BlackBox Chrono

Installation Manual

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This Install Guide documents the BlackBox Series Chrono

Sourcing
Proudly designed and manufactured in Australia by Innovative Air Systems Pty Ltd, an independent Australian-owned company.

Product support
Freecall: 1800 354 434 (Australia-wide)

Contents

1 INSTALLATION

1.1 Wiring

All electrical installation is to be carried out by a licensed trades person in accordance with AS3000 and manufacturers connection diagrams.

1.1.1 Device I/O Cabling Requirements

All touchpad and sensor cables should be shielded, and kept the maximum practical distance from any power cables ≥ 240 volts (minimum recommended distance = 300 mm).
Shielded 4 core data cable is acceptable provided the drain is firmly connected by a mechanical means to the SH terminal. The mechanical connection of the earth terminal on the Relay Module to a suitable point enables this shielded cable to function as intended.

1.2 Component Positioning

The Chrono Module can be positioned in the mechanical services switchboard or, on or near the systems air handling unit. Maintain a minimum distance of 300 mm from the indoor fan motor or similar inductive fields.

The Touchpad (optional) should be mounted in a central position within the air conditioned space. It has been designed to be flush mounted to a cavity wall, or surface mounted through the use of a 15 mm mounting block.

The Return Air Sensor should be mounted either, inside the return air duct as close to the return air grille as possible, or wall mounted 1.5 meters from floor level close to the return air grille. Most importantly, the return air/room sensor should always be protected from direct sources of heat such as direct sunlight and office equipment.

The Outside Air Sensor (133E) should be protected from direct sunlight, mounted inside the outside air duct as close to the outside air grille as possible.

1.3 Controller Configuration

The Chrono is capable of controlling many different A/C configurations of up to 8 relay outputs.

The DIP switches on the face of the Chrono define the relay outputs. Relay outputs are assigned from 1 to 8 in the following order:

- fan outputs
- cooling outputs
- heating outputs
- auxiliary timers**

Select the appropriate configuration for your A/C unit from the table below and switch the corresponding DIP switch to the ON position.

Only one DIP switch may be ON at any time.

Table 1.3a

Configuration DIP Switches									
DIP #	**Config**	**Relay 1**	**Relay 2**	**Relay 3**	**Relay 4**	**Relay 5**	**Relay 6**	**Relay 7**	**Relay 8[1]**
1	311	Fan Low	Fan Med	Fan High	Cool	Heat	Timer Ch6	Timer Ch7	Timer Ch8
2	322	Fan Low	Fan Med	Fan High	Cool	Cool	Heat	Heat	Timer Ch8
3	122	Fan	Cool	Cool	Heat	Heat	Timer Ch6	Timer Ch7	Timer Ch8
4	133	Fan	Cool	Cool	Cool	Heat	Heat	Heat	Timer Ch8
5	103	Fan	Heat	Heat	Heat	Timer Ch5	Timer Ch6	Timer Ch7	Timer Ch8
6	130	Fan	Cool	Cool	Cool	Timer Ch5	Timer Ch6	Timer Ch7	Timer Ch8
7	133E[2]	Fan	Cool	Cool	Cool	Heat	Heat	Heat	Timer Ch8
8	TIME SW8	Timer Ch1	Timer Ch2	Timer Ch3	Timer Ch4	Timer Ch5	Timer Ch6	Timer Ch7	Timer Ch8

1. Relay 8 may be configured as a pump call relay by creating a short circuit at JP1 (refer to connection diagrams).
2. 133E features an economy cycle for the first stage of cooling using the 0-10V cooling ramp to drive an outside air damper. (Refer to Section 1.5.1)

1.4 Chrono technical specifications

Power input to Controller ..... 240 volt ± 10%
Line frequency ..... 50 Hz
Power Consumption ..... 7 VA (max)
Operating temperature ..... 0 °C to 50 °C
Altitude ..... 0 to 2000 meters
Operating Relative Humidity..... 10% to 80%
Unit Dimensions (mm)..... 173 (L) x 116 (W) x 55 (H)
Weight ..... 570 g
Avoid static electricity hazards
Avoid electromagnetic radiation sources
Avoid dust contamination
Avoid highly corrosive environments

1.4.1 Inputs/Outputs

8 x relay outputs

- Max load through relay terminals is 2.5 A (inductive).
- Green LED indicates normally open contact is energised.

8 x digital inputs

- linked to corresponding relay output.
- operation may be via momentary switch, or latched mode (short circuit to run: open circuit to stop)

2 x analogue outputs

- 1 x 0-10 VDC linked to cooling - V1
- 1 x 0-10 VDC linked to heating - V2

2 x analogue inputs

- 1 x NTC thermistor - 47 kΩ @ 25 °C
- 1 x Multi purpose

1.4.2 Special Inputs

Analogue inputs S1 and S2 provide additional digital inputs in the following manner (voltage free clean contacts required):

- **S2 Closed Circuit = System Fault**
  Close circuit analogue input 2 terminals (S2 and SC) to shutdown all conditioning relays (compressors and electric duct heaters). The fan relay will remain energised only if the system is On. For 3 speed fan models in auto fan mode the controller will default to low fan speed. Manual changes to fan speed will be accepted.
- **S1 Closed Circuit = Remote On/Off**
  Close circuit analogue input 1 terminals (S1 and SC) to shutdown all relays.
- **S1 Open Circuit = Forced Vent Mode**
  Open circuit analogue input 1 terminals (S1 and SC) to shutdown all conditioning relays (compressors and electric duct heaters), the fan and reversing valve relays will remain energised. If the system is Off, the relay for the currently selected fan speed will be energised.
  For 3 speed fan models in auto fan mode the controller will default to low fan speed. Manual changes to fan speed will be accepted.

