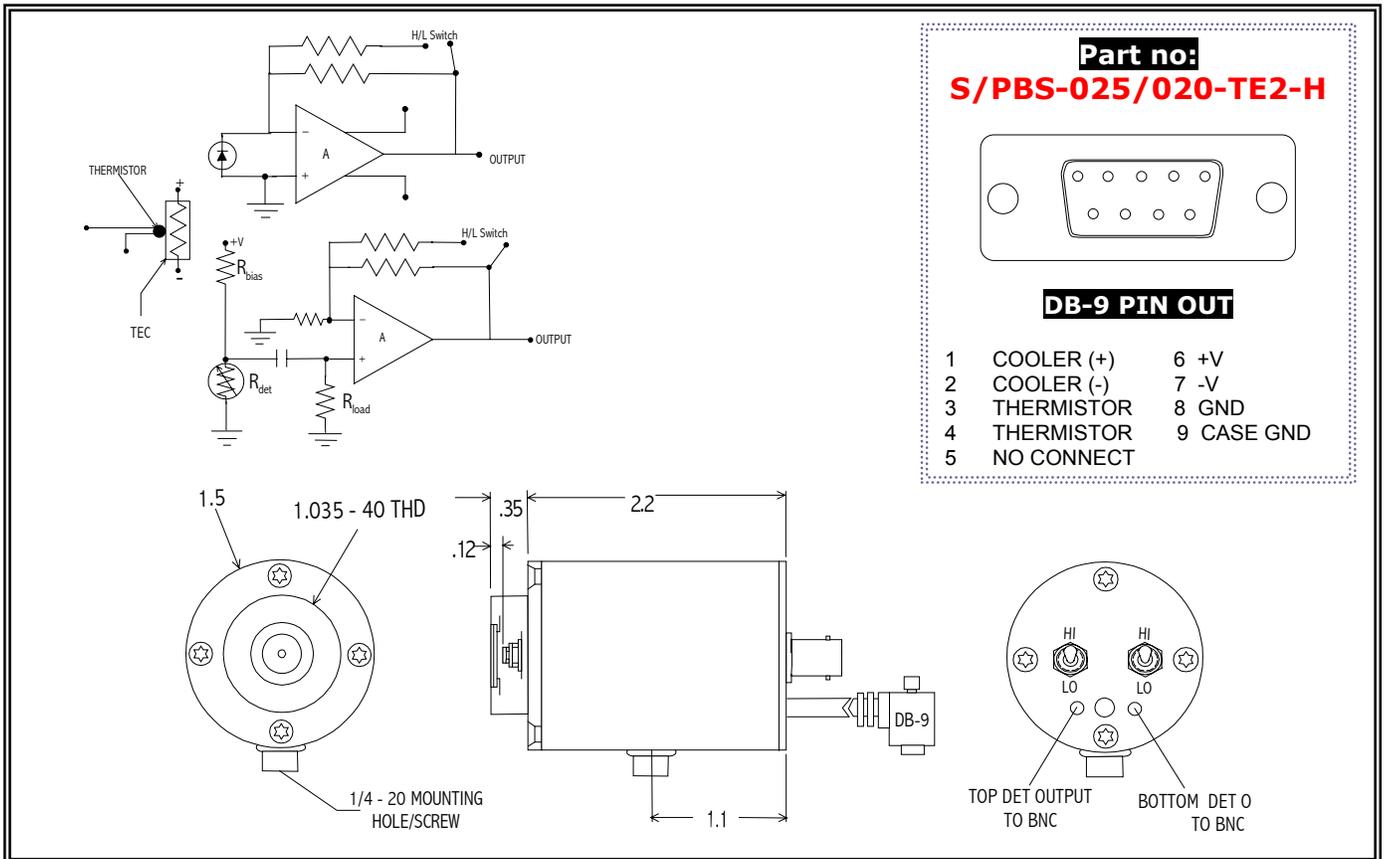


## 2 - COLOR PHOTODETECTOR / RECEIVER



### Application Note

This unit is a high performance two color "sandwich" photodetector/receiver operated with a thermoelectric cooler for stabilization/cooling and dual gain FET input transimpedance amplifiers. The output voltage is proportional to the input signal current (photodiode) or the input voltage (photoconductor):  $V_{out} = I_{signal} \cdot R_f$ . A DC coupled circuit is used for the photodiode, while an AC coupled circuit is used for the photoconductor. Care should be taken in shielding the unit from stray light during operation to prevent saturation of the amplifiers (and potential failure).

## SPECIFICATIONS

| Detector Type                  | 2.5 mm dia Si Photodiode / 2 x 2 mm PbS Photoconductor   |                          |                          |                          |
|--------------------------------|--|--------------------------|--------------------------|--------------------------|
| Operating Temperature - °C     | 22 @ $I_{tec} = 0.0A$  |                          | -30 @ $I_{tec} = 0.6A$   |                          |
| Operating Wavelength - $\mu m$ | 0.3 - 1.0  | 1.0 - 2.6                | 0.3 - 1.0                | 1.0 - 2.8                |
| Responsivity - V/W @ pk        | $0.6 \times 10^9 / 10^8$   | $5.0 \times 10^6 / 10^5$ | $0.6 \times 10^9 / 10^8$ | $2.0 \times 10^7 / 10^6$ |
| Noise - $\mu V/Hz^{1/2}$       | 6.0 / 0.6  | 15 / 1.5                 | 3.6 / 0.4                | 10 / 1.0                 |
| NEP - W/Hz <sup>1/2</sup> @ pk | $1 \times 10^{-14}$  | $3 \times 10^{-12}$      | $6 \times 10^{-15}$      | $1 \times 10^{-12}$      |
| Bandwidth (-3dB) - Hz          | DC - 200 / 2k  | 5 - 500                  | DC - 200 / 2k            | 5 - 300                  |
| Power Requirements             | +/- 9 VDC to +/- 15 VDC  |                          |                          |                          |
| Connections                    | Two shielded signal cables terminated with a BNC. Shielded power cable terminated with a DB-9 connector directly couples the unit with the PS/TC-1 Low Noise Power Supply. |                          |                          |                          |