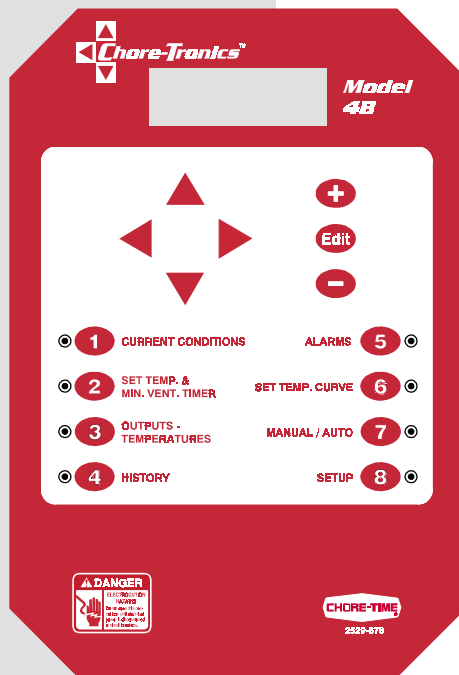




Model 4B/EVS Control



MT155B-01 788

User / Installer Manual

MT1556A
August 1998

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General

Chore - Time Warranty

Chore-Time Equipment warrants each new product manufactured by it to be free from defects in material or workmanship for one year from the date of initial installation by the original purchaser. If such a defect is found by Chore-Time to exist within the one year period, Chore-Time will, at its option, (a) repair or replace such product free of charge, F.O.B. the factory of manufacture, or (b) refund to the original purchaser the original purchase price, in lieu of such repair or replacement.

Conditions and limitations:

1. The product must be installed and operated in accordance with instructions published by **Chore-Time or warranty will be void.**
2. Warranty is void if **all components** of a system are not supplied by **Chore-Time.**
3. This product must be purchased from and installed by an authorized Chore-Time dealer or certified representative thereof, or the warranty will be void.
4. Malfunctions or failure relating to or resulting from misuse, abuse, negligence, alteration, accident, or lack of proper maintenance, or from lightning strikes, electrical power surges or interruption of electricity, shall not be considered defects under this warranty.
5. This warranty applies only to systems for the care of poultry and livestock. Other applications in industry or commerce are not covered by this warranty.

Chore-Time shall not be liable for any **Consequential or Special Damage** which any purchaser may suffer or claim to have suffered as a result of any defect in the product. **“Consequential” or “Special Damages”** as used herein include, but are not limited to, lost or damaged products or goods, costs of transportation, lost sales, lost orders, lost income, increased overhead, labor and incidental costs and operational inefficiencies.

THIS WARRANTY CONSTITUTES CHORE-TIME'S ENTIRE AND SOLE WARRANTY AND CHORE-TIME EXPRESSLY DISCLAIMS ANY AND ALL OTHER WARRANTIES, INCLUDING, BUT NOT LIMITED TO, EXPRESS AND IMPLIED WARRANTIES AS TO MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE SOLD AND DESCRIPTION OR QUALITY OF THE PRODUCT FURNISHED HEREUNDER.

Any exceptions to this warranty must be authorized in writing by an officer of the company. Chore-Time reserves the right to change models and specifications at any time without notice or obligation to improve previous models.

CHORE-TIME EQUIPMENT, A Division of CTB, Inc.
P.O. Box 2000
Milford, Indiana 46542-2000 U.S.A.

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Support Information

Using this equipment for any other purpose or in a way not within the operating recommendations specified in this manual will void the warranty and may cause personal injury.

*** {Note}** — | **As with all electronic controls, we recommend the use of a backup system. This will provide continuous operation in the unlikely event of a control failure.**

Distributor and Installer Information

Please fill in the following information about your Product.
Keep this manual in a clean, dry place for future reference.

Distributor's Name _____

Distributor's Address _____

Distributor's Phone _____ **Date of Purchase** _____

Installer's Name _____

Installer's Address _____

Installer's Phone _____ **Date of Installation** _____

System Specifications _____

Introduction

This manual is designed to provide comprehensive planning, installation, operation, and parts listing information. The Table of Contents provides a convenient overview of the information in this manual.

Read this manual before operating your Control.

If you have any questions regarding your Control, please contact your local Chore-Time dealer.

Explanation of Symbols and Special Manual Elements



<Caution>

Cautions alert you to potential damage to the Controller, if the procedures are not followed carefully.



! Danger !

Dangers alert you to potentially hazardous situations which, if not avoided could result in death or personal injury.

*** {Note}**

Notes contain additional information or “reminders” of important information you should know.

Safety Instructions and Warnings

- Read all instructions in this manual carefully, before operating the Control.
- Ground all electrical equipment for safety.
- The installation of the Control must be done by an authorized technician / installer
- All wiring should be done by a qualified electrician in accordance with local and national electrical codes.
- Electrical current to control must be hard wired into breaker box, eliminating any receptacle.
- Control should be located in an area that is protected from the elements.
- Front cover must be kept closed at all times except when front panel is in use.
- Control should be mounted securely to an internal wall or to a board that is mounted to a wall.
- **As with all electronic controls, we recommend the use of a backup system. This will provide continuous operation in the unlikely event of a control failure.**
- It is recommended that access codes be used to avoid unintentional alterations to the settings.
- It is recommended that an audible warning device (i.e. siren, phone dialer, etc.) be used to inform grower of unacceptable conditions.
- Check the Control regularly for possible malfunctioning. Notify your local Chore-Time distributor of any problems.
- It is recommended that the control be energized year round. This will help the interior of the control to stay dry, and extend the life of the memory backup battery. If the house is empty, use the manual switches to discontinue the function of equipment wired to the control.



<Caution>

- Check your Control regularly for proper functioning. This control is manufactured to provide reliable operation as well as an alert system to notify you of system failures. However, this cannot be 100% guaranteed because of circumstances that are beyond Chore-Time's control. Since this control is helping to provide a living environment for livestock, it is recommended that a Back-Up system be provided in the unlikely event of a system failure. Failing to provide a Back-Up will be viewed as the user's willingness to accept the risk of that loss.

- Chore-Time takes no responsibility for any possible damage as a result of improper settings and non or partially functioning installation.

