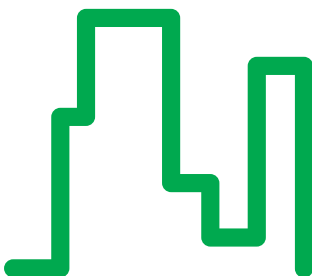


Satchwell Climatron

CSC5252/CSC5352 Compensator User's Guide



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1. INTRODUCTION

The CSC controller is designed to be simple to install and easy to use. The controller is used in simple plants typically in schools, libraries and large domestic installations. It may be installed either within a control panel or can be wall mounted.

The user can recall, display and adjust parameters quickly and easily, prompted by the controller display. The fascia has clearly labelled push-buttons for use when setting the controller. There is an overlay card which must be placed over the controller display for use in the Fine Tune Mode. A rotary selector switch is provided to enable overrides to be quickly and easily applied.

The CSC controls the temperature of air in ducts or water flowing to radiators throughout the building or zone. Each independent zone will need its own CSC controller and associated equipment.

A 3 way mixing valve is normally used to control the water temperature by mixing the cooler return water with the hot water from the heat source. Because boilers are used to supply heat to the domestic hot water as well as heating radiators the CSC must be used with a mixing valve. Where the heating system is independent the boiler may be directly controlled by turning it on and off to control the output or flow temperature.

The temperature of the flow water is monitored to ensure that desired value is maintained to maximise energy savings. The hot water can be supplied by a boiler or non-storage calorifier on a district heating system. The set point of the flow water is determined mainly by the outside air temperature. As the outside air temperature decreases the radiator water temperature is increased to compensate for heat loss. This is the basic principal of how a compensator works. A space temperature sensor can be connected to influence the flow temperature if required. The space sensor allows the set point of the flow water to be increased or reduced as the space temperature changes.

The CSC can only control one item of plant (either a valve or a boiler).

The CSC is shipped with standard (defaults) values for parameters. These default settings are used so that in most cases only a minimal number of parameters need to be amended to get the best out of the controller. It is important, however, that you tune the CSC to your control system to get the best out of it. Typical default values that should be checked/set are:-

- **Current time and Time-schedule (CSC 5352 only).**
- **Valve/Boiler application selection.**
- **Room Influence Operation.**
- **Night Set Back Operation (CSC 5352 only).**
- **Frost Logic and Set Point (CSC 5352 only).**
- **Pump Exercise (CSC 5352 only).**
- **Pump Overrun (CSC 5352 only).**
- **Controller tuning.**

2. INSTALLATION AND COMMISSIONING

The CSC should be installed and commissioned by a competent technician.

DO NOT SWITCH ON THE POWER SUPPLY UNTIL THE COMMISSIONING PROCEDURES HAVE BEEN COMPLETED.

2.1. LOCATION OF CONTROLLER

The controller must be installed in a position which is fairly clean and free from damp and condensation.

Temperature and humidity limits must be obeyed.

Ambient Operating Temperature:	0°C to 50°C
Operating Humidity:	0 to 95% RH non condensing

A minimum of 150 mm clearance is required around the controller to allow access for mounting, wiring, servicing and to avoid electrical interference from other devices such as contactors.

2.2. WIRING PRECAUTIONS

- On new installations all sensor cables must be screened with the screens connected separately to the 0V earth point provided. An MICC earth plate is provided for use if MICC cable is used.
- When upgrading a CSC or CXC installation it is usually possible to use the existing unscreened sensor wiring as long as the cable run is less than 100 metres and is sited more than 75mm from mains wiring runs.
- The mains supply, 24Vac output, relay and triac output wiring must be run separately from all the controller sensor and override inputs.
- The controller must be located as far away as possible (minimum 150mm) from any contactors or switches and their cables. This is to avoid any interference to the controller.
- No connections to the controller should be made whilst power is applied.

2.3. COMPATIBLE SENSORS

There are a large number of sensors that are compatible with the CSC.

It is not possible to mix old generation and 'T' type sensors on the CSC.

The compatible sensors are listed below along with their resistance type number's.

The first time the CSC is powered up it will automatically configure itself to the sensor type connected ("old generation" or "T Type").

2.4. CHANGING SENSORS

If a CSC connected to old generation sensors is subsequently equipped with a set of "T Type" sensors it is necessary to manually select the sensor type as 5 (T Type).

Remember that you cannot mix "T Type" and old generation sensors on the same CSC. **"T Type" sensors should be used on all new installations.**

2.5. USING ADJUSTABLE SPACE TEMPERATURE SENSORS

Adjustable room sensors do not change the CSC controllers programmed set point, they fool the controller into believing that the space temp is above or below the ideal space temperature. The CSC is primarily a water temperature controller and the space sensor only provides an influence over the flow temperature as a way to modify the actual space temperature. Where these sensors are used the controller may be forced into a Frost condition is adjustment is to great, e.g. asking for 30°C in the space the controller may think its 10°C or less. For this reason it is recommended that the low limit space setting is reduced to its minimum when using adjustable sensors to avoid confusion. Non adjustable space sensors will allow automatic frost protection to take place.

"T TYPE" SENSORS			
Sensor	Sensor Type	Resistance Type	Temperature Range
DRT 3451, 3453	Room	5	-5 to +40°C
DWT 1701, 1702	Water	5	-10 to +120°C
DST 1601, 1603	Water (strap on)	5	+5 to +120°C
DOT 2301	Outside	5	-40 to +40°C




2.6. COMMISSIONING





ENSURE THE MAINS POWER SUPPLY IS OFF AND THAT ANY OTHER POWER SUPPLIES TO AND FROM THE CSC ARE ISOLATED.

1. Undo the central case fixing screw and separate the case to gain access to the terminals.
2. Check that all wiring is correctly connected to the terminals. This should be done using the connection or application diagram for reference.
3. The battery supplied should now be fitted.
4. Reassemble the controller case and securely tighten the central fixing screw.
5. Apply mains power to the controller, the display will show “reset” followed by the controller firmware number:
6. The controller will then go into review mode.
7. Set the real time clock. (See the Quick Set mode for details on setting the clock).
8. Complete the configuration via the Quick-Set and Fine-Tune parameters.

Which Parameters to Change

The CSC is programmed with typical defaults to suit most applications. These should always be checked to maximise energy savings and comfort. Depending on the model being used the following table show which parameters are most likely to be in need of adjustment to allow correct and safe operation.

			CSC 5352	CSC 5252	Why Do You Need to Alter?
Quick Set Mode		Time & Day	✓		To enable correct plant time switching.
		Low Outside Temperature	✓		To protect the plant from low outside temperatures if required.
		Flow High Limit	✓		This setting sets the highest possible flow temperature that the CSC will allow. Must be used in sensitive applications such as under floor heating.

			CSC 5352	CSC 5252	Why Do You Need to Alter?
Fine Tune Mode	IA	Integral Action	✓	✓	Allows the CSC to react to temperature deviations.
	PB	Proportional Band	✓		Allows the CSC to position the value according to the error.
		NSB Action	✓		Do you want heating during the relaxed periods: 0 = (No Heating) 1 = (Yes both periods) 2 = (Yes to 1st Off period, No to 2nd Off period)
	INF	Room Influence Mode	✓		How do you want the Space Temperature to influence the Flow Temperature.
		Frost Logic	✓		Do you want to use UK or European Frost Logic.
		Valve or Boiler	✓		Are you controlling a valve or boiler.
	SVd	Set Value Day Origin	✓		If you have a Space Sensor what will be your target Space temperature for the Day Period.
	SVn	Set Value Night Origin	✓		If you have a Space Sensor what will be your target Space temperature for the Night Period.
		Low Space Temperature	✓		If you have a non-adjustable Space Sensor what is the lowest permissible Space Temperature.
	Stroke	Actuator Stroke	✓		How long does the actuator take to run from fully closed to fully open in seconds.

