./max.	2.5Vdc/3Vdc	16Vdc/18Vdc	2.5Vdc/3Vdc	16Vdc/18Vdc
	switch off typ./max.	2Vdc/2.5Vdc	12Vdc/14Vdc	2Vdc/2.5Vdc	12Vdc/14Vdc
Current	typ./max.	12mA	12mA	17mA	20mA
	switch-off (leakage immunity) min.	-	-	-	-
Impedance	typ.	0.42k Ω	2.0k Ω	0.3k Ω	1.4k Ω
Noise immunity	typ.	-	-	-	-
Crosstalk attenuation		- / 50dB	- / 50dB	-/50dB	-/50dB
Output					
Switching device		back-to-back power MOSFET	back-to-back power MOSFET	triac	triac
Load voltage	min./max.	0Vdc/250Vac, 300Vdc	0Vdc/250Vac, 300Vdc	0Vdc/264Vac	0Vdc/264Vac
Load current continuous	max.	1.2A	1.2A	3A	3A
Loadcurrent 20,sec.	max.	8A	8A	90A	90A
Voltage drop at max. load	typ./max.	1.5V	1.5V	1.0V	1.0V
Power factor	min.	0.3 - 1.0	0.3 - 1.0	0 - 1.0	0 - 1.0
Leakage current	typ.	50 μ A	50 μ A	2mA/ 50 μ A	2mA/ 50 μ A
Off state voltage transient protection, dv/dt	typ.	-	-	200V/ μ s	200V/ μ s
General					
Switch-on delay	typ./max.	0.1ms/0.2ms	0.1ms/0.2ms	0.5ms/1.0ms	0.5ms/1.0ms
Switch-off delay	typ./max.	0.3ms/0.5ms	0.3ms/0.5ms	- / 11ms	- / 11ms
Isolation		4000Vac RMS	4000Vac RMS	4000Vac RMS	4000Vac RMS
Isolation degree		IEC 380/VDE0806, class II	IEC 380/VDE0806, class II	IEC 380/VDE0806, class II	IEC 380/VDE0806, class II
Clearance/creepage distance		8mm	8mm	8mm	8mm
Insulation		10 ¹⁰ Ω	10 ¹⁰ Ω	10 ¹⁰ Ω	10 ¹⁰ Ω
Coupling capacitance		3pF	3pF	3pF	3pF
Colour/material		black thermoplastic	black thermoplastic	black thermoplastic	black thermoplastic
Flammability		UL 94V-0	UL 94V-0	UL 94V-0	UL 94V-0
Temperature	storage	-40° to 70°C	-40° to 70°C	-40° to 70°C	-40° to 70°C
	operation	-20°C to 30°C (70°C ²)	-20°C to 30°C (70°C ²)	-20°C to 30°C (70°C ²)	-20°C to 30°C (70°C ²)
Weight	typ.	40g	40g	40g	40g
Dimensions	L x H x W	43 x 47 x 12.5mm	43 x 47 x 12.5mm	43 x 47 x 12.5mm	43 x 47 x 12.5mm

TR versions are for standard AC use

TH versions are for signal lines with exceptionally high and sharp voltage spikes (MOV on input and output)

IRA versions are for high speed AC/DC switching. Switch-off time is irrespective of voltage phase

CR versions are for standard use

CRA versions are for high DC voltages (lower currents)

CRX versions are for high DC currents (lower voltages)

5Vdc input versions are suitable for TTL signal with 12 to 15mA drive current available