- Chore-Time takes no responsibility for any possible damage due to failure, damage, or malfunction resulting from misuse, abuse, negligence, alteration, accident, lack of proper maintenance, improper or insufficient power sources or electrical connections, impact of foreign objects, tornado, hurricane, other violent storm, flood, fire, pollutants, chemicals, acts of God, or other causes outside the reasonable control of Chore-Time.



! Danger !

- Do not use running water or high pressure washers on or around your control.

Notice to Electrician

Each relay output in this Chore-Tronics™ control is designed to control 1 H.P. for many years of service. The relays are single pole, normally open contacts and break only one line of the power to the various loads. (The control is not to be considered the disconnect device for motor loads.) If a load of more than 1 H.P. is controlled by a relay in the control, additional contactors are required and some of the basic flexibility of the control is compromised. It is very important that the owner/integrator understands that the grouping of loads compromises flexibility.

It is recommended that the installation diagram on **page 29** be used to configure the house, and the relay decal inside the box is filled out completely. If this step is completed prior to wiring, it will eliminate any unnecessary confusion. Filling out the relay position decal will help to properly group the loads.

Initial Setup

1. Answer all questions and adjust all settings in *Screen #8*. In this screen the relay numbers are associated with the output names in the drawing on **page 29**. This must be done first in that the other screen's contents are affected by the answers and settings of *Screen #8*.
2. Answer all questions, and adjust settings in Screens # 2,3,5,6.
3. Recheck all screens to verify everything is as desired.



! Danger !

While going through the setup steps, place “Auto/Manual” in “Man” and in “Off” position until the process is completed.

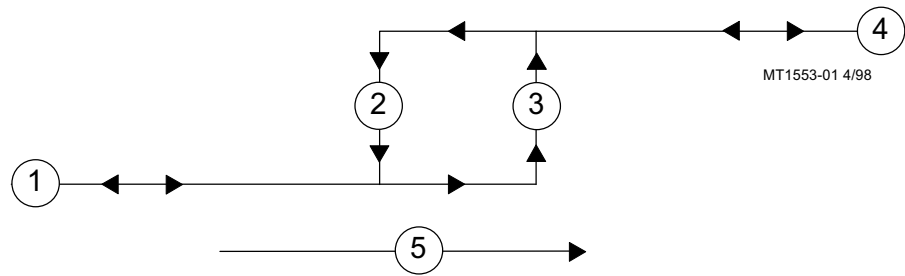
*** {Note}**

Ignore alarms until setup process is completed. Then reset alarm system as described in Alarms section of this manual.

Types of Outputs

EXH FAN, TUN FAN, COOL AND STIR FAN

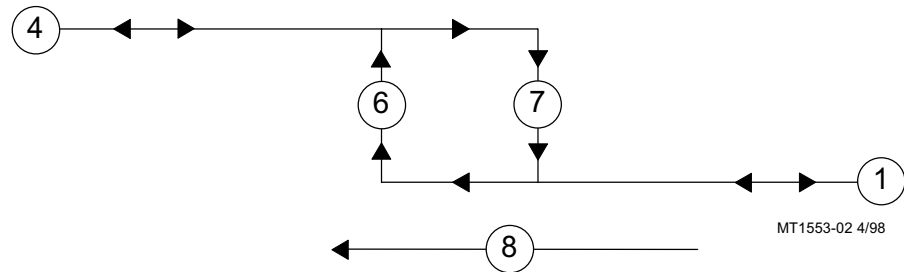
(Relay contacts close, supplying power to the equipment on temperature rise).



Key	Description
1	Output Off
2	Fan Off (temp falling)
3	Fan On (temp rising)
4	Output On
5	Temperature Increasing

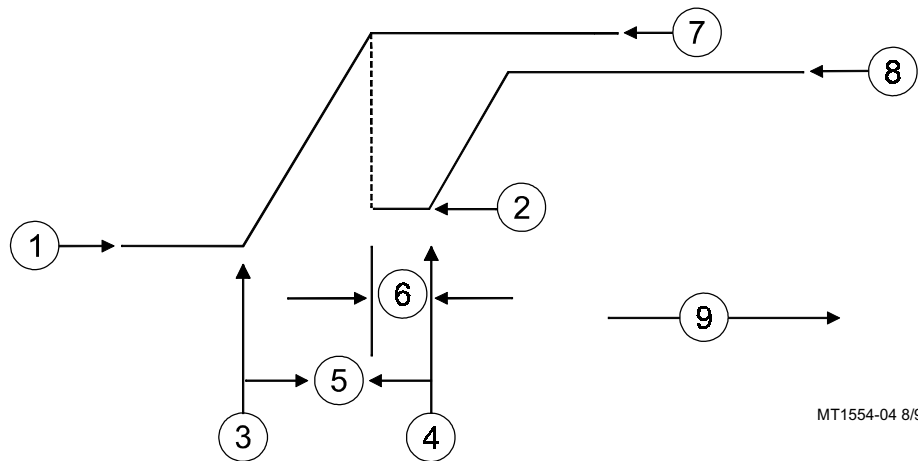
HEAT ZONE

(Relay contacts close, supplying power to the equipment on temperature fall).



Key	Description
1	Output Off
4	Output On
6	Heat On (temp falling)
7	Heat Off (temp rising)
8	Temperature Decreasing

