CUI INC
a bel group

SERIES: VGS-600 | **DESCRIPTION:** INTERNAL AC-DC POWER SUPPLY

FEATURES

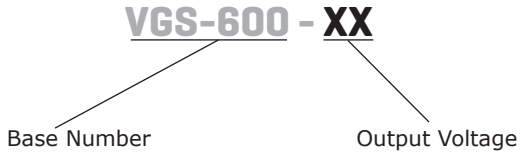
- UL/EN 62368 certified
- active PFC
- temperature range -40°C to +70°C
- isolation up to 4000 Vac
- operating altitude up to 5000 m
- remote on/off
- short-circuit, over-current, over-voltage & over-temperature protection
- AC or DC input
- internal fan cooling
- PCB conformal coating
- 5 V, 1 A standby supply
- remote output voltage sensing

MODEL

	output voltage		output current	output power	ripple and noise[1]	efficiency[2]
		range	max	max	typ	typ
	(Vdc)	(Vdc)	(A)	(W)	(mVp-p)	(%)
VGS-600-12	12	11.8 ~ 12.6	50.0	600	150	92
VGS-600-15	15	14.7 ~ 15.8	40.0	600	150	92
VGS-600-24	24	23.5 ~ 25.2	25.0	600	200	94
VGS-600-27	27	26.4 ~ 28.4	22.3	600	200	94
VGS-600-36	36	35.3 ~ 37.8	16.7	600	300	94
VGS-600-48	48	47.0 ~ 50.4	12.6	600	300	94

Notes: 1. Ripple & noise are measured at 20 MHz BW with 47 µF aluminum electrolytic capacitor and 0.1 µF ceramic capacitor on the output.
2. Measured at 230 Vac

PART NUMBER KEY



INPUT

parameter	conditions/description	min	typ	max	units
voltage	ac input dc input	80 110		277 390	Vac Vdc
frequency		47		63	Hz
current	at 115 Vac at 230 Vac			7.5 3.5	A A
inrush current	at 230 Vac, cold start		40		A
leakage current	at 240 Vac			0.1	mA
no load power consumption	at 230 Vac, 25°C, on/off add +5V signal		0.5		W
power factor	at 115 Vac, full load at 230 Vac, full load		0.98 0.95		

OUTPUT

parameter	conditions/description	min	typ	max	units
capacitive load	12 Vdc & 15 Vdc output 24 Vdc & 27 Vdc output 36 Vdc output 48 Vdc output			6,000 4,000 2,400 1,600	µF µF µF µF
total regulation	+5 VSB output, standby, full load all other outputs, full load		±2 ±1		% %
line regulation	+5 VSB output, standby, rated load all other outputs, rated load		±0.5 ±0.3		% %
load regulation	+5 VSB output, standby, 0%~100% load all other outputs, 0%~100% load		±2 ±0.5		% %
hold-up time	at 230 Vac	15			ms

PROTECTIONS

parameter	conditions/description	min	typ	max	units
over voltage protection	12 Vdc output, latching 15 Vdc output, latching 24 Vdc output, latching 27 Vdc output, latching 36 Vdc output, latching 48 Vdc output, latching			16 20 32 35 47 60	Vdc Vdc Vdc Vdc Vdc Vdc
over current protection	auto-recovery	110		160	%
short circuit protection	hiccup, continuous, auto-recovery in < 3 s after short removed				
over temperature protection	output turns off and self recovers after temperature drops				

SAFETY & COMPLIANCE

parameter	conditions/description	min	typ	max	units
isolation voltage	input to ground for 1 minute, 5 mA max input to output for 1 minute, 5 mA max output to ground for 1 minute, 5 mA max	1,500 4,000 1,500			Vac Vac Vac
insulation resistance	input to ground, 500 Vdc input to output, 500 Vdc output to ground, 500 Vdc	50 50 50			MΩ MΩ MΩ
safety approvals	certified to 62368: IEC/EN/UL designed to meet 61558: EN designed to meet 60335: EN				
safety class	Class I				
conducted emissions	CISPR32/EN55032 CLASS B				
radiated emissions	CISPR32/EN55032 CLASS B				
harmonic flicker	IEC/EN61000-3-2 CLASS A and CLASS D				

SAFETY & COMPLIANCE

voltage flicker	IEC/EN61000-3-3				
parameter	**conditions/description**	**min**	**typ**	**max**	**units**
ESD	IEC/EN 61000-4-2 Contact ±8KV/Air ±15KV, perf. Criteria A				
radiated immunity	IEC/EN 61000-4-3 10V/m, perf. Criteria A				
EFT/burst	IEC/EN 61000-4-4 ±4KV, perf. Criteria A				
surge	IEC/EN 61000-4-5 line to line ±2KV/line to ground ±4KV, perf. Criteria A				
conducted immunity	IEC/EN61000-4-6 10 Vr.m.s, perf. Criteria A				
voltage dips and interruptions	IEC/EN61000-4-11 0%, 70%, perf. Criteria B				
MTBF	as per MIL-HDBK-217F at 25°C	300,000			hours
RoHS	yes				

