



Electronic Service Inc.

VISSMANN

VITOTALK

KW Electronic Service Inc. and Viessmann, partners in heating technology. Controls newsletter, January 2002, Issue 1

Welcome!

This is the first edition of the *VITOTALK* newsletter. This is a new forum designed to inform, educate and communicate new changes with Viessmann controls.

Along with covering new control information, the newsletter will visit past issues with SR, Trimatik, Dekamatik controls as well as their associated accessories.

Technical electrical topics such as electrical diagnosis and theories will be covered from time to time.

If there are specific issues you feel should be covered in future issues, forward them to KWE to attention of Jeff.

INTERFACE ACCESSORIES

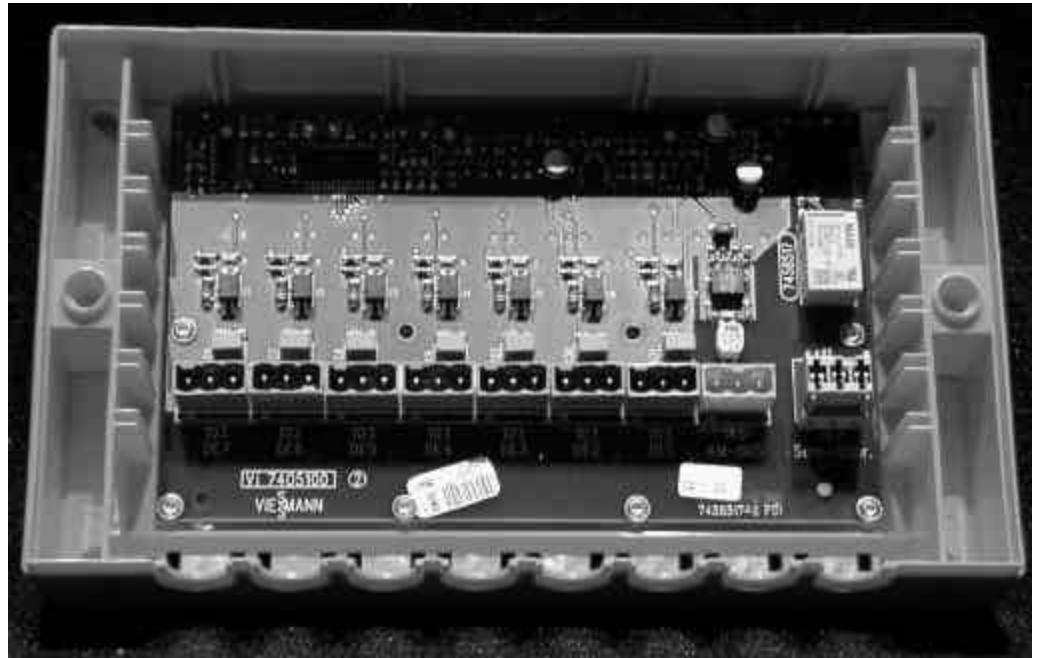
FT Module vs.

Switching Module V

Since the introduction of the Vitotronic controls, there has been some confusion regarding the application of these two useful accessories. It should be understood that a Vitotronic control is not compatible with a FT module and a Switching Module V is not compatible with a Trimatik control.

These two accessories do share similar basic functions. The Switching Module V incorporates programming coding changes instead of a dial and a DIP switch like that of the FT module.

Connection of the Switching Module V to the Vitotronic Control is performed by using a supplied interconnection cable with two 145 plugs at either end. One end is plugged into the 145 socket inside of the Switching Module V, while the other end is connected into



Picture showing the insides of a Switching Module V. Note the relay located on the right of PC Board.

either the Bus Expansion Module or into the Vitotronic control. It is always best to use the Bus Expansion Module when multiple devices are being connected to the KM Bus. It allows easy, quick, and reliable connections.

When the Vitotronic control detects the Switching Module V, coding address 94 will change its value from its factory value of 00 to 02. It is always a good practice to verify the change in value by accessing coding level 2 and check the value at address 94. An alternate method would be to look at the scan codes and verify the number of participants on the Viessmann Bus is equal to that of the installed devices.

If a fault does occur a "CE" error will be displayed in the control screen of the Vitotronic control. If this should occur, ensure all the connections are correct.

Like the FT Module, the Switching Module V has an external burner activation input to enable the burner immediately. However, this heat

demand input does function a little differently than that of the FT Module. The override input is divided into two dry contact inputs: one contact for first stage and one contact for the second stage.