Any connected LCD touchpad will display a message on the screen for each digital input trigger and the service timer trigger.
If multiple trigger events occur at the same time the message displayed is based on the following priority.

1. System Fault
2. Service Timer
3. Remote On/Off
4. Forced Vent

The factory default messages may be replaced by one from the message library via the Advanced Settings Menu.
The library contains one custom entry of 2x8 character lines.

1.4.3 Message Library

The same message may be linked to more than one trigger.

Abbreviated version displayed on message selection screen	Message displayed on screen after trigger is activated
<Blank>	
SERVICER (Default Custom Message)	SERVICE REQUIRED
DoorOpen	Door Open
VentMode	Vent Mode
RemoteOf	Remote Off
RemoteSh	Remote Shutdown
CleanFil	Clean Filters
ServiceR (Default Service Timer Message)	Service Required
NoWaterF	No Water Flow
FanOverl	Fan Overload
FireShut	Fire Shutdown
ACPlantF	AC Plant Fault
HPFault	HP Fault
LPFault	LP Fault
HP/LPFau	HP/LP Fault
S1OpenCi (Default Forced Vent Input Message)	S1 Open Circuit
S1Closed (Default Remote On/Off Input Message)	S1Closed Circuit
S2Closed (Default System Fault Input Message)	S2Closed Circuit

1.4.4 Default Software Settings

Following is a list of adjustable settings from the main menu and their factory default values. For details on altering these settings refer to Section 3.5.

- **Setpoint (Default = 22.5 °C)**
  Setpoint is the temperature the controller will try to maintain.
  Adjustable via LCD touchpad.
- **Mode (Default = Auto)**
  Mode controls the operating mode of the system. Select from auto, cool, heat or vent. In auto mode the controller changes from heating to cooling as dictated by the ambient conditions.
  Adjustable via LCD touchpad only.
- **Fan Speed (Default = Low)**
  Fan Speed controls the indoor fan speed. Select from low, medium, high or auto. Auto fan decreases the fan speed as the temperature approaches setpoint.
  Adjustable via LCD touchpad only.
- **Heat Fan (Default = Continuous)**
  Heat Fan controls the indoor fan operation in heating mode. Select 'Auto/Cyc' to cycle the fan between heating calls. If EDH has been selected there is a fixed 60 second fan run on.
  Adjustable via LCD touchpad only.
- **RunTimer (Default = Disabled)**
  Run Timer counts down run hours from a preset limit. At the end of the timer period the system switches off.
  Adjustable via LCD touchpad only.
- **SetBack (Default = Disabled)**
  Setback is used to maintain temperature within preset limits at all times. If the temperature moves outside these limits the Controller will turn the system On and heat or cool as required to keep the temperature within the preset limits. These limits are separate and distinct from the normal setpoint.
  Adjustable via LCD touchpad only.

1.4.5 Default Software Settings - Advanced Menu

Following is a list of advanced system settings and their factory default values. For details on altering these settings refer to Section 3.6.

- **Delays (Default = 4 minutes)**
  The compressor delay variable controls the length of time between compressor cycles - both On & Off.
  Adjustable via LCD touchpad to 4 seconds, 40 seconds or 4 minutes
- **Deadband (Default = 0°C)**
  Adjustable via LCD touchpad only, in 1 °C increments to 3 °C
- **Control Band (Default = 0.5 °C per stage)**
  Control Band is a common variable covering both Stage Separation and Switching Differential. There is a separate control band for Heating and Cooling working from the heating and cooling setpoints dictated by the DEADBAND.
  Adjustable via LCD touchpad only.
- **Service Timer (Default = Disabled)**
  The Service Timer monitors the system run time and at the end of the time period displays a selectable message. Select from 0-990 hours in 10 hour increments.
  Adjustable via LCD touchpad only.

1.4.6 Default Hardware Settings

The following table details the function of the main processor module DIP switches located next to the sensor inputs.

Table 1.4.6a

Main Processor Module DIP Switch Settings

DIP #	Function	OFF (Factory Default)	ON
1	**Compressor Delay**	Software Selectable (4 minute default)	4 seconds max (overrides software)
2	**Memory Lock (Diagnostic Use Only)**	Disabled	Memory locked. Settings changes are discarded.
3	**Restore Factory Defaults**	Disabled	Restore factory defaults at next reboot.
4	**Heat Type**	Reverse Cycle	EDH or Cool Only

1.5 133E - Economy Cycle Controller

133E is an economy cycle personality that uses outside air to provide the first cooling stage when conditions are suitable.

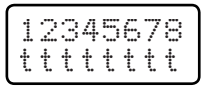
During economy mode the controller shifts the cooling relay stages 1 degree away from their normal activation points and uses the V1 (0-10V) output to open an outside air damper.

The controller will only enter economy mode if the outside air sensor is connected to the sensor 2 terminals (S2 & SC) and the outside air temperature will assist the cooling call (S2 temperature is 2 ºC lower than S1 temperature).

1.6 TIME SW[8] - 8 channel timeswitch

The TIME SW[8] personality provides 15 timer programs to switch the eight relay outputs. When 8-channel timeswitch mode is selected, only the timeswitch functions are displayed on the screen (HVAC functions – which are not available – are not shown).

Default Display



Clock Display

1.6.1 Manually switching a channel ON or OFF

- While viewing the default display, press the **ARROW**s to move the cursor to the channel you wish to switch ON or OFF.
- Press **POWER** to toggle the channel ON or OFF.
- Repeat for each additional channel.
- Press **ENTER** to accept the change(s).

