IR-PAD

Infrared Train Detection Controller

For use with IRSB Modules

Introduction to the IR-PAD

The IR-PAD is a control module for the IRSB infrared-based train detector modules for use with signalling and any other application which requires knowing when a train is at a discrete point on a section of track. The IR-PAD powers and receives detection information from the IRSB modules. Up to two (2) IRSB modules can be connected to the IR-PAD. A pushbutton (PB) is provided for each sensor to allow calibration.

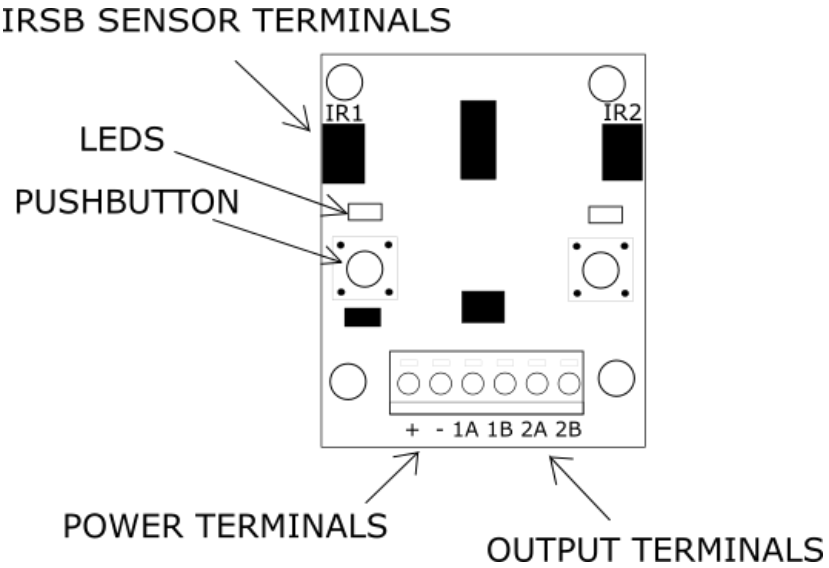


Figure 1 – Board Layout

Installing the IR-PAD

Signalogic Systems recommends a good quality 12VDC accessory power supply and 20-26 AWG solid wire for connections to all devices including the IR-PAD. Solid wire telephone and network cabling is a cost-effective solution. Ensure that track power and the 12VDC power are off during installation and check wiring prior to turning power back on.

Power Connections

Two-terminal positions are provided on the terminal block connector to power the IR-PAD. Each IRSB module is powered by the IR-PAD.

Sensor Connections

Two ribbon cable connectors are provided, one for each possible IRSB module that may connect to the IR-PAD. The IRSB ribbon cable must be oriented with the contact side of the ribbon facing up down towards the IR-PAD board, blue side facing up and away from the board. Hold the rigid end section of the IRSB ribbon cable firmly while pushing the end of the ribbon into the accepting connector on the IR-PAD. Do not over-exert the ribbon cable.

Detector Output Connections

An six-terminal block is provided for connecting the detector outputs to other circuits. Each output is open-drain meaning that the output will be connected to the power supply common (-) when a train is detected. Each sensor is provided with two outputs to minimize the need for external circuitry.

