

## TECHNICAL INFORMATION

### ATC190/C AND ITC190/C WEATHER COMPENSATED CONTROLLER

Remote Temperature Adjustment  
RSA/5 (+/- 5°C)

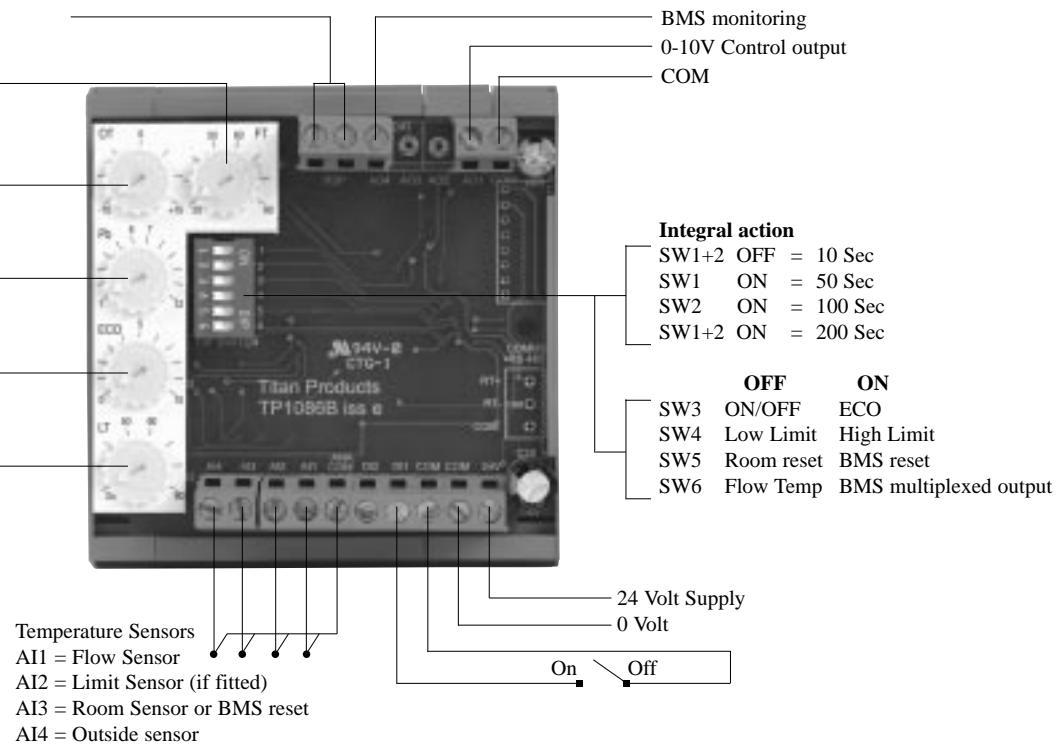
FT (Flow temp)  
Range 20 to 90°C

OT (Outside temp)  
Range -15 to +15°C

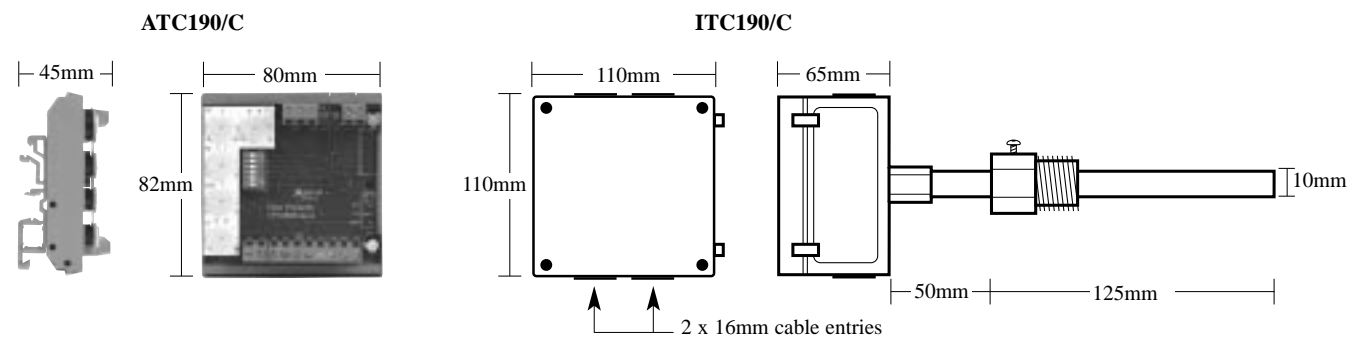
Pb  
Proportional Band  
Range 1 to 12°C