1.6.2 Activating a timer program

- Press **CLOCK** to view the clock display.
- Press **MENU** to access the clock menus.
- Use the **ARROW**s to select '**SetProgs**' from the clock menu then press **ENTER**
- Use the **ARROW**s to select the timer program to be edited, then press **ENTER** to edit the start time.
- The cursor will highlight the minutes value. Use the **ARROW**s to select the correct time in 10 minute increments, then press **ENTER** to edit the stop time.
- Use the **ARROW**s to set the stop time then press **ENTER**.
- The display will show the channel and run day selection screen.
- Use the **ARROW**s to select the relay channel (**Ch#**) controlled by this program.
- Press **ENTER** to define the days the program will be active. The cursor will highlight the first letter on the bottom line, representing Sunday.
- Press the **UP ARROW** to turn the program on, or the **DOWN ARROW** to turn the program off for this day.
- Press **ENTER** to save and move the cursor to the next day.
- Press **MENU** to go back one day if required.
- Repeat this procedure for each day of the week.
- Press **ENTER** at Saturday to return the display to the program selection screen and the cursor will highlight the last program edited.
- Active programs (that is, programs with a start and/or stop time AND active days) appear in upper case in the program list. Example: PROG 01 is active, prog 01 is inactive.
- To deactivate a program, select a start and stop time of '--:--' or deactivate all seven days on that program.

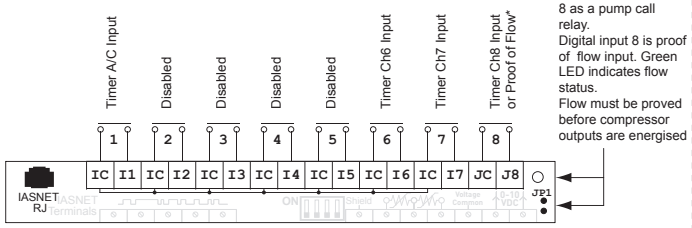
Refer to Section 3.7 for additional details on setting the clock and holiday functions.

1.7 Connection Diagrams

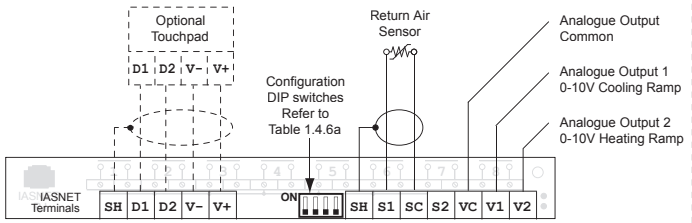
Select the appropriate connection diagram from the following pages.

1.7.1 Configuration 311

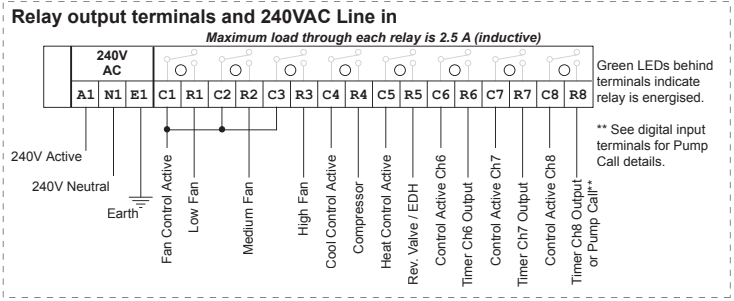
Digital input terminals and IASnet RJ



Analogue input and output terminals, and IASnet Terminals

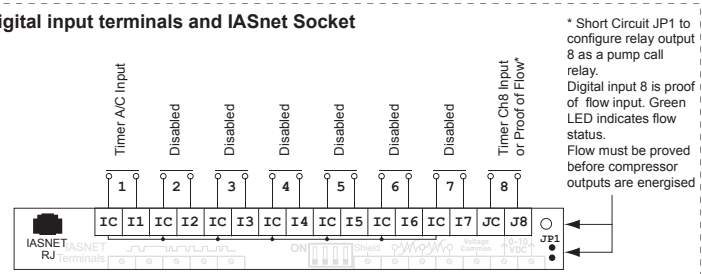


Relay output terminals and 240VAC Line in

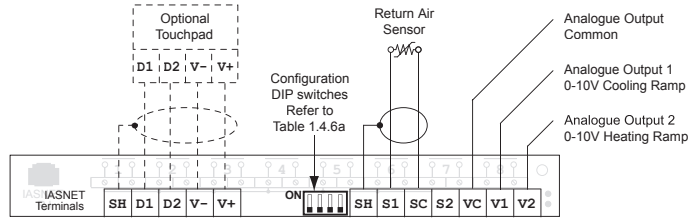


1.7.2 Configuration 322

Digital input terminals and IASnet Socket



Analogue input and output terminals, and IASnet Terminals



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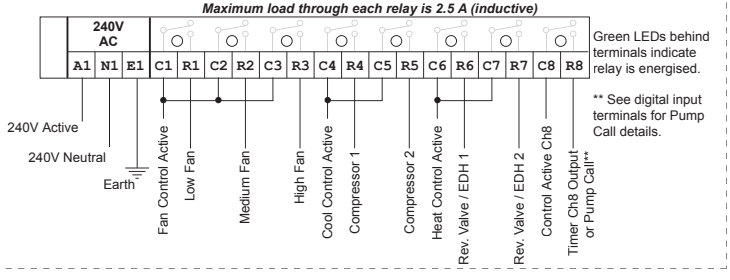
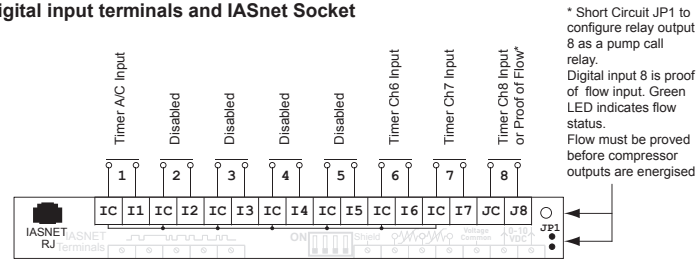
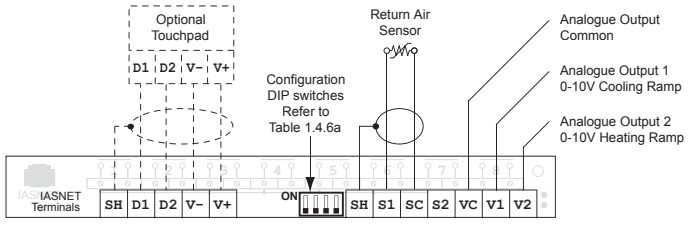


