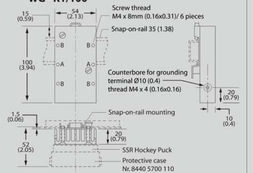
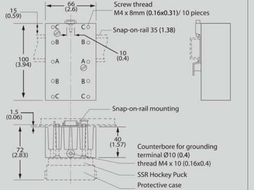
HEATSINK DIMENSIONS

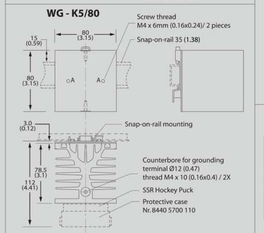
WG - K1/100



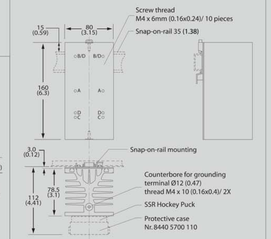
WG - K2/100



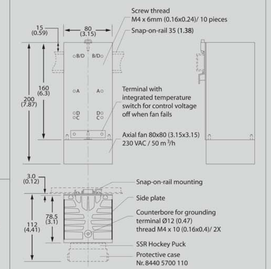
WG - K5/80



WG - K3/160



WG - K4/160L



Heat Sink with snap-on-rail mounting

Thermal resistance versus Heat sink and nr. of SSR's	1phase 1 SSR (K/W)	1phase 2 SSR's (K/W)	1phase 3 SSR's (K/W)	1reversing / 3 phase SSR (K/W)	Weight (gr)
K1/100	3.5	6.0	-	-	170
K2/100	2.5	4.0	-	2.5	400
K3/160	0.9	1.7	2.5	0.8	1100
K4/160L	0.3	0.55	0.85	0.25	1500
K5/80	1.6	-	-	-	600

All dimensions are nominal, in millimetres unless otherwise stated. If further information is required, individual datasheets are available on our websites, and on CD.
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The Comus Group of Companies

ORDERING INFORMATION

WG	280	D	25	Z	-	LD

280: Thyristor 600V
420: Thyristor 800V
480: Thyristor 1200V
660: Thyristor 1600V
A4 6: Triac 600V
A5 6: Triac 600V
A5 8: Triac 800V
A8 6: Triac 600V
A8 8: High Commutation Triac 800V
A8 10: High Commutation Triac 1000V
A0 12: Thyristor 1200V
A0 16: Thyristor 1600V
A3 12: Thyristor 1200V
A3 16: Thyristor 1600V

A: 90 - 280 Vac, 10mA
D: 3 - 32 Vdc, 12mA
E: 3 - 32 Vdc, 6mA
P: 3 Vdc typ. <5mA
Q: 5 Vdc typ. <5mA
R: 9 Vdc typ. <5mA
S: 12 Vdc typ. <5mA
T: 24 Vdc typ. <5mA

02
03
05
10
25
40
45
50
75
90
110
125A

Z: Zero Cross Switching
R: Random Cross Switching

LD: With LED
P: 100% Encapsulated
PC: Non-Linear phase control
LC: Linear phase control
MR: Monitoring relay
N: No snubber
2P: Dual pole

The Comus International group of companies consists of:

Comus International
454 Allwood Road
Clifton
New Jersey 07012
U.S.A

Tel: (1)973 - 777 - 6900
Fax:(1)973 - 777 - 8405
email: info@comus-intl.com
internet: http://www.comus-intl.com

Assemtech Europe Limited
Unit 7, Rice Bridge Industrial Estate
Thorpe - Le - Soken
Essex
England
CO16 0HL
Tel: +44 (0)1255 862236
Fax: +44 (0)1255 862014
email: sales@assemtech.co.uk
internet: http://www.assemtech.co.uk

Comus Belgium BVBA
Overhaamlaan 40
B-3700 Tongeren
Belgium

Tel: +32 (0)12 390400
Fax: +32 (0)12 235754
email: info@comus.be
internet: http://www.comus.be

Comus International SARL
Immeuble 'Les Juilliottes
31 Cours des Juilliottes
F-94700 Maisons-Alfort
France

Tel: +33 (0)1 43 96 86 10
Fax: +33 (0)1 43 96 86 11
email: info@comus.fr
internet: http://www.comus.fr

Switching Technologies Gunther
B-9, B-10, & C-1 Special Economic Zone (MEPZ)
Kadapperi
Tambaram
Chennai 600 045
India
Tel: +91 44 22628093
Fax: +91 44 22628271
email: stgltd@eth.net

Comus Electronics India
No 74A Anbu Street
Gandhi Nagar
Ekkattuthangal
Chennai 600 097
TamilNadu
India
Tel: +91 44 22628198
Fax: +91 44 22628271
email: chitra@comus-intl.com
internet: http://www.comusindia.com

We also have a large network of worldwide agents. These can be seen on any of our websites, or on our company profile brochure.