VAR FAN 1 & 2



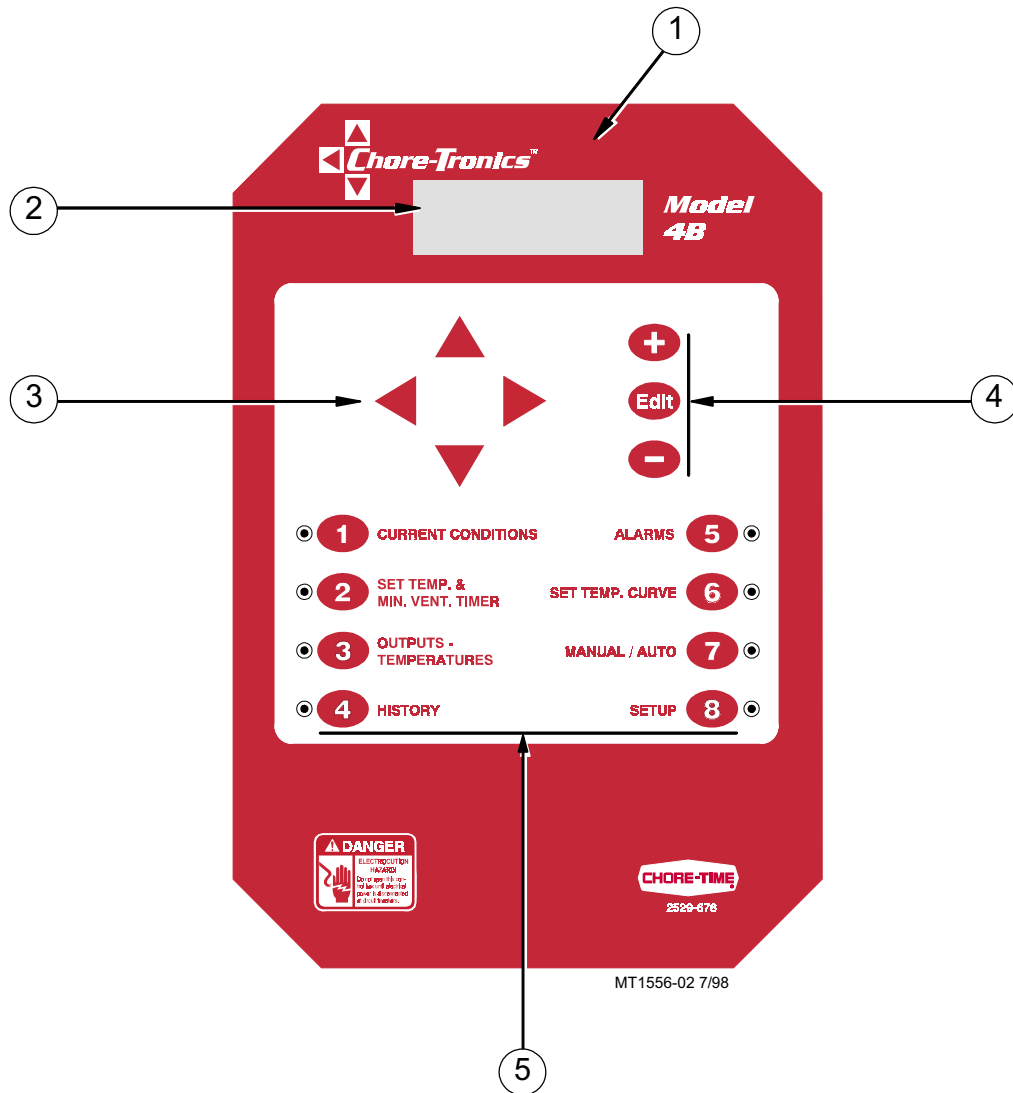
Key	Description
1	Minimum Speed 1
2	Minimum Speed 2
3	*Variable Fan 1 – on
4	*Variable Fan 2 – on
5	2.5° Fahrenheit – minimum allowed
6	.5° Fahrenheit – fixed
7	Variable Fan #1 – Full Speed
8	Variable Fan #2 – Full Speed
9	Increase Temperature

*See *Outputs-Temperatures* BUTTON 3

*** {Note}** — 1, 2, 3, and 4 are the only values that can be edited. If the variables are to function independently of each other, the “On” for variable 2 has to be set at 2.5°F above the “On” for variable 1. If the “on” for both variables are the same, then they will function identically.

Introduction to Control

Description of Control Front Panel



Item	Description
1	Model 4 Control Shown
2	Viewing Screen
3	Navigation Buttons
4	Edit Buttons
5	Subject Buttons

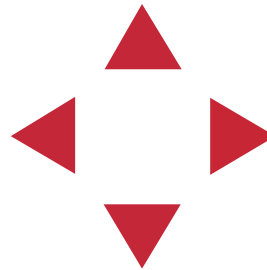
Viewing Screen

The viewing screen has a display which can show 4 lines, each containing 20 characters. This is the area that will display the requested information when a subject button is pressed. The viewing screen will always remain lit. When other subjects are not shown, the *Current Conditions* screen will be displayed

Room Temp	72.8
Set Temp	72.0
Check Alarms	
13 Jul 1998	2:30p

Navigation Buttons

These buttons allow you to scroll up and down in those few screens that have more information than will fit on the screen. When **HOLDING DOWN** an *up* or *down* arrow button, this will activate “fast forward”, which accelerates the scrolling process. The *left* and *right* arrows are used only when you are in the *Edit Mode* (explained below) and will move a cursor to an editable (changeable) position. This will highlight the area you want to change.



Edit Buttons

When the button labeled **EDIT** is pressed and you are looking at a screen that has editable fields, a cursor will appear. With the *Navigation Buttons*, you can move the cursor to the position on the screen you want to edit. By pressing the “+” or “-” button, it will change the numerical value up or down, or if you are changing text (i.e. “yes” or “no”) it will select the possible text choices. These buttons also have “fast forward” which will accelerate the changing of numbers.



Security

To provide for security in setting your controls, there is an optional security feature that will appear only when you initiate the *Edit* process. When you press the **EDIT** button, the control will automatically ask for an access code. This is a four digit number that you have selected while setting up the control and is explained under the “**Set-Up**” section. Once you have inserted the correct code, the control will allow you to make all the edits you need. However, if five minutes have passed since your last edit, and you would like to make further edits, you will have to reinsert your access code. As long as you are working with the settings and the five minutes have not elapsed, you can make as many edits as you need without re-inserting the code.

* {Note}

An example of using the *Edit Buttons* and the *Navigation Buttons* are discussed later in this section.
See “How to Maneuver in the Viewing Screen”

Subject Buttons

On the front of the Controller are 8 subject keys each with an indicator light.

As each subject button is pressed, the subject that is described beside the button will appear on the screen and the light on the other side of the button will be lit. After viewing that subject for five minutes, and if no other buttons are pressed, the control will automatically return to *Current Conditions*.

An explanation of each subject is described in the following section entitled “**Operation**”.

How to Maneuver in the Viewing Screen

- The procedures below give a brief overview on the use of the *Navigation Buttons* and the *Edit Buttons*.
- For this example we will be looking at the *Setup* Screen. (*Button 8* on the Control front panel).