When the first stage demand is closed, the boiler will heat to the pre-programmed minimum boiler water temperature set point. This set point is set at address 32. The factory default of this address is 70 degrees C (158 degrees F). If it becomes necessary to have boiler water temperatures above 70 degrees C, address 32 can be changed as required.

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While there is a second stage enable contact, the second stage will naturally come on to achieve the minimum boiler set point temperature. The staging delay may be eliminated by closing the second stage with a dry contact. Now both burners will be turned on to satisfy the boiler temperature set point.

When the external burner activation is on, the mixing valve(s) and pumps will remain in the control mode. If priority needs to be selected, address 33 is where to change this function. Change address 33 from 0 to 1 for priority.

It should be noted that if the heating curve or DHW set points are higher than that of address 32, the boiler will operate at the higher set point temperature.

The external burner disable function is identical to that of the FT Module. As soon as the Vitotronic detects the disable command, the burner will be turned off.

Three features that the Switching Module V have that the FT Module never had are: short-term recirculation pump operation, external fault input and compiled fault indicator.

The short term recirculation pump is triggered by a momentary dry contact. The pump will operate for a specific period of time. The operating time can be changed at address 74. The factory default can be changed from its setting of 5 to anywhere from 0 to 15. This value entered at address 74 is equivalent to time in minutes.

A second feature that is unique to the Switching Module V is the external fault input. This input allows a dry contact signal to be connected to the Switching Module V. When a closed contact is detected by the Vitotronic control, an external fault is triggered.

The fault code "C9" will be displayed as well as the red fault indicator on the front of the control will start to flash. If the fault continues to be detected, a relay in the Switching Module will be triggered. The normally open contact will close, thereby triggering a device connected on the output. The rating of this contact is 0.5A@24VAC.

The fault output plug is shown here at the right. Connection to the relay contacts is accomplished through the 157 plug on terminals S and P.

The Vitotronic 300 is the only control in the Vitotronic series to have a compiled fault output in the power pump module. Like that of the Dekamatik, a relay, small buzzer or indicator can be connected to the PPM's 50 compiled fault output. The connection in the power pump module is wired on the terminal rail. This output is marked "Output 120VAC Alarm".

Once the detected fault has been rectified, the control will no longer register the fault. The fault is stored in the memory of the Vitotronic control for future reference. You may follow the

control instructions to remove this fault from memory. The two remaining functions of the Switching Module V are the external switching of mixing valve and boiler operating modes.

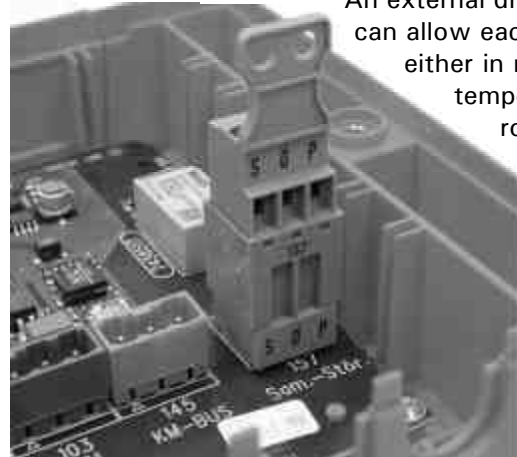
An external dry contact signal can allow each circuit to operate either in normal room temperature or reduced room temperature.

The normal room temperature is determined by the setting of the SUN dial on the front of the control. The remote control may also dictate the set point temperature.

Ensure the correct heating circuit has been selected on the left hand side of the control, before making any adjustments with the dial.

