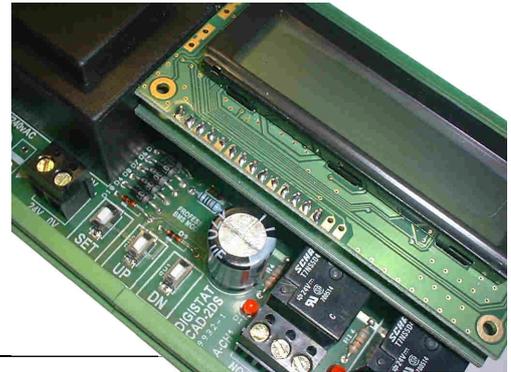


Din-rail Mounted electronic control module. Monitors air or liquid temperature, and controls up to eight User Programmable switching Relay channels in response with 0.25°C resolution.

2/8 CHANNEL DIGITAL ELECTRONIC THERMOSTAT

Features

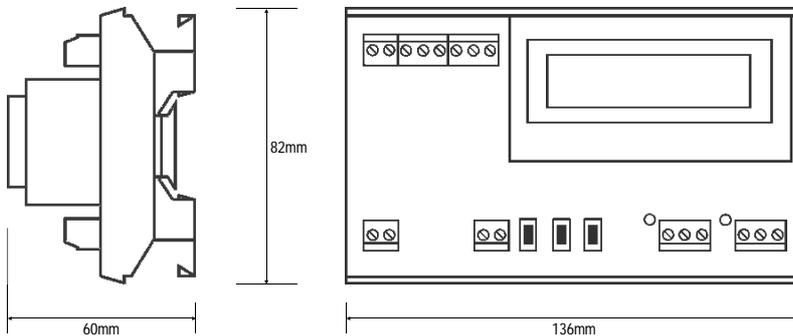
- m Two Relay Channels on-board, Six optional plug-in
- m One unit covers entire -5°C to +95°C Range
- m Separate Day and Night Set-Points
- m 0.25°C-10°C Programmable Stage Differential
- m 0.25°C-50°C Inter-Stage Differential
- m Heating or Cooling Function
- m Digital Display with Temperature and Set-Point
- m Connections for External Temperature Controls
- m Digital Data Output for Remote Display/Options



SPECIFICATIONS

Type CAD-2DS	Input Supply +/- 15% 24V AC/DC 150mA (max) 230/240VAC 6VA	Sensor Type CAD...	Temp Range -5°C to +95°C -9°C to +99°C w/Ext Pot 0.25°C-10°C Differential	Output Signals 2 x C/O Relay Contact 10(5)A@240v 6 x plug-in Relays, <i>SamTalk</i>	Mounting DIN Rail (included)	Enclosure IP00
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DIMENSIONS



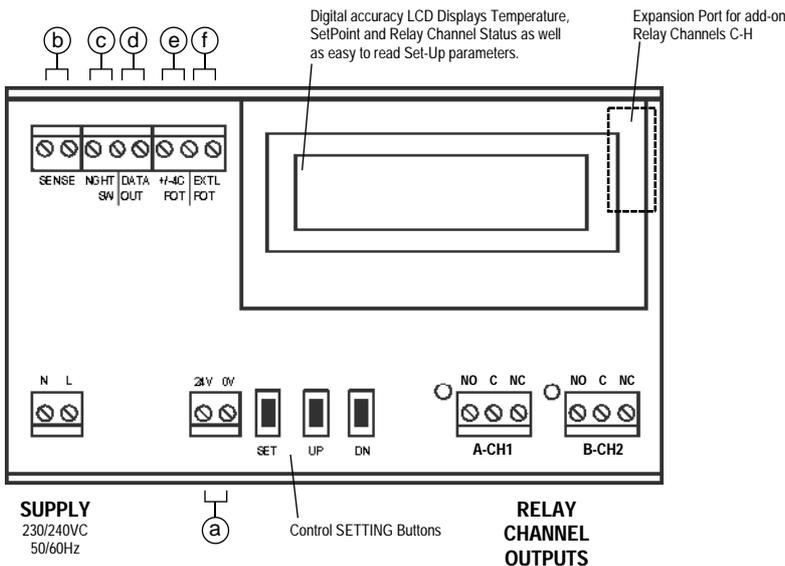
DIAGNOSTIC CODES

SENSOR ERROR. The Temperature Sensor readings are outside acceptable parameters. Check (a) that the Sensor is properly connected, or (b) that the Sensor it's Cable is not Short-Circuit or Open-Circuit.