1.7.3 Configuration 122

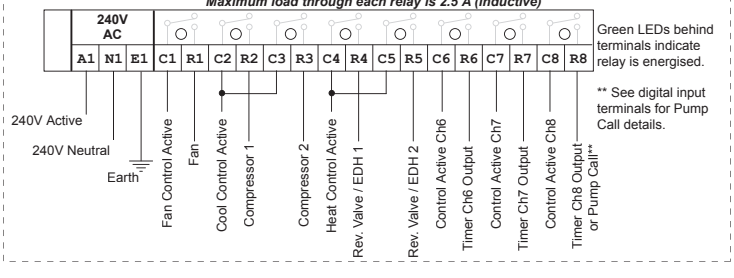
Digital input terminals and IASnet Socket



Analogue input and output terminals, and IASnet Terminals

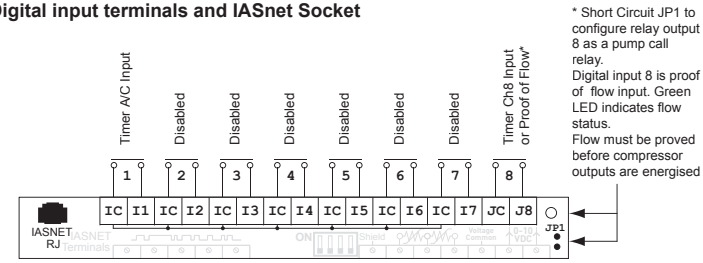


Relay output terminals and 240VAC Line in

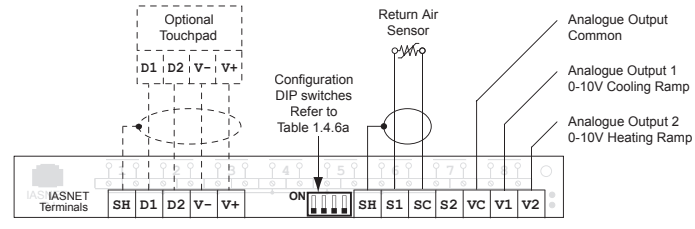


1.7.4 Configuration 133

Digital input terminals and IASnet Socket



Analogue input and output terminals, and IASnet Terminals



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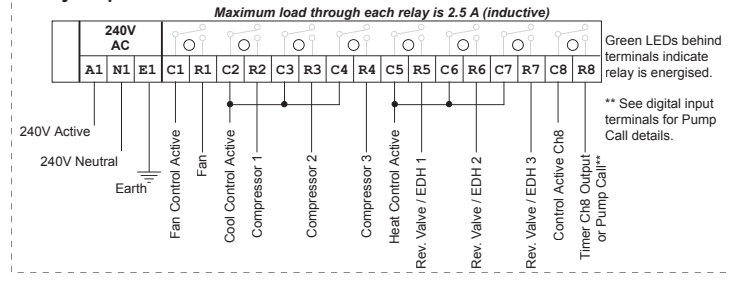
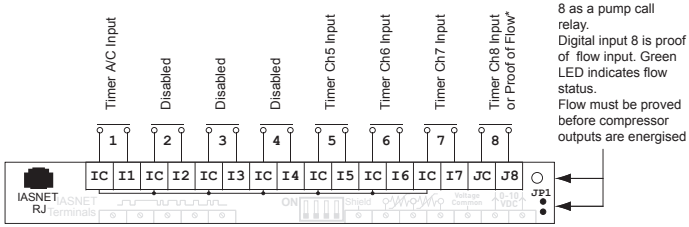
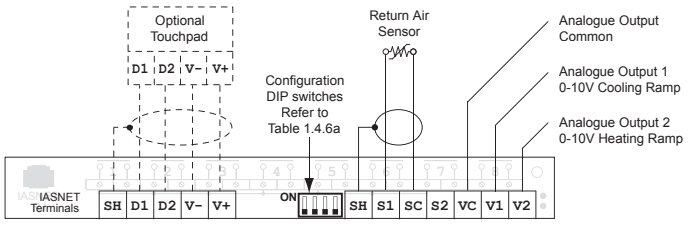


1.7.5 Configuration 103

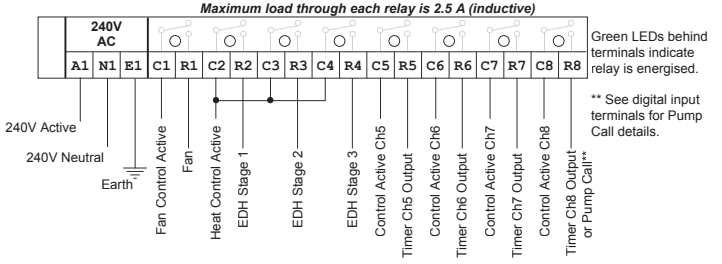
Digital input terminals and IASnet Socket