OTHER SETTINGS - CSC 5352

 Set the time schedule to complete the basic commissioning procedure.

NOTE:

If you have set the above they should not need further adjustment given your application. Always check periodically as a part of ongoing maintenance program. Ratios and ECO functionality must be set to maximise energy savings.

2.7. ADDITIONAL CONTROL LOGIC INFORMATION

Room Influence Operation.

If a room sensor is used you can choose how it influences the flow temperature. If you select 0 there is no influence. If you select 1 then room influence will adjust the flow temp up and down during the day but only down during the off periods. If you select 2 the flow temp is only influenced to lower the set point during both day and night periods. The fixed ratio is 3:1, both day and night have set points for space temperature.

Night Set Back Operation (CSC 5352 Only).

When the CSC turns off you can select what happens to the heating. If you set to "0" the heating will turn off during both "off" periods. This means that there will be no heating during the relaxed periods, the pump will turn off and the valve, if used, will close. If you set the value to "1" this means that the heating will run during both off periods with the flow temp reduced by the \downarrow setting. If the setting = 2 then the heating will control to NSB during the 1st off period but turn off for the 2nd off period. The controller can be externally overridden to Night Set Back by the use of an external contact if required.

● Frost Logic and Set Point (CSC 5352 Only).

The CSC has three stages of frost. Stage 1 is outside air temperature. This value is adjustable by you. The CSC is constantly monitoring the outside air temp and if it falls below the limit when the heating is off then the CSC will a) turn the pump on (UK Logic) b) turn on the pump and control to the NSB requirement. During the event of frost out of hours the controller will display "Auto 1" to indicate that the controller is working correctly.

Low Flow Temperature (Stage Two Frost)

If the flow water temperature falls below 5°C then the valve will open and the boiler and pump will start. The plant will remain in Boost control for a ½ hour period. This should ensure a sufficient rise in return water temperature and remove the frost condition. In the event of another frost condition the control will cycle as stated. The controller will display "Auto 2" during this frost period.

Low Space Temperature (Stage Three Frost)

If a space temperature sensor is fitted then this will also provide the third stage frost protection in addition to room influence. The low space temp setting will open the valve and energise the pump until the space temperature has increased above the in built hysteresis of 2°C (not adjustable) under boost conditions. The default low space temperature setting is set to 10°C and this will be adjustable (-10 to 30°C). Whilst in this condition display will show "Auto 3". An example of this occurrence could be a window being broken/left open in the area being controlled. As the space temperature can increase the flow temperature during the day this alarm should only occur when the plant is off or in the NSB mode. The low space temperature setting can be adjusted to -10 to remove the function if required. This will allow the input to be used for other influence applications if required.

Pump overrun will be in operation for the programmed period after any of the frost conditions have cleared.

The CSC 5252 does not include any frost protection as the controller does not directly control the pump. Frost protection must be provided by external controls such as thermostats and interlocked accordingly to the plant and actuator.

● **Pump Exercise (CSC 5352 Only)**

If the plant has not been used for any 7 day period then the plant will be exercised to prevent pump and valve seizure. This period setting is not adjustable but can be turned off by putting the controller into the off condition or any other manual position by using the rotary knob. Exercise will only take place when the controller is in the Auto or Standby condition.

● **Pump Overrun (CSC 5352 Only)**

Used to dissipate residual heat in the non-storage calorifier or directly controlled boiler after firing. The pump run on time is adjustable to suit plant types and needs to be set to avoid nuisance high limit tripping.

● **Controller Tuning**

Adjust the Proportional Band and Integral Action to ensure the most accurate and efficient response. Check control loop stability at frequent intervals as a part of an on going maintenance program. This will ensure maximum energy savings and component life.

● **Flow High Limit**



Depending on your application it may be necessary to limit the maximum water temperature that the CSC will provide to the heat emitting elements. This feature should be employed on non-storage calorifier applications and under floor heating applications.

2.8. RELOADING THE DEFAULT VALUES

This procedure only needs to be carried out if you need to reload the controller default values. The controller will also automatically configure itself to the sensors connected to it.

The following procedure will reload the CSC default values.

THIS WILL DELETE ALL YOUR EXISTING USER SETTINGS.

1. Switch OFF the power.
2. Press and hold the  “Enter” key. Switch the power ON.
3. The controller display will show “reset” followed by the firmware number.
4. The controller will now display “dflts”. Release the  “Enter” key.
5. The controller display will show “reset” again followed by the firmware number.
6. The controller will then go into review mode.
7. Enter your new Parameters and update your setting record sheet in the back of this guide.

3. APPLICATIONS

3.1. COMPENSATED VALVE CONTROL

This compensator application operates a 3 port mixing valve to control the flow temperature of the system based on the outside temperature. A room sensor is optional and is used to trim the flow temperature and not to control it. The way room influence works can be selected to suit your needs. It need not be used. The flow temperature can be adjusted by 3°C for every 1°C the room temperature is above or below the daytime space temp set value (SVd).

If the CSC 5352 is used then the clock determines whether the compensator operates in day or Night Set-Back (NSB) mode. The CSC can be set to allow the heating i.e. pump, valve etc. to run at reduced set points or turn off during the off periods. When in NSB mode the action of Room Influence is adjusted to work only in a negative fashion as to reduce the flow temperature. The flow temperature will be lowered by 3°C for every 1°C the room temp is above the relaxed set point (SVn). The compensator has 2 compensation ratios and a high limit function to prevent excessive set points occurring.

Out of hours, If the outside temperature drops below an adjustable frost setting, defaulted to 0°C, the pump is enabled and "Auto 1" is displayed on the controller. The CSC will resume normal operation when the outside temperature increases by 2°C. If a space sensor is used then this will also provide frost protection to protect the building fabric. The low space temperature is adjustable but is normally set to 10°C. If this limit is passed then the heating will come on in boost to ensure the fastest possible relief. "Auto 3" will be displayed on the CSC during this period. The frost condition will be removed when the space temperature has risen by 2°C. If for any reason, the flow temperature should fall below 5°C the CSC will act to remove the possibility of frost. The controller will start the pump and open the valve to raise the water temperature of the system, the CSC will remain in this condition for 30 minutes. When this event occurs during a standby period if not day or NSB, the CSC will display "Auto 2" for the period. If your CSC doesn't have a time clock, then Frost Protection is not included as the controller does not control the pump. All Frost Protection must be provided by other interlocked devices such as thermostats.

If under floor heating is used, please remember to check the high limit setting so as not to allow excessive flow temperatures.

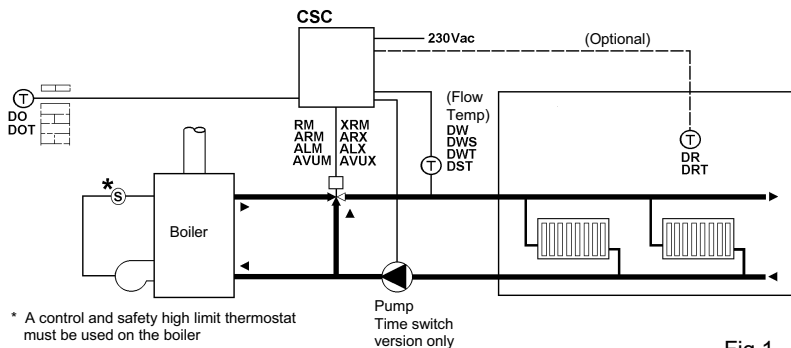
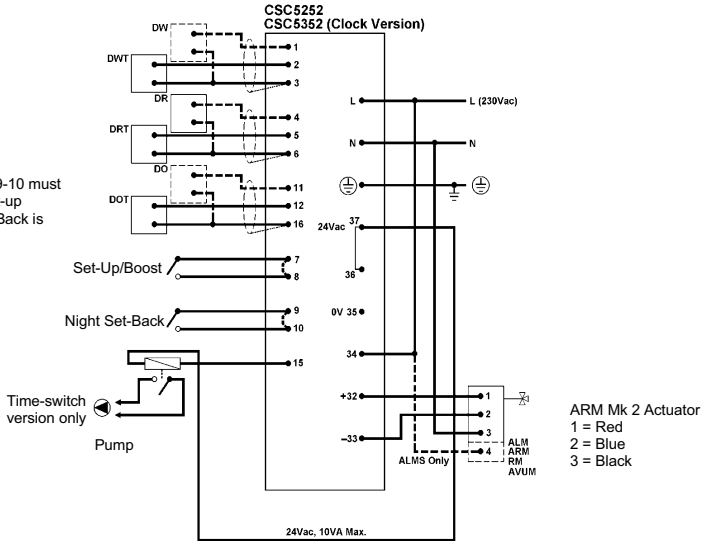


