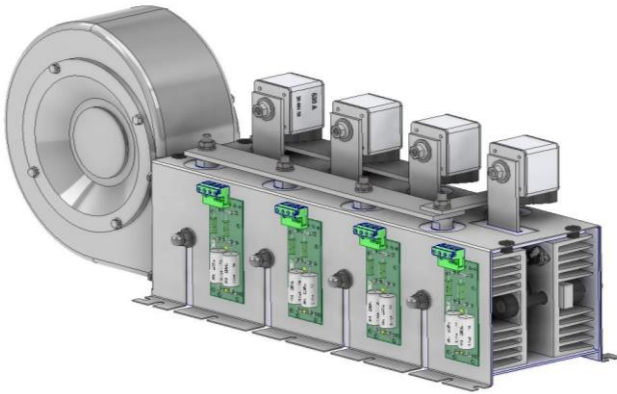


## GO\_016,\_017 OCTAL SCR MODULES

### Green Power Easy Module



- ▶ Electrically insulated metal frame
- ▶ Extremely high power density
- ▶ 3000 V<sub>RMS</sub> insulation voltage
- ▶ Line voltage range up to 700 V<sub>RMS</sub>
- ▶ High reliability
- ▶ Modularity
- ▶ Fully customizable
- ▶ Broad range of accessories
- ▶ Cost effective solution
- ▶ Suitable for heavy duty applications



This new family of high power modules brings to the high power applications the same compactness, ease of use and scalability of the lower power semiconductor modules. In addition to these typical features (i.e. standard dimensions, electrical insulation, various circuit types, etc.) the new Green Power Easy Module (GEM) family includes many features aimed to simplify their adoption allowing the end users to focus on their core business. These features include:

- embedded air cooling system (heatsink and fan)
- optimised snubber circuits
- pulse transformer modules
- ducted heat flow.

#### Maximum ratings of single thyristor

Part number	GO_017	GO_016	Conditions	Units
$I_{T(AV)}$	177	167	180° cond, half sine Ta = 40 °C	A
$I_{T(RMS)}$	278	262	Air velocity = 5 m/s	A
$I_{TSM}$	9	8	50 Hz, Tj = Tjmax, VR = 0 V	kA
$I_{TSM}$	9.5	8.4	60 Hz, Tj = Tjmax, VR = 0 V	kA
$I^2t$	405	320	50 Hz, Tj = Tjmax, VR = 0 V	kA <sup>2</sup> s
$I^2t$	369	291	60 Hz, Tj = Tjmax, VR = 0 V	kA <sup>2</sup> s
V <sub>DRM</sub> /V <sub>RSM</sub>	1600	2200	Tj = Tjmax	V
Tjmax	125	125		°C

Part Number	V code	V <sub>DRM</sub> V <sub>VRRM</sub> max repetitive reverse and off-state blocking voltage [V]	I <sub>DRM</sub> I <sub>RRM</sub> @ T <sub>jmax</sub> [mA]	V <sub>L(RMS)</sub> maximum suggested RMS line voltage [V]
<b>GO_017</b>	12	1200	50	400
	16	1600	50	500
<b>GO_016</b>	22	2200	100	700

**On-State Characteristics**

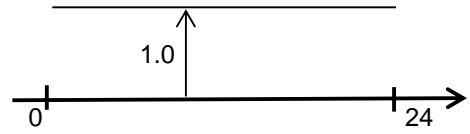
Parameters		GO_017	GO_016			Conditions	Units
V <sub>T(TO)</sub>	Threshold voltage	0.9	1.0			T <sub>j</sub> = T <sub>jmax</sub>	V
r <sub>T</sub>	On-state slope resistance	0.65	0.72			T <sub>j</sub> = T <sub>jmax</sub>	mΩ
I <sub>H</sub>	Holding current, max	600	300			T <sub>j</sub> = 25°C	mA
I <sub>L</sub>	Latching current, typ	1000	1000			T <sub>j</sub> = 25°C	mA
P <sub>MAX</sub>	Max power losses	1264	1247			T <sub>A</sub> = 40°C	W