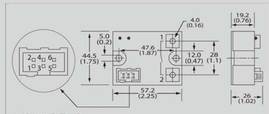
Com/13/Jan04/Iss.1

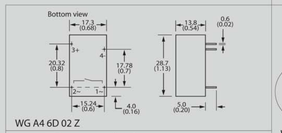
The Comus Group of Companies

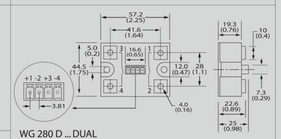
Solid State Relays

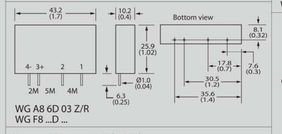
The Comus Group of Companies

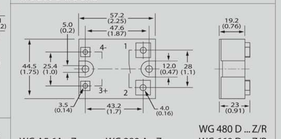
SOLID STATE RELAY DIMENSIONS

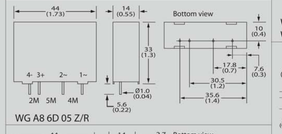


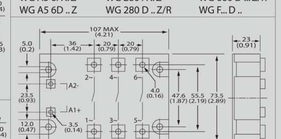


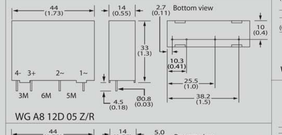


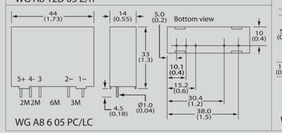


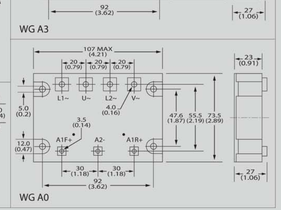












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SOLID STATE RELAYS

AC TYPES








TYPE			WG A0			WG A3			WG A4			WG A8 6D			WG A8 8D			WG A8 10D		WG A8 6 05 PC	WG A8 6 05 LC	WG A8 6 10 LC
Output	Load Current	A rms	10	25	45	10	25	45	2	3	5	5									5	
	Surge Current	Apeak	110	230	500	110	230	500	100			120									100	
	I²t for fusing	A²s	60	260	1250	60	260	1250	50			72									50	
	Off-State Leakage current max.	mAeff	10			10			2	3	5	5									8	
	Load Voltage range	V rms	WG A0 120xx : 48 - 480 WG A0 160xx : 48 - 660			WG A3 120 : 24(Z)/48(R) - 480 WG A3 160 : 24(Z)/48(R) - 660			(Z) 24 - 280 (R) 24 - 280			(Z) 24 - 280 (R) 48 - 280			24 - 420			24 - 480		140 - 280		
	Peak off-state Voltage	V drm	1200		1600	1200		1600	600			800			1000			600				
	On-state Voltage	V peak	1.6			1.6			1.6												1.6	
	Off-state (static) dv/dt min.	V / µs	1000			1000			500												500	
	Snubber	Ohms ; nF	47 ; 10			47 ; 10			100 ; 10	47 ; 22	47 ; 47				47 ; 10						-	
	Output		THYRISTOR			THYRISTOR			TRIAC												TRIAC	
Input	Supply Voltage	Vdc	-			-			-											3 - 32	5 - 24	
	Supply Current	mA	-			-			-											1	20	
	Control Voltage range	Vdc	3 - 32			3 - 32			3 - 32											0.6 - 40	0 - 5	0 - 10
	Control Current max.	mA	30 (with LED)			25			14			22								0 - 5	1	1
	Turn-off Voltage min.	Vdc	1			1			1											-	-	-
	Input resistance	Ohm	Constant Current			Constant Current			Constant Current											-	10 Kohm	
General Data	Resolution		-			-			-											Analogue	64 steps	
	Linearisation		-			-			-											None	By microprocessor	
	Turn-on time max.	ms	6 (at 24Vdc)			11 (Z) - 0.1 (R)			11			11 (Z) - 0.1 (R)									Controllable	
	Turn-off time max.	ms	11			11			11												11	
	Interlocking time	ms	40 - 80			-			-												-	
	Line frequency range	Hz	47 - 63			47 - 63			47 - 63												47 - 63	
	Isolation between input / output	V rms	4000			4000			4000												4000	
	Isolation between in-output / base	V rms	2500			2500			-												-	
	Isolation resistance	Mohm	50			50			50												50	
	Operating Temperature	°C	-20 +80			-20 +80			-20 +80												-20 +80	
	Zero cross switching		-			WG A3 xxD xx Z			WG A4 6D 02 Z			WG A8 6D 0x Z			WG A8 8D 05 Z			WG A8 12D 05 Z		Phase Control	Linear Control	
	Random switching		Always Random			WG A3 xxD xx R			-			WG A8 6D 0x R			WG A8 8D 05 R			WG A8 12D 05 R				
Heatsink I SSR 40°C		WG K1/100	-	-	-	-	-	-														
		WG K2/100	8A	8A	8A	6A	6A	6A														
		WG K3/160	10A	22A	24A	10A	16A	17A														
		WG K4/160L	10A	25A	45A	10A	25A	42A														
		WG K5/80	-	-	-	-	-	-														