Fig.1

3.1.1. Basic Wiring Diagrams for Compensated Valve Control

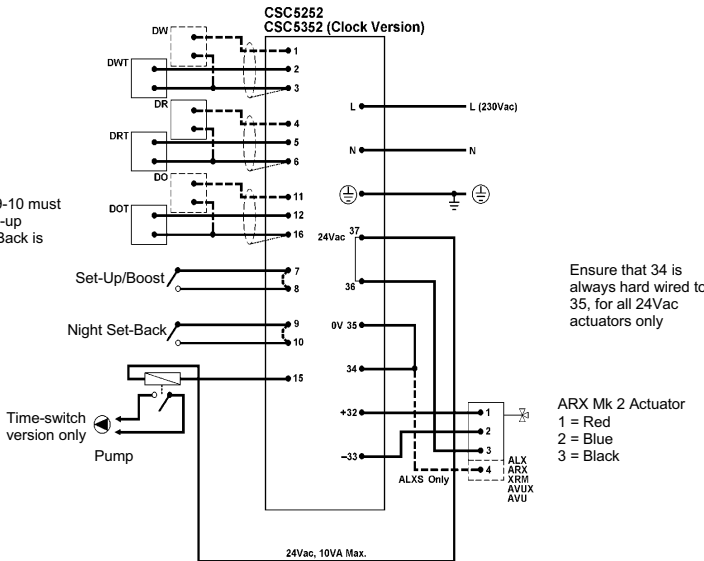
Links 7-8 and/or 9-10 must be removed if Set-up and/or Night Set Back is used.



230Vac Actuator

Fig.2

Links 7-8 and/or 9-10 must be removed if Set-up and/or Night Set Back is used.



24Vac Actuator

Fig.3

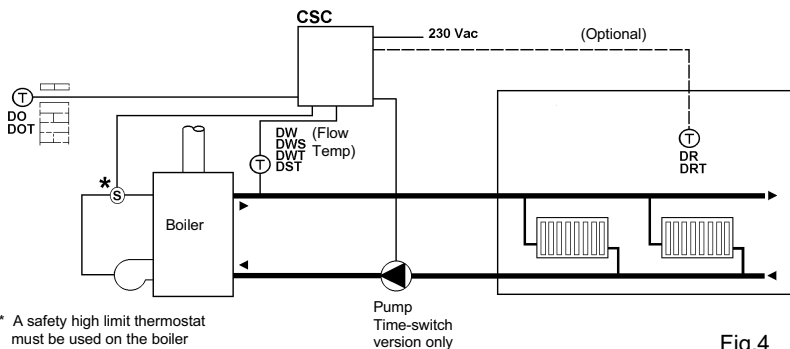
3.2. COMPENSATED BOILER CONTROL

This compensator application switches the boiler to control the flow temperature of the system based on the outside temperature. A room sensor is optional and is used to trim the flow temperature and not to control it. The way room influence works can be selected to suit your needs. It need not be used. The flow temperature can be adjusted by 3°C for every 1°C the room temperature is above or below the daytime space temp set value (SVd).

If the CSC 5352 is used then the clock determines whether the compensator operates in day or Night Set-Back (NSB) mode. The CSC can be set to allow the heating i.e. pump, valve etc., to run at reduced set points or turn off during the off periods. When in NSB mode the action of Room Influence is adjusted to work only in a negative fashion as to reduce the flow temperature. The flow temperature will be lowered by 3°C for every 1°C the room temp is above the relaxed set point (SVn). The compensator has 2 compensation ratios and a high limit function to prevent excessive set points occurring.

Out of hours, If the outside temperature drops below an adjustable frost setting, defaulted to 0°C, the pump is enabled and "Auto 1" is displayed on the controller. The CSC will resume normal operation when the outside temperature increases by 2°C. If a space sensor is used then this will also provide frost protection to protect the building fabric. The low space temperature is adjustable but is normally set to 10°C. If this limit is passed then the heating will come on in boost to ensure the fastest possible relief. "Auto 3" will be displayed on the CSC during this period. The frost condition will be removed when the space temperature has risen by 2°C. If for any reason, the flow temperature should fall below 5°C, the CSC will act to remove the possibility of frost. The controller will start the pump and open the valve to raise the water temperature of the system, the CSC will remain in this condition for 30 minutes. When this event occurs during a standby period if not day or NSB, the CSC will display "Auto 2" for the period. If you are using the CSC 5252 then Frost protection is not included as the controller does not control the pump. All frost protection must be provided by other interlocked devices such as thermostats.

If under floor heating is used please remember to check the high limit setting as not to allow excessive flow temperatures.



* A safety high limit thermostat must be used on the boiler

Fig.4

3.3. DISTRICT HEATING SYSTEMS

This application operates a two or three port valve to control the secondary water temperature of the heat exchanger based on the outside temperature. In Scandinavian applications a DWT sensor can be connected to the CSC via the input used for Room Influence. The CSC will use the DWT sensor to control the Primary Return Temperature. This will ensure that the permitted limits will not be exceeded. Space Frost Protection or room influence cannot be offered if the maximum return sensor is used.

Where the primary medium could enable extremely high secondary water temperatures, a dedicated safety circuit is required.

If a clock version CSC is used then the clock determines whether the compensator operates in day or Night Set-Back (NSB) mode. The CSC can be set to allow the heating i.e. pump, valve etc., to run at reduced set points or turn off during the off periods. When in NSB mode the action of Room Influence is adjusted to work only in a negative fashion as to reduce the flow temperature. The flow temperature will be lowered by 3°C for every 1°C the room temperature is above the relaxed set point (Svn). The compensator has 2 compensation ratios and a high limit function to prevent excessive set points occurring.

Out of hours, if the outside temperature drops below an adjustable frost setting, defaulted to 0°C, the pump is enabled and "Auto 1" is displayed on the controller. The CSC will resume normal operation when the outside temperature increases by 2°C. If a space sensor is used then this will also provide frost protection to protect the building fabric. The low space temperature is adjustable but is normally set to 10°C. If this limit is passed then the heating will come on in boost to ensure the fastest possible relief. "Auto 3" will be displayed during this period. The frost condition will be removed when the space temperature has risen by 2°C. If for any reason, the flow temperature should fall below 5°C the CSC will act to remove the possibility of frost. The controller will start the pump and open the valve to raise the water temperature of the system, the CSC will remain in this condition for 30 minutes. If the water frost event occurs during a standby period, the CSC will display "Auto 2".

If your CSC does not have a time clock then Frost Protection is not included as the controller does not control the pump. All frost protection must be provided by other interlocked devices such as thermostats.

If under floor heating is used please remember to check the high limit setting as not to allow excessive flow temperatures.

The INF setting in Fine Tune Mode must be set to 3 to enable the max. return application and settings.