**Triggering Characteristics**

Parameters		GO_017	GO_016			Conditions	Units
V <sub>GT</sub>	Gate trigger voltage	3	3.5			T <sub>j</sub> = 25°C, V <sub>D</sub> = 5V	V
I <sub>GT</sub>	Gate trigger current	200	300			T <sub>j</sub> = 25°C, V <sub>D</sub> = 5V	mA
P <sub>GM</sub>	Peak gate power dissipation	10	10			Pulse width 1 ms	W
P <sub>G(AV)</sub>	Average gate power dissipation	2	2				W
I <sub>FGM</sub>	Peak gate current	3	3				A
V <sub>FGM</sub>	Peak gate voltage (forward)	20	20				V
V <sub>RGM</sub>	Peak gate voltage (reverse)	5	5				V

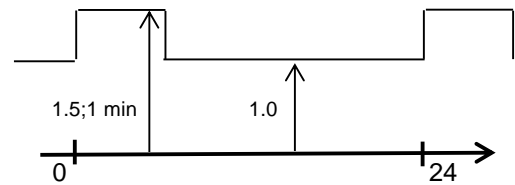
**Switching Characteristics**

Parameters		GO_017	GO_016			Conditions	Units
di/dt	Critical rate of rise of on-state current	200	200			T <sub>j</sub> = T <sub>jmax</sub>	A/μs
dV/dt	Critical rate of rise of off-state voltage	500	500			T <sub>j</sub> = T <sub>jmax</sub>	V/μs
t <sub>q</sub>	Turn-off time, typ	200	200			T <sub>j</sub> =T <sub>jmax</sub> , I <sub>T</sub> =1000A di/dt=-20A/μs V <sub>R</sub> =50V dV/dt=20V/μs	μs



Maximum IEC class 1 currents for typical circuit type

Circuit Type	GO_017	GO_016	Conditions	Units
Six pulse bridge	511	480	TA = 40 °C delay angle = 0°	A
				A
				A

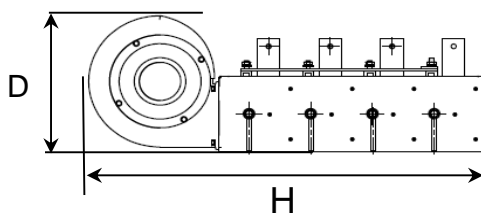


Maximum IEC class 2 currents for typical circuit type

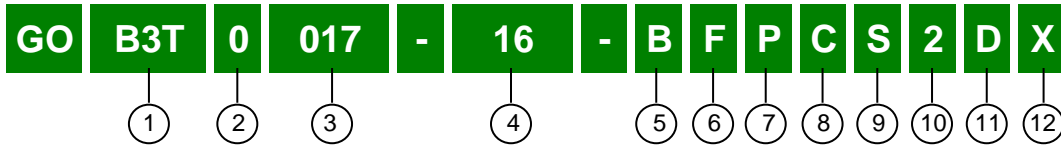
Circuit Type	GO_017	GO_016	Conditions	Units
Six pulse bridge	380	357	TA = 40 °C delay angle = 0°	A

Thermal and mechanical characteristics

Parameters	GO_017	GO_016	Conditions	Units
T <sub>jmax</sub> Max operating junction temperature	125	125		°C
T <sub>stg</sub> Storage temperature	-40 +70	-40 +70		°C
R <sub>thJA</sub> Thermal resistance (junction to ambient)	0.404	0.409	Air velocity = 5 m/s	°C/W
F Mounting torque - GEM to panel (+/- 10%)	7	7	M6 mounting screw	N-m
	14	14	M8 mounting screw	N-m
MTTR Mean Time To Repair	12	12		minutes
<b>Overall dimensions</b>				
D Depth	263			mm
H Height	709			mm
W Width	215			mm
m Mass (with FPC options)	11			kg
<b>Blower electrical characteristics (50/60Hz)</b>				
V <sub>L</sub> Line voltage-single phase	230			V <sub>RMS</sub>
P Input power	174			W
A Current	0.78			A



## PART-NUMBERING SYSTEM



- ① Circuit configuration = six pulse bridge fully controlled + crowbar
- ② 0 = No standard busbar B = bridge configuration
- ③ Average current / 10
- ④ Blocking voltage / 100
- ⑤ 0 = No fan B = 220 V blower (other fans available on request)
- ⑥ 0 = No fuse - F = Individual fuse - R = individual fuse suitable for regen bridge - L = line fuse
- ⑦ 0 = No pulse transformer - P = With pulse transformer (\*)
- ⑧ 0 = No fan loss detection module - C = With fan loss detection module
- ⑨ 0 = No SCR fault detection module
- ⑩ 0 = No snubber - 3 = three snubber - 6 = six snubbers
- ⑪ 0 = No fan-on-demand thermo-switch - D = Fan-on-demand thermo-switch (trip point 50 °C)
- ⑫ 0 = Standard aluzinc frame - X = Stainless steel frame

(\*) Pulse transformer GT001 (dual) or GT002 (single) depending on the circuit configuration.