Analogue input and output terminals, and IASnet Terminals

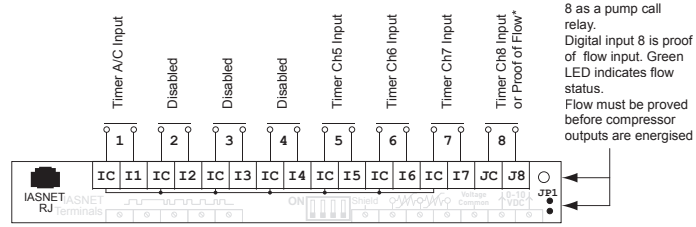


Relay output terminals and 240VAC Line in

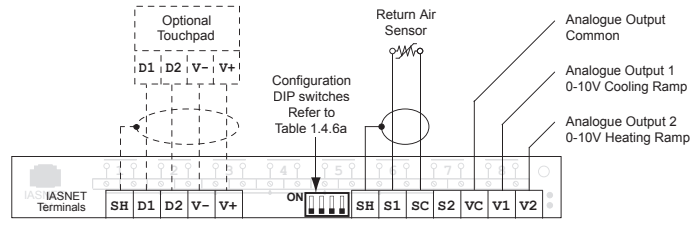


1.7.6 Configuration 130

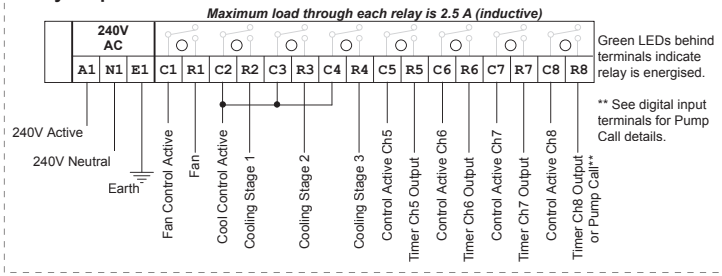
Digital input terminals and IASnet Socket



Analogue input and output terminals, and IASnet Terminals

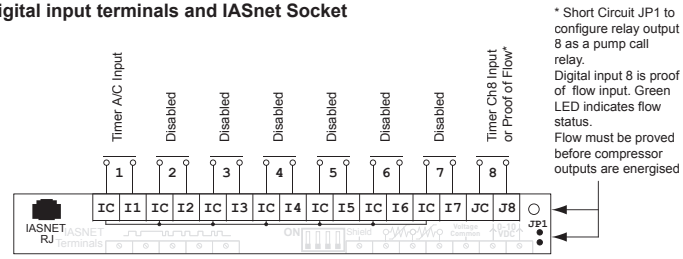


Relay output terminals and 240VAC Line in

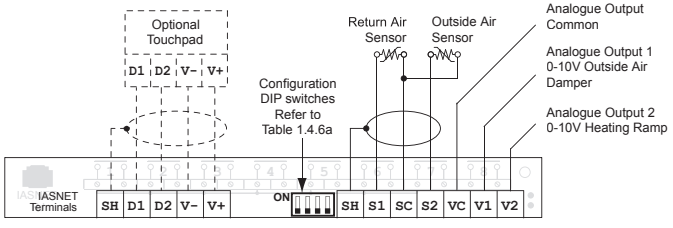


1.7.7 Configuration 133E

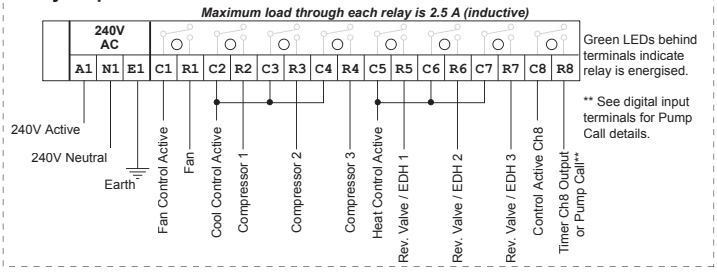
Digital input terminals and IASnet Socket



Analogue input and output terminals, and IASnet Terminals

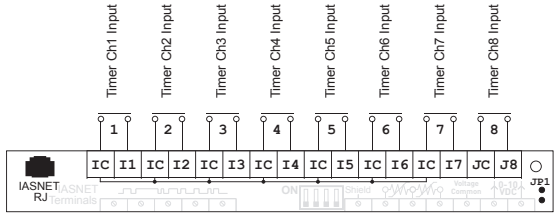


Relay output terminals and 240VAC Line in

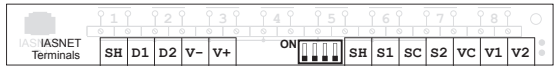


1.7.8 Configuration TIME SW[8]

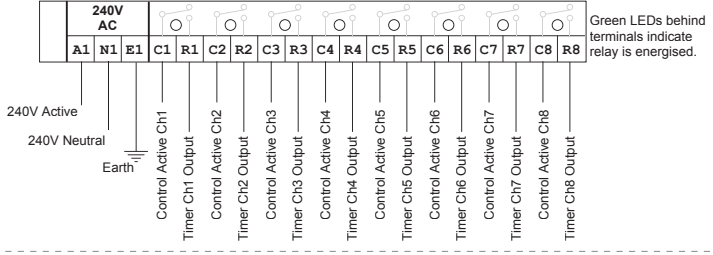
Digital input terminals and IASnet RJ



Analogue input and output terminals, and IASnet Terminals



Relay output terminals and 240VAC Line in



2 COMMISSIONING

2.1 Before connecting 240 VAC power

Ensure all electrical connections are in accordance with the supplied connection diagrams and local bylaws.
Verify the correct configuration has been selected from the DIP switches on the face of the controller.

2.2 Before first run

Set all the system settings as detailed in Section 3.

If the clock module has been purchased and fitted, refer to Section 3.7 to configure the clock and automated on/off programs, holidays and daylight savings.

