

Receiver Circuit Description (Summary)

Power is supplied to the circuit from an external typical low voltage line from a control thermostat (X1). The 9-12 vdc input is regulated to 5 vdc by (IC1) for use by the circuit. Voltage regulator (IC2) further regulates the 5 vdc to 3.3 vdc for use by the receiver (IC3). The received Manchester encoded data is sent to the microcontroller (IC5) through port pin RB5. The microcontroller checks the address received against the addresses stored in eeprom (IC4), the eeprom is read through port pins RA0-RA3, if the addresses match, the received data is sent to the control thermostat (X1) through port pins RB0 and RB1 and LED (D3) is flashed through current limiting resistor (R1) connected to port pin RB6.

Switch (S1) is connected to port pin RB3 (active low). When (S1) is pressed, the microcontroller turns on LED (D4) through port pin RB7. This places the unit into "install mode". When an installation message is received from a transmitter, the received zone and address information is written to the eeprom (IC4). When switch (S1) is pressed again the unit exits from "install mode". If the switch is pressed and held for 10 seconds, the eeprom is erased of all data.

Receiver Circuit Description:

X1 Control thermostat connector -

1. Supplies power to the circuit. 9-12 vdc
2. Connection pin 1 data
3. Connection pin 2 clock
4. Connection pin 3 and 4 gnd

D1 and D2 diodes -

1. Redundant reverse polarity protection.

IC4 eeprom

1. Stores installed transmitter zone and address information.
2. Connects to the microcontroller IC5 using data in, data out, clk, and cs lines.

S1 momentary normally open switch -

1. When pressed puts unit into install mode, allowing the received message to be stored in eeprom
2. When pressed again, removes unit from install mode
3. When pressed and held for 10 seconds, erases eeprom data

4. Connected to port pin RB3 through resistor R6.

RX (D3) LED

1. Flashes when a reception occurs with matching stored eeprom address
2. Connects to port pin RB6 through current limit resistor R1.

ST (D4) LED

1. ON when unit is in install mode
2. Connects to port pin RB7 through current limit resistor R2.

SM1

1. Transient voltage suppresser

LC1, LC2

1. Digital noise filter

IC1

1. Voltage regulator 5 vdc

IC2

1. Voltage regulator 3.3 vdc

IC3 RF Receiver -

1. Converts RF to data