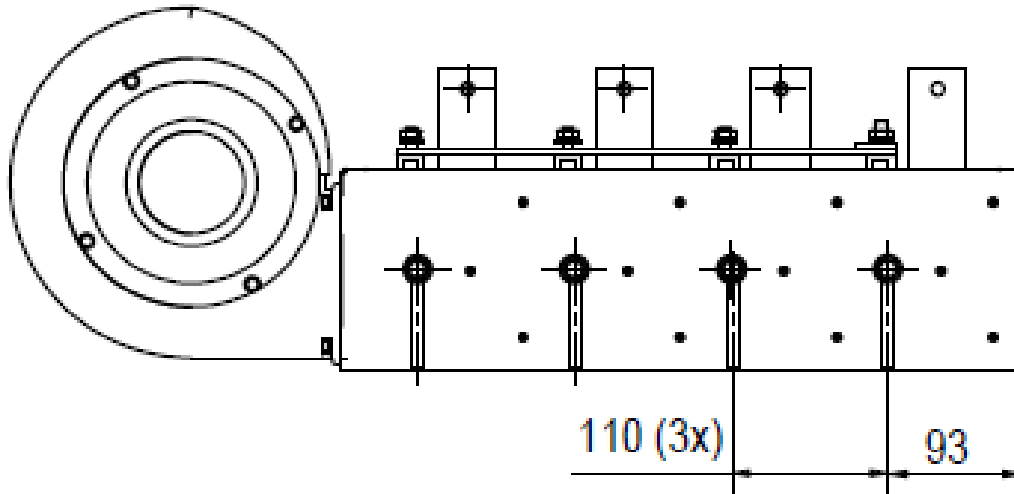
For pulse transformer characteristics see their specific datasheets.

GEM modules are not covered by the Low Voltage Directive (LVD) 2014/35/EU because, according to LVD Guidelines, they are components "the safety of which can only, to a very large extent, be assessed taking into account how they are incorporated and for which a risk assessment cannot be undertaken".

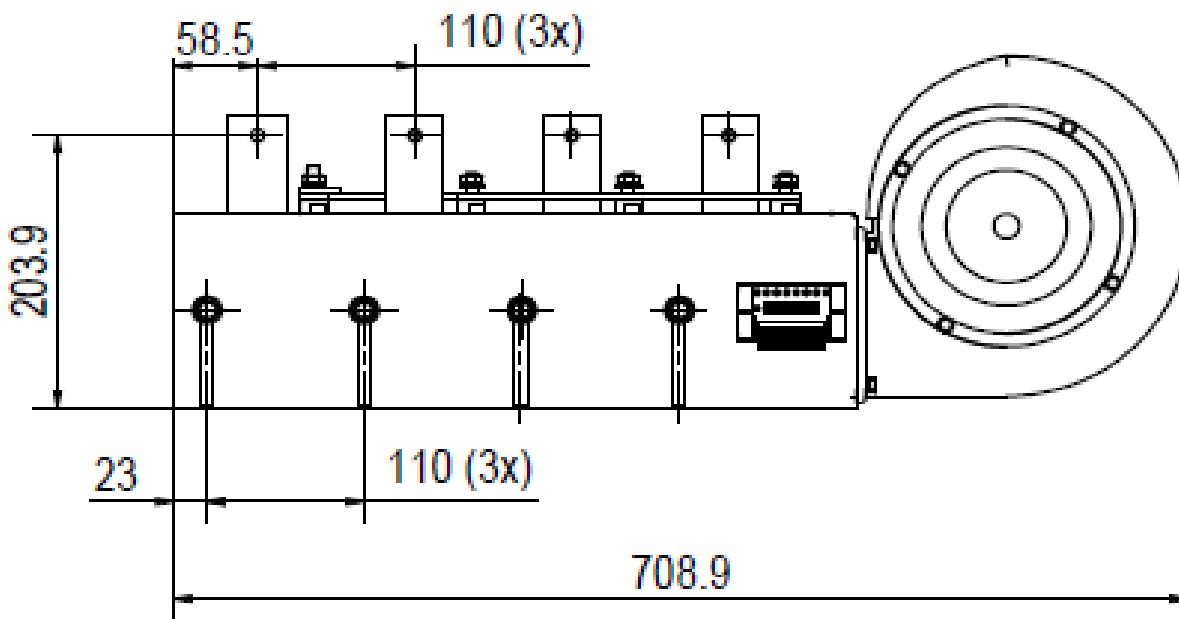
In the interest of product improvement Green Power Solutions reserves the right to change any specification given in this data sheet without notice.