2.3 Power on

Operate the controller in heat, cool and try each fan speed setting.

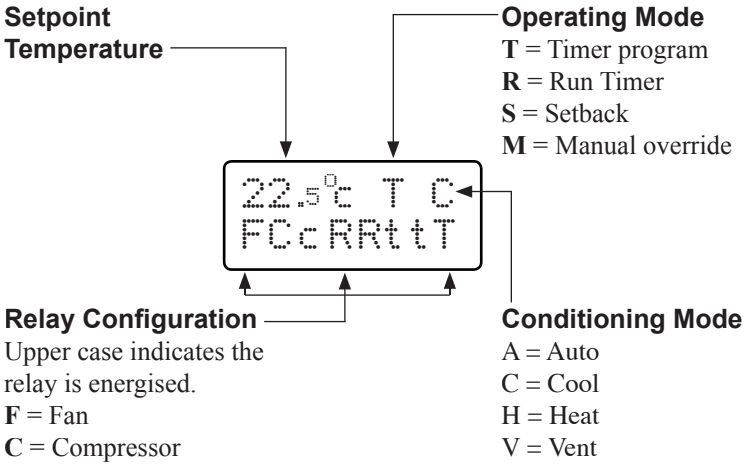
2.4 Prior to departure

Ensure that the Delay software setting is restored to Safety and verify the hardware delay DIP switch # 1 is returned to the off position prior to finishing commissioning.

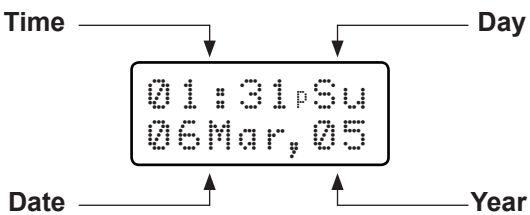
3 USER GUIDE

3.1 Controller Layout

3.2 Default Display Screen



3.3 Clock Display Screen



3.4 Quick Start Options

This controller provides a menu based user interface. The information that can be displayed at any given time is limited by the screen area of 2 x 8 character lines. Additional options are viewed by using the **ARROW**s to scroll the information vertically across the screen.
The flashing cursor indicates the active area of the screen (generally the top line of the display). Pressing **ENTER** will activate the selection highlighted by the flashing cursor.

- To change the setpoint, press the **ARROW**s. Once the required temperature has been set the screen will revert to the default display after a short period.
- Press **CLOCK** to switch between the default display screen and the clock display screen.
- All standard menu options are accessible by pressing **MENU** at the default display screen.
- All clock menu options (clock module required) are accessible by pressing **MENU** at the clock display screen.
- While in the menu screens, pressing **MENU** takes you back one step.
- Pressing **ENTER** moves forward through the various screens, selecting options and saving settings.
- The current active settings appear in CAPITALS.
- The **ARROW**s, when pressed in a menu will either cycle the cursor and scroll the screen through the various options available, or, alter the value of the selected variable.
- Press and hold the **ARROW** to quickly scroll the selected variable.

3.5 Standard Menu Options

The default menus are accessible from the default display screen.

Default Display

- Press **MENU** to gain access to the standard menu options.
- Use the **ARROW**s to cycle the cursor to the desired menu option, then press **ENTER** to select that option.
- Pressing **MENU** (or selecting '**Exit**' then pressing **ENTER**) will exit the current selection if required.

3.5.1 To Change the Mode

Operation: The Mode controls the operation of the A/C system. Available options are Cool, Heat, Vent or Auto (automatically switches between cooling and heating as required)

- Select 'Set Mode' from the standard menu screen (see section 3.5) and the mode selection screen will appear.
  (Quick Tip: Press **MENU**, **DOWN ARROW**, **ENTER**)
- Scroll down with the **DOWN ARROW** to select the required operating mode.
- Press **ENTER** to save the new value and return to the default display screen.

3.5.2 To Set the Fan Speed

Operation: The Fan Speed enables the user to manually select the fan speed or set the fan to Auto. In Auto mode the fan speed decreases as the temperature approaches setpoint.

- Select 'FanSpeed' from the standard menu screen.
- Use the **ARROW**s to select the required fan speed setting.
- Press **ENTER** to save the new value and return to the default display screen.

3.5.3 To Change the Heat Fan Setting

Operation: Heat Fan controls the indoor fan operation in heating mode. In '**Contin**' mode the fan will run whenever the system is On. In '**Auto/Cyc**' mode the fan will cycle off between heating calls. Electric Duct Heating is protected by 60 second fan run-on.

- Select 'Heat Fan' from the standard menu screen and press **ENTER**.
- Use the **ARROW**s to move the cursor to the required setting.
- Press **ENTER** to save the new value and return to the default display screen.

NOTE: The fan can never cycle off in cool mode or during a cool or heat call.

3.5.4 To Set the Run Timer (After Hours Timer)

Operation: With the Run Timer enabled, and if the system is off (and outside any timer periods), pressing the On/Off button will start the system in Run Timer Mode. The system will run for the duration of time set in the Run Timer, after which the system will turn itself off.

- Select 'RunTimer' from the standard menu screen and press **ENTER**, the run timer edit screen will appear.
- The cursor will highlight the minutes space.
- Use the **ARROW**s to alter the hours shown (in ten minute increments) to the required period (up to 24 hours).
- Press and hold the **ARROW**s to scroll numbers quickly.
- Press **ENTER** to save the new value and return to the default display screen.

To disable the Run Timer, select the minimum value of "-----" and press **ENTER**.

NOTE: The Run Timer status can be determined from the standard menu screen. If the Run Timer is enabled, '**RUNTIMER**' will appear in CAPITAL letters in this screen.