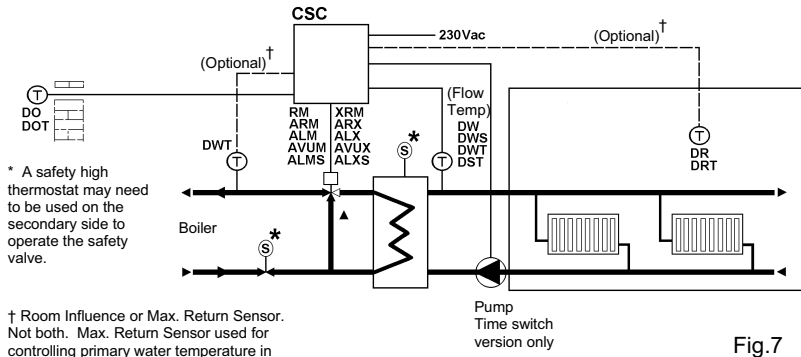


Fig.7

3.3.1. Basic Wiring Diagram for District Heating Applications

Links 7-8 and/or 9-10 must be removed if Set-up and/or Night Set Back is used.

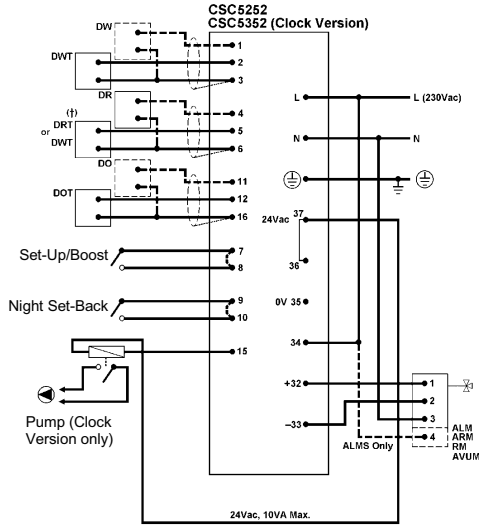


Fig.8

230Vac Boiler Output

Links 7-8 and/or 9-10 must be removed if Set-up and/or Night Set Back is used.

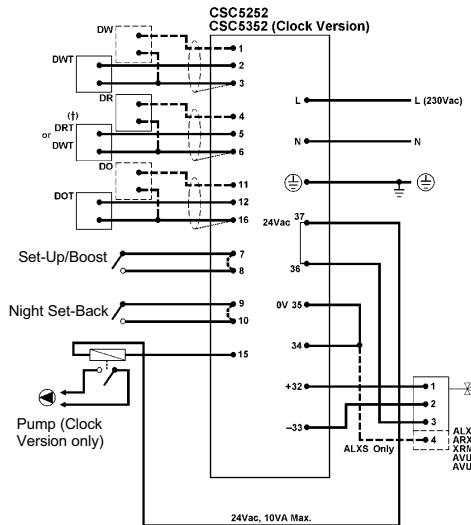


Fig.9

24Vac Boiler Output

Ensure that 34 is always hard wired to 35, for all 24Vac actuators only

3.4. ACTUATOR OVERRIDE FOR MAINS OUTPUT APPLICATIONS

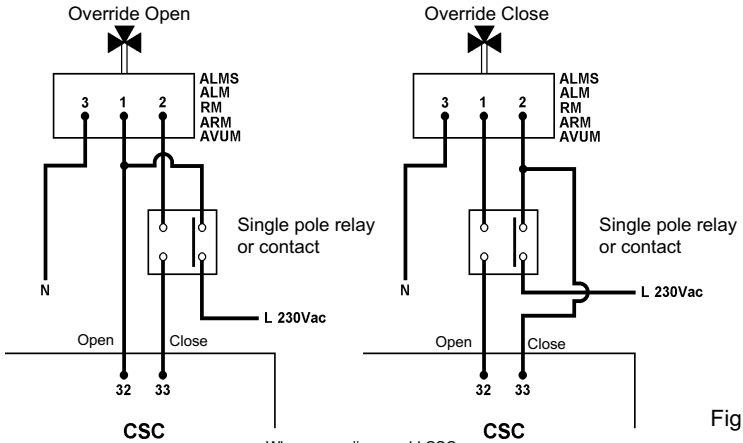


Fig.10

When upgrading an old CSC or CSC this method reproduces the 4-5 link override that was used.

3.5. ACTUATOR OVERRIDE FOR 24VAC OUTPUT APPLICATIONS

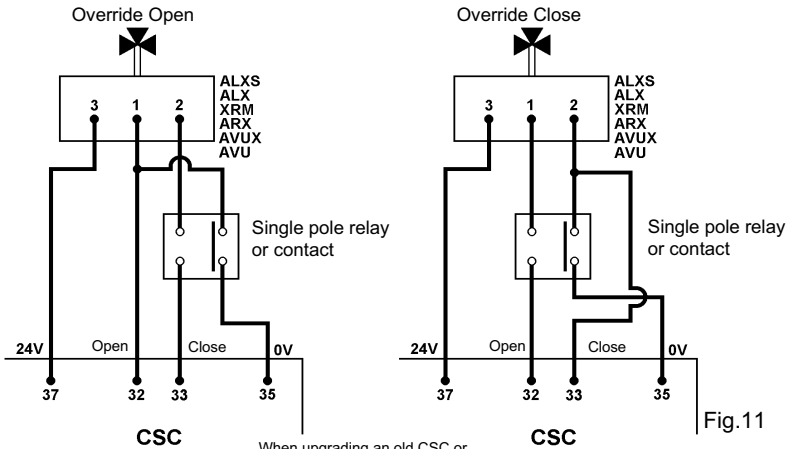


Fig.11

When upgrading an old CSC or CSC this method reproduces the 4-5 link override that was used.

4. FACIA AND DISPLAY






The display will show the time, temperature and the values of various parameters. The arrows point to the appropriate graphic on the facia to highlight the currently active function(s).

The five push-buttons and an eight way rotary switch on the facia are for setting and overriding the controller. The arrangement of the facia is as follows (time switch version shown):



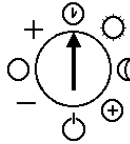
Fig.12

The five buttons have the following functions:

-  **Calendar Button:** Selects the mode that allows setting of the Time Switch functions.
-  **Tuning Button:** Selects the mode that allows setting of the controller parameters.
-  **Enter Button:** Enter button for confirming the entry of parameters.
-  **Plus Button:** To increase the value or move clockwise to the next function. Holding the button down will cause it to auto repeat.
-  **Minus Button:** To decrease the value or move anti clockwise to the next function. Holding the button down will cause it to auto repeat.

4.1. MANUAL OVERRIDE SWITCH

The rotary switch, shown below, is used to select **manual override functions**.



THIS SWITCH CAN BE SET IN ANY MODE INCLUDING REVIEW MODE.

IT IS IMPORTANT TO REMEMBER TO SWITCH BACK TO AUTO AFTER THE MANUAL OVERRIDE FUNCTION HAS BEEN USED.

WHEN THE SWITCH IS IN AN OVERRIDE CONDITION THE DISPLAY WILL FLASH AND THE OVERRIDE CONDITION WILL BE INDICATED (EXCEPT IF IT IS OVERRIDDEN OFF).

PUMP EXERCISE WILL ONLY TAKE PLACE WHEN THE CONTROLLER IS IN AUTO OR OVERRIDDEN TO STANDBY.

It is important to remember to switch back to auto after the manual override function has been used.

The override modes are as follows:

- Auto mode: Allows the controller to operate on the time schedule and uses all of the set parameters.
- ☀
 Day mode: Removes the effect of the time schedule and makes the controller run at the day set value constantly.
- ☾
 Night mode: This mode overrides the controller time schedule and decreases the calculated flow temperature by the value set in night setback.
- ⊕
 Boost mode: This mode overrides the controller time schedule and increases the calculated flow temperature by the value set in boost.
- ⏻
 Standby mode: This causes the actuator to close and turns the controller off, but it does leave the frost protection running. The pump exercise will also remain active
- Close Actuator: Forces the actuator to close or turns the boiler off.
- Controller off: Causes both actuator outputs to be off and the actuator to stop. In this mode no control function is operative including frost protection and pump exercise.
- +
 Open Actuator: Forces the actuator to open or the boiler on.