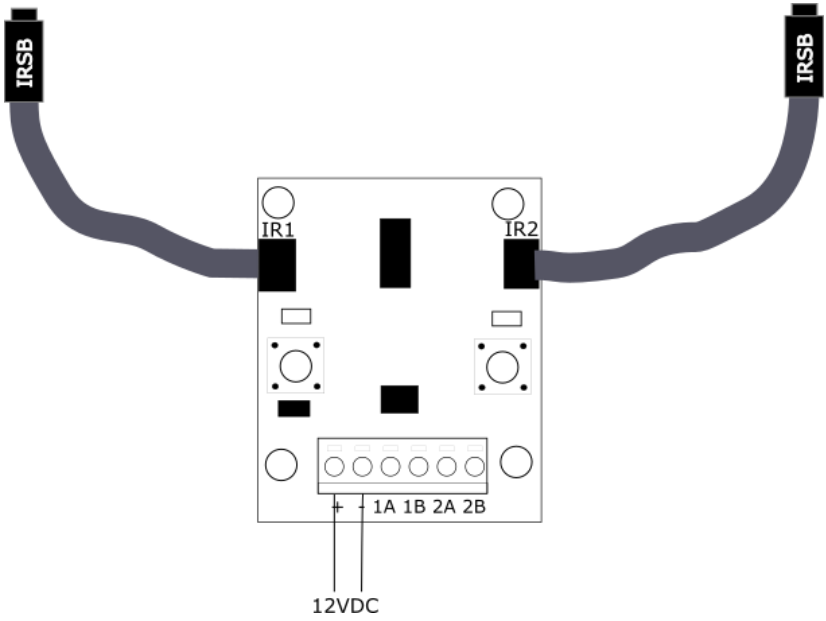
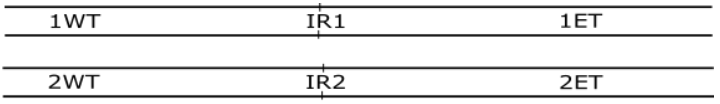


Figure 2 – Connections



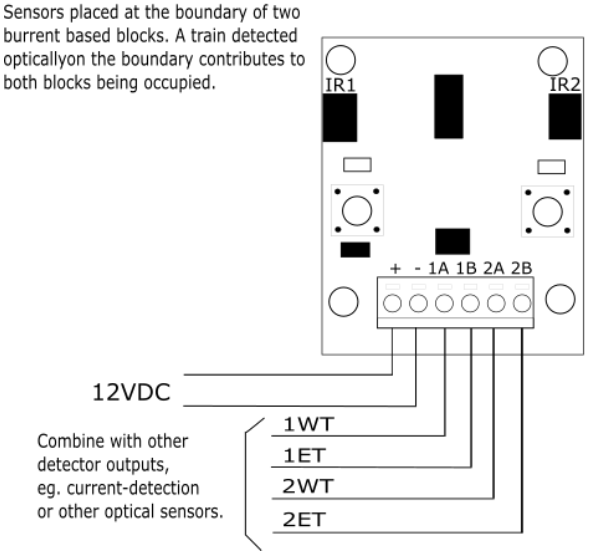


Figure 2 – Example:Sensors at block boundary

Operation

IRSB Calibration

Each IRSB module is calibrated in the factory for maximum sensitivity. If a need arises to recalibrate an IRSB module, the IR-PAD allows for this. If an IRSB module sensitivity needs to be adjusted, the following procedure must be used:

Place rolling stock over the IRSB module to be calibrated. The IRSB module will be calibrated to detect this car, and no further or darker objects.

Hold the PB for 5 seconds. The IR-PAD will send a command to the IRSB to attempt to recalibrate.

NOTE: If the IR-PAD continuously detects that an IRSB module is falsely detecting a train, then the calibration of the IRSB module has failed. The IRSB module must be calibrated again with a closer or brighter calibration target.

Occupancy Indication

A built-in timer keeps the output terminal(s) in the occupied state for three (3) seconds after train detection is lost. This is like 'Loss of Shunt' (LOS) timers used by real railroads and will help to keep your occupancy status prototypically steady.

When an IRSB module detects a train, it passes the occupancy status to the IR-PAD. When the train is detected, the associated onboard LED will illuminate brightly. After an IRSB module no longer detects a train, the LED will illuminate dimly while the LOS timer runs.

The LED will flicker between the bright and dim illuminations as rolling stock passes over the IRSB module typically does not detect every part of each car.

Occupancy status is output from the IR-PAD via the output terminals.

Maximum Specifications

Minimum Power Voltage	10 VDC
Maximum Power Voltage	16 VDC
Maximum Output Current per output	25 mA

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