# USER INSTRUCTIONS

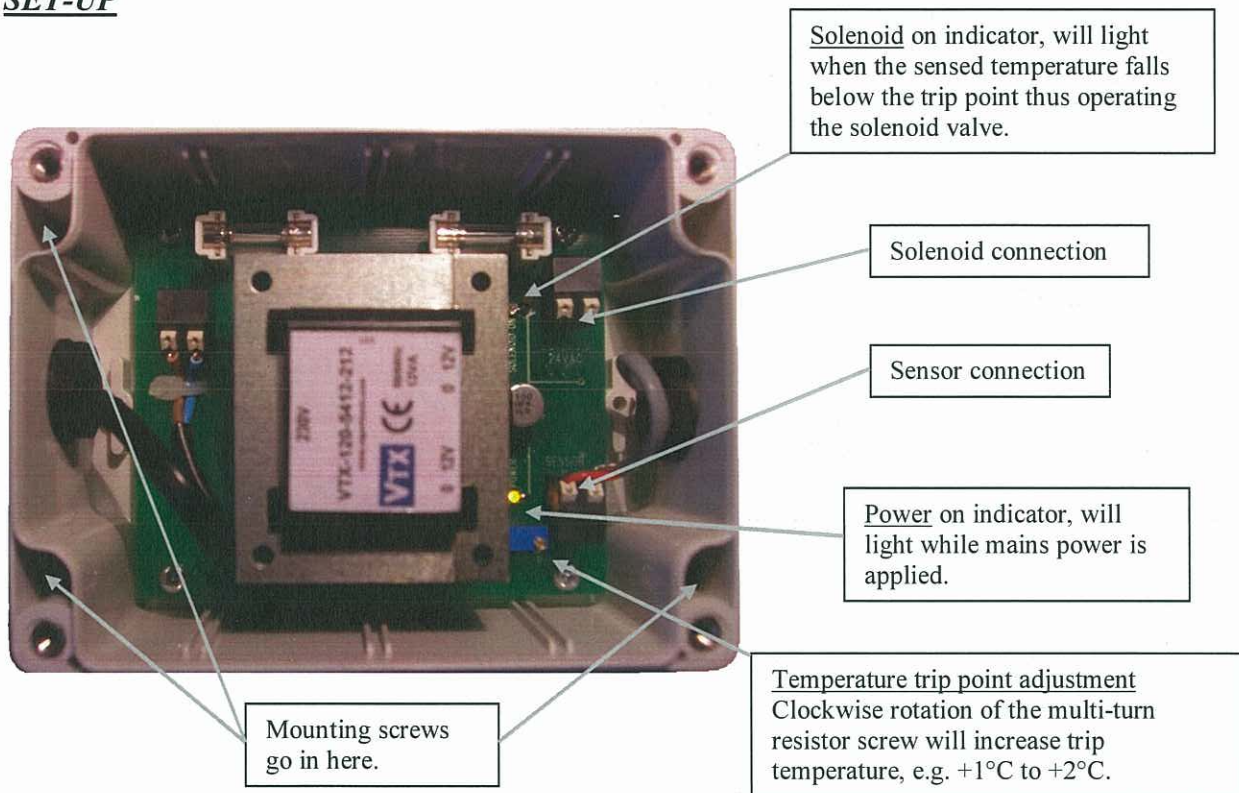**4U PRODUCTS**

## FC101 Frost Protection Controller

The 'FC101 Frost Protection Controller' is a low cost system that monitors the air temperature near the crop area to be protected from a frost. When its temperature sensor observes the surrounding air temperature fall below a user defined limit, it will automatically operate a solenoid water valve, spraying warming water over the area at risk.

### *SET-UP*



Solenoid on indicator, will light when the sensed temperature falls below the trip point thus operating the solenoid valve.

Solenoid connection

Sensor connection

Power on indicator, will light while mains power is applied.

Mounting screws go in here.

Temperature trip point adjustment Clockwise rotation of the multi-turn resistor screw will increase trip temperature, e.g. +1°C to +2°C.

1. Mount the controller to a solid surface and close to a power outlet. Mounting screw holes can be accessed by removing the case cover.
2. Wire the solenoid valve to the PCB "SOLENOID" terminal block.
3. If not already connected wire the temperature sensor to the PCB "SENSOR" terminal block.
4. Apply mains power. The "POWER" on indicator should now light.
   WARNING: Do not touch any components as they may be live and result in an electric shock.
5. Adjustment of the temperature sensor trip point is through a PCB mounted multi-turn resistor. Using an insulated handle screw driver on the multi-turn resistor screw, clockwise rotation will increase trip temperature, while anticlockwise rotation will decrease the trip temperature.
   The range of adjustment is: -1°C to +6°C. (see photo above)
6. Perform the calibration procedure by immersing the sensor into a cup of ice water with a reference thermometer to establish the desired trip point. Alternatively fixed resistors (Table 1) representing the desired temperature can be substituted for the sensor and trip point adjustment made. The "SOLENOID" on indicator will light when the trip point has been exceeded.
7. Replace the case cover; the controller is now ready for operation.

NOTE: It is recommended that an annual calibration and functional check is performed on the installed system.

## SPECIFICATIONS

**Environment:**
Recommended Operating Conditions:     -10 to +50°C
Transport & Storage Conditions:     -10 to +50°C

**Mechanical:**
Dimensions:     119mm(L) x 90mm(W) x 60mm(H)
Weight:     800g
Case:     Plastic, ABS
Protection rating:     IP66

**Electrical:**
Input Power:     220-240VAC,  50Hz,
     Max. Power 12VA

Output Power:     24VAC
     Max. output current 500mA

Electrical Protection:     Class II, Electrical Insulation  ▣

Fuses:     F1 & F2, 500mA 250VAC, 5x20mm

Indicators:     Amber colour LED

Sensor Type:     Temperature, NTC Thermistor, 10k@25°C, β=3988

Sensor Cable Length:     3m

Temperature Adjustment:     -1°C to +6°C

| _Table 1._ |
| --- |
| 34368Ω = -1°C |
| 32650Ω =  0°C |
| 31032Ω = +1°C |
| 29499Ω = +2°C |
| 28052Ω = +3°C |
| 26684Ω = +4°C |

⚠ **WARNING**
Disconnect power before servicing.

---

**WARRANTY:**
*This product is warranted against defects in material and workmanship while use in normal service for a period of one year from the date of sale to the original purchaser. Our obligation is limited to the repair or replacement of any defective part if unit is returned, transportation prepaid, to 4U Products Limited. No liability will be accepted for the loss of property due to incorrect operation or malfunction of this device.*

**4U PRODUCTS LIMITED**
P.O Box 11 240, Ellerslie, Auckland, New Zealand
www.4uproducts.co.nz