ECO  
Night Set back  
Range 0 to 10°C

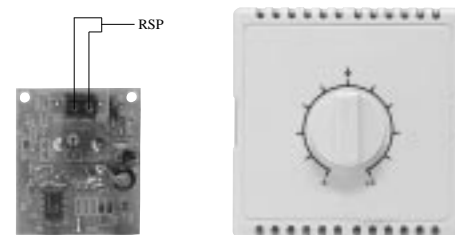
LT  
Limit Temp Setting  
Range 20 to 90°C



## DIMENSIONS



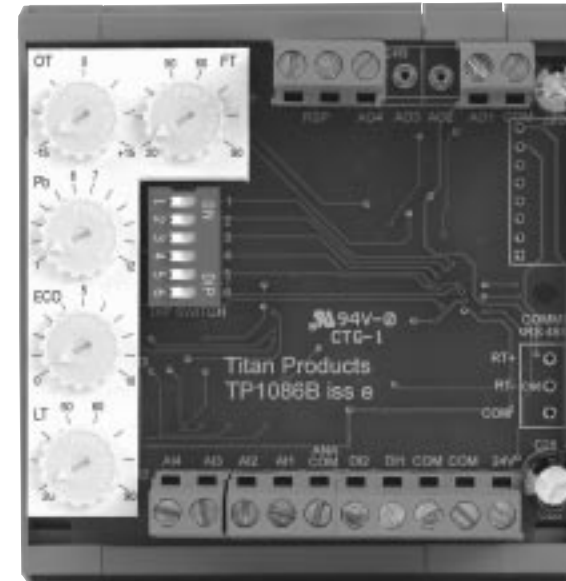
RSA5 Remote Setpoint Adjuster +/- 5°C



## PRODUCT TYPES

ATC190/C	DIN Rail mounted temperature controller
ITC190/C	Direct Immersion temperature controller
TPTIS	Immersion Sensor for ATC190/C and Limit Sensor (if required)
TPTOS	Outside Temperature Sensor
TPTRS	Room Temperature Sensor (if required)
TPT/RSA5	Room Temperature Sensor with setpoint adjustment (if required)
RSA5	Remote Temperature adjustment (if required)

## ATC190/C AND ITC190/C WEATHER COMPENSATED CONTROLLER



## DESCRIPTION

The ATC190/C and ITC190/C are designed to provide weather dependant compensated control of the system flow temperature in heating systems.

The compensated control continuously varies the system flow temperature with respect to the changes in outside temperature.

The ATC190/C is din rail mounted whilst the ITC190/C is direct immersion pipe mounted incorporating its own built in flow temperature sensor.

## FEATURES

- \* 24 Volt AC/DC supply
- \* Proportional plus Integral control action
- \* Weather Compensation Control
- \* Limit Sensor (High or Low Limit)
- \* Off or ECO (set back) option
- \* Internal Room reset option
- \* Option for remote offset adjustment
- \* Option for BMS offset adjustment
- \* Output for BMS monitoring
- \* DIN rail or direct pipe mounting