Using the Navigation Buttons

1. Press **BUTTON 8**.
Setup screen for viewing appears (**Figure 1**).

House Number =	1
°F	
12H	
Time	11:01p

Figure 1. Setup Screen.

At this point you can move from line to line by pushing the **DOWN ARROW** or the **UP ARROW**. This will cause the text to either scroll up or down one line at a time.

2. Press the **DOWN ARROW** once.
The text will scroll one line (**Figure 2**). If you push the **UP ARROW** once, the text will scroll back to the previous line as shown in **Figure 1**.

°F	
12H	
Time	11:01p
Date	07 Jul 98

Figure 2. Setup Screen.

* {Note}

The **LEFT** and **RIGHT** arrow keys are only functional in the *Edit Mode*.
See following page on the use of the *Edit Buttons*.

Using the Edit Buttons

- This example gives you a brief summary on how to use the *Edit Buttons* in conjunction with the *Navigation Buttons* to edit values.
- For this example we will be looking at the *Setup Screen*. (*BUTTON 8* on the Control front panel).

1. Press **BUTTON 8**.
Setup screen for viewing appears (**Figure 3**).

House Number =	1
°F	
12H	
Time	11:01p

Figure 3. Setup Screen.

2. Press the **EDIT** button.
*(If a screen comes up asking you for an “Access Code”, enter it at this time. If more information is needed please turn to the operation section **page 27 description #11.**)*

*** {Note}**

This activates the cursor and allows you to edit certain settings. **Figure 4** shows what the screen looks like.

- **Notice that the settings are highlighted when they can be edited.**

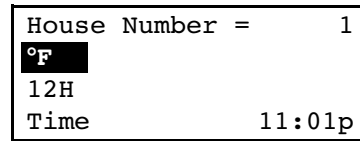
The white text with black background designates those areas that can be edited to the individual growers specifications. When viewing the actual Control Display, the text will be black with a shaded green background.

House Number =	1
°F	
12H	
Time	11:01p

Figure 4. Setup edit Screen.

3. Press the (+) or (-) buttons to edit the House #.
The (+) key will increase the value and the (-) key will decrease the value.

4. Press the **DOWN ARROW** (Figure 5).



```
House Number = 1
°F
12H
Time 11:01p
```

Figure 5. Setup edit Screen.

5. Press the (+) or (-) buttons to change from Fahrenheit to Celsius. In this case the (+) and (-) buttons select different text choices.
6. If two or more editable settings are on the same line, the *left* and *right* arrow buttons will be used to move between those positions.

*** {Note}**

To exit the *Edit Mode* — Press the EDIT key. This will take you out of the edit mode and turn off the cursor.

When a value or text is edited, it is immediately saved in the control. This eliminates the need for an enter key.

Operation and Description of Function Settings

1

Current Conditions Screen

- This screen shows a brief summary of the current conditions of the house. There are **no editable** values in this screen—it is for viewing only.

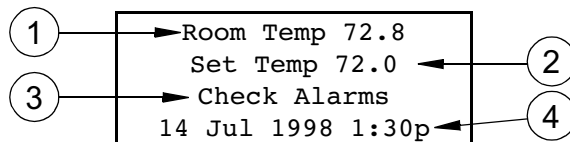


Figure 6. Model 4B Current Conditions Screen

- Room Temperature** - this indicates the current room temperature.
- Set Temperature** - this is the temperature you want to achieve in your house through the use of heating, cooling, and ventilation. This is assigned in the *Set Temp & Min. Vent Timer* screen *BUTTON 2*.
- Check Alarms** - this will appear (flashing) if the control detects an alarm condition. This will continue to appear until the condition is corrected. Refer to the *Alarms* screen *BUTTON 5*.
- Date** - shows the current date and time. Refer to the *Setup* screen *BUTTON 8*.

2

Set Temperature and Minimum Vent. Timer.

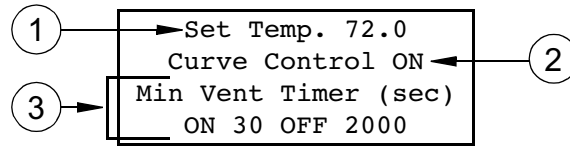


Figure 7. Model 4B Set Temp. & Min. Vent Timer Screen

1. **Set Temperature** - this is the temperature that you chose to operate your house at and the control will do its best to maintain. This value can be changed by using your edit procedure discussed earlier.
2. **Curve Control On** - this indicates if the set temperature curve is activated, (this function is activated in the *Set Temp Curve* screen—*Button 6*). If “on”, then the curve will make adjustments automatically to your temperature. This is **non-editable** in this screen.
3. **Minimum Vent. Timer** - this is where you set your on and off values (in seconds) for the timer.

*** {Note}** — | If the Set Temperature Curve is off, there is nothing shown. It’s “Curve Control On” or blank.

3

Outputs–Temperatures

- This Output Temperature screen describes how your control is set to operate.

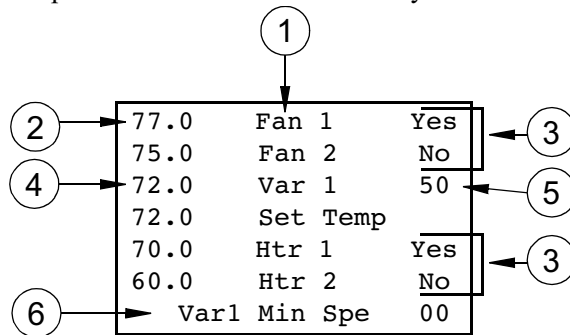


Figure 8. Model 4B Output Temp. Screen

- Output** - This gives a complete list of each piece of equipment that is hard wired into the control — these are assigned in the *Setup* screen *BUTTON 8*. This allows you to see what will happen in the house as the temperature moves away from set temperature.
- Here is where you enter the temperatures you will assign to turn a particular device on. Heat settings will automatically be positioned below set temperature.
- This indicates the current status of the equipment, “ON” or “OFF”
- This example shows that one variable speed output will be used.
- This indicates the percent of variable speed the fan(s) are currently running.
- This is where you indicate the minimum speed in percentage, the optional variable speed(s) will run.

