

Smart Wire Module

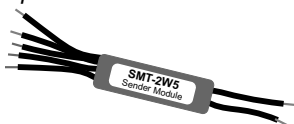
Installer Manual Version 1



The Smart Wire Module from Smart Temp is a innovative and low cost solution for any application where you need to control up to five (voltage free) digital outputs and only have a single pair of wires between the two locations.

The Smart Wire is ideal for applications where you need to upgrade an existing battery thermostat to add Wi-Fi or cooling etc however, you don't have enough wires for the task and running additional wires is too cost prohibitive.

Sender Module

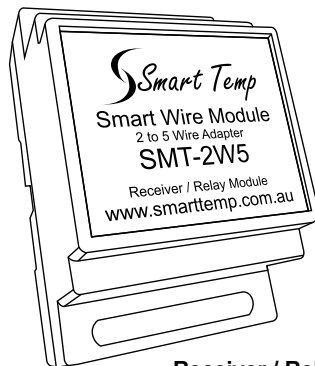


The Sender Module has been designed to be as small as possible. It is covered in heat shrink tubing to protect its electronics and is supplied with seven coloured input wires at one end and two coloured output wires at the other.

Of the seven wires, two are 24VAC Active and Common that are used to power the thermostat and the other five are then switched by the thermostat and that information is recorded by the Sender Module. The two output wires carry the status of the thermostat relays (on or off) to the Receiver / Relay Module which duplicates the thermostat's relay calls.

The Sender Module is ideally installed in the wall cavity behind the thermostat where possible, to prevent any heat generated by the Sender Module affecting the thermostat's accuracy.

NOTE - This module has been made as physically small as possible to ensure that it fits through the hole in the wall behind the thermostat which makes it extremely easy to bend and break. Great care should be used when handling this module.



Receiver / Relay Module

The Receiver / Relay module is a DIN mounted module that is powered by an external 24VAC source* that holds five relays rated to 1 Amp each maximum. The relays in this module will mimic the thermostat relays connected to the Sender Module.

The 24VAC used to power the Receiver / Relay Module is also transmitted down the two wires and then used to power the thermostat attached to the Sender Module.

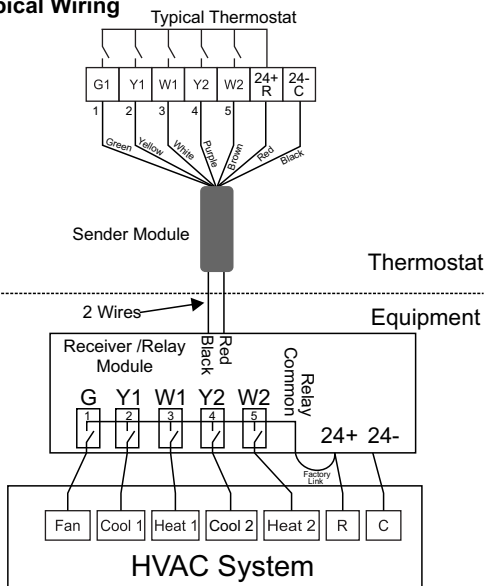
The maximum load that the Sender Module can power is 1 Amp. This is generally sufficient to power a typical thermostat.

DO NOT power high current draw devices such as actuators and valves from this device as it has been designed to power the thermostat only.

The Receiver / Relay Module should be installed in a cool, dry environment wherever possible. The electronics are coated to protect it against moisture and dust, however it is not water resistant and should be protected from the environment.

(*The Smart Temp SZ-PS 24VAC power supply can be used if no other 24VAC source is available.)

Typical Wiring



Sender Module Colour Codes

2 Wire End

Red - Data A +Ve

Black - Data B -Ve

5 Wire End

Red - 24R

Black - 24C

Green - Input 1 (G - Typically Fan)

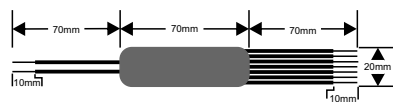
Yellow - Input 2 (Y - Typically Cool1 or Comp 1)

White - Input 3 (W - Typically Heat 1 or RV)

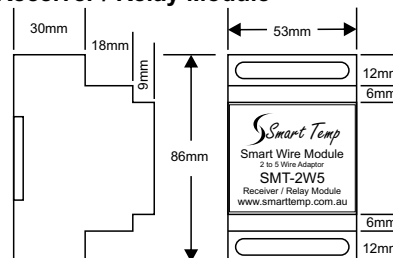
Purple - Input 4 (P - Typically Cool /Comp 2, Fan 2)

Brown - Input 5 (Br - Typically Heat 2, Fan 3)

Sender



Receiver / Relay Module



Specifications

| | |
|----------------------------|--|
| Power Supply | 24VAC +/- 20% |
| Power Consumption | 0.15mA (No Relays) 0.45mA (All Relays On) |
| Maximum Load Current | 1 Amp @24VAC |
| Relays Switching Current | 5 x 1 Amp (Volt Free) |
| Maximum Range | 50 Metres |
| Transmission Lag | 1.75 Seconds |
| Temperature | 50°C (65°C Storage) |
| RH | 95% (Non Condensing) |
| Recommended Cable | 2 Wire Screened 0.5mm ² |
| LED display (Relay Module) | Green - Power On Yellow - Data (Blinking) |
| Warranty | 5 Years RTB |

Advanced Logic

The Smart Temp Smart Wire Module, two to five wire adaptor, uses two advanced microprocessors. One in the Sender and the other in the Receiver / Relay Module.

Based on input signals from the device connected to the Sender Module, a matrix signal is encoded (along with checksum data to ensure accuracy), then superimposed onto the 24VAC signal wires that is then transmitted to the Receiver / Relay Module.

The Receiver / Relay Module then decodes and verifies the data matrix and turns relays on or off to match the Sender Module information. This verification process introduces a small delay in time between the thermostat relays changing and the Receiver / Relay Module responding.

Base Logic

The system consists of two separate modules that communicate with each other over a single pair of wires.

The Sender Module connects to the thermostat and reads the thermostat's relay status. It also provides the 24VAC to power the thermostat. It connects to the thermostat just as a normal HVAC system would.

The Receiver / Relay Module simply duplicates (after a brief lag) what the Sender Module reads from the thermostat. It connects to the HVAC equipment just as a thermostat would.

Examples provided in this manual suggest a "typical" wiring example however, you are free to use this system in multiple ways and with different devices to achieve your desired outcome. There are no rules. Simply ensure the input functions wired at the Sender match the output functions of the Receiver. If you use the Input 1 (green wire) for Compressor 1 on the Sender module, ensure that relay 1 on the Receiver is also wired to Compressor 1.

The logic is extremely simple:-

- Thermostat relay 1 will switch Receiver Module relay 1
- Thermostat relay 2 will switch Receiver Module relay 2
- Thermostat relay 3 will switch Receiver Module relay 3
- Thermostat relay 4 will switch Receiver Module relay 4
- Thermostat relay 5 will switch Receiver Module relay 5