## SPECIFICATION

Power Supply	24 Volt AC/DC (+/- 15%)
Power Consumption	12mA plus 0-10V controlled output
Outputs	0-10V (5mA max) controlled 0-10V (5mA max) remote monitoring
Sensing Elements	10K3A1 Thermister
Inputs	0-10V BMS SP offset
Settings	RSA Remote Setpoint (500-10500 ohms) Flow Temp (FT) range 20-90°C Outside Temp (OT) range -15 to +15°C Proportional Band (Pb) 1-12°C ECO (setback) 0-10°C Limit Control 20-90°C Integral action (I time) 10, 50, 100, 200 secs
Option selections	SW 1+2 Integral I time SW3 Off or ECO SW4 Limit Sensor option SW5 Room or BMS reset SW6 Monitoring output option
Terminals	Max. cable size 1.0mm
Operating Temperature	0 to 50°C
Dimensions	See back for details



Measurement Devices for Control Systems

**TITAN Products Ltd.**  
Unit 7 Southside, Bredbury Park Industrial Estate, Bredbury,  
Stockport SK6 2SP England.  
Tel :- 0161 406 6480 Fax :- 0161 494 8309  
E-mail: admin@titanproducts.com  
Website: www.titanproducts.com

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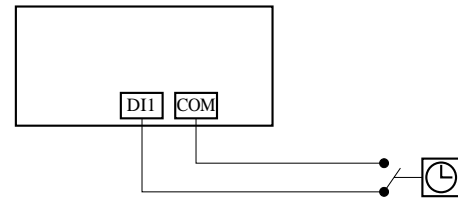
## OPTIONS AND CONTROL FUNCTIONS (see back for full connection details)

### ON/OFF

The controller can be switched ON/OFF from a remote time clock or switch by connecting across terminals DI1 and Com. In the OFF mode the controlled outputs drive to zero Volts (closed). These connections are also used for switching the controller into ECO (night setback) mode when option switch 3 is selected.

Legends used the following diagrams: -

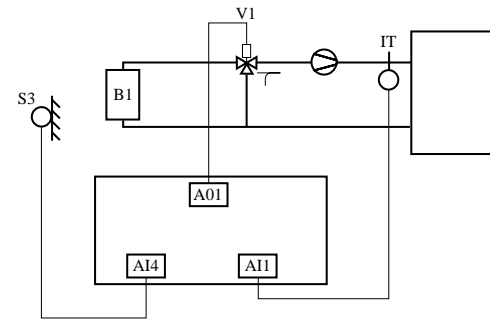
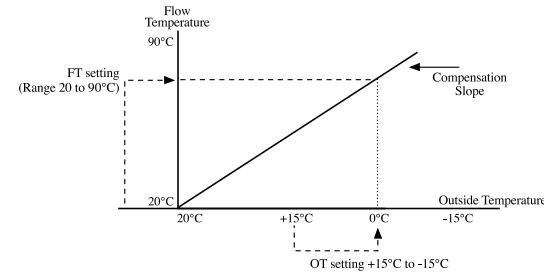
- IT = Immersion temperature controller ITC or Immersion Temperature sensor 10K3A1
- S1 = Limit temperature Sensor (can be immersion or clamp on 10K3)
- S2 = Room temperature sensor (TPTRS optional)
- S3 = Outside temperature sensor (TPTOS)
- B1 = Boiler
- V1 = 3 port mixing valve
- Remote Setpoint Adjuster = RSA/5 (optional)



### WEATHER COMPENSATION CONTROL

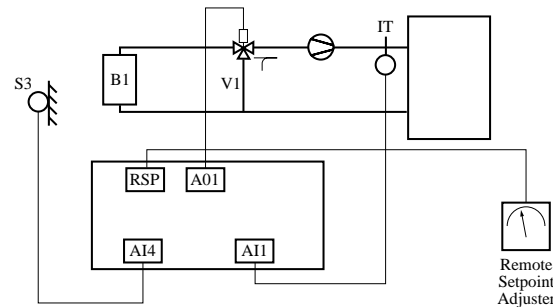
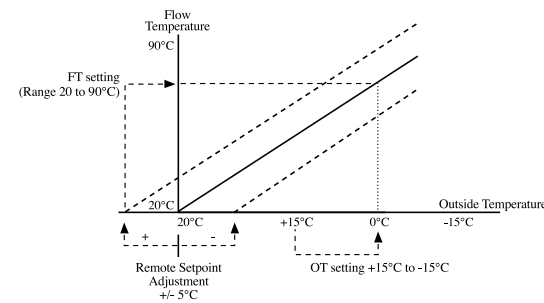
The controller provides weather compensation via a 3 way-mixing valve which varies the system flow temperature in respect to the prevailing outside temperature. This variable flow temperature is determined by the compensation slope which is set on the controller settings FT and OT from a base point of 20°C Flow at 20°C outside temperature.

