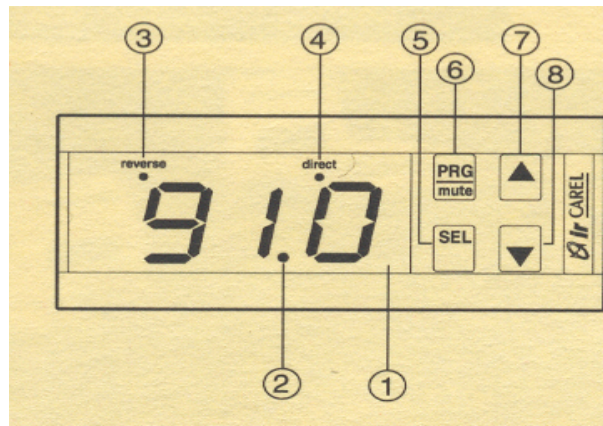


ULTRAFLOW and THERMAFLOW Plate Heat Exchanger Packages

CAREL IR32W Temperature Controller with NTC Probe - Instructions for Set-up and Use – PWM mode
(2 pages)



General: These instructions are a simplified extract of the Carel instruction manual (available in .pdf electronic format on request) and are intended solely for setting up the temperature controllers fitted on the UltraFlow and ThermaFlow plate heat exchanger packages.

This particular version is for setting up in PWM mode – used on some units 2004 onwards. PWM mode gives steadier temperature control than “dead-band mode” previously used.

1. Normal Operation - Set Point Adjustment:

The only user adjustment commonly required will be Set Point Adjustment as follows:
Refer to instrument facia diagram above.

Press SEL (key 5) and hold for a few seconds until “St1” flashes.

Release SEL (key 5).

Press UP or DOWN arrows (keys 7 and 8) as required until the desired value shows.

Press SEL (key 5) to confirm the value and restore normal operation.

2. Set-Up

2.1 Function Mode (C0) selection

The instrument should be set to operate in “PWM” mode (C0 = 4) as follows:

Press SEL (key 5) and PRG/mute (key 6) together and hold for 5 seconds.

Press UP arrows (key 7) to give value 22. (this is a security code)

Press SEL (key 5) to confirm security code

Display shows “C0”. Press SEL (key 5).

Press UP or DOWN arrows (keys 7 and 8) as required to give value 4

Press SEL (key 5) to confirm the value

Press PRG/mute (key 6) to restore normal operation.

2.2 Setting other parameters

2.2.1 General procedure for setting parameters:

- Press PRG/mute (key 6) and hold for 5 seconds. Parameter code “P1” is displayed.
- Press UP or DOWN arrows (keys 7 and 8) until the required parameter code is displayed.
- Press SEL (key 5) to accept the parameter and display current value
- Press UP or DOWN arrows (keys 7 and 8) to give required value
- Press SEL (key 5) to confirm the value
- The display shows the code for the modified parameter.
- Repeat (b) to (f) to modify other parameters if required.
- Press PRG/mute (key 6) to restore normal operation.

2.2.2 Guideline values for parameters

These values assume a set point of 63 deg. C. (for DHW generation – PWM mode).

Please note that the Carel alarms are not used by the UltraFlow Control panel. However, if set-point is too close to high alarm value (see below) an alarm condition may occur in normal operation. This will cause an error display on the Carel display and a buzzer may sound (depending on model).

Parameter	Description:	Value	Comment
St1	Setpoint (deg. C.)	63	Typical value for DHW
P1	Hysteresis (deg. C.)	4.0	Hysteresis below dead band in which PWM mode operates
P2	Hysteresis (deg. C.)	4.0	Hysteresis above dead band in which PWM mode operates
P3	Dead Band (deg. C.)	0.1	x 2 = Dead band inside which control actions do not occur
C12	PWM cycle time (secs)	30	Time between successive PWM actions
P14	Probe Calibration	0	Do not adjust this value
P25	Lower alarm (deg. C.)	-50	Do not adjust this value
P26	Higher alarm (deg. C.)	90	Do not adjust this value
P27	Alarm Hysteresis (deg. C.)	2	Do not adjust this value
P28	Alarm Delay (mins)	60	Do not adjust this value

Note:

PWM (pulse width modulation) acts as follows:

- a) When measured temperature (T) is within the dead band no control action occurs
- b) When measured temperature (T) is within the hysteresis band control action occurs as follows
 - E.g. measured temperature (T) is within the lower hysteresis band (too cool)
 - Control valve actuator is energised for time t equal to a fraction of PWM cycle time
 - $t \text{ equals } C12 \times (T - St1 - P3)/P1$
 - The actuator is then de-energised for the remainder of time C12
 - The above procedure is repeated until T is within the dead band
- c) When measured temperature (T) is outside the hysteresis band the actuator is energised without time limit until T comes within the hysteresis band.