COMUS solid state relays have been developed according to different regulations.

Information on VDE marking, approval nrs. 65641, 68302 and 70983, can be found doing an online search in the Catalog of VDE-Certified Products on www.vde.com/VDE_PI_en .

Information on our UL/CSA recognized components, USR/CNR file nr. E103299 and E103300, can be found by checking the Online Certifications Directory on www.ul.com/certifications.
Solid State Devices should be installed and wired according their intented use and Conditions of Acceptability. For details refer to the instruction manual or technical data on our website.

Characteristics of Solid State Relays
- no mechanical parts
- galvanic separation between control and load circuit by opto-coupler
- semiconductor components like triacs, thyristors, alternistors or MOS-FET's in the output

Advantages of SSR's against Electromechanical Relays
- nearly unlimited life expectancy
- low control power, direct interface to microcomputer or PLC
- no contact bounce
- no sparks
- no mechanical contact wear
- insensitivity to shock, vibration and mechanical forces as well as severe environmental conditions
- Comus thyristor SSR's are manufactured using DCB-technology (direct copper bonding) and are approximately 100 times more resistive to temperature cycles than conventional SSR's.

Application fields of Solid State Relays
- Medical equipment : heating control, motor control
- Security systems
- traffic control systems
- Office equipment & building infrastructure : elevators, escalators, automatic doors, copy machines, vending machines, industrial and domestic lighting control systems, light dimming systems, air conditioning, refrigeration, condensing fans, evaporator blowers, heating systems
- Lifts & industrial automation : temperature controls, test equipment, valves and motor control, motor reversing, soft start and stop
- Production machines : Ovens & furnaces, fryers, heaters, coffee machines, moulding and thermoforming machines, textile machines, conveyer systems, pumps and compressors, printing machines, test equipment, and industrial laundry machines.

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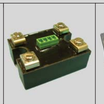
AC TYPES