- FT = Desired Flow Temperature at the outside temperature set on OT. (Range 20 to 90°C).
- OT = Outside Temperature value that the FT set value is reached (Range -15 to +15°C).



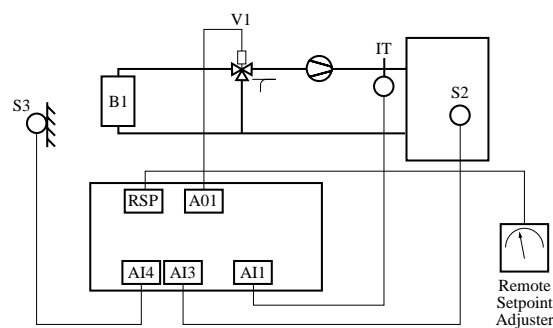
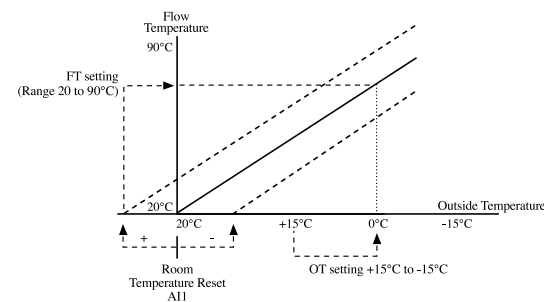
### REMOTE SETPOINT ADJUSTMENT (RANGE +/- 5°C)

A remote setpoint TP/RSA5 connected across terminals RSP provides an adjustment to the actual controller setting that equates to + or - 5°C of room temperature. The controller automatically detects if the TP/RSA5 Setpoint Adjuster is connected.



### ROOM TEMPERATURE RESET

A room temperature sensor TPTRS can be used connected into AI3 to provide an automatic adjustment of the controller setting. A useful application of this is to cater for internal heat gains caused by such things as occupancy or solar influence. The action of the room temperature sensor is to adjust the controller calculated setpoint + or - by a ratio of 50% against the difference with the measured room value until the calculated desired value is achieved. The room sensor also acts as a boost facility if the measured temperature is 5°C below the actual calculated value. In this instance the reset ratio is 100%.



### BMS MONITORING

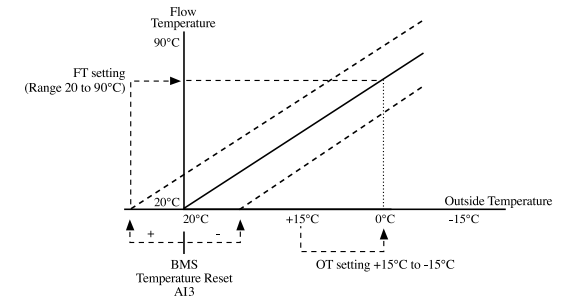
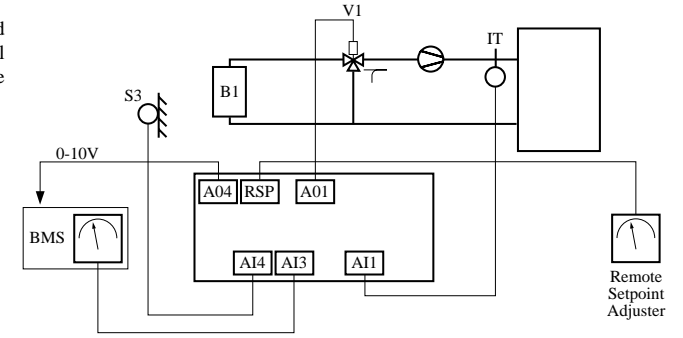
The controller compensated flow temperature can be measured 0-10V on output AO4 (ranged 0 to 100°C). This signal can be used to monitor the flow temperature remotely by a digital display or BMS input. If DIL SW6 is ON then AO4 outputs a multiplexed 0-10V signal for the values of Flow Temp, Outside Temp, Room Temp (if fitted), Limit Sensor temp (if fitted).