4.2. CONTROLLER MODES

The CSC operates in three distinct modes:

4.2.1. Review Mode

The controller usually operates in Review Mode, this allows the operator to view various system temperatures, the controller output status and the current time. No changes may be carried out in this mode.

4.2.2. Quick Set Mode

Quick Set Mode allows various basic controller functions to be set. Entry to the Quick Set Mode is described later in this user guide.

4.2.3. Fine Tune Mode

Fine Tune Mode allows the more advanced controller functions to be set.










Entry to the Fine Tune Mode is described later in this user guide.





4.2.4. Setting the Time Schedule (CSC 5352 Only)

The default schedule is programmed as:

Day Number	Day	First ON Time (1)	First OFF Time (2)	Second ON Time (3)	Second OFF Time (4)
1	Monday	08:00	00:00	00:00	17:00
2	Tuesday	08:00	00:00	00:00	17:00
3	Wednesday	08:00	00:00	00:00	17:00
4	Thursday	08:00	00:00	00:00	17:00
5	Friday	08:00	00:00	00:00	17:00
6	Saturday	00:00	00:00	00:00	00:00
7	Sunday	00:00	00:00	00:00	00:00

Please note, if switching points 2 and 3 are not required then the time at these points should be programmed to zero (00:00).

1. Press and hold the  button and then the  button, keeping both buttons pressed down until SEC appears on the display. This means that mode selection has been accessed.
2. Press the  'Calendar' button, to enter Time Schedule mode.
3. The screen will display the day number (flashing) followed by the First ON Time. Select which day number (1 to 7, where 1 is Monday and 7 is Sunday) is to be set using the  and  buttons.
4. Press the  'enter' button to select the day and the hour will flash.
5. Use the  and  "buttons" to set the hour and press the  'enter' button to move on to set the minutes. Set the minutes in the same way as the hour and the First OFF Time will be displayed.

6. Either amend the time or press the  “**enter**” button twice and the Second ON Time is displayed and is amended in the same way as the First. Having amended the Second OFF Time, the display will again indicate the First ON Time. The day number is now flashing again.
7. Use the  and  “**buttons**” to select another day number to set or press the  “**calendar**” button to exit back to the Review Mode.

Please note, if switching points 2 and 3 are not required then the time at these points should be programmed to zero (00:00).

4.3. FACIA PRINTING, REVIEW AND QUICK SET MODE

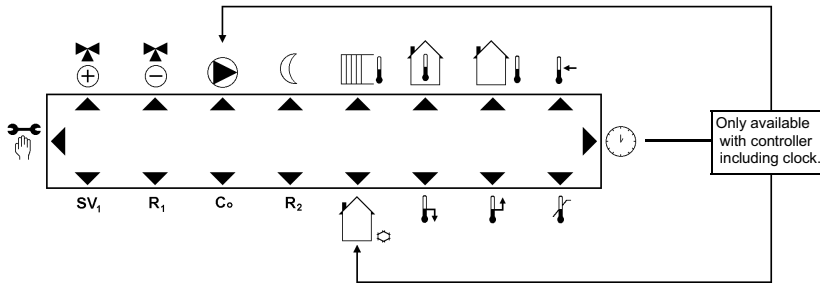







Fig.13

4.3.1. Review Mode






The review mode is a read only display mode. It shows various temperatures, the status of the actuator, pump and the current time and day.





- No settings can be changed in this mode, except the facilities on the manual override switch.
- The main display will show the main sensor reading by default.
- By pressing the  or  **buttons** the display will show the CSC parameters in turn with the appropriate symbol highlighted by the display arrow. The  **button** moves the cursor clockwise and the  **button** moves the cursor anti clockwise.

4.3.2. Setting the Default Display for Review Mode







Move the cursor arrow to the required parameter and press the  **button** the arrow will stop flashing. You have now selected the default parameter to be displayed when the CSC returns to Review Mode.

The controller functions available for viewing in Review Mode are as follows:





Symbol	Description
	Valve Opening
	Valve Closing
	Pump Running (CSC 5352 Only)
	Controller is in Night
	Display Flow Temperature

Symbol	Description
	Display Room Temperature
	Display Outside Temperature/Water Temperature for District Heating
	Display Calculated Flow Set Value
	Display Current time and Day (CSC 5352 Only)



4.4. ACCESSING AND EXITING QUICK SET MODE

1. Press and hold the  **button** and then the  **button**, keeping both buttons pressed down until SEC appears on the display. This means that mode selection has been accessed.
2. Press the  **'tuning key' button** followed by the  **'enter' button** to access the Quick Set Mode.
3. The display will show the arrow pointing towards the  **'tuning graphic'** on the left side of the display.
4. To exit Quick-Set the  **'tuning key' button** must be pressed when the icons are flashing. If no keys are pressed within 30 seconds the controller will return to the default review mode.

The user settings that are able to be adjusted or viewed in the Quick Set Mode are:








Symbol	Description	Used In	Default	Range
	Tuning Key Indicates that you are in Quick Set Mode if the arrow is lit.	Quick Set Mode	–	–
	Set Current Time and Date (CSC 5352 only)	Quick Set Mode	–	00:00 to 23:59 1 to 7
r1	Set Compensator Ratio 1 Used to set the compensation ratio. E.g. 30 equals a ratio of 3:1.	Quick Set Mode	25 (2.5:1)	0 to 255
	Set Night Set Back Value (NSB) Sets the amount the flow temperature should be decreased by during NSB.	Quick Set Mode	10	0 to 255°C
	Set Flow Temperature Set Up Value Sets the amount the flow temperature should be increased by during set up.	Quick Set Mode	10	0 to 255°C

Quick Set Mode (continued)


Symbol	Description	Used In	Default	Range
	Set Flow High Limit Temperature The highest controlled flow temp used.	Quick Set Mode	82	0 to 255°C
	Low Outside Temperature (Frost) (CSC 5352 only) Sets the outside air temperature low limit value at which point the CSC will take precautions to prevent the freezing of pipework. The actual action taken depends on the Frost Logic used. (See Frost Logic setting in Fine Tune). The frost protection system is active during all Auto Off and Standby conditions. The CSC will display "Auto 1" to inform you that the CSC is working correctly out of normal hours in order to protect plant under the conditions of Frost Stage One. The display and plant operation will cease when the outside air temperature has risen by 2°C.	Quick Set Mode	0	-60 to 30°C
r2	Set Ratio 2 Sets compensator ratio 2. This ratio is used between the Changeover point (Co) and the flow high limit setting. The value set is divided by 10 to get the actual ratio. E.g. 30 is equivalent to a ratio of 3:1.	Quick Set Mode	30 (3:1)	0 to 255
Co	Set Change Over Value Used to set the outside temperature at which the CSC changes from using ratio 1 to ratio 2.	Quick Set Mode	5	0 to 255°C
Sv1	Set Flow Origin Sets the Flow temperature required when the outside air temperature is at 20°C.	Quick Set Mode	20	0 to 255°C

4.4.1. How To Set Values

This method applies to all parameters














1. Enter Quick Set Mode as previously described.
2. When in the Quick Set Mode, an arrow will appear and the required symbol can be selected by scrolling left or right using the  and  buttons.
3. When the parameter is highlighted press the  'enter' button. This allows the value to be adjusted, using the  and  buttons.
4. Press the  'enter' button when the required value is displayed. This will enter the value. If you decide not to change the value press the  "tuning" button instead.

- The display will clear, but the arrow will continue to flash at the selected symbol.

To return to review mode at any time press the  **'tuning' button** until the review mode appears.

