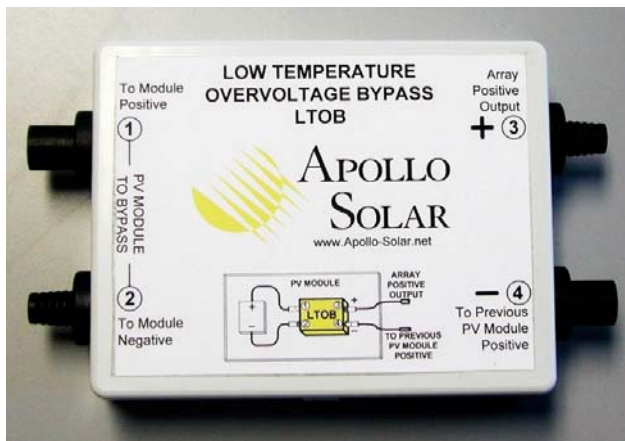


Low Temperature Overvoltage Bypass



Automatically Bypasses PV Module at Low Temperatures to Drop Voc

Expand the Input Voltage Range of any Inverter or Charge Controller

- Add extra PV module to every string
- Use with any modules up to 85Voc
- Any string voltage up to 600VDC
- Switch up to 8 Amps per string
- Choice of temperature point

Complete Safety at the Lowest of Temperatures without Compromising the High-Temperature Performance

- Size arrays for maximum power and forget the cold/Voc problem
- MC connectors - quick wiring
- Sticks to back of any module
- Very low power consumption
- Failsafe to low voltage output

Protect PV System Equipment From High PV Open-Circuit Voltage At Low Temperatures

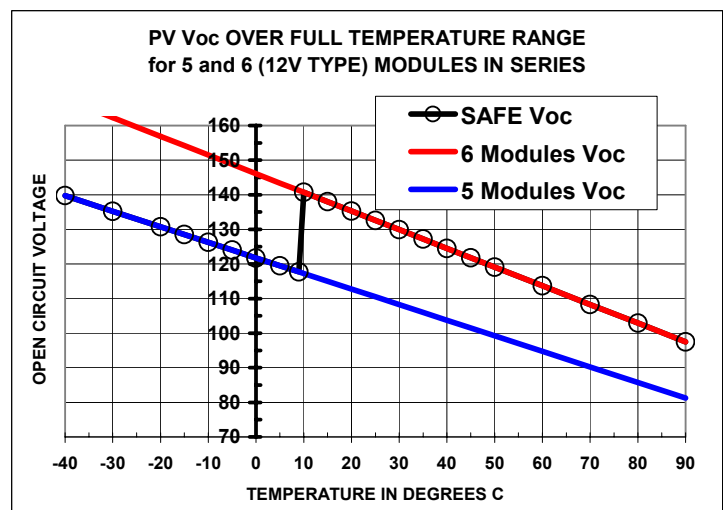
Models available for 0 or 10°C/32 or 50°F
(Other temperature models on request)

Size the PV Array for Optimum Performance

Every PV array can now be sized without regard to high open circuit voltages at low temperatures. The Apollo Solar LTOB automatically switches modules out of the circuit if the temperature falls below the specified point.

Simple, Reliable Operation

In the graph below, the LTOB removes 1 module from the 6-module string keeping Voc under 140V. When the temperature falls below 10°C (50°F) the LTOB turns on and the top module is switched out of the circuit so the Voc drops to 120V. The 5-module string is below the 140V limit down to -40°C. When the temperature rises, the LTOB turns off and the module is switched back into the circuit.

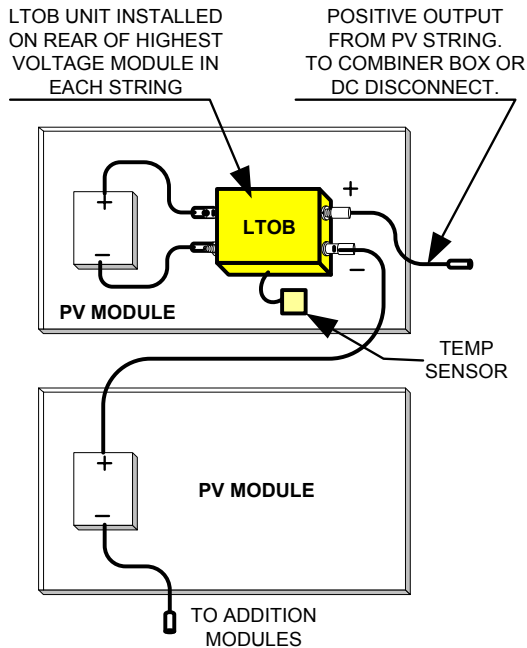


Fast, Easy Installation

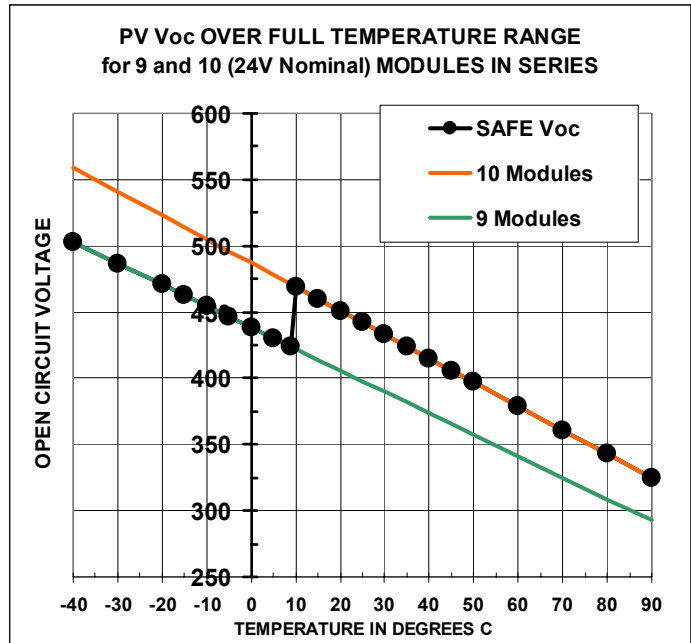
The Apollo Solar LTOB units are supplied with an adhesive tape on the back side. Just peel off the backing layer and stick the LTOB and Temperature Sensor to the back of the PV module to be cut from the string. Simply snap the MC connectors together as shown in the diagram. At normal or high temperatures the LTOB connects straight through and the PV array functions normally.

Inverter example with high voltage strings

WIRING DIAGRAM



The graph below is an example using 10 BP SX-160 modules in a series string. The Apollo Solar LTOB cuts out one of the 24 volt modules holding the Voc below 500 volts down to -40° .



SPECIFICATIONS

Maximum PV Module Voc	85 volts DC (Sanyo HIT200 PV modules are 79.88 Voc at -40°C .)
Maximum String Voltage	600 volts DC
Maximum String Current	8 Amps DC
LTOB Power Consumption	10mA from the PV module
Model Number	0 10 (Other temperatures available on request.)
Turn off temperature	0°C 10°C
Turn on temperature	5°C 15°C
Temperature-switch accuracy	$\pm 2^{\circ}\text{C}$
Overall dimensions	11.7cm X 9.2cm X 3.6cm (4.6" x 3.6" x 1.4") Width X Height X Depth
Weight	227g (8oz)
Environmental rating	NEMA 4



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