### GOB3T Six pulse SCR bridge + AC crowbar

Right side view

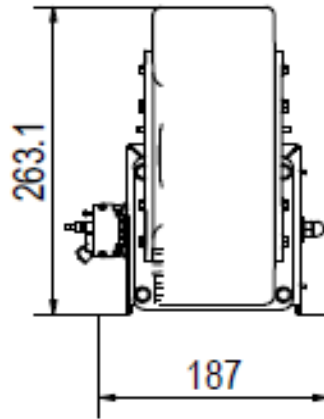


Left side view

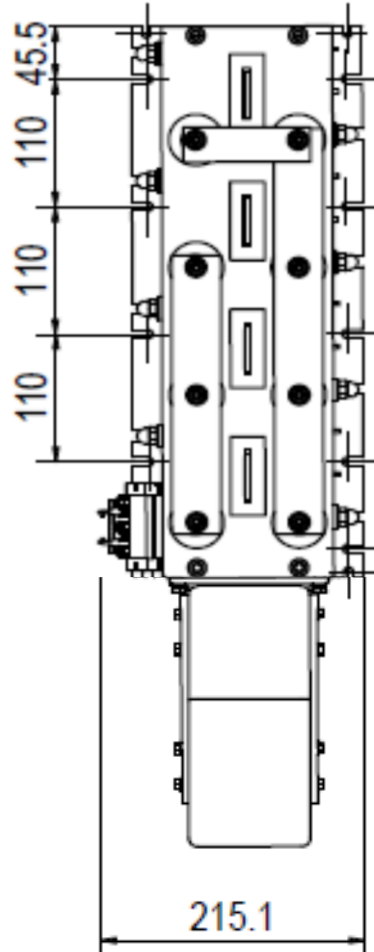


### GOB3T Six pulse SCR bridge + AC crowbar