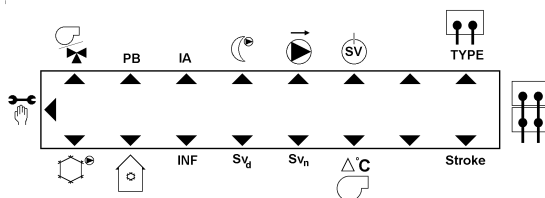
4.4.2. Setting the Time and Day (CSC 5352 only)

The day, hours and minutes are programmed as follows:

- Enter Quick Set Mode as previously described.
- Begin by obtaining the  Clock symbol in the normal way, then press the  **'enter' button**. The number on the far left of the display will flash, this is the day number.
- Use the  and  **buttons** to select the day number (1 to 7) with 1 representing Monday and 7 representing Sunday. If you decide not to change the value at any stage press the  **"tuning" button** instead.
- Press the  **'enter' button** to enter the day number and the hours will flash. The  and  **buttons** will allow the hour to be set.
- Press the  **'enter' button** to enter the hour and the minutes will flash. The  and  **buttons** will allow the minutes to be set.
- Press the  **'enter' button** and the display will return to the Quick Set mode and the time and day will be set. **To return to review mode at any time press the  'tuning' button.**

4.5. OVERLAY CARD PRINTING, FINE TUNE MODE ONLY

Fine Tune Card Settings for the CSC 5352



Fine Tune Card Settings for the CSC 5252

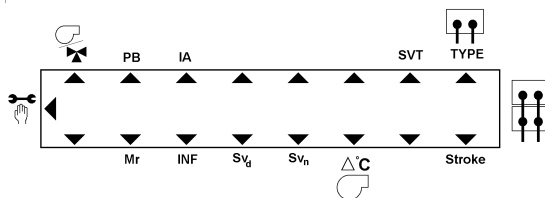








Fig.14



4.5.1. Entering and Exiting The Fine Tune Mode

The Fine Tune Mode is used by Commissioning Engineers and the more advanced users to set the Fine Tune parameters.





The overlay card must be placed on the CSC to use the Fine Tune mode.

1. Press and hold the  **button** and then the  **button**, keeping both buttons pressed down until “SEC” appears on the display. This means that mode selection has been accessed.
2. Press the  **‘tuning’ button** three times. The display will show “CARD 1” and all the arrows will flash simultaneously on the screen to show that the Fine Tune Mode is being entered. Place the overlay card on the display. The overlay card has a different set of symbols for the arrows to point to. Press the  **‘enter’ button**.
3. The display will show a flashing arrow pointing towards the  **tuning graphic** on the left side of the display.
4. Parameters are set in the same way as in Quick Set Mode.
5. To exit Fine Tune Mode at any time press the  **‘tuning key’ button**. If no keys are pressed within a period of 30 seconds then the product will return to the Review mode.





The user parameters that can be viewed and/or adjusted in the Fine Tune Mode are:

Symbol	Description	Used In	Default	Range
	Tuning Key Indicates that you are in Fine Tune Mode if the arrow is flashing.	Fine Tune Mode	–	–
IA	Set Integral Time Usually how long the actuator will take to run from fully closed to fully open given a continuous demand signal.	Fine Tune Mode	120	0 to 999
PB	Controller Tuning (°C) Used to tune the controller to the control system.	Fine Tune Mode	50	0 to 255
	Select NSB action. (CSC 5352 only) Setting this to 0 allows the CSC clock to switch plant off at night or a setting of 1 allows control to the night set back values as will the external NSB contact. The plant will be overridden in the event of Frost or ECO. Setting this to 2 allows the CSC to control to NSB during the 1st off period but turn off during the 2nd off period.	Fine Tune Mode	1	0 = Plant Off 1 = Control to NSB 2 = NSB then Off

Fine Tune Mode (Continued)

Symbol	Description	Used In	Default	Range
	Set Economy Set Value (CSC 5352 Only) Sets the outside temperature above which the plant will shut down. Frost protection remains active as does pump exercise.	Fine Tune Mode	18	0 to 255°C
SVT	Select SVT (CSC 5252 Only) Selects the digital input as SVT or Set-up. There are two connection/operation options for the SVT/CSC. BOOST (Valve Override Open, set to 1): SVT terminals 5 and 4 are wired to CSC terminals 7 and 8 respectively. BOOST (set value increase, set to 0): SVT terminals 5 and 4 are wired to CSC terminals 7 and 8 respectively.	Fine Tune Mode	0 Set-up	0 = Set-up 1 = SVT
 TYPE	Set Sensor Type The sensor type is normally automatically detected when the CSC is first powered up but it can be manually set if required.	Fine Tune Mode	5	1 or 5
	Sensor Averaging This tells the CSC how many Room Sensors are connected to it. Averaging.	Fine Tune Mode	1	1 to 4
	Set Boiler Hysteresis Sets the number of °C the actual flow temperature must be above the calculated flow temperature before the boiler is switched OFF by the CSC.	Fine Tune Mode	6	0 to 255K
INF	Room Influence Mode Select (only if Space Sensor fitted) If space sensor is fitted then the flow temperature can be adjusted in relation to the space temperature. The ratio for this is 3:1. The use of this feature can increase and/or decrease the flow temperature depending on the setting and Time Clock. A value of 3 should only be used when the max. return is used in Scandinavian Applications. This allows the sensor input to be used for another purpose.	Fine Tune Mode	0	0 = No Room Inf. 1 = Day (+/- 3°C/°C) & NSB (-3°C/°C) 2 = Day (-3°C/°C) & NSB (-3°C/°C) 3 = District Htg

Fine Tune Mode (Continued)






Symbol	Description	Used In	Default	Range
	Set Pump Override Time - (CSC 5352 Only) This setting should be used with direct boiler compensation or non-storage Calorifier applications to dissipate heat after demand.	Fine Tune Mode	15	0 to 59 Minutes
	Set Low Outside Temperature Frost Logic - (CSC 5352 Only) Sets the action of the plant in relation to low outside air temperature. UK logic will start the pump until the Hysteresis (+2°C) has been cleared. European logic will start the pump and control the valve/boiler to the NSB setting until the Hysteresis (+2°C) outside has been cleared.	Fine Tune Mode	1	0 = UK 1 = European
	Low Space Temperature Setting (CSC 5352 only if space sensor fitted) Sets the temperature at which point the heating will come on in boost until the hysteresis (+2°C) has been cleared. (If an adjustable room sensor is used then this setting must be set to -10°C to remove frost protection. Failure to do so may result in control problems). *or If the INF setting = 3 then this settings sets the max. Return Temperature Ratio. A divisor of 100 is used for the max. Return Ratio Setting, e.g. 83 = 0.83.	Fine Tune Mode	10 *or 83	-10 to 127°C
Svd	Set Day Room Temperature Origin (Only used when a space temperature sensor is fitted) The space temperature will influence the compensated flow temperature for each °C error from this figure. Subject to the fine tune setting (INF) or If the ING setting = 3 then this setting is the primary base return water origin relative to an outside air temperature of 10°C.	Fine Tune Mode	19 *or 45	0 to 255°C
	Valve or Boiler Control Selects the controller type.	Fine Tune Mode	0	0 = Valve 1 = Boiler

Fine Tune Mode (Continued)

Symbol	Description	Used In	Default	Range
Sv _n	Set Night Room Temperature Origin (Only used when a space temperature sensor is fitted) The space temperature will influence the compensated flow temperature for each °C error from this figure. Subject to the fine tune setting (INF) *or If the INF setting = 3 then this setting sets the Max. Return Low Limit.	Fine Tune Mode	16	0 to 255°C
Stroke	Set Actuator Stroke Time in Seconds In order for the control loop to operate accurately, the stroke time for the actuator to run from Closed to Open must be entered.	Fine Tune Mode	120	0–999 Seconds
Mr	Maximum Return set Value Ratio - (CSC 5252 only) If the INF setting = 3 (Max. Return Application) this value sets the set point ratio. The outside air origin is 10°C. A divisor of 100 is used for the Max. Return Ratio setting, e.g. 83 = 0.83.	Fine Tune Mode	83	–10 to 127

4.5.2. To Adjust the Economy Mode  (CSC 5352 Only)

Economy mode is used to override the plant in the event of a high outside temperature. This temperature can be set by the user. In warm conditions the plant will shut down. If the outside temperature falls below the economy set value within 1 hour of the end of occupancy time the controller will remain in economy mode. The plant will stay shut down until the outside temperature falls by 3°C.

