

## LCC250

250 Watts

Convection/Conduction  
Mounting

Total Power: 250 W  
# of Outputs: Single  
Output: 12, 24, 48 V



## Special Features

- 250W Full power at elevated temperatures
- Wide Operating Temperature Range suited for outdoor application
- IP64 Rated
- Conduction-cooled or convection
- Differential Remote Sense
- Output Adjust
- Output On/Off (Positive or Negative logic user selectable)

## Compliance

- EMI Class B
- EN61000 Immunity
- MIL-STD-461E: CE101; CE102; CS101; CS114

## Safety

- UL + CSA: 60950-1 2nd Ed.  
60601-1 1st Ed.  
ES 60601-1 (PENDING)
- TUV: 60950-1 2nd Ed.  
60601-1 3rd Ed.  
61347-1; 2-13
- CB Scheme: IEC 60950-1 2nd Ed  
IEC 61347-1; 2-13  
CCC<sup>5</sup>
- China
- CE Mark

## Electrical Specifications

Input	
Input Range:	90 - 264 Vac (Operating) 115/230 Vac (Nominal)
Frequency:	47 - 63 Hz
Input Fusing:	Internal fuse on both L and N lines
Inrush Current:	50 A
Power Factor:	> 0.92 Full load
Harmonics:	Meets EN61000-3-2; MIL-STD-461E: CE101; CE102; CS101; CS104
Input Current:	3.4 A @ 90 Vac full load
Hold Up Time:	16 ms minimum at 115 Vac; 100% load 230 Vac; 100% load
Efficiency:	12 V - 89% typical 24 V - 91% typical 48 V - 91.5% typical
Leakage Current:	< 275 $\mu$ A at 230 Vac

Output		
Output Rating:	12 V @ 20.8 A 24 V @ 10.4 A 48 V @ 5.2 A	
Set Point:	± 0.2%	Factory set point
Total Regulation Range:	± 2%	Line/Load/Temperature
Rated Load:	250 W maximum	
Minimum Load:	0 A Load	No loss of regulation
Capacitive Load:	0 - 330 $\mu$ F/Amp	
Constant Output Voltage Adjustment Range:	12 V: +10 / -10% 24 V: +14.6 / -15% 48 V: +15% / -15%	Adjust via VR2
Constant Output Current Adjustment Range:	+0 / -50%	Adjust via VR1 CC mode supported from Vo nominal down to 80% Vo
Output Ripple and Noise:	1%	0 to 330 $\mu$ F/Amp
Transient Response:	± 5% Vo max transient; recovery < 500 $\mu$ s max	50% Load Step @ 1 A/ $\mu$ s Step Load verified at: 50% to 100% Load; 90 - 264 Vac input; Capacitive load from 0 to 330 $\mu$ F/Amp
Remote sense:	Capable of Stable Offset of ± 0.5 Vdc at output cable termination	+SENSE (Red Wire); -SENSE (Black Wire)
Output On/Off:	Remote On/Off referenced to secondary side. Positive or Negative logic user selectable via CN2. Factory default is Positive logic	On/Off (Orange Wire); On/Off Return (White Wire)
Overcurrent Protection (OCP):	≤ 150% Io	Auto-recovery
Overvoltage Protection (OVP):	110% to 135% Vo	Latching mode; Requires input AC recycle
Overtemperature Protection (OTP):		Auto-recovery; hiccup mode
Output Isolation	4000 Vac Input to Output 1500 Vac Input to Ground 500 Vac Output to Ground	

## Environmental Specifications

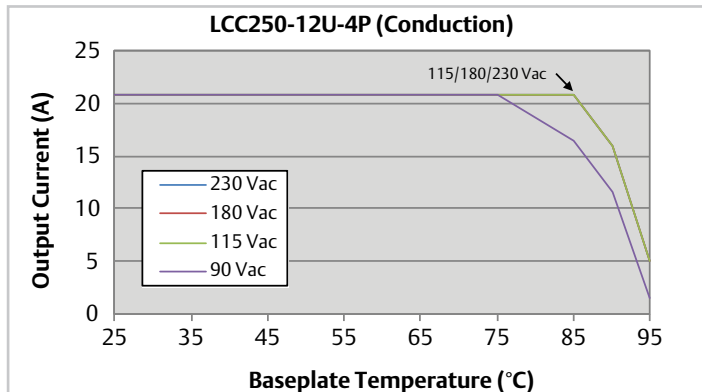
Operating Temperature Range:	Suffix 4P (Conduction): -40 °C to +85 °C Baseplate Temperature Suffix 7P (Convection): -40 °C to +85 °C Ambient Temperature
Storage Temperature:	-40 °C to 85 °C
Humidity:	10% to 100% (Condensing & Non-Condensing)
Altitude:	Operating: 13,000 feet Non-Operating: 50,000 feet
Shock:	IEC68-2-27
Vibration:	IEC 68-2-6 / IEC 721-3-2
Ingress Protection:	IP64 Rated
MTBF (Calculated):	> 780,000 hours at 100% load; Low line; Telcordia SR-332