DC Output Modules	Cat.No.	SLO5CR	SLO24CR	SLO5CRA	SLO24CRA
Input					
Voltage	min./typ./max.	3Vdc/5Vdc/7Vdc	18Vdc/24Vdc/32Vdc	3Vdc/24Vdc/32Vdc	18Vdc/24Vdc/32Vdc
	switch-on typ./max.	2.5Vdc/3Vdc	16Vdc/18Vdc	2.5Vdc/3Vdc	16Vdc/18Vdc
	switch off typ./max.	2Vdc/2.5Vdc	12Vdc/14Vdc	2Vdc/2.5Vdc	12Vdc/14Vdc
Current	typ./max.	12mA	15mA	12mA	15mA
	switch-off (leakage immunity) min.	-	-	-	-
Impedance	typ.	0.42k Ω	2.0k Ω	0.42k Ω	2.0k Ω
Noise immunity	typ.	-	-	-	-
Crosstalk attenuation		- / 50dB	- / 50dB	- / 50dB	- / 50dB
Output					
Switching device		power MOSFET	power MOSFET	power MOSFET	power MOSFET
Load voltage	min./max.	0Vdc/60Vdc	0Vdc/60Vdc	0Vdc/300Vdc	0Vdc/300Vdc
Load current continuous	max.	3A	3A	1.8A	1.8A
Loadcurrent 20,sec.	max.	12A	12A	8A	8A
Voltage drop at max. load	typ./max.	0.5V	0.5V	1.5V	1.5V
Power factor	min.				
Leakage current	typ.				
Off state voltage transient protection, dv/dt	typ.				
General					
Switch-on delay	typ./max.	0.1ms/0.2ms	0.1ms/0.2ms	0.1ms/0.2ms	0.1ms/0.2ms
Switch-off delay	typ./max.	0.3ms/0.5ms	0.3ms/0.5ms	0.3ms/0.5ms	0.3ms/0.5ms
Isolation		4000Vac RMS	4000Vac RMS	4000Vac RMS	4000Vac RMS
Isolation degree		IEC 380/VDE0806, class II	IEC 380/VDE0806, class II	IEC 380/VDE0806, class II	IEC 380/VDE0806, class II
Clearance/creepage distance		8mm	8mm	8mm	8mm
Insulation		10 ¹⁰ Ω	10 ¹⁰ Ω	10 ¹⁰ Ω	10 ¹⁰ Ω
Coupling capacitance		3pF	3pF	3pF	3pF
Colour/material		red thermoplastic	red thermoplastic	red thermoplastic	red thermoplastic
Flammability		UL 94V-0	UL 94V-0	UL 94V-0	UL 94V-0
Temperature	storage	-40° to 70°C	-40° to 70°C	-40° to 70°C	-40° to 70°C
	operation	-20°C to 30°C (70°C ²)	-20°C to 30°C (70°C ²)	-20°C to 30°C (70°C ²)	-20°C to 30°C (70°C ²)
Weight	typ.	40g	40g	40g	40g
Dimensions	L x H x W	43 x 47 x 12.5mm	43 x 47 x 12.5mm	43 x 47 x 12.5mm	43 x 47 x 12.5mm

2) continuous load current derated to 1/3 or adjacent modules separated by 12.5mm

Pulse Transformer - Digital I/O Modules

SLO24TH

18Vdc/24Vdc/32Vdc
 16Vdc/18Vdc
 12Vdc/15Vdc
 17mA/20mA
 -
 1.4kΩ
 -
 50dB

0.5ms/1.0ms
 - / 11ms
 4000Vac RMS
 IEC 380/VDE0806, class II
 8mm
 10¹⁰Ω
 3pF
 black thermoplastic
 UL 94V-0
 -40° to 70°C
 -20°C to 30°C (70°C²)
 40g
 43 x 47 x 12.5mm