4

History

Mon	HH:MMa	000.0
	HH:MMa	000.0
Sun	HH:MMa	000.0
	HH:MMa	000.0
Sat	HH:MMa	000.0
	HH:MMa	000.0
Fri	HH:MMa	000.0
	HH:MMa	000.0
Thu	HH:MMa	000.0
	HH:MMa	000.0
Wed	HH:MMa	000.0
	HH:MMa	000.0
Tue	HH:MMa	000.0
	HH:MMa	000.0

Figure 9. Model 4B History Screen

1. This indicates the day of the week with the current day showing at the top.
2. Time of day high and low temperatures were recorded.
3. Minimum temperature recorded in your house for the current day since last midnight.
4. Maximum temperature recorded in your house for the current day since last midnight.

*** {Note}** — This is a non-editable screen.

5

Alarms

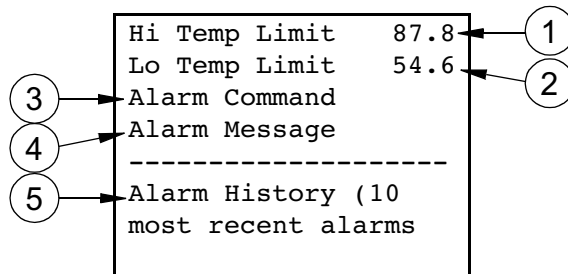


Figure 10. Model 4B Alarms Screen

*** {Note}** — The alarm output can be connected to external devices such as sirens or dialers. The control itself will present a visual display in screen “1” and screen “5”.

1. **Hi Temperature Limit** - this is where you enter the high temperature alarm limit. When the room temperature reaches this value, the alarm relay will activate your alarm device and the light next to the #5 BUTTON will blink. You will also see a message in the *Current Conditions* screen **BUTTON 1**.
2. **Low Temperature Limit** - this is where you enter the low temperature alarm limit.
3. **Alarm Command** - this is where you toggle between the following commands in order to react to the alarm.:
 - Enabled
 - Disabled
 - Test
4. **Alarm Message** - if there is an alarm present, this area will advise you as to what the alarm condition is. The alarm possibilities are as follows:
 - Minimum temperature
 - Maximum temperature
 - Sensor failure
 - Power failure

*** {Note}** — If the alarm message is a group of number’s, the problem deals with the internal workings of the control and does not reflect problems within your house. If an alarm code appears in this space, notify your local distributor and advise him of the code.

5. **Alarm History** - this will list your last 10 alarms and when they occurred.

6

Set Temperature Curve

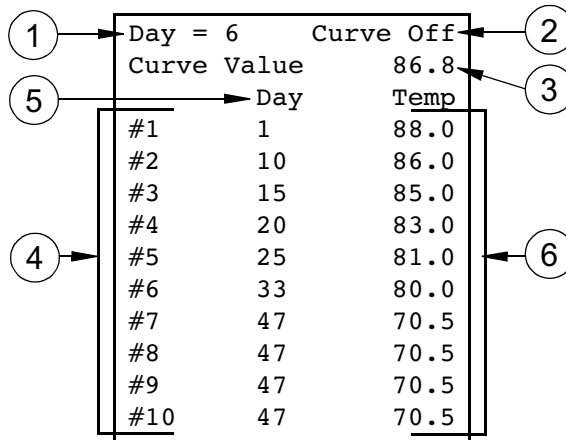


Figure 11. Model 4B Set Temperature Curve Screen

1. **Day** - usually this would be the age of the birds or livestock at this moment. This also determines the position on the curve.
2. **Curve on/off** - shows whether curve is on or off, this area is editable.
3. **Curve Value** -the set temperature at this moment according to the curve. The curve's set temperature is continuously calculated and is updated in .1 degree increments.

The set temp in *screen #2* can be changed while the curve is on. This shifts the curve by the amount of change. Changing the set temp back to the curve value at a later time will return the set temp to the curve's listed value in this screen.

4. **Curve Bend Points** - the curve has a maximum of ten points which define the curve.
5. **Day** - these are the days you pick to correspond with each of the ten bend points.
6. **Set Temperatures** - these are the set temperatures at midnight of the assigned days of the curve.

7**Manual/Auto**

The diagram shows a screen with a list of equipment settings. A red circle with the number 7 is at the top left. A box contains the following text:

Fan 2	Auto	Off
Fan 1	Auto	Off
Var 1	Auto	000
Htz 1	Auto	Off
Htz 2	Auto	Off

Callout 1 points to the left side of the box. Callout 2 points to the 'Auto' column. Callout 3 points to the 'Off' column.

Figure 12. Model 4B Manual/Auto Screen

1. This gives you a list of each piece of equipment that you designated in the *Setup* screen *BUTTON 8*.
2. This is where you chose to run the equipment in “Auto” or “Man” (manual) by moving between the two choices while in Edit.
3. While in “Man” (manual) select between “OFF” or “ON”. In the case of a variable speed fan, enter the desired speed in percent from 25 to 100. To switch the variable(s) to off, enter all zeros.

8

Setup

- This is probably the most important screen in your control. This is the area that configures your control to meet the needs of your specific house management style. This setup should be done by a certified installer or distributor technician.

Figure 13.

* {Note}

Important!

A full understanding of what this screen does is essential before modifying it.

All values below indicate a possible sample situation

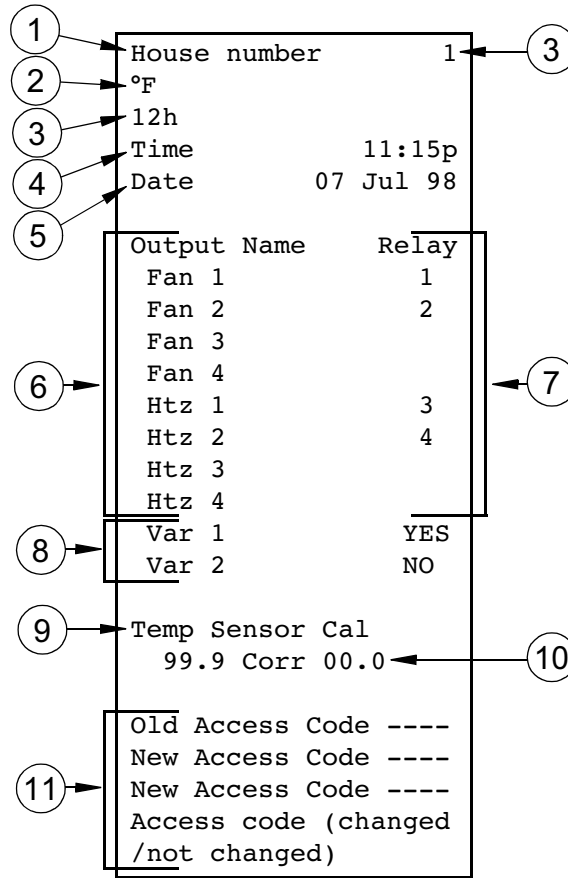


Figure 13. Model 4B Setup Screen

Setup - continued

*** {Note}** — All setups are performed in the *Edit Mode* with the use of the *Navigation Buttons* to move you around to editable positions and the (+) and (-) buttons to make changes and to answer questions.