CALL SERVICE - FAULT CODE = nn. This message is only displayed if an internal error is detected - Call for Assistance.

DATA LINK ERROR - SAFETY AUTOSTOP. When operating in Slave Mode and the expected *SamTalk* Data Signal from the Master *DIGISTAT* is lost, all Relay Channels will be shut-down until the Data is restored.

CONNECTION/SETUP



- (a) **24V AC/DC SUPPLY.** If DC is used, then connect the Negative rail to 0V, and Positive to 24V Terminal. The 24V Supply can be used in place of, or simultaneously with the 230/240VAC Supply (for failsafe dual supply)
- (b) **SENSOR.** Connect Sensor to these two Terminals only. Sensor type is CAD...
- (c) **NIGHT SWITCH.** This must be a Volt-Free contact. Connect between Centre and Outer Terminal as marked. When Open, the *DIGISTAT* uses the DAY Set-Point. When closed, the NIGHT Set-Point is used.
- (d) **DATA IN/OUT.** This is a Digital Data stream compatible with the *SamTalk* protocol. Connect Remote Displays, other protocol compatible devices to this port or a second CAD-2DS Digistat for upto 16-channels.
- (e) **+/- 4°C POT.** Connect the POT between the Centre and Outer Terminal. If fitted, allows +/-4°C adjustment away from the DAY Set-Point. This allows the range of the *DIGISTAT* to be extended from -9°C to +99°C.
- (f) **EXTL (EXTERNAL) POT.** Connect the POT between the Centre and Outer Terminal. If fitted, allows the DAY Set-Point to be over-riden by the POT setting. Ensure the correct RANGE for the attached Pot is programmed into the *DIGISTAT* Set-Up presets (see overleaf).

NOTES

Min Sensor Cable 7/0.2mm. Keep away from Power Cables or sources of interference. Screened cable is recommended to eliminate electrical interference. Terminals 0.5-2.5mm² with wire clamps. Max cable length 100m. This module is designed for either LOW VOLTAGE isolated supply connection or 230/240vAC 50/60Hz Line. If connecting to DC supply, -ve supply to 0v, +ve supply to 24v. Both supplies can be connected simultaneously. Ambient Temp -20°C/+50°C dry bulb.

For Technical Support in the first instance contact your distributor. Installation should be checked by qualified electrician before applying any voltage. Always ensure devices switches correctly at the desired temperature. If failure of device can cause damage, ensure a suitable safety backup is fitted. Observe all relevant safety precautions, regulations and electrical ratings. Observe all precautions for handling electrostatic sensitive devices. Specifications for guidance only and subject to change without notice. E&OE.

PROGRAMMING

The CAD-2DS *DIGISTAT* is factory shipped with the following defaults preset:

Day Set-Point	22°C	adjustment Range -5°C to +95°C
Night Set-Point	16°C	adjustment Range -5°C to +95°C
Heating/Cooling Mode	ALL HEATING	Select any combination of Heating or Cooling
External Pot Range	LOW	Low Range covers -5°C to +45°C High Range covers +25°C to +95°C
Time Delay	1 SECOND	select from 0-250 seconds
Stage Differentials	2°C	adjustment Range 0.25°C to 10°C
Inter-Stage Differentials	2°C	adjustment Range 0.25°C to 50°C
Communications	OFF	OFF, Master, Slave TP and Slave TP+SP
LCD Contrast Level	2	select Levels 0 (darkest) to 5 (lightest)
Security PIN	Disabled (Spaces)	Any password up to 4 characters long



Depress and HOLD-DOWN the SET Button until the display blanks - (depending on what the *DIGISTAT* is doing this can take a few seconds). This will cause the *DIGISTAT* to jump into Menu Set-Up Mode. (Note: Whilst in the Menu Mode, Temperature sensing and the Output Relay Channels will be switched OFF).

Enter PIN:

If PIN (Password) protection has been set, you will need to enter a valid PIN to gain access to the SET-UP's. Use the Up/Down Buttons to scroll through selecting the individual character for each of the four possible characters making up the PIN. Press the SET button to advance from one character to the next. For security purposes, your previous character will change to a "*" for your protection. A successful PIN entry (pressing SET after the fourth character) will gain you access to the SET-UP's, otherwise you will be greeted with "INVALID PIN". If you have forgotten or lost your PIN, call your master distributor for assistance - a charge may be made for this service.

Set-Point Day

Allows setting of the **DAY SET-POINT**. Use the UP and DN (Down) Buttons to change the value to your desired setting. Once complete, depress SET once again. This will SAVE the new value and advance to the next preset item.

Set-Point Night

Allows setting of the **NIGHT SET-POINT**.