3.5.5 To Edit the Setback Temperatures

Operation: Setback is used to maintain temperature within preset limits at all times. If the temperature moves outside these limits the Controller will turn the system On and heat or cool as required to keep the temperature within the preset limits. These limits are separate and distinct from the normal setpoint.

CAUTION: When activated, Setback will cause the system to start irrespective of any timer programs including holidays. Pressing the Off button WILL NOT stop the system if running in Setback Mode.

To disable Setback, select a minimum of "----" and a maximum of "----". These "----" settings are found by scrolling the minimum all the way down, and the maximum all the way up.

- Select 'Setback' from the standard menu screen and the setback edit screen will appear.
- The cursor will highlight the minimum temperature value.
- Use the **ARROW**s to alter the value to the required temperature (in 1 °C increments).
- Press **ENTER** to save and the cursor moves to the maximum temperature value.
- Use the **ARROW**s alter the value to the required temperature (in 1 °C increments).
- Press **ENTER** to save and return to the default display screen.

NOTE: The Setback Range is from 5 - 50 °C. The setback function is enabled whenever there is at least one valid limit set as detailed above. The setback temperatures values are to be linked to setpoint in the following manner:
Minimum setback temperature settings higher than setpoint minus 2 °C will cause the system to start at setpoint minus 2 °C.
Maximum setback temperature settings lower than setpoint plus 2 °C will cause the system to start at setpoint plus 2 °C.

3.6 Advanced Settings (Service Personnel Only).

⚠ Changing these settings may adversely affect system operation and in extreme cases may cause system damage.

- Select 'Advanced' from the standard menu screen and press **ENTER** to access the advanced menu screen.
- The line 'CAUTION!' will alternate with 'Service' and 'use only'.
- Press either **ARROW** to scroll the cursor from 'Exit' to 'Proceed' then press **ENTER** to access the advanced menu screen .

3.6.1 To Change the Compressor Delays

Operation: The compressor delays dictate the length of time that the compressor must remain on or off after cycling.

- Select 'Delays' from the advanced menu screen, then press **ENTER** to access the delay select screen.
- The current Delay setting is displayed in CAPITALS.
- Use the **ARROW**s to highlight the required Delay setting.
- Press **ENTER** to save and the display will return to the advanced menu screen.

The following options are available for Compressor Delays:
Safety = 4 minutes (minimum)
Extended = 40 seconds (minimum)
Standard = 4 seconds (minimum)

3.6.2 To Set the Deadband

Operation: A deadband value other than 0 will create separate Heating and Cooling setpoints (half of the deadband value either side of the displayed setpoint).

- Select 'Deadband' from the advanced menu screen, then press **ENTER** to access the deadband edit screen .
- The cursor will highlight the deadband value.
- Use the **ARROW**s to alter the value in 1 °C increments from 0 to 3.
- Press **ENTER** to save and return to advanced menu screen.

3.6.3 To Set the Control Band

Operation: Control Band is a common variable covering both Stage Separation and Switching Differential. There is a separate control band for Heating and Cooling working from the heating and cooling setpoints dictated by the DEADBAND.

- Highlight ‘CtrlBand’ from the advanced menu screen, then press **ENTER** to access the control band edit screen.
- The cursor will highlight the Heating value.
- Use the **ARROW**s to change the value.
- Press **ENTER** to save the value and move the cursor to the Cooling value. Now change this value by using the **ARROW**s.
- Press **ENTER** to save and return to the advanced menu screen.

SINGLE STAGE CONTROLLERS: The control band for single stage controllers is adjustable in 0.5 °C increments from 0.5 °C to 1.5 °C, resulting in a switching differential equal to the control band value and stage separation also equal to the control band value.

TWO STAGE CONTROLLERS: The control band for two stage controllers is adjustable in 1.0 °C increments from 1.0 °C to 3.0 °C, resulting in a switching differential for each stage equal to half the control band value and stage separation equal to half the control band value.

THREE STAGE CONTROLLERS: The control band for three stage controllers can either be 1.5 °C or 3.0 °C, resulting in a switching differential for each stage equal to 1/3 the control band value and stage separation equal to 1/3 the control band value.

3.6.4 To Edit the Service Timer

Operation: The Service Timer monitors system run time and at the end of the timer period displays a message (see Section 1.4.2) and gives an audible warning (2 beeps every 16 seconds). Press any button to silence the audible warning.

- Select ‘SvcTimer’ from the advanced menu screen, then press **ENTER** to access the service timer edit screen .
- Use the **ARROW**s to move the cursor to highlight ‘Set’. Press **ENTER** and the cursor will highlight the number of hours. Use the **ARROW** to change the hours shown in increments of 10 hours.
- Press **ENTER** and the Service Timer will reset and the cursor will move back to highlight ‘Set’.
- Press menu to return to the advanced menu screen.
- To disable the service timer, select a set time of “----”.

NOTE: The Due value is the time remaining until the Service Timer message appears on the display. This value will revert to the Set value when the above procedure is followed.

3.6.5 To Select the Forced Vent Input Message

Refer to the message library table in Section 1.4.3 for the complete list of available messages and their abbreviations. Refer to Section 1.4.2 for information on input triggers.

- Select ‘Msg S1op’ from the advanced menu screen and press **ENTER**.
- The screen will display the abbreviated message library, with the cursor highlighting the current selection.
- Press the **ARROW**s to scroll to the required selection then press **ENTER**.

3.6.6 To Select the Remote On/Off Input Message

- Select ‘Msg S1cl’ from the advanced menu screen and press **ENTER**.
- The screen will display the abbreviated message library, with the cursor highlighting the current selection.
- Press the **ARROW**s to scroll to the required selection then press **ENTER**.