ENVIRONMENTAL

parameter	**conditions/description**		**min**	**typ**	**max**	**units**
operating temperature			-40		70	°C
storage temperature			-40		85	°C
operating humidity	non-condensing		20		95	%
storage humidity	non-condensing		10		95	%
power derating	operating temperature derating	50°C ~ 70°C	2.5			%/°C
	input voltage derating	80 Vac ~ 85 Vac 85 Vac ~ 100 Vac	2.0 1.33			%/Vac

MECHANICAL

parameter	conditions/description	min	typ	max	units
dimensions	101.6 x 203.1 x 40.6				mm
weight			1,000		g
cooling	forced air cooling				
case material	metal (AL1100, SGCC)				

MECHANICAL DRAWING

units: mm [inch]
adj: output adjustable resistor
input connector wire range: 22 ~ 14 awg
input connector tightening torque: M4, 1.2 N·m (max)
output connector (-V0/+V0) tightening torque: M5, 2.4 N·m (max)
tolerance: ±1.0 [±0.039]

PIN CONNECTIONS	
PIN	Function
1	⏚
2	AC (L)
3	AC (N)
4	+Vo
5	-Vo

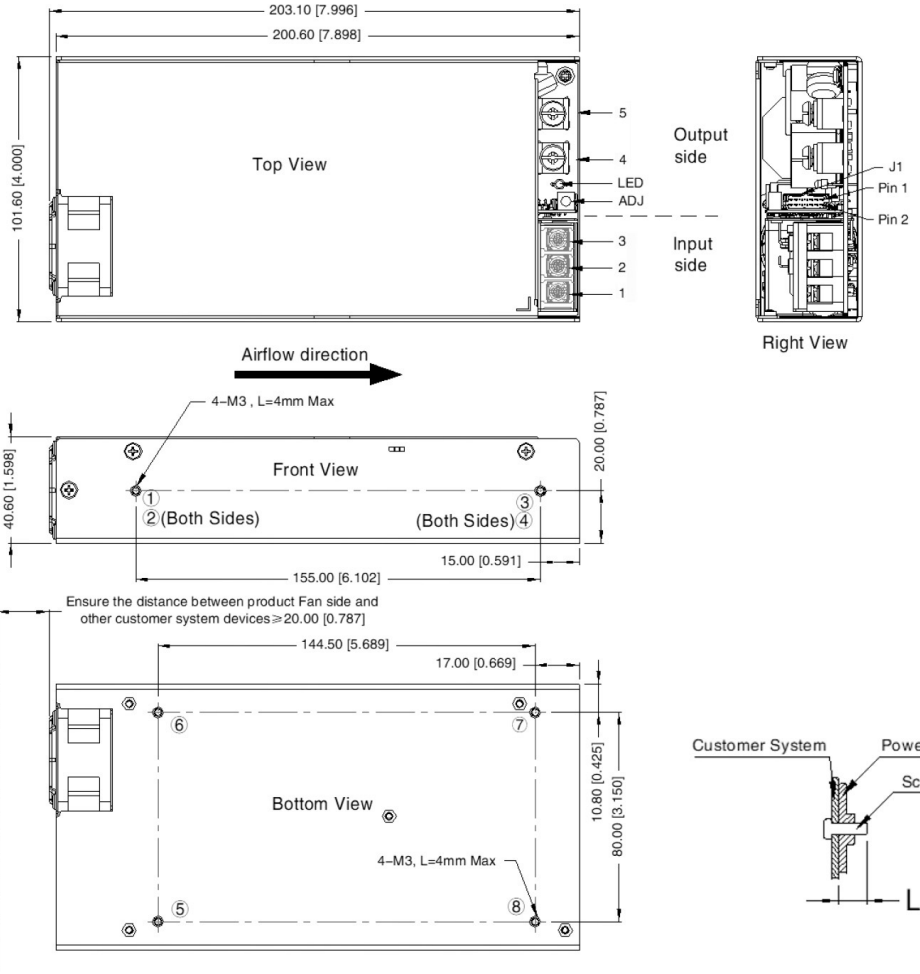
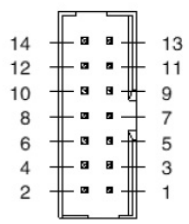