Cooling|Heating

Change the Cooling/Heating combination from HE=ABCDEFGH which is all eight stages HEATING, through to CO=ABCDEFGH which is all eight stages COOLING. The letters represent the individual Relay Channels. Stages always engage sequentially from the lowest channel for that mode, so if you select four channels Heating and four channels Cooling (CO=ABCD|HE=EFGH), then when Cooling the channels will sequence from A to B to C to D (and back down in reverse), and the Heating will sequence from E to F to G to H (and back down). The vertical bar '|' shows the Neutral Zone between the Heating and Cooling selections.

External Pot

Allows selection of the scale of the External Pot that is connected (if any). If no External Pot is connected, then this setting is not relevant.

Stage Time Delay

Allows entry of a TIME DELAY between any stage (Relay Channel) opening or closing. The main intention is to prevent nuisance switching but can also be used for delaying external devices such as Heaters from all switching on simultaneously and causing power overloads.

Differential a

This is the INDIVIDUAL STAGE DIFFERENTIAL for each stage (displayed A to H). See also the section Operational Maximum.

Differential a-b

Selects the DIFFERENTIAL BETWEEN STAGES (eg between stages A and B, B and C, C and D and so forth). Any Inter-Stage Differential within a Neutral Zone is ignored when the *DIGISTAT* is running (eg using our 4-Cooling and 4-Heating channel example CO=ABCD|HE=EFGH, the Inter-Stage Differential D-H within the Neutral Zone is ignored). See also the section Operational Maximum.

Communications

Switches the *DIGISTAT* into different communication modes. MASTER selects Talk (host) Mode, which allows that unit to talk to other devices such as Remote Displays or another *DIGISTAT*. SLAVE Mode allows a *DIGISTAT* operating in Master Mode to remotely pass the Temperature (Slave TP) and optionally also the Set-Point (Slave TP+SP) to the Slave unit. This allows two *DIGISTAT*'s to operate with just one Sensor, Night-Switch, External Pot etc., or allows the Slave control over it's own Set-Point if required.

LCD Contrast

Changes the CONTRAST Setting of the LCD (as you make the adjustment). Press the SET button to make the setting permanent.

PIN Code:

Allows the setting of a User PIN (Password). Up to four characters can be entered which need not be numeric. The PIN is case sensitive, so 'abcd' is NOT the same as 'ABCD'. Do NOT forget any PIN that you set. A setting of 'all spaces' (blanks), disables the PIN.

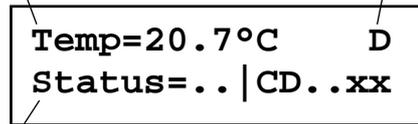
OPERATIONAL MAXIMUM. If any combination of Stage and Inter-Stage Differentials cause a particular Relay Channel to exceed the operational maximums of the *DIGISTAT*, then that channel will be ignored and an 'x' will appear in that channels designated space on the LCD's STATUS line. The *DIGISTAT*'s displayable and absolute operational maximum range is -20°C to +110°C.

Differentials Out of Sequence. If Differential stages are entered out of sequence, the *DIGISTAT* will resequence during it's Normal Operation so that the stages always sequence up and down in order.

Pressing SET after any Set-Up entry causes that entry to be saved and the user advanced to the next item. After saving the last item, (PIN Code), the *DIGISTAT* will return to Normal Operation. Note: If at any time the *DIGISTAT* is left in Menu Mode for more than 20 seconds without any Buttons being pressed, it will revert automatically to Normal Operation WITHOUT SAVING the current entry being edited.

Display indicates 'D' for Day and 'N' for Night. Note a *DIGISTAT* in Slave Mode always displays D regardless.

Display Toggles between the Sensor Temperature (Temp) and the current Set-Point (SetP).



Channel Status: Letters to the left of the Vertical Bar '|' are COOLING stages, whilst letters to the right are HEATING stages (the above example has stages AB cooling and CDEFGH Heating. Any displayed letters (C and D in above example) show those Channels that are currently ON. Channels that are OFF are represented by a period '.' Any channels whose differentials exceed the *DIGISTAT*'s absolute maximum ratings will always be OFF and will be represented by an 'x' (in the above Figure, Heating stages G and H are invalid and so represented).

Figure 1. Example of *DIGISTAT*'s LCD Display.

Please note that although the *DIGISTAT* has a quarter Celcius (0.25°C) resolution, this is displayed to only one significant decimal place. For example 17.25°C would be displayed as 17.2°C, and 17.75°C would be displayed as 17.7°C accordingly.

NOTES

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