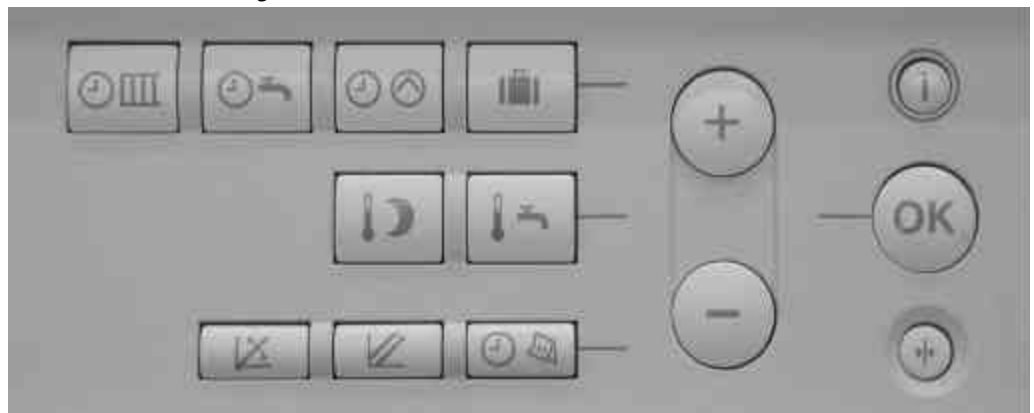
The reduced room temperature is adjusted by pressing the moon button and increasing or decreasing the set point with the + or - signs. These are the same buttons used to increase the room temperature from frost protection.

When the contact for either the boiler circuit or mixing valve circuit is open, temperature calculations are made in the normal room temperature modes. If the contact should close for either circuit, the room temperature will be calculated based on the setting of the moon button for that particular circuit. Keep in mind that this function will also



Normal room temperature dial

Picture showing the buttons on the front of the Vitotronic 200 and 300 controls.



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be effected by the timer settings with respect to the time of day. It should be noted that when the contact is closed for the boiler circuit, the calculated boiler temperature may not be set back if the mixing valve circuit is still in normal operating mode. As always, the boiler has to supply enough heat to the mixing valve circuit. This is generally accomplished by adding a differential temperature to that of the mixing valve set point. This differential temperature is changed at address 05. As with all Viessmann controls, a factory differential of 8 degrees C or 14 degrees F is preprogrammed. The differential can be changed from 0 to 40 degrees C or 0 to 72 degrees F as required.

Once the contact is closed for the mixing valve circuit, the boiler temperature set point will recalculate to the reduced room temperature set point.

At this point, you may be asking "what about the third mixing valve circuit when using a Vitotronic 300?" Well, this is accomplished by using the 143 plug inside of the control. Changing address 91 will allow the control to respond to contact changes for normal and reduced room temperatures.

The Switching Module V can be an invaluable addition to any system whether it be for a pool, spa or snow melt system.

WARNING!

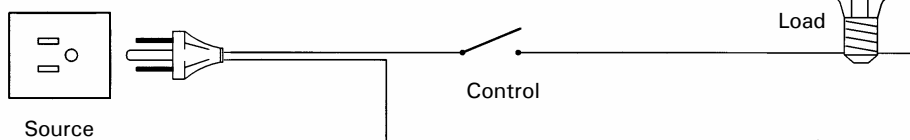
Turn off electric power supply before servicing electrical devices. Contact with live electric components can cause shock or loss of life. If you don't know what you are looking at, or what it does, don't touch it!

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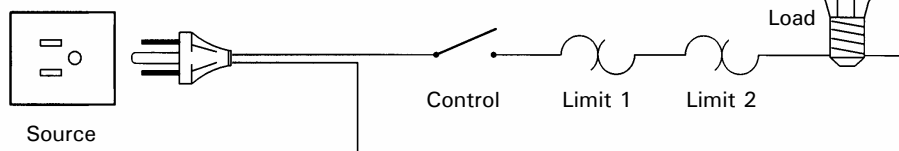
A Little Electrical Theory

A common misconception of the control products that we offer is that they are overly complicated. While this may be true to a certain point, the fact is the operation is generally based on a common everyday series circuit.

Let's define the series circuit: A single conductive path that allows the same current flow through each device. The basic make-up of this kind of circuit is comprised of a power source, conductive path, control device and a load.



A fine example of a basic series circuit in your house is a living room lamp. It is plugged in the wall (power supply), the wire in the cord conducts electricity to the switch (a control), power flow continues to the bulb (a load).



When the switch is off, the light bulb is off. When the switch is on, the light bulb is on.

A single current path starts from the source, continues through the control, through the load and back to the source. The load offers restriction to current flow and thereby determining the total amperage draw from the power supply.

Now, lets add a couple of limits to this same lamp circuit, in total, we have one power supply, three controls (one power switch, two limits) and one load. The only difference between the two circuits is that there are three controls that can turn the lamp off instead of one. If either one of the

limits should open, the single line for current flow is now interrupted and the light will turn OFF.

There is a fundamental law that exists in series circuits and that is: The sum of the voltage drops around a closed loop equals the applied voltage.