TYPE			WG A5			WG 280									WG 280 D xxxx-DUAL			WG 480 D / WG 660 D									WG 420 D ... Z - MR								
Output	Load Current	A rms	10	25	40	10	25	40	50	75	90	110	125		10	25	45	10	25	40	50	75	90	110	125	10	25	45	50	75	90	110	125		
	Surge Current	Apeak	110	230	400	110	230	500	570	910	1090	1350	1590		110	230	500	110	230	500	570	910	1090	1350	1590	110	230	500	570	910	1090	1350	1590		
	I²t for fusing	A²s	60	260	880	60	260	1250	1620	4150	5980	9100	12650		60	260	1250	60	260	1250	1620	4150	5980	9100	12650	60	260	1250	1620	4150	5980	9100	12650		
	Off-State Leakage current max.	mAeff	6	12		6		12							6	12		WG 480 : 10 / WG 660 : 12									5								
	Load Voltage range	V rms	24 - 280			24 - 280									24 - 280			WG 480 : 24(Z) / 48(R) - 480 WG 660 : 24(Z) / 48(R) - 660									150 - 420								
	Peak off-state Voltage	V drm	600			600									600			WG 480 : 1200 / WG 660 : 1600									650								
	On-state Voltage	V peak	1.85			1.6									1.6			1.6									1.6								
	Off-state (static) dv/dt min.	V / µs	500			1000									1000			1000									500								
	Snubber	Ohms ; nF	47;47	47;100	47;100	47;47	47 ; 100								47;47	47 ; 100		47 ; 22									-								
	Output		TRIAC			THYRISTOR									THYRISTOR			THYRISTOR									THYRISTOR								
Input	Supply Voltage	Vdc	-			-									-			-									20 - 32 (typ. 24 Vdc)								
	Supply Current	mA	-			-									-			-									25 (@ 24Vdc)								
	Control Voltage range	Vdc	WG A5 60 : 3 - 32			WG 280 D : 3 - 32									WG 280 D : 3 - 32			3 - 32									0 - 24 (active low input)								
	Control Voltage range	Vac	WG A5 6A : 90 - 280			WG 280 A : 90 - 280									-			-									-								
	Control Current max. without LED	mA	10			10									12			22									-								
	Control Current max. with LED	mA	-LD : 22			-LD : 22									-			-									4 (@ 0Volt)								
	Turn-off Voltage min.	Vdc	1			1									1			1									Turn-on voltage <12 V, Turn-off voltage >19 V								
	Input Resistance	Ohm	Constant Current			Constant Current									Constant Current			Constant Current									-								
General Data	Turn-on time max.	ms	11 (D-Z) - 33 (A-Z) - 0.1 (R)			11 (D-Z) - 33 (A-Z) - 0.1 (R)									11 (Z) - 0.1 (R)			11 (Z) - 0.1 (R)									11								
	Turn-off time max.	ms	11 (D) - 33 (A)			11 (D) - 33 (A)									11			11									11								
	Line frequency range	Hz	47 - 63			47 - 63									47 - 63			47 - 63									47 - 63								
	Isolation between input / output	V rms	4000			4000									4000			4000									4000								
	Isolation between in-output / base	V rms	2500			2500									2500			2500									2500								
	Isolation resistance	Mohm	50			50									50			50									50								
	Operating Temperature	°C	-20 +80			-20 +80									-20 +80			-20 +80									-20 +80								
	Zero cross switching		WG A5 6D xx Z*			WG 280 x xx Z									WG 280 D xx Z			WG 480 D xx Z / WG 660 D xx Z									WG 420 D ... Z - MR								
	Random switching		WG A5 6D xx R*			WG 280 x xx R									WG 280 D xx R			WG 480 D xx R / WG 660 D xx R									N/A								
Alarm	Output Voltage max.	Vdc	-			-									-			-									30								
	Output Current max.	mA	-			-									-			-									100								
	Output Voltage drop max.	Vdc	-			-									-			-									1.3 @ 24Vdc / 100mA								
Heatsink I SSR 40°C		WG K1/100	10A	14A	16A	10A	18A	18A	20A	23A	25A	25A	25A		10A	11A	11A	10A	18A	18A	20A	23A	25A	25A	25A	10A	18A	18A	20A	23A	25A	25A	25A		
		WG K2/100	10A	17A	20A	10A	23A	23A	26A	31A	33A	33A	33A		10A	14A	14A	10A	23A	23A	26A	31A	33A	33A	33A	10A	23A	23A	26A	31A	33A	33A	33A		
		WG K3/160	10A	25A	31A	10A	25A	40A	50A	66A	74A	74A	74A		10A	25A	27A	10A	25A	40A	50A	66A	73A	74A	74A	10A	25A	40A	50A	66A	73A	74A	74A		
		WG K4/160L	10A	25A	40A	10A	25A	45A	50A	75A	90A	110A	125A		10A	25A	45A	10A	25A	45A	50A	75A	90A	110A	125A	10A	25A	45A	50A	75A	90A	110A	125A		
		WG K5/80	10A	24A	27A	10A	25A	34A	41A	51A	56A	56A	57A		10A	22A	22A	10A	25A	34A	41A	51A	56A	56A	57A	10A	24A	34A	41A	51A	56A	56A	57A		

* = 8D version Also available

SSR's for AC loads

WG A4 (PCB mounting)
Offers high component density on the PCB with a maximum load current of 2A

WG A8 (PCB mounting)
Especially developed for PCB mounting with very small dimensions and load currents of 3A or 5A. There are types with 600 V peak-off-state voltage as well as types with 1200 V available.
The WG A8 is available in zero cross switching (Z-types) for resistive and capacitive loads or in random switching (R-types) for inductive loads.