Figure	Output connector J1				
	PIN	Function	PIN	Function	Customer connector
	1	-S	2	+S	MOLEX PN: 51110-1450 (without locking ramp) or 5110-1451 (with locking ramp) or equivalent
	3	NC	4	NC	
	5	DC_OK-	6	DC_OK+	
	7	+5VSB	8	5VSB_RTN	
	9	RC+	10	RC-	
	11	+5VSB	12	+5VSB	
	13	5VSB_RTN	14	5VSB_RTN	

Position	Screw spec.	L (max)	Torque (max)
① - ⑧	M3	4 mm	0.4 N·m

Note: At least one hole position, ①~⑧, must be securely connected to Protective Earth (PE) ⏚

TYPICAL APPLICATION

REMOTE ON/OFF

Figure 1

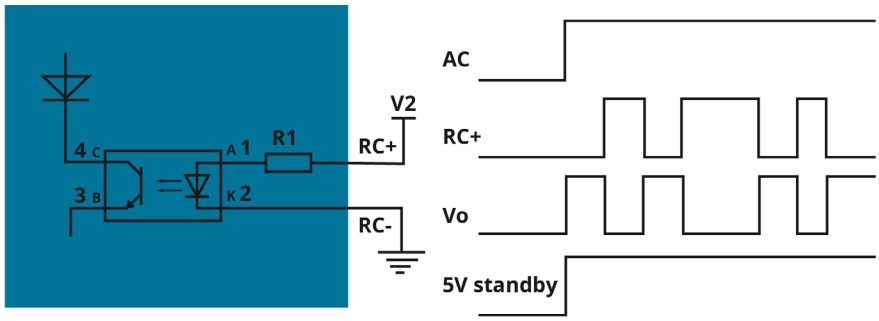


Table 1

R1 (Product inside)	2KΩ, $\frac{1}{12}$W
V2 (User side)	5V ~ 15V

1. When the product is working normally, apply voltage (5-15V) to RC+ and RC- to trigger the remote ON/OFF function, and the output voltage will be off. Withdraw the voltage, the output voltage will be re-established.
2. 5V standby power supply is not controlled by remote ON/OFF function.

DC_OK

Figure 2

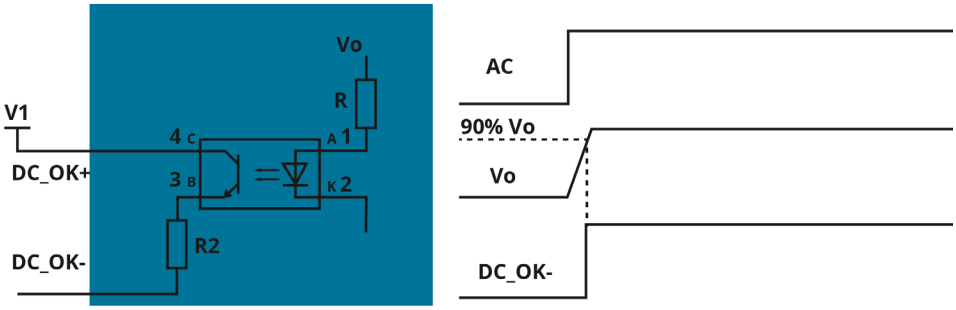


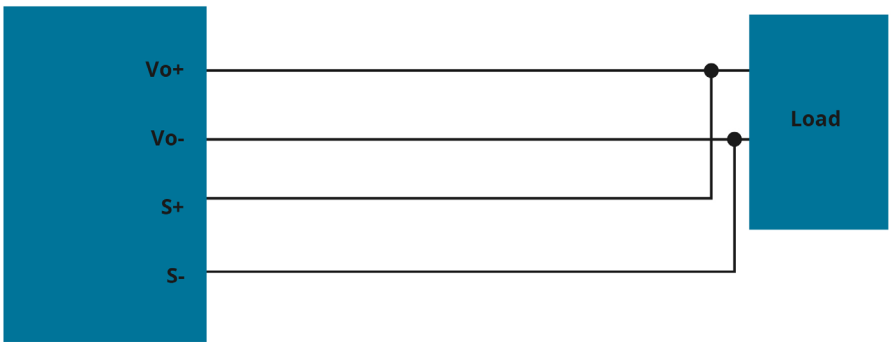
Table 2

R2 (Product inside)	1KΩ, $\frac{1}{12}$W
V1 (User side)	5V ~ 15V

1. When the output voltage of the product reaches 90% of the rated value, DC_OK+ will be connected to DC_OK-.
2. It is recommended that users apply a certain voltage between DC_OK+ and DC_OK- to detect the signal.