## Ordering Information

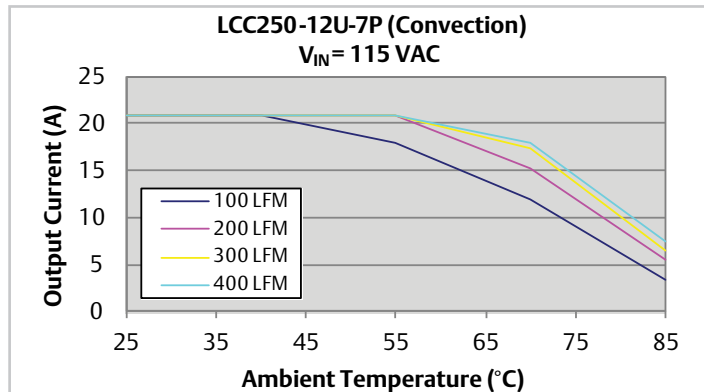
Model Number	Output	Adjustment Range	Output Current		Output Ripple P/P <sup>1</sup>	Line/Load Regulation
			Min	Max		
LCC250-12U-4P	12 V	±10%	0 A	20.8 A	1% <sup>2</sup>	± 2%
LCC250-12U-4PE	12 V	±10%	0 A	20.8 A	1% <sup>2</sup>	± 2%
LCC250-12U-7P	12 V	±10%	0 A	20.8 A	1% <sup>2</sup>	± 2%
LCC250-12U-7PE	12 V	±10%	0 A	20.8 A	1% <sup>2</sup>	± 2%
LCC250-24U-4P	24 V	+14.6 / -15%	0 A	10.4 A	1% <sup>3</sup>	± 2%
LCC250-24U-4PE	24 V	+14.6 / -15%	0 A	10.4 A	1% <sup>3</sup>	± 2%
LCC250-24U-7P	24 V	+14.6 / -15%	0 A	10.4 A	1% <sup>3</sup>	± 2%
LCC250-24U-7PE	24 V	+14.6 / -15%	0 A	10.4 A	1% <sup>3</sup>	± 2%
LCC250-48U-4P	48 V	±15%	0 A	5.2 A	1% <sup>4</sup>	± 2%
LCC250-48U-4PE	48 V	±15%	0 A	5.2 A	1% <sup>4</sup>	± 2%
LCC250-48U-7P	48 V	±15%	0 A	5.2 A	1% <sup>4</sup>	± 2%
LCC250-48U-7PE	48 V	±15%	0 A	5.2 A	1% <sup>4</sup>	± 2%

- Output ripple measured at the end of the output cable terminated with 10  $\mu$ F tantalum cap in parallel with 0.1  $\mu$ F ceramic capacitor.
- 12V: 1% limit is achieved with 2X 820 $\mu$ F/16V external cap (e.g. PLG1C821MDO1 from Nichicon or equivalent). Otherwise, maximum limits are 1.5% at  $T_a \geq 0^\circ\text{C}$  and 2.0% max at  $T_a < 0^\circ\text{C}$ .
- 24V: 1% limit is achieved with 2X 820 $\mu$ F/35V external cap (e.g. UPM1V821MHD1TO from Nichicon or equivalent). Otherwise, maximum limits are 1.5% at  $T_a \geq -10^\circ\text{C}$ . 2.0% max ripple at  $T_a < -10^\circ\text{C}$  is met with below external capacitance:

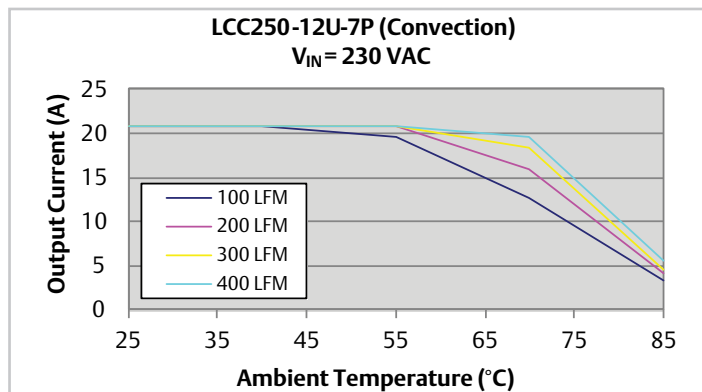
Ambient Temperature ( $^\circ\text{C}$ )	-20	-25	-30	-35	-40
Recommended External Capacitors ( $\mu\text{F}$ )	1000	2200	3300	12000	22000
- 48V: 1% limit is achieved with 3X 470 $\mu$ F/63V external cap. Otherwise, maximum limits are 1.5% max at  $T_a \geq 0^\circ\text{C}$  and 2% max at  $T_a < 0^\circ\text{C}$ .
- Safety Approvals: China CCC approval applies to part numbers with "-xxE" suffixes only.
- Warranty: 2 years



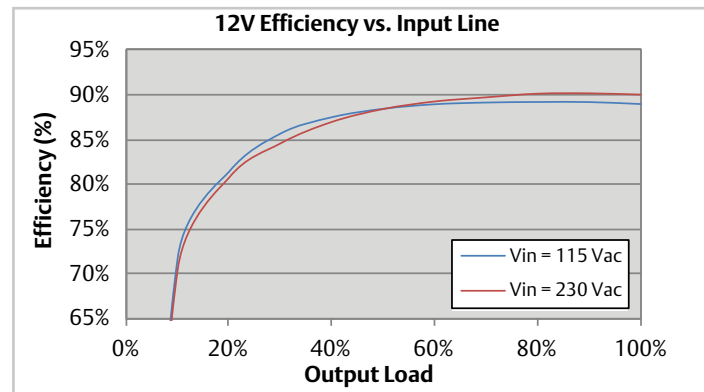
**Fig 1. 12 V “4P” Suffix (Conduction) Output Current Derating**



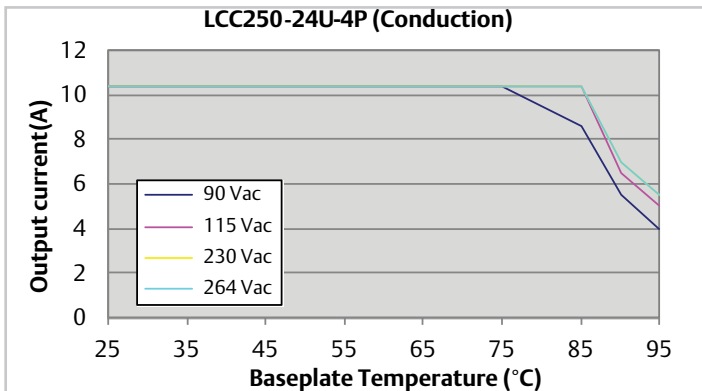
**Fig 2. 12 V “7P” Suffix (Convection) Output Current Derating at 115 Vac**



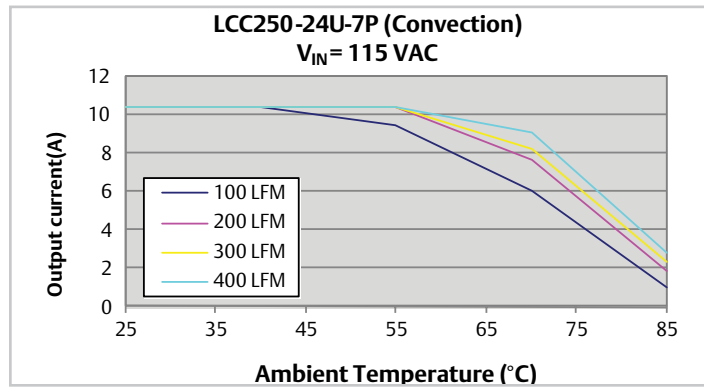
**Fig 3. 12 V “7P” Suffix (Convection) Output Current Derating at 230 Vac**