1. **House Number** - this is where you identify the house (barn) that the control is being setup. This is important when a PC is part of your system.
2. **Temperature Units** - Choose between Fahrenheit or Celsius temperature readings.
3. **Clock Type** - if you want to have time of day represented in a 12 hour clock (a.m. and p.m.), or a 24 hour clock format.
4. **Time** - Insert the current time of day.
5. **Date** - Insert the current date — DD:MMM:YY.
6. **Output Name** - this is the list of possible equipment that the relays can be wired to — this is non-editable.
7. **Relay** - this is where you assign the relays to the equipment following the houses wiring diagram.
8. **Variable Speed** - If you are using one or both of the optional variable speed outputs, you indicate that by selecting “YES” or “NO”.
9. **Temperature Sensor Calibration** - sensors should not require calibration. You can define the readings if desired by using an accurate device to check the sensors. If you find that there is a discrepancy, simply insert the temperature your accurate device is reading.
10. This value is for troubleshooting purposes and is not editable.
11. **Access Code (security)** - an access code is available for added security if needed. The access code is a four (4) digit number. This number is entered by using the numbers of the **Subject** buttons.

For example:

*If the access code were “1234”, you would press the **Current Conditions** button, **Set Temperature-Timer** button, **Outputs Temperatures** button, and the **History** button when asked for the access code.*

From the factory, the Access Code is “1111”. This is a special number which causes the control to not ask you for the access code when you first press the **Edit** button.

If you decide to define your own access code, it is done in this area of the setup screen and respond to the screen’s question.

If you later decide you don’t want to use an access code, you simply change the access code back to “1111”. If you forget your access code, call Chore-Time. It is certainly recommended that you write down your access code in a safe place.

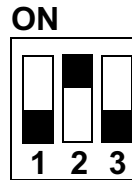
Setup - continued

Variable Speed Dip Switch Positions

1. Switch position for first variable speed module.



2. Switch position for second variable speed module.



*** {Note}** — Since variable speed modules are added in the field, they will NOT come preset from the factory.

Actual House Layout

1. Indicate position of Sensor.
2. Fill in the list of relay numbers with device(s) each is controlling.

- | Relay | Device Controlled |
|-------|-------------------|
| 1. | |
| 2. | |
| 3. | |
| 4. | |

Suggested abbreviations for House Layout	
H1	HT Zone 1
X1	EXH Fan 1
ST1	STIR Fan 1
C1	COOL 1
S1	Sensor 1
V1	VAR Fan 1
V2	VAR Fan 2

Variable Speed Add-On's

EVS Control (External Variable Speed)

The EVS is a second variable speed control. Due to the size of the main control, the second variable speed must be located in its own separate box — see “Wiring Diagram” later in this manual.



PB20 (Power Booster 20A)

The PB20 is used when you need additional amperage capacity for your variable speed. Using the PB20 will give one of the variable speed outputs 20 Amp capacity.

Both variable speed outputs can be increased to 20 amps. But to do so, you will need two PB20 boxes — see “Wiring Diagram” later in this manual.



Technical Specifications

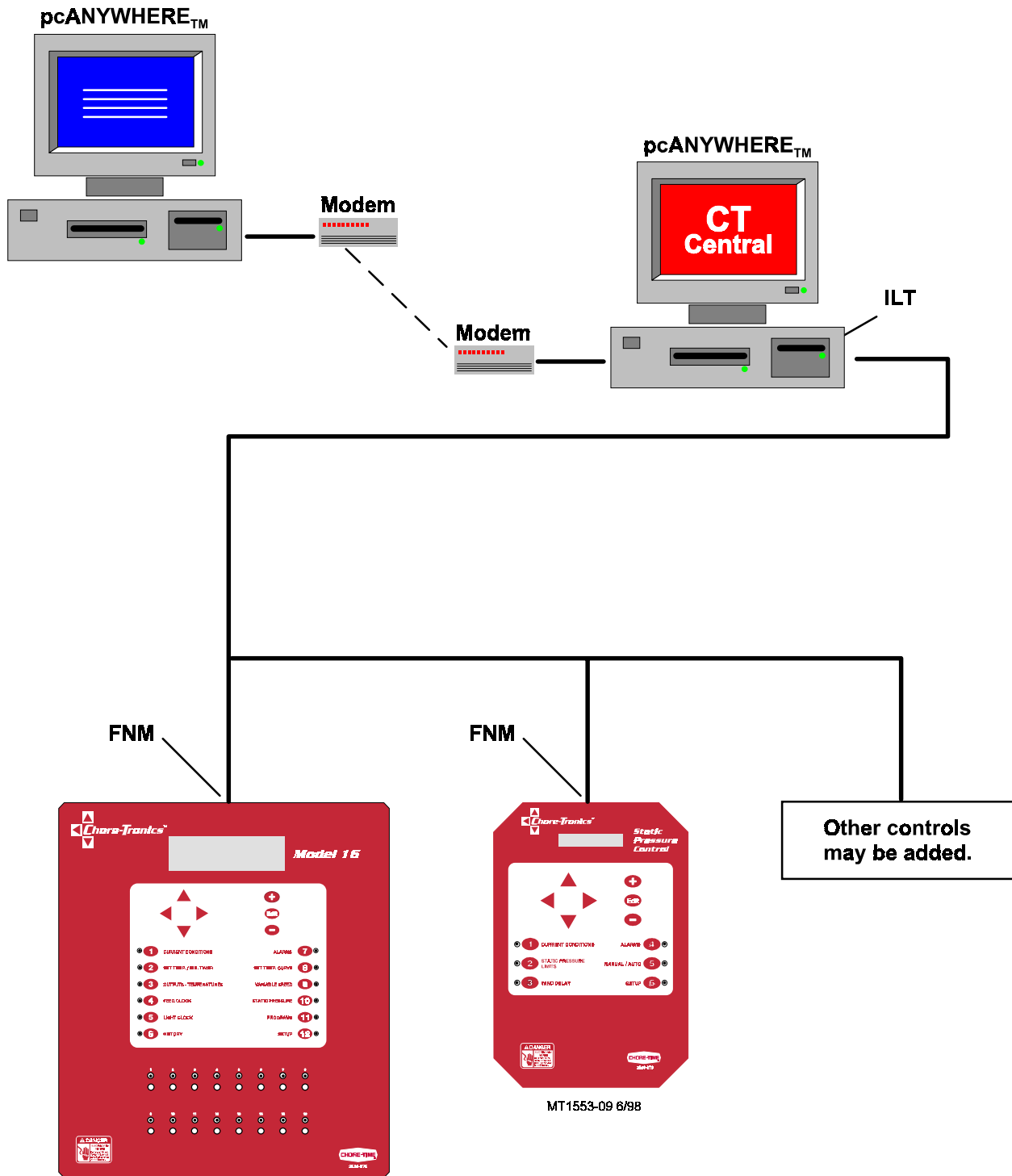
This information is to follow.