1. Enter Fine Tune Mode as previously described.
2. Begin by obtaining the  economy symbol.
3. Use the  or  buttons to set the temperature required. Set the value very high to disable this function.
4. Press the  'enter' button when the required value is displayed. This will enter the value. If you decide not to change the value press the  "tuning" button instead.
5. The display will clear, but the arrow will continue to flash at the selected symbol.

5. SPECIFICATION

Type:	CSC 5252	230 Vac output, Without Clock	561-5-252
	CSC 5352	230 Vac output, With Clock	561-5-352

Power Supply:	230Vac, +10%, -6%
Output Supply:	2 x 24Vac Output terminals, a total of 10VA max.

230Vac CSC

Output Relays:	2 x Single Pole ON/OFF (interlocked) 230Vac, 10A resistive, 6A inductive.
Pump Output:	Time-switch version only. 1 x 24Vac Triac, 1A (0V switched).
Fuses:	100mA on the 230Vac input.
Power Consumption:	22VA fully loaded.

CONSTRUCTION

Ambient Temperature Limits:	Operating: 0°C to 50°C Storage: -10°C to 70°C
Ambient Humidity Limits:	Operating: 0 to 95% Rh non condensing Storage: 0 to 95% Rh non condensing
Terminals:	The terminals are provided to take wire of 2.5mm ² cross-section.
Protection Class:	IP 30
Case:	Matt black coloured 2 piece polycarbonate case. Fire resistant to UL94V-0
Mounting:	Wall or panel mounting.
Case Dimensions:	144 x 144 x 136mm.
Panel Cut Out Size:	138 x 138mm.

Power Supply

The power supply is on the base PCB and consists of a mains transformer which steps the controller Voltage down to 24Vac.

Memory

The controller stores all non-volatile data in an E²PROM such as the user set control parameters. This means that in the event of a power failure or separation of the controller and base unit the user set parameters will be maintained without having to rely on battery support. The battery (3.6V Lithium AA) will power the clock whilst the controller is powered off for a period of typically 1 year of continuous use. The typical shelf life of the battery is 10 years.

5.1. CHANGING THE BATTERY

The battery is provided to keep the clock running if the power is switched off.

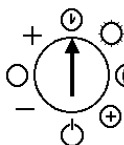
1. **WHEN CHANGING THE BATTERY, ENSURE THE MAINS POWER SUPPLY HAS BEEN SWITCHED OFF.**
2. Undo the central fixing screw and remove the front of the case to allow access to the battery.
3. Replace the front of the cover and lock it securely with the central fixing screw.
4. Switch the mains supply on.

6. FREQUENTLY USED FUNCTIONS AND USER SETTING RECORD TABLES

6.1. MANUAL OVERRIDES

A simple rotary switch, shown below, is used to select the override function.

THIS SWITCH CAN BE SET IN ANY MODE INCLUDING REVIEW MODE.





IT IS IMPORTANT TO REMEMBER TO SWITCH BACK TO AUTO AFTER THE MANUAL OVERRIDE FUNCTION HAS BEEN USED.

WHEN THE SWITCH IS IN AN OVERRIDE CONDITION THE DISPLAY WILL FLASH AND THE OVERRIDE CONDITION WILL BE INDICATED (EXCEPT IF IT IS OVERRIDDEN OFF).

PUMP EXERCISE WILL ONLY TAKE PLACE WHEN THE CONTROLLER IS IN AUTO OR OVERRIDDEN TO STANDBY.

The modes are as follows:










- ⌚ Auto mode: Allows the controller to operate on the time schedule and uses all of the set parameters.
- ☀ Day mode: Removes the effect of the time schedule and makes the controller run at the day set value constantly.
- ☾ Night mode: This mode overrides the controller time schedule and decreases the calculated flow temperature by the value set in night setback.
- ⊕ Boost mode: This mode overrides the controller time schedule and increases the calculated flow temperature by the value set in boost.

-  Standby mode: This causes the actuator to close and turns the controller off, but it does leave the frost protection running. The pump exercise will also remain active.
- Close Actuator: Forces the actuator to close or turns the boiler off.
-  Controller off : Causes both actuator outputs to be off and stops the actuator. In this mode no control function is operative including frost protection and pump exercise.
- + Open Actuator: Forces the actuator to open or turns the boiler on.






6.2. REVIEW MODE


Review Mode is used to view parameters only, no settings can be changed in this mode.







The following parameters are available in Review Mode

Symbol	Description	Used In
	Valve Opening	Review Mode
	Valve Closing	Review Mode
	Pump Running (CSC 5352 only)	Review Mode
	Controller is in Night	Review Mode
	Display Flow Temperature	Review Mode
	Display Room Temperature or Water Temperature for District Heating	Review Mode
	Display Outside Temperature	Review Mode
	Display Calculated Flow Set Value	Review Mode
	Display Current Time and Day (CSC 5352 only)	Review Mode

6.3. HOW TO ENTER QUICK SET MODE

1. Press and hold the  **button** and then the  **button**, keeping both buttons pressed down until SEC appears on the display. This means that mode selection has been accessed.
2. Press the  **'tuning key'** button followed by the  **'enter'** button to access the Quick Set Mode.
3. The display will show the arrow pointing towards the  **'tuning graphic'** on the left side of the display.

4. To exit security the  'tuning key' button must be pressed when the icons are flashing. If no keys are pressed within 30 seconds the controller will return to the default review mode.








Symbol	Description	Used In	Default	Range	User Setting
	Tuning Key Indicates that you are in Quick Set Mode if the arrow is lit.	Quick Set Mode	–	–	
	Set Current Time and Date	Quick Set Mode	–	00:00 to 23:59 and 1 to 7	
r1	Set Compensator Ratio 1 Used to set the compensation ratio. E.g. 30 equals a ratio of 3:1.	Quick Set Mode	25 (2.5:1)	0 to 255	
	Set Night Set Back Value (NSB) Sets the amount the flow temperature should be decreased by during NSB.	Quick Set Mode	10	0 to 255°C	
	Set Flow Temperature Set Up Value Sets the amount the flow temperature should be increased by during set-up.	Quick Set Mode	10	0 to 255°C	
	Set Flow High Limit Temperature The highest controlled flow temp used.	Quick Set Mode	82	0 to 255°C	
	Low Outside Temperature (Frost) (CSC 5352 only) Sets the outside air temperature low limit value at which point the CSC will take precautions to prevent the freezing of pipework. The actual action taken depends on the Frost Logic used. (See Frost Logic setting in Fine Tune). The frost protection system is active during all Auto Off and Standby conditions. the CSC will display "Auto 1" to inform you that the CSC is working correctly out of normal hours in order to protect plant under the conditions of Frost Stage One. The display and plant operation will cease when the outside air temperature has risen by 2°C.	Quick Set Mode	0	–60 to 30°C	

Quick Set Mode (Continued)





Symbol	Description	Used In	Default	Range	User Setting
r2	Set Ratio 2 Sets compensator ratio 2. This ratio is used between the Changeover point (Co) and the flow high limit setting. The value set is divided by 10 to get the actual ratio. E.g. 30 is the equivalent to a ratio of 3:1.	Quick Set Mode	30 (3:1)	0 to 255	
Co	Set Change Over Value Used to set the outside temperature at which the CSC changes from using ratio 1 to ratio 2.	Quick Set Mode	5	0 to 255°C	
SV1	Set Flow Origin Sets the Flow temperature required when the outside air temperature is at 20°C.	Quick Set Mode	20	0 to 255°C	


6.3.1. Economy Mode (CSC 5352 only)

The economy mode is used to override the plant in the event of a high outside temperature. This temperature can be set by the user. Therefore in warm conditions the plant will shut down. If the outside temperature falls below the economy set value within 1 hour of the end of occupancy time the controller will remain in economy mode.