When a switch or contact opens, because it offers the greatest resistance to current flow, applied voltage can be measured **across**

the switch/contact terminals. This test is particularly useful in determining open switches in safety circuits.

When diagnosing a safety circuit to determine faults, it is always best to view the circuit in its entirety. Without knowing whether or

not a voltage signal is being applied to the circuit, it is impossible to know if a safety is open. Start by taking voltage readings across the entire circuit and then narrow down the scope. Eliminate each safety until you find one or more safeties that are open and preventing the proper operation of the device.

Common safety circuits that we may encounter are temperature limits, high and low gas pressure switches as well as low water cut off's and flow switches.

In our next issue we will show how this simple circuit can be applied to all the Viessmann boiler controls from the EK/R, to Trimatik's, Dekamatik's and Vitotronics.

Vitotronic Controls: We Have Your Address!

Since the introduction of the Vitotronic controls, many questions have come up with respect to the description of coding addresses. This section is dedicated to addressing the addresses. If there are some personal favorites that you would like **VITOTALK** to explore fully, please send a fax or e-mail to KWE.

The remote Vitotronic displays are very easy to use and installation friendly. Once the DIP switches have been set correctly, for the individual circuits, it is possible to provide room feedback to the control. As with older Viessmann room temperature devices, it is very important to take mass into consideration. A large water volume may influence the way the room feedback operates and thereby effecting comfort levels.

The majority of Viessmann controls operate based on a outdoor reset function. Outdoor temperature is used in fundamental boiler temperature set point calculations. Because of solar gain and other heat sources, it may be necessary to use room feedback to help the overshooting of room temperature.

There are a number of different settings that are possible from the Vitotronic control with respect to indoor feedback. Weather responsive operation is the default setting in each of the circuits. This may be changed for alternate operating methods.

Address b0 allows modification of how the heating circuit is to operate. Please note that if changes to the coding are to be made, ensure the proper circuit is visible in the display along with the address to be changed.

The first option is the selection of room temperature dependant operation during the reduced operation. This is value 1 at the b0 address. Once the timer has switched into the reduced mode, all set point calculations will be influenced by room temperature feedback. As the room temperature

increases, the set point will decrease. In mixing valve circuits, this can be seen by the mixing valve going towards the closed position.

The second option is to select room temperature operation during the normal heating mode and weather responsive operation for the reduced mode. Again, timer settings will influence when the switching takes place. This option can be selected by changing to value 2 at address b0.

The last option is to select full room temperature dependant operation for both normal and reduced operating modes. This option can be selected by changing to value 3 at address b0.

There is an option to select a pure room temperature control of the specific heating circuit selected. By changing address b1 from 0 to 1, the user may select to operate the specific circuit based on the set sun or moon setting. Again, depending on the timer functions, the circuit set point is only dependant on the sun and moon setting.

ROOM INFLUENCE FACTOR

A very important function of room sensing is the room influence factor. This is a variable which is used in a calculation to determine the calculated boiler/supply water temperature.

The value set at this address has the effect of either increasing or decreasing the amount of influence. The higher the number, the greater the gain in heating system response. The smaller the number, the slower the gain of system response.

It must be realized that the difference of the actual room temperature and calculated room temperature will effect the final calculation of influence.

Address b0 must be set to either 1, 2, or 3 for the address b2 to become active. Once b2 is active, you may select an operating range from 1 to 31.

Address C8 has a limiting effect on the amount of room influence.

As a guideline, try the following settings for various systems:

High Temperature Baseboard.

Address B2:31

Address C8:31

Because of the relatively quick response time of copper fin tube baseboard, a increased room influence factor could be used.

Mid-temperature baseboard and panel radiators

Address B2:20

Address C8:20

The increased mass of the mid-temperature baseboard and panel radiators require a decreased room influence factor.

Low temperature, low mass, floor and cast iron systems.

Address B2:10

Address C8:10

A decreased setting of room influence and limits on room influence are used.

Low temperature, high mass radiant floor in concrete.

Address B2:5

Address C8:5

The slow response time of concrete or high mass floors require a much lower setting than that of higher temperature systems.

CAUTION:

Before making any changes to these addresses or any other addresses, be aware of the possible results.

The suggestions herein within are only guide lines and are to be used as such.

Change the coding for the boiler circuit only on boilers without a low limit or for the heating circuit with mixing valve if the remote control is effective for this heating circuit.