**Fig 4. 12 V Efficiency Curve**



**Fig 5. 24 V “4P” Suffix (Conduction) Output Current Derating**



**Fig 6. 24 V “7P” Suffix (Convection) Output Current Derating at 115 Vac**

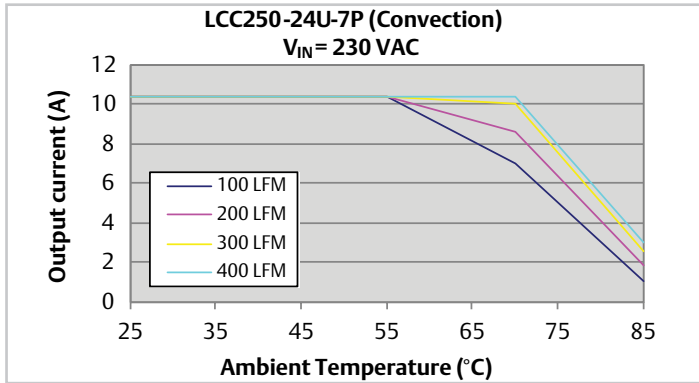


Fig 7. 24 V "7P" Suffix (Convection) Output Current Derating at 230 Vac

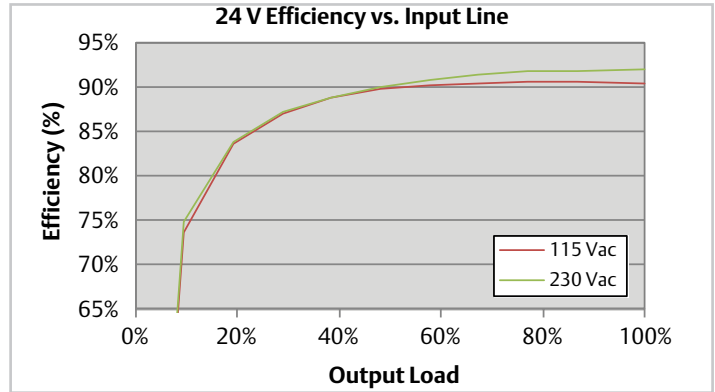


Fig 8. 24 V Efficiency Curve

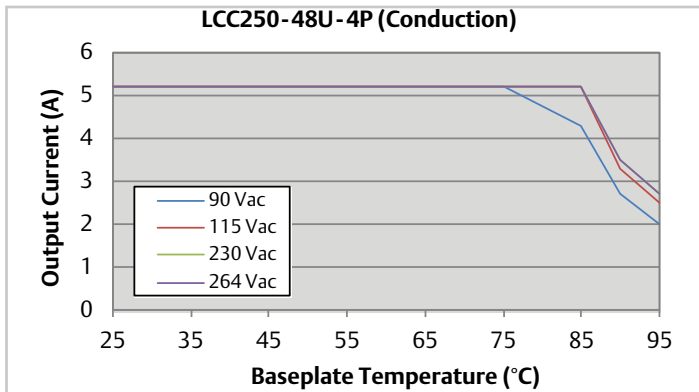