WG A8 PC / LC
The WG A8 series also offers phase controlled or linear controlled power for heaters or lighting up to 5A.

WG A5 (Hockey Puck Housing)
Especially suited to switch resistive loads as in heaters and lamps.

WG 280 (Hockey Puck Housing)
Designed to switch inductive loads like electric motors and valves (R-type) as well as resistive loads like heaters and lamps (Z-type).

WG 480 / WG 660 (Hockey Puck Housing)
For switching applications in three phase systems, the WG 480 and 660 series offer excellent reliability due to high noise immunity (maximum peak-off-state voltage of 1200/1600 V) and extremely good dv/dt characteristics (partly with integrated overvoltage protection).

WG 420 MR (Hockey Puck Housing)
Microprocessor controlled monitoring relay with LED-indication of the status and alarm output . Indicates open or short circuit, interruption, supply voltage and AC line voltage loss.

WG A3 (Maxi Puck Housing)
This series is able to switch three phase loads with one control signal up to rated line currents of 45A and line voltages up to 480Vac. The WG A3 has high noise immunity and an internal overvoltage protection which becomes effective at 1000 V.

WG A0 (Maxi Puck Housing)
This series is recommended for electronic motor reversing in three phase systems.
Load voltages up to 480 Vac and load currents up to 45 A can be switched. A built-in interlocking circuit with a typical change over switching time of 60 +/- 20 ms prevents simultaneous switching-on of forward and reverse functions and prevents a short circuit between two phases. A LED indicates the forward and reverse function.

SSR's for DC loads

WG F8
This PCB mounting type has a MOSFET output, suitable for resistive and capacitive loads. For inductive loads a protection circuit (diode or snubber) is recommended.

WG F
This is the chassis mounting version with MOSFET output and load currents up to 30A.
Types with IGBT output are available for high load voltages.

COMUS The Comus Group of Companies

DC TYPES


TYPE			WG F 10 D 28	WG F 100 D 75	WG F 200 D 18	WG F 400 D 05	WG F 950 D 10	WG FB 10 D 28	WG FB 40 D 10	WG FB 100 D 05	WG FB 200 D 03	WG FB 400 D 01
Output			MOSFET				IGBT	MOSFET				
Load Current		A rms	30	15	10	5	10	8	10	5	3	1.5
Surge Current		Apeak	80	50	35	15	150	80	100	50	35	15
Off-State Leakage current max.		mAeff	0.1				0.1					
Load Voltage range		Vdc rms	1-50	1-100	1-200	1-400	2-950	1-50	1-60	1-100	1-200	1-400
Peak off-state Voltage		V drm	50	100	200	400	1200	50	60	100	200	400
On-state resistance max.		mOhm	36	150	360	1100		36	25	150	360	1100
On-state Voltage		V peak	-				1.17 @ 6A	-				
Control Voltage range		Vdc	3 - 32				10-32	3 - 32				
Control Current max. without LED		mA	25				30mA@ 24V	25				
Control Current max. with LED		mA	30				-	-				
Turn-off Voltage min.		Vdc	1				7	1				
Input Resistance		Ohm	Constant Current				800	Constant Current				
Turn-on time max.		ms	2				200 µS	2				
Turn-off time max.		ms	0.1				50 µS	0.1				
PWM frequency max.		Hz	250				5000	250				
Isolation between input / output		Vdc rms	1500				3000	1500				
Isolation between in-output / base		Vdc rms	2500				-	-				
Isolation resistance		MOhm	50					50				
Operating Temperature		°C	-20 +80					-20 +80				
Heatsink I SSR 40°C	WG K1/100		20A	10A	6.5A	3.7A	10A					
	WG K2/100		22A	11A	7.2A	4A	10A					
	WG K3/160		27A	14A	9A	4.7A	10A					
	WG K4/160L		30A	15A	10A	5A	10A					
	WG K5/80		24A	12A	8A	4.3A	10A					

Application remarks

SSRs must be cooled sufficiently in order to stay below the specified maximum junction temperature. The most suitable heatsink has to be determined out of the derating diagrams (see individual datasheets on our website or on CD). This catalogue already indicates the max current that can be handled by one relay on a specific heatsink at 40°C ambient temperature.
When mounting SSRs on a heatsink, heat conducting paste or thermal pads are mandatory. Both can be supplied upon request.