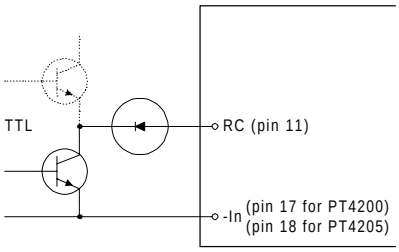
# Using the PT4200/4205/4300 DC to DC Converter

**Remote Control (RC)** Turn-on or turn-off can be realized by using the RC pin. Normal operation is achieved if pin 11 is open. If pin 11 is connected to pin 17 (PT4200/4300) or pin 18 (PT4205), the power module turns off. To insure safe turn-off, the voltage difference between pin 11 and 17 or 18 should be less than 1.0V. RC is compatible with TTL open collector outputs with a sink capacity > 300µA (see figure 28).

***Figure 28***

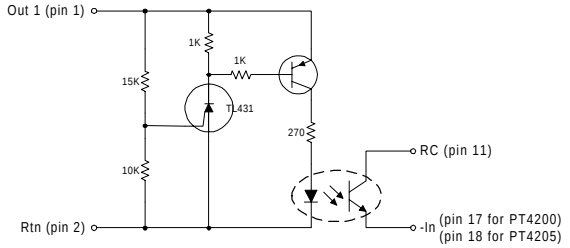
**PT4200/4205/4300 REMOTE CONTROL**




**Over Voltage Protection (OVP)** The remote control can also be utilized for OVP by using the external circuitry shown in figure 29. Resistor values are for 5V output applications, but can easily be adjusted for other output voltages and the desired OVP level.

***Figure 29***

**PT4200/4205/4300 OVER VOLTAGE PROTECTION**




**Turn-on/off Input Voltage** The power module monitors the input voltage and will turn on and turn off at predetermined levels set by means of external resistors.

**To increase $V_{Ion}$** connect a resistor between pin 11 and 17 (PT4200/4300) or 18 (PT4205) (see figure 30). The resistance is determined by the following equations; (a) PT4200/4300, (b) PT4205:

(a) $R_{Ion} = 100 \times (100.2 - V_{Ion})/(V_{Ion} - 36.5)$ kΩ (for $V_{Ion}$>37V)

(b) $R_{Ion} = 1000 \times (1110 - V_{Ion})/(V_{Ion} - 18.7)$ kΩ (for $V_{Ion}$>18.7V)

where 18.7 or 36.5 is the typical unadjusted turn-on input voltage. $V_{Ioff}$ is the adjusted turn-off input voltage and is determined by $V_{Ion}$-$V_{Ioff}$ = 2V (typical value).

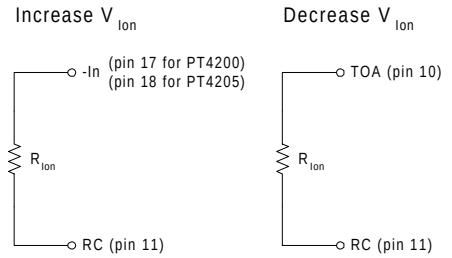
**To decrease $V_{Ion}$** connect a resistor between pin 10 and 11 (see figure 30). The resistance is determined by the following equations; (a) PT4200/4300, (b) PT4205:

(a) $R_{Ion} = 364 \times (V_{Ion} - 29.9)/(36.5 - V_{Ion})$ kΩ (for 30<$V_{Ion}$< 36V)

(b) $R_{Ion} = 25 \times (V_{Ion} - 16.9)/(18.7 - V_{Ion})$ kΩ (for 16.9<$V_{Ion}$< 18.7V)

***Figure 30***

**PT4200/4205/4300 TURN-ON/OFF INPUT VOLTAGE ADJUSTMENT**




**Ouput Voltage Adjust (Vadj)** Ouput voltage can be adjusted by using an external resistor. Typical adjust range is ±15%. If pin 8 and 9 are not connected together, the output will decrease to a low value. To increase $V_O$, a resistor should be connected between pin 8/9 and 18. To decrease $V_O$, a resistor should be connected between pin 8 and 9 (see figure 31).

The typical resistor value to **increase** $V_O$ is determined by:

$$R_{adj} = k_1 \times (k_2 - V_O)/(V_O - V_{Oi}) \text{ kΩ}$$

where: $V_O$ is the desired output voltage

$V_{Oi}$ is the typical output voltage initial setting

| | | | |
|---|---|---|---|
| and | $k_1$=0.684 | $k_2$=2.46V | PT4201 |
| | $k_1$=0.495 | $k_2$=3.93V | PT4202 |
| | $k_1$=0.495 | $k_2$=5.87V | PT4203 |
| | $k_1$=0.566 | $k_2$=15.00V | PT4204* |
| | $k_1$=3.180 | $k_2$=3.78V | PT4205 |
| | $k_1$=3.180 | $k_2$=5.85V | PT4206 |
| | $k_1$=0.495 | $k_2$=5.82V | PT4301 |
| | $k_1$=0.495 | $k_2$=3.93V | PT4302 |
| | $k_1$=0.566 | $k_2$=15.00V | PT4303* |

The typical resistor value to **decrease** $V_O$ is determined by:

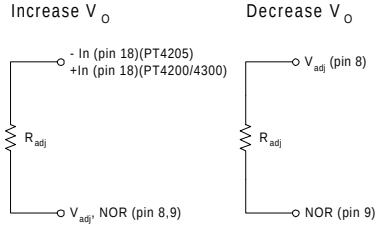
$$R_{adj} = k_1 \times (V_{Oi} - V_O)/(V_O - k_2) \text{ kΩ}$$

| | | | |
|---|---|---|---|
| where | $k_1$=2.751 | $k_2$=1.75V | PT4201 |
| | $k_1$=1.986 | $k_2$=2.59V | PT4202 |
| | $k_1$=1.986 | $k_2$=4.12V | PT4203 |
| | $k_1$=2.284 | $k_2$=9.52V | PT4204 |
| | $k_1$=17.2 | $k_2$=1.70V | PT4205 |
| | $k_1$=12.5 | $k_2$=4.28V | PT4206 |
| | $k_1$=1.986 | $k_2$=4.12V | PT4301 |
| | $k_1$=1.986 | $k_2$=2.59V | PT4302 |
| | $k_1$=2.284 | $k_2$=9.52V | PT4303 |

* Over 13.8V output voltage, the input voltage range is limited to 38-65V.

***Figure 31***

**PT4200/4205/4300 OUTPUT VOLTAGE ADJUSTMENT**



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