Fig 9. 48 V "4P" Suffix (Conduction) Output Current Derating

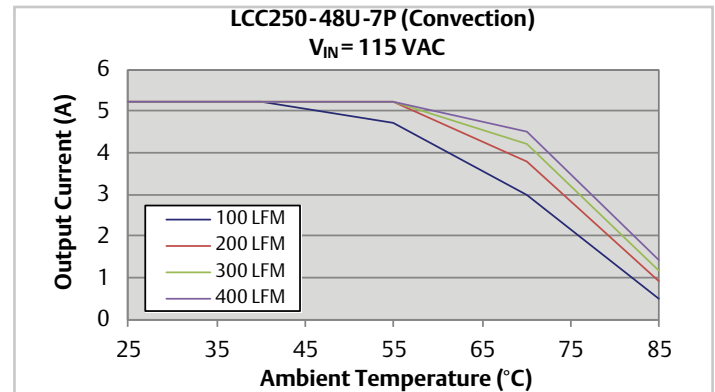


Fig 10. 48 V "7P" Suffix (Convection) Output Current Derating at 115 Vac

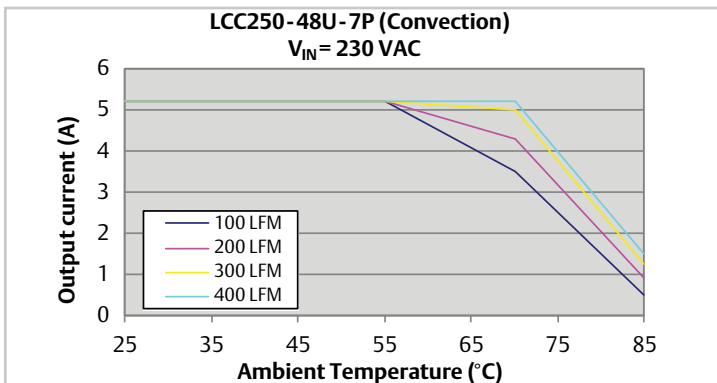


Fig 11. 48 V "7P" Suffix (Convection) Output Current Derating at 230 Vac

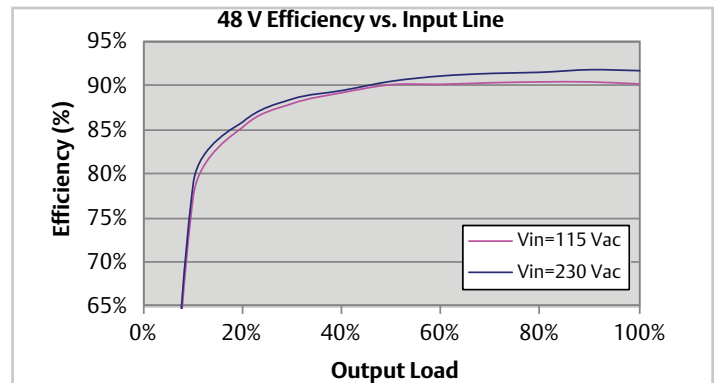
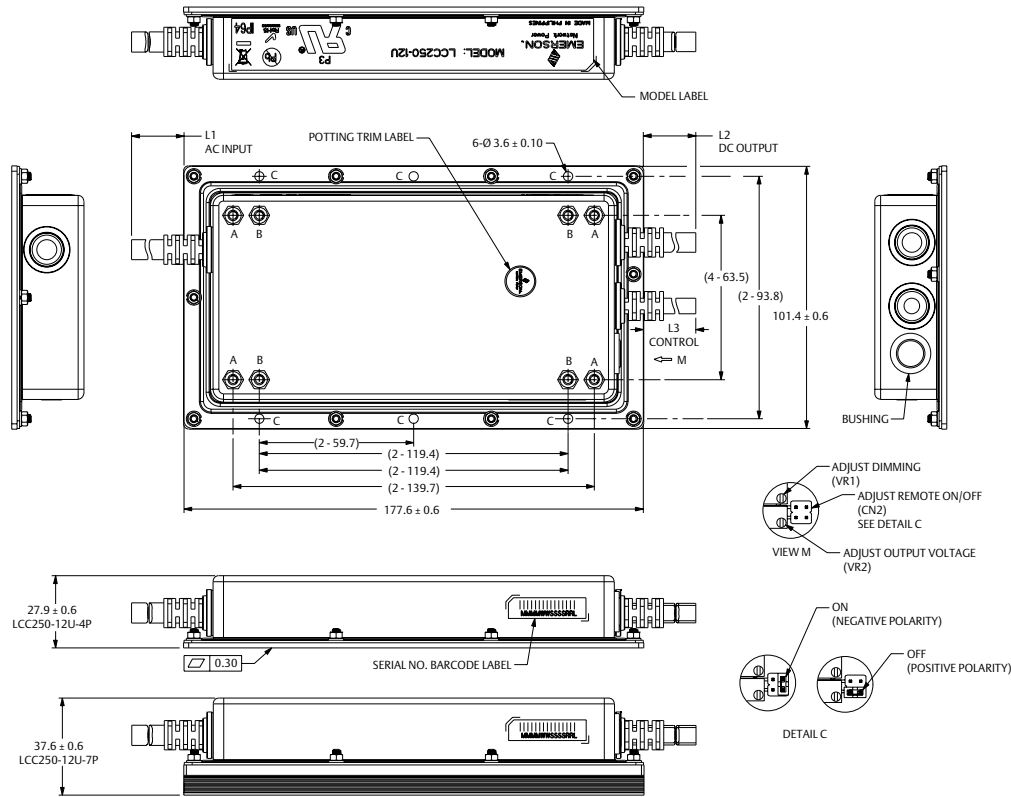