MULTIPLEXED AO4 SIGNAL			
Condition	Output V	Range °C	Time
Start	10V	N/A	4 Sec
Flow Temp	0-10V	0 to 100	4 Sec
Outside Temp	0-10V	-15 to +45	4 Sec
Room Temp If Fitted	0-10V	0 to 100	4 Sec
Limit Temp If Fitted	0-10V	0 to 100	4 Sec

If the Room temperature sensor and Limit temperature sensor is not fitted then the AO4 Multiplexed signal output does not include them.

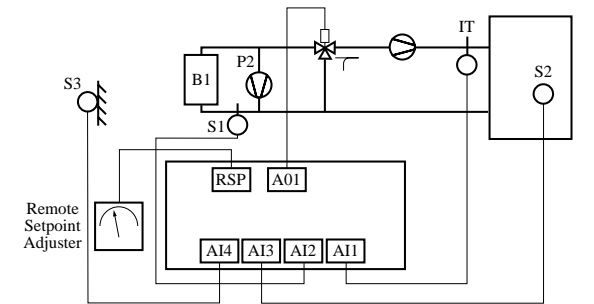
A BMS reset can be achieved by selecting DIL switch 6 and connecting a voltage input signal into AI3. This reset range is +/- 5°C for an input of 3.5 to 4.5V (4V input = zero reset).

**Note: - If a BMS reset is required then a room temperature sensor cannot be fitted.**



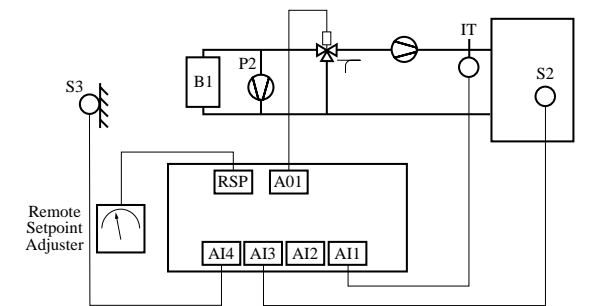
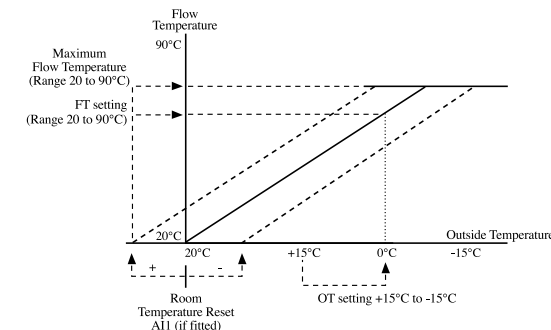
### LOW LIMIT RETURN TEMPERATURE (RANGE 20 TO 90°C)

If a low limit return sensor (S1) is fitted then the controller automatically detects the sensor is connected. The function of the Low Limit sensor with DIL SW4 OFF is to modulate the 3 port mixing valve closed until the return limit temperature is achieved when the controller takes normal control. In this application a primary circulating pump is required.



### MAXIMUM FLOW TEMPERATURE LIMIT (RANGE 20 TO 90°C)

If maximum flow temperature limitation is required then this is measured by the actual flow sensor. The option for max/min limit is selected with DIL SW 4. ON is for maximum limitation and the value is set on the Limit Setpoint (see settings). Maximum flow limit is used for applications such as heat exchangers or under floor heating systems. Where Maximum limit is applied for system protection it is recommended that a High Limit cut off thermostat is also used. If Maximum Flow Temperature Limit is required then the Low Limit Return function cannot be used.



**Note: - When all Set Point reset functions are selected the controller calculated output is the summation of all reset conditions.**