1. Make sure that you are in Fine Tune mode.
2. Use the  and  buttons to obtain the  economy symbol, then press the  "enter" button.
3. Use the  or  buttons to set the temperature required. Set the value very high to disable this function.
4. When the outside temperature exceeds the economy set value, the economy feature becomes active, and in this case the display pointer will point at .

6.4. ENTERING AND EXITING THE FINE TUNE MODE




1. Press and hold the  button and then the  button, keeping both buttons pressed down until "SEC" appears on the display. This means that the security mode has been accessed .
2. Press the  'tuning' button three times. The display will show "CARD 1" and all the arrows will flash simultaneously on the screen to show that the Fine Tune Mode is being entered. Place the overlay card on the display. The overlay card has a different set of symbols for the arrows to point to. Press the  'enter' button.

3. The display will show the arrow pointing and flashing at approximately once per second towards the tuning graphic on the left side of the display.
4. To exit Fine Tune Mode press the  'tuning key' button. If no keys are pressed within a period of 30 seconds then the CSC will return to the Review mode.




The following parameters are available in Fine Tune Mode

Symbol	Description	Used In	Default	Range	User Settings
	Tuning Key Indicates that you are in Fine Tune Mode if the arrow is flashing.	Fine Tune Mode	–	–	
IA	Set Integral Time Usually how long the actuator will take to run from fully closed to fully open given a continuous demand signal.	Fine Tune Mode	120	0 to 999	
PB	Controller Tuning (°C) Used to tune the controller to the control system.	Fine Tune Mode	50	0 to 255	
	Select NSB action. (CSC 5352 only) Setting this to 0 allows the CSC clock to switch plant off at night or a setting of 1 allows control to the night set back values as will the external NSB contact. The plant will be overridden in the event of Frost or ECO. Setting this to 2 allows the CSC to control to NSB during the 1st off period but turn off during the 2nd off period.	Fine Tune Mode	1	0 = Plant Off 1 = Control to NSB 2 = NSB then Off	
	Set Economy Set Value (CSC 5352 Only) Sets the outside temperature above which the plant will shut down. Frost protection remains active as does pump exercise.	Fine Tune Mode	18	0 to 255°C	


Fine Tune Mode (Continued)

Symbol	Description	Used In	Default	Range	User Settings
SVT	<p>Select SVT (CSC 5252 Only) Selects the digital input as SVT or Set-up. There are two connection/operation options for the SVT/CSC.</p> <p>BOOST (Valve Override Open, set to 1): SVT terminals 5 and 4 are wired to CSC terminals 7 and 8 respectively.</p> <p>BOOST (set value increase, set to 0): SVT terminals 5 and 4 are wired to CSC terminals 7 and 8 respectively.</p>	Fine Tune Mode	0 Set-up	0 = Set-up 1 = SVT	
	<p>Set Sensor Type The sensor type is normally automatically detected when the CSC is first powered up but it can be manually set if required.</p>	Fine Tune Mode	5	1 or 5	
	<p>Sensor Averaging This tells the CSC how many Room Sensors are connected to it.</p>	Fine Tune Mode	1	1 to 4	
	<p>Set Boiler Hysteresis Sets the number of °C the actual flow temperature must be above the calculated flow temperature before the boiler is switched OFF by the CSC.</p>	Fine Tune Mode	6	0 to 255K	
INF	<p>Room Influence Mode Select (only if Space Sensor fitted) If space sensor is fitted then the flow temperature can be adjusted in relation to the space temperature. The ratio for this is 3:1. The use of this feature can increase and/or decrease the flow temperature depending on the setting and Time Clock. Using a value of 3 should only be used when the max. return is used in Scandinavian Applications. This allows the sensor input to be used for another purpose.</p>	Fine Tune Mode	0	0 = No Room Inf. 1 = Day (+/- 3°C/°C) & NSB (-3°C/°C) 2 = Day (-3°C/°C) & NSB (-3°C/°C) 3 = District Htg	

Fine Tune Mode (Continued)

Symbol	Description	Used In	Default	Range	User Setting
	<p>Set Pump Override Time - (CSC 5352 Only) This setting should be used with direct boiler compensation or non-storage Calorifier applications to dissipate heat after demand.</p>	Fine Tune Mode	15	0 to 59 Minutes	
	<p>Set Low Outside Temperature Frost Logic - (CSC 5352 Only) Sets the action of the plant in relation to low outside air temperature. UK logic will start the pump until the Hysteresis (+2°C) has been cleared. European logic will start the pump and control the valve/boiler to the NSB setting until the Hysteresis (+2°C) outside has been cleared.</p>	Fine Tune Mode	1	0 = UK 1 = European	
	<p>Low Space Temperature Setting (CSC 5352 only if space sensor fitted) Sets the temperature at which point the heating will come on in boost until the hysteresis (+2°C) has been cleared. (If an adjustable room sensor is used then this setting must be set to -10°C to remove frost protection. Failure to do so may result in control problems). *or If the INF setting = 3 then this settings sets the max. Return Temperature Ratio. A divisor of 100 is used for the max. Return Ratio Setting, e.g. 83 = 0.83.</p>	Fine Tune Mode	10 *or 83	-10 to 127°C	

Fine Tune Mode (Continued)

Symbol	Description	Used In	Default	Range	User Setting
Svd	<p>Set Day Room Temperature Origin (Only used when a space temperature sensor is fitted) The space temperature will influence the compensated flow temperature for each °C error from this figure. Subject to the fine tune setting (INF)</p> <p>*or</p> <p>If the ING setting = 3 then this setting is the primary base return water origin relative to an outside air temperature of 10°C.</p>	Fine Tune Mode	19 *or 45	0 to 255°C	
	<p>Valve or Boiler Control Selects the controller type.</p>	Fine Tune Mode	0	0 = Valve 1 = Boiler	
Svn	<p>Set Night Room Temperature Origin (Only used when a space temperature sensor is fitted) The space temperature will influence the compensated flow temperature for each °C error from this figure. Subject to the fine tune setting (INF)</p> <p>*or</p> <p>If the INF setting = 3 then this setting sets the Max. Return Low Limit.</p>	Fine Tune Mode	16	0 to 255°C	
Stroke	<p>Set Actuator Stroke Time in Seconds In order for the control loop to operate accurately, the stroke time for the actuator to run from Closed to Open must be entered.</p>	Fine Tune Mode	120	0–999 Seconds	
Mr	<p>Maximum Return set Value Ratio - (CSC 5252 only) If the INF setting = 3 (Max. Return Application) this value sets the set point ratio. The outside air origin is 10°C. A divisor of 100 is used for the Max. Return Ratio setting, e.g. 83 = 0.83.</p>	Fine Tune Mode	83	–10 to 127	

6.5. TIME-SCHEDULE

The default schedule is programmed as:

Day No.	Day	First ON Time (1)	First OFF Time (2)	Second ON Time (3)	Second OFF Time (4)
1	Monday	08:00	00:00	00:00	17:00
2	Tuesday	08:00	00:00	00:00	17:00
3	Wednesday	08:00	00:00	00:00	17:00
4	Thursday	08:00	00:00	00:00	17:00
5	Friday	08:00	00:00	00:00	17:00
6	Saturday	00:00	00:00	00:00	00:00
7	Sunday	00:00	00:00	00:00	00:00

Please note, if switching points 2 and 3 are not required then the time at these points should be programmed to zero (00:00).



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