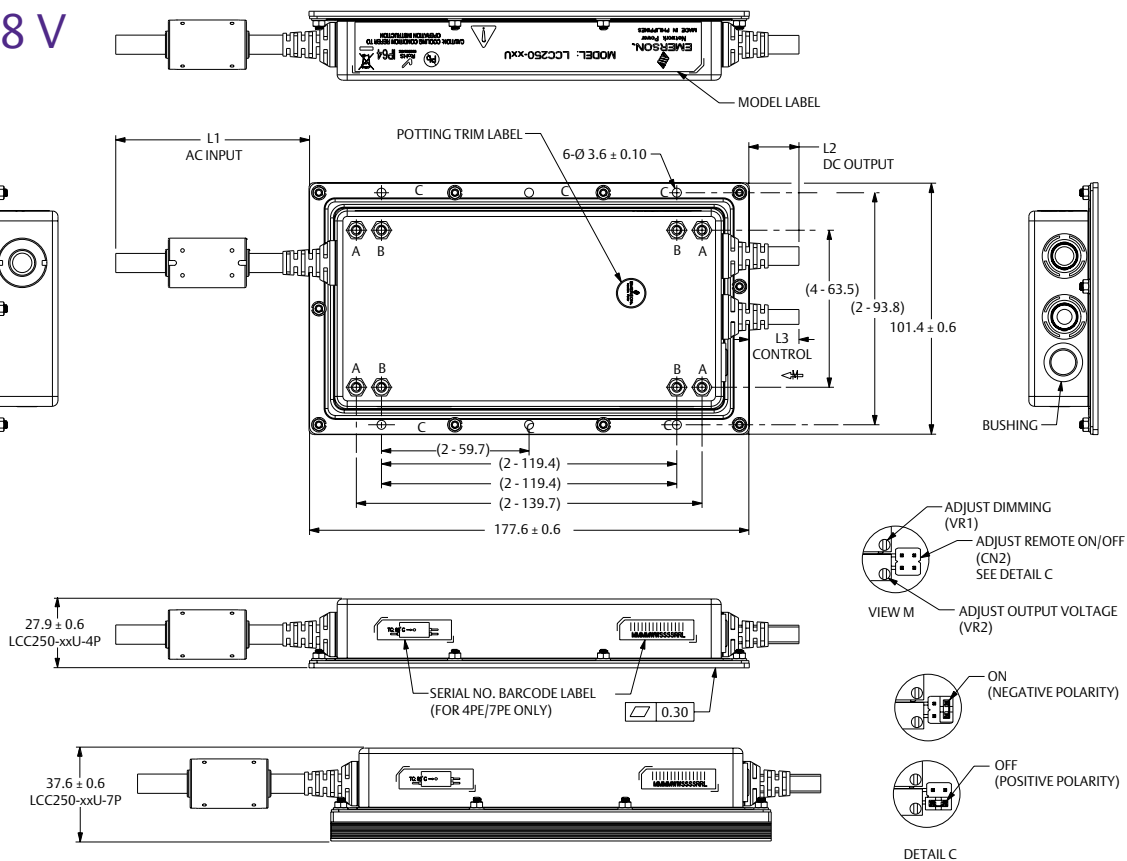
Fig 12. 48 V Efficiency Curve

# Mechanical Drawings

## 12 V



## 24 V / 48 V



Cable	Length	Designation	Wire Color	Wire Gauge
AC Input Cable	L1 = 300 ± 10 mm	L = Live	Brown	AWG#18
		N = Neutral	Blue	AWG#18
		PE = Primary Earth	Green/Yellow	AWG#18
DC Output Cable	L2 = 300 ± 10 mm	+Output	Blue	AWG#14
		-Output	Gray	AWG#14
Control Cable	L3 = 300 ± 10 mm	Dimming	Brown	AWG#26
		Dimming Return	Yellow	AWG#26
		ON/OFF	Orange	AWG#26
		ON/OFF Return	White	AWG#26
		Sense	Red	AWG#26
		Sense Return	Black	AWG#26

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