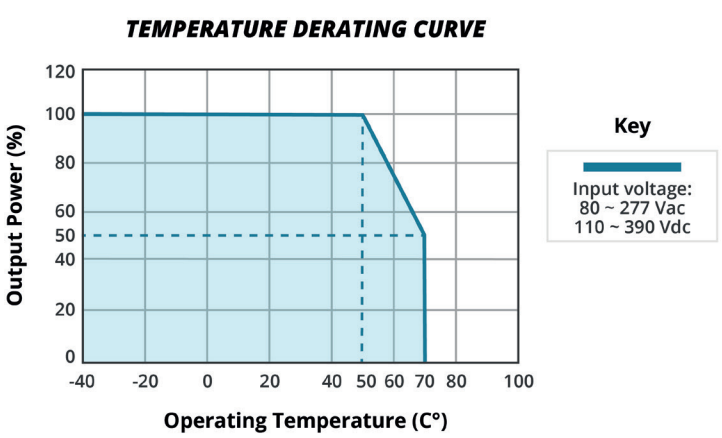
REMOTE SENSE COMPENSATION

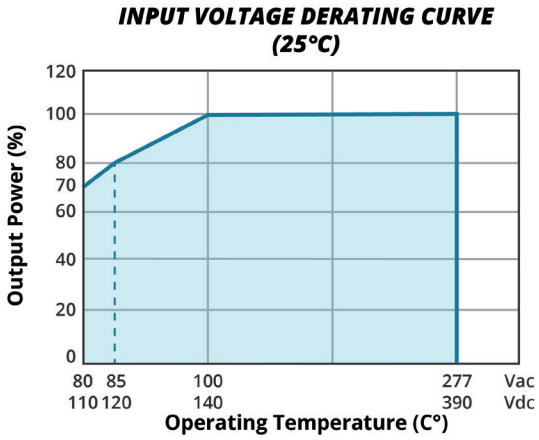
Figure 3



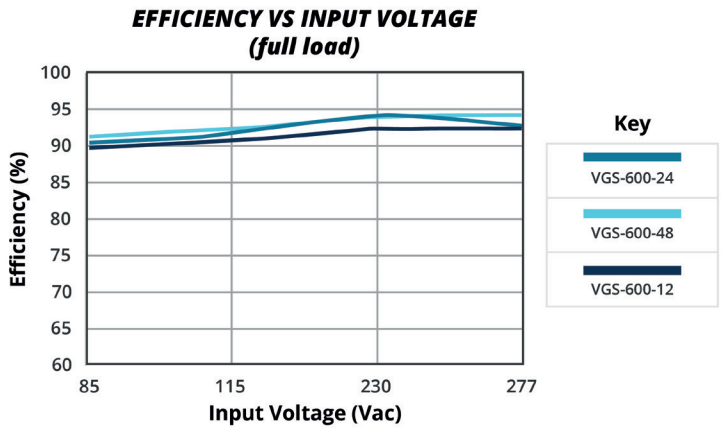
1. The left side represents the internal schematic diagram of the product, the right side represents the customer system.
2. Twisted pair wires are needed for S+/S-.

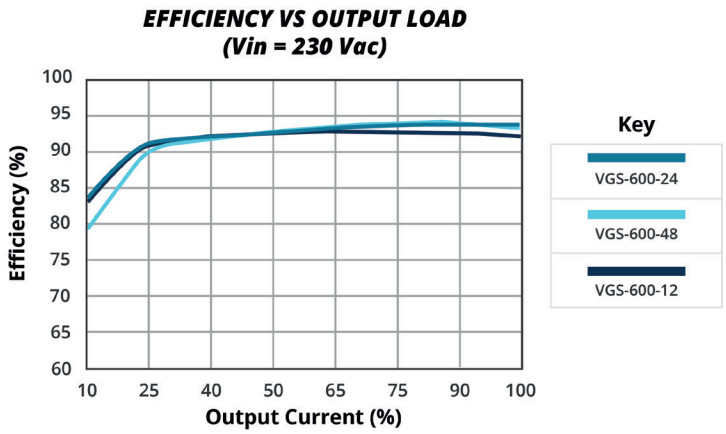
DERATING CURVE





EFFICIENCY CURVES





Notes:
3. The room temperature derating of 5°C/1000m is needed for operating altitude greater than 2000m.
4. In order to improve the efficiency at high input voltage, there will be audible noise generated, but it does not affect product performance and reliability.
5. The out case needs to be connected to PE (⏚) of system when the terminal equipment in operating.
6. CAUTION: Double pole, neutral fusing. Disconnect mains before servicing.
   ATTENTION: Double pôle/fusible sur le neutre. Débrancher lalimentation avant lentretien.

REVISION HISTORY

rev.	description	date
1.0	initial release	09/09/2022

The revision history provided is for informational purposes only and is believed to be accurate.

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