SLO120TR

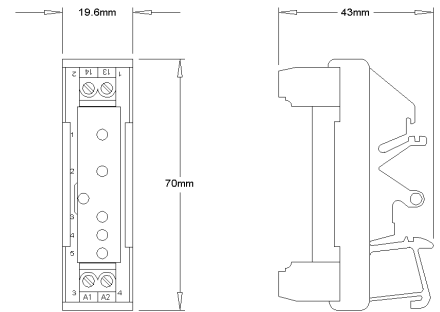
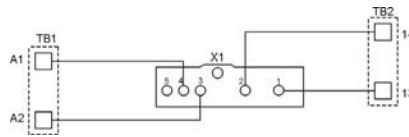
95Vdc/120Vdc/140Vdc
 80Vdc/95Vdc
 55Vdc/65Vdc
 5mA/6mA
 3.0mA
 24kΩ
 10mJ
 -

10ms
 20ms
 4000Vac RMS
 IEC 380/VDE0806, class II
 8mm
 10¹⁰Ω
 3pF
 black thermoplastic
 UL 94V-0
 -40° to 70°C
 -20°C to 30°C (70°C²)
 40g
 43 x 47 x 12.5mm



1 channel - Output rail mountable base

Cat.No. 990892 0000



SLO5CRX

3Vdc/5Vdc/7dc
 2.5Vdc/18Vdc
 2Vdc/2.5Vdc
 12mA
 -
 0.42kΩ
 -
 - / 50dB

0.1ms/0.2ms
 0.3ms/0.5ms
 4000Vac RMS
 IEC 380/VDE0806, class II
 8mm
 10¹⁰Ω
 3pF
 red thermoplastic
 UL 94V-0
 -40° to 70°C
 -20°C to 30°C (70°C²)
 40g
 43 x 47 x 12.5mm

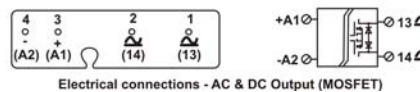
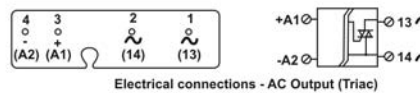
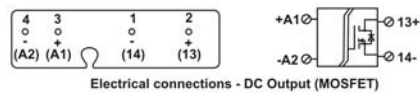
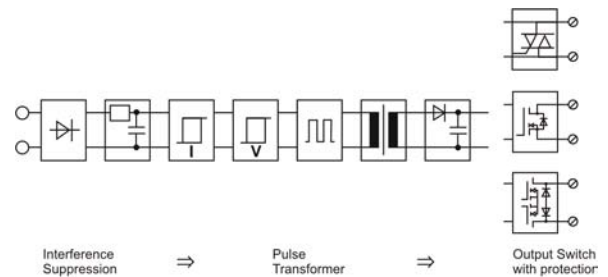
SLO24CRX

18Vdc/24Vdc/32Vdc
 16Vdc/18Vdc
 12Vdc/214Vdc
 15mA
 -
 2.0kΩ
 -
 - / 50dB

0.1ms/0.2ms
 0.3ms/0.5ms
 4000Vac RMS
 IEC 380/VDE0806, class II
 8mm
 10¹⁰Ω
 3pF
 red thermoplastic
 UL 94V-0
 -40° to 70°C
 -20°C to 30°C (70°C²)
 40g
 43 x 47 x 12.5mm

Output Modules

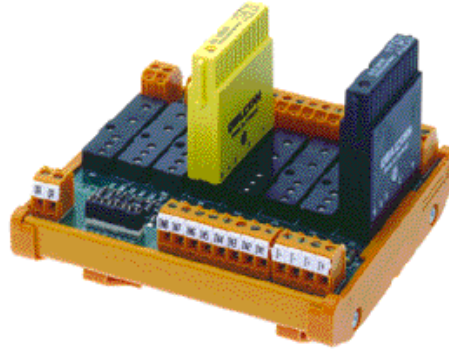
(specifications on next page)



Pulse Transformer - Digital I/O Modules

8 channel rail mountable base

- 24Vdc positive switching (common negative) input
- common positive, source switching output
- optional logic "OR" output signal (active if 1 or more modules are energized)
- DC voltage supply LED



8 channel - Output rail mountable base

Cat.No. 990972 0000