Technical Specifications - continued

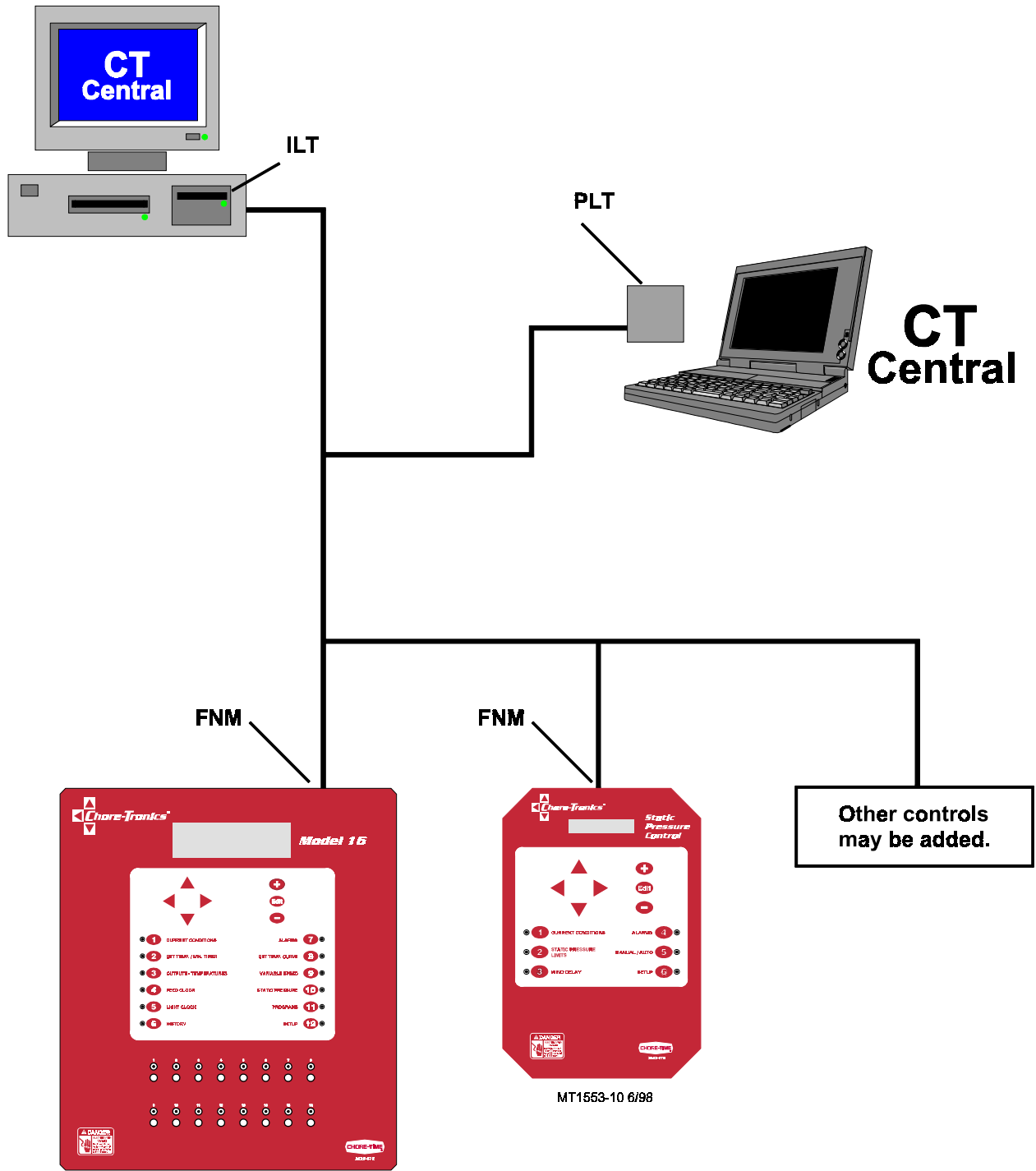
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PC Connection Overview