3.6.7 To Select the System Fault Message

Operation: The input trigger for the System Fault Message (S2 closed circuit), when activated, displays the message and causes the touchpad to emit an audible warning (2 beeps every 16 seconds). Press any button to silence the audible warning.

- Select 'Msg S2cl' from the advanced menu screen and press **ENTER**.
- The screen will display the abbreviated message library, with the cursor highlighting the current selection.
- Press the **ARROW**s to scroll to the required selection then press **ENTER**.

3.6.8 To Select the Service Timer Message

- Select 'MsgTimer' from the advanced menu screen and press **ENTER**.
- The screen will display the abbreviated message library, with the cursor highlighting the current selection.
- Press the **ARROW**s to scroll to the required selection then press **ENTER**.

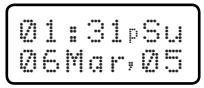
3.6.9 To Edit the Custom Message

- Highlight 'Edit Msg' and press **ENTER**.
- The display will show 'SERVICE REQUIRED' and the cursor will highlight the first letter. Using the **ARROW**s, select the alphanumeric symbol required then press **ENTER** to save and move to the next letter. (Press menu to go back, if required.)
- Repeat until the both 8 character lines are complete.
- Press **ENTER** to save and return to the advanced settings menu.

3.7 Clock Menu Options

The clock menus are accessible via the clock display screen.

Clock Display



- If the default display is showing on the screen, press **CLOCK** to access the clock display screen.
- While the clock display screen is displayed press **MENU** to enter the clock menu screen.
- Use the **ARROW**s to cycle the cursor to the desired menu option, then press **ENTER** to move to the edit screen for that menu option.

3.7.1 To Set the Clock

- Select '**SetClock**' from the clock menu screen (see Section 3.7) then press **ENTER**.
- The cursor will highlight the Hour value. Use the **ARROW**s to select the correct hour (watch for am/pm), then press **ENTER**.
- Repeat this procedure for the Minutes, Day, Month and Year values.
- After pressing **ENTER** on the Year, the display will return to the clock display screen.

3.7.2 To Edit the Timer Programs

Each of the 15 timer programs may be assigned to any one of the available relay channels.
Active Programs will appear in CAPITALS
("PROG 02" = active; "prog 02" = not active)
To disable a timer program, select a start & stop time of "--:--", or make all days inactive.

- Select '**SetProgs**' from the clock menu screen then press **ENTER** to select a timer program to edit.
- Use the **ARROW**s to select the timer program to be edited, then press **ENTER** to edit the start time.
- The cursor will highlight the minutes value. Use the **ARROW**s to select the correct time in 10 minute increments, then press **ENTER** to edit the stop time.
- Use the **ARROW**s to set the stop time then press **ENTER**.
- The display will show the channel and run day selection screen.
- Use the **ARROW**s to select the relay channel controlled by this program.
  NOTE: Channel 1 is always used for the air conditioning system (except for TIME SW8) and so it appears as "A/C" at this screen.
  Other channels display as "Ch#" (# = Relay Number)
- Press **ENTER** to define the days the program will be active. The cursor will highlight the first letter on the bottom line, representing Sunday.
- Press the **UP ARROW** to turn the program on, or the **DOWN ARROW** to turn the program off for this day.
- Press **ENTER** to save and move the cursor to the next day.
- Press menu to go back one day if required.
- Repeat this procedure for each day of the week.
- Press **ENTER** at Saturday to return the display to the program selection screen and the cursor will highlight the last program edited.
- To enter more programs, use the **ARROW**s to select another program and repeat the process.
- To return to the clock display screen, simply use the **ARROW**s to navigate back up to the exit options and press **ENTER**.

3.7.3 To Set Holidays

NOTE: Active Holidays (i.e. ONLY holidays with a start AND stop date) will appear in CAPITALS. Active Holidays will cause the system to ignore timer program signals (On or Off).
Holidays may be set as single days, or as blocks.
Dates are inclusive, and all holiday programs must have a start and stop date to be valid.
For a one day holiday, enter the same start and stop date.
To disable a holiday program, set it's start or stop date to "----".

- Select '**Set Hols**' from the clock menu screen then press **ENTER**.
- Use the **ARROW**s to select the Holiday program to be edited, then press **ENTER**.
- The cursor will highlight the Month value. Use the **ARROW**s to select the correct Month, then press **ENTER**.
- Repeat this procedure for the Day value which completes setting the start date for the holiday.
- The display will change to the set stop date screen.
- Repeat the procedure to set the stop date for the holiday.
- The display will revert to the set holiday edit screen and the cursor will highlight the last holiday edited.
- To return to the clock display screen, simply use the **ARROW**s to navigate back up to the '**Exit**' options and press **ENTER**.
- To enter more holidays, use the **ARROW**s to select another holiday entry and repeat the entire process.

3.7.4 To Set Daylight Savings

Operation: The daylight savings function advances the clock's time by 1 hour whilst the current date and time are between the start and stop dates set. (E.g. Southern Hemisphere = Oct 31...Mar 31; Northern Hemisphere = Mar 31...Oct 31)

- Select 'Day Save' from the clock menu screen (see Section 3.7), then press **ENTER** to select the start date for daylight savings.
- Use the **ARROW**s to select the correct Month , then press **ENTER**.
- Repeat this procedure for the Day value.
- The display will change to the set stop daylight savings screen.
- Repeat the steps detailed above to set the required stop date for the daylight savings.

To disable daylight savings, simply select a start date of "----" or start & stop in the same month.

NOTE: The 1 hour advance occurs at 1:59 am (advances to 3:00 am) and the 1 hour back occurs at 2:59 am (reverts to 2:00 am).

Timer Program Record				
Program #	**Start Time**	**Stop Time**	**Channel**	**Active Days**
01				
02				
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				

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