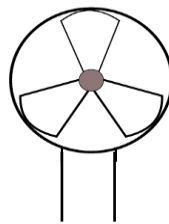
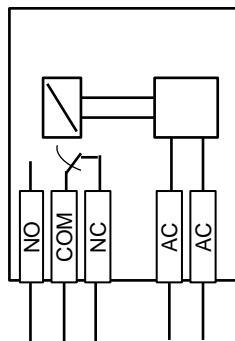
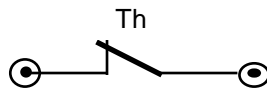
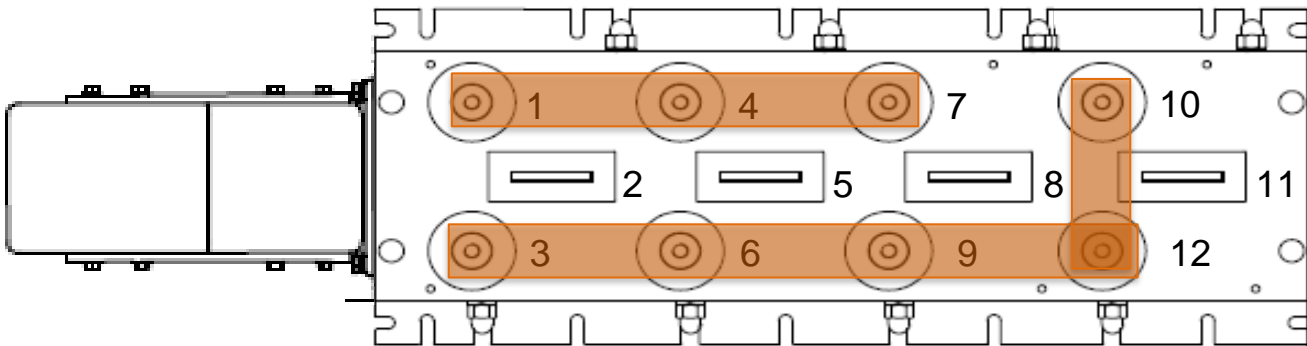
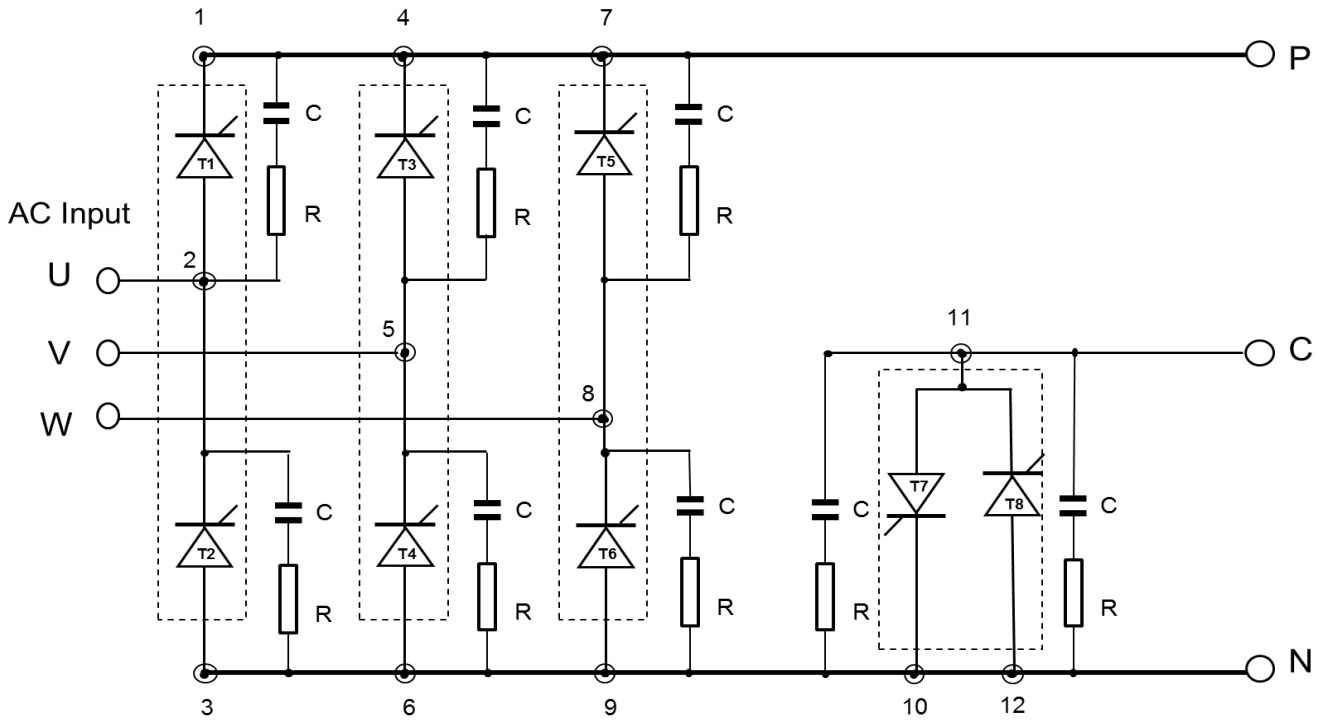
Front view