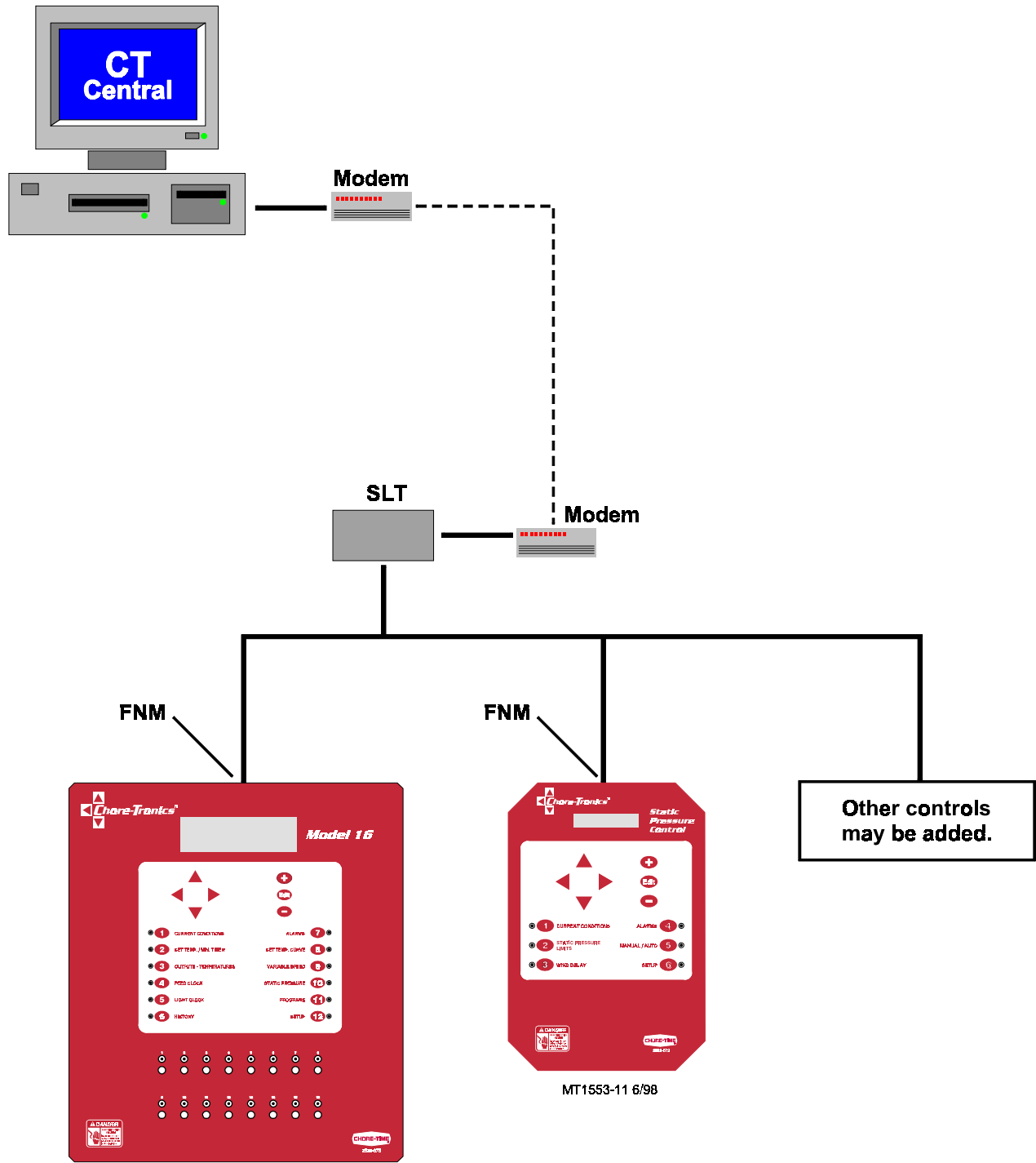
Off-Site PC Connecting to On-Site PC with Controls



On-Site PC with Controls



Off-Site PC with Controls



Trouble Shooting

Problem	Possible Cause	Solution
The Screen is blank, but outputs appear to be operating normally.	The screen is defective.	Replace the display.
	The flat cable between the KD board and the screen is defective, loose or disconnected.	Readjust connections or replace cables.
The screen does not respond when pressing any of the Subject Buttons	The KD board is defective.	Replace the KD board.
An output does not work under any condition	The relay board is defective.	Replace the relay board.
The control seems completely dead — the screen shows nothing under any condition, and the indicator lights are off	The fuse for incoming power is blown.	Replace the fuse.
	The circuit breaker supplying power to the control is tripped.	Reset the breaker.
	The power supply or I/O board is bad.	Replace the power supply or I/O board.
	The KD board is defective.	Replace
The failed temp. sensor or the readings are clearly wrong.	The flat cable from the power supply board to the IO board or IO board to the KD board is defective.	Readjust or replace.
	Bad connections between the temperature sensor and the Model 4B controls IO board.	Correct the bad connection.
	Defective or damaged sensor.	Replace
	Defective IO board.	Replace

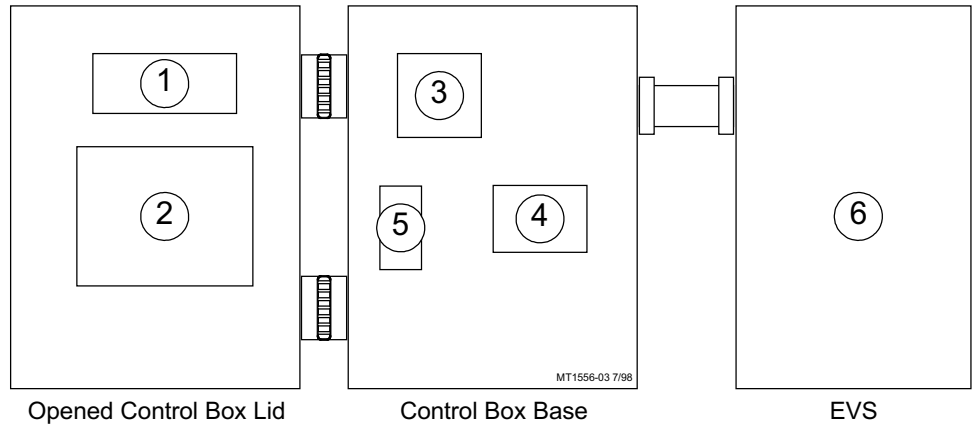
Wiring Diagram

This information is to follow.

Wiring Diagram - continued

This information is to follow.

Parts Listing



Item	Description	Part No.
1	4x20 Display	41317
2	KDCM.1 Keyboard Display Module	41315
3	IOCM.1-2 Control Module (Model 4B)	41311
4	RM.4 Relay Circuit Board (4 relays)	41305
5	Variable Speed #1 (optional)	40729
6	Variable Speed #2 (optional)	40735



Contact your nearby Chore-Time distributor or representative for additional parts and information.

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