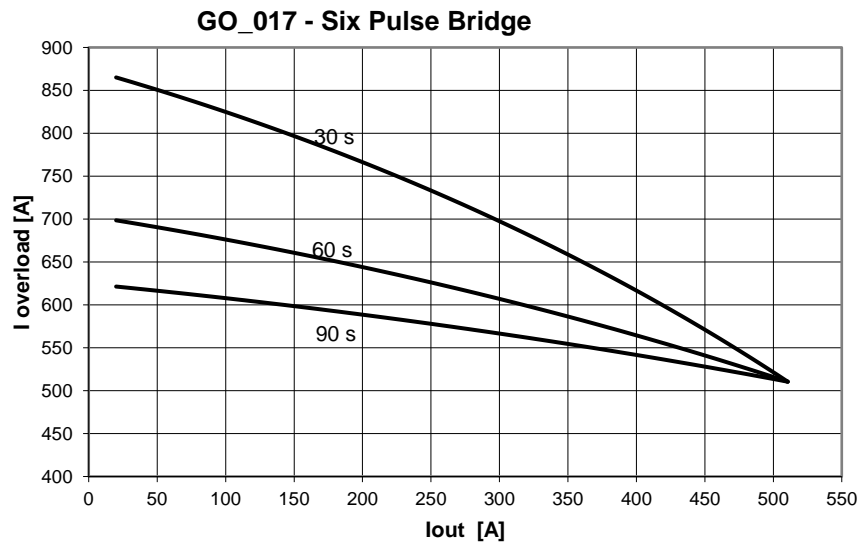
Top view



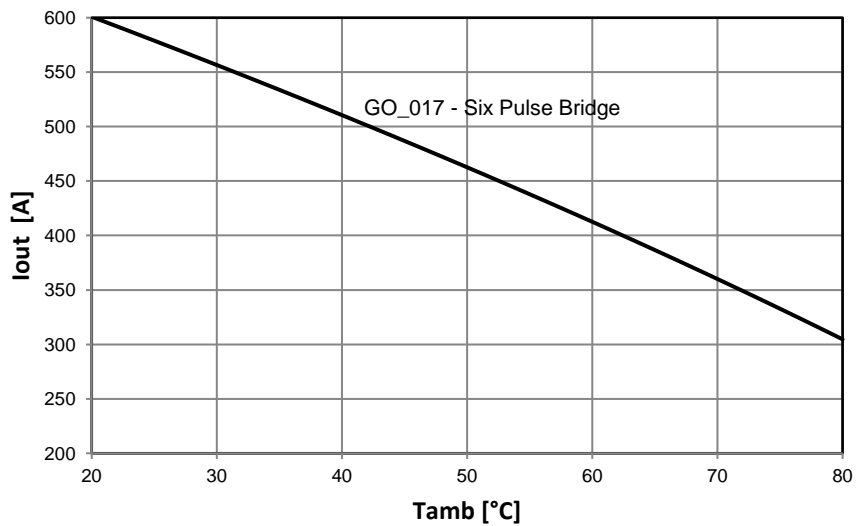
### GOB3T Six pulse SCR bridge + AC crowbar



Overload capability at different overload time - Tamb = 40 °C

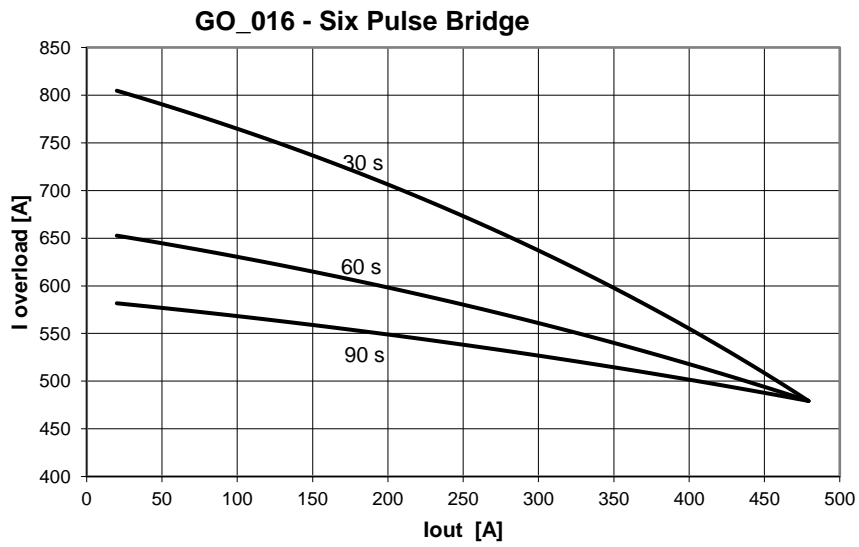


Max output vs Tamb





Overload capability at different overload time - Tamb = 40 °C



Max output vs Tamb

