

## Local Communications

Communication to boiler controls within a building envelope, is categorized as *Local*. When used in commercial applications, the Dekamatik boiler control system, in conjunction with HK mixing valve zone controls, are responsible for the operation of the boilers and how heat is distributed to the various mixing valve zones.

When the Dekamatik control system communicates with the Viessmann Vitocom LON Gateway, information that travels between the boilers and mixing valves controls can be accessible from outside of the boiler room.

Smaller commercial applications may require only one boiler, in which case, communication to a Vitotronic 300 or a Vitodens 200, WB2 may also be used.

### Vitocom LON®

The heart of local BMS communication, with a Viessmann system, is the Vitocom LON® gateway. It provides an interface between the Viessmann 2-wire 141 BUS and LON.

The controls which use this method of communication are Dekamatik M1/D1, E/DE, Vitotronic 300 and the Vitodens 200, WB2.

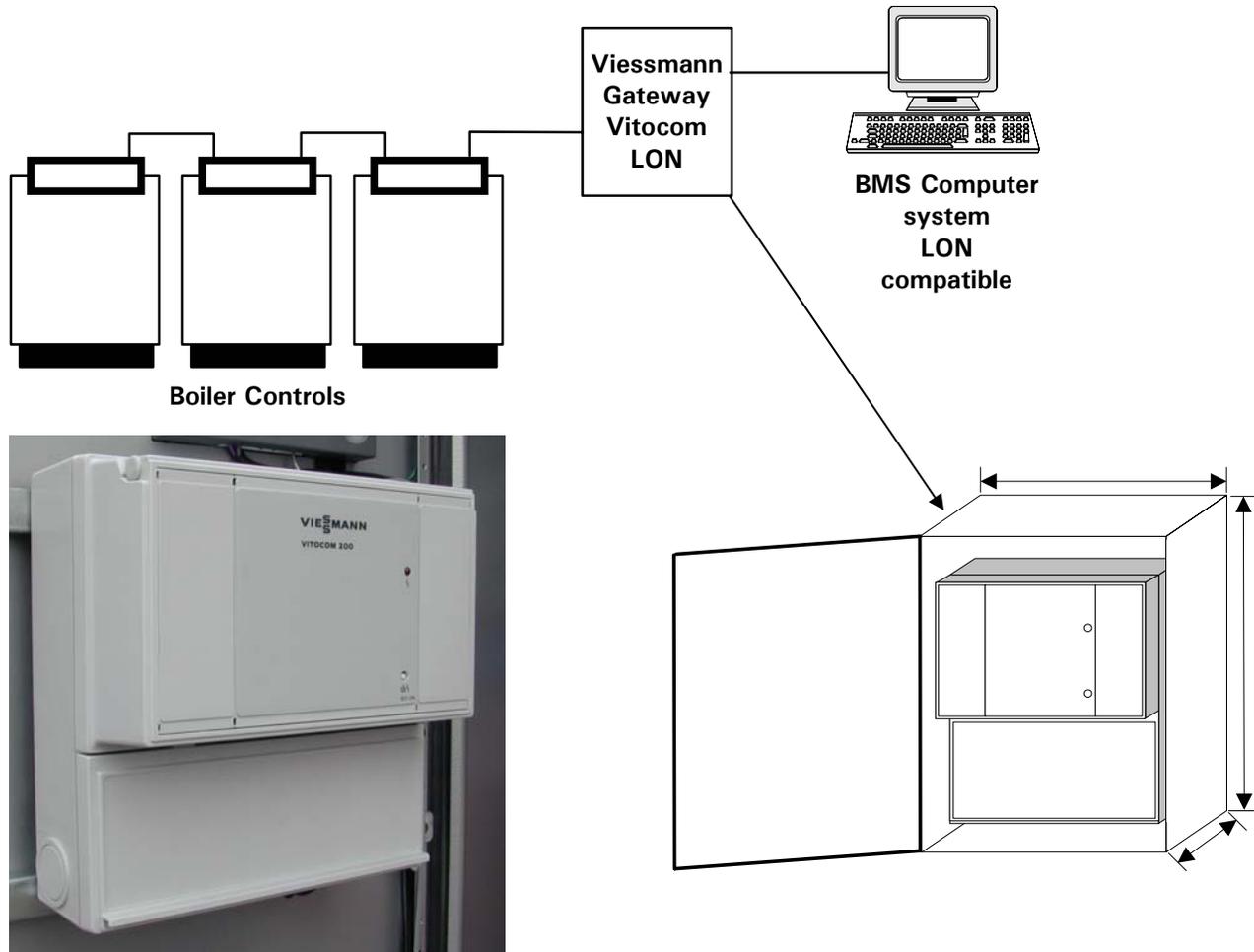
Set point and actual temperatures as well as slope, shift and operation mode

settings are transmitted digitally between the devices. This allows for real time information to be shared over the LON network. This information can then be used elsewhere within the BMS control system.

### Installation

For ease of installation and universality of location, the Vitocom LON is pre-installed in a small control panel. The panel is sized to allow for installation in small areas where space is an issue. The top mounted "gland" plate allows for field installed holes depending on the type and size of conduit used i.e. EMT, PVC or any other approved rigid or flexible conduit material.

## Basic system overview of local BMS communications



**Pictured:** Vitocom LON gateway control installed within dedicated control panel or part of a custom panel.



## Local BMS Communication Continued

### Vitocom 0-10VDC

The Vitocom 0-10VDC communicates digitally with the boiler control via the Viessmann 2-wire 141 BUS. The purpose of this control is to provide a common supply/boiler set point based on a control voltage input from a BMS system.

When the 0-10VDC input control signal is modulated from low to high, the common supply set point is varied from 0 to 100 degrees C proportionally. The set point demand is used to control the burner operation.

The 0-10VDC input signal is used to determine the calculated set point of the boiler control regardless of outdoor temperatures.

Burner modulation control is accomplished by the Dekamatik boiler control based on the 0-10VDC input signal

An alarm output from the boiler controls can be monitored by BMS system. Fault codes can be viewed on the boiler control interface.

### Vitocom BCT

The Vitocom BCT provides a gateway interface between the Viessmann specific 141 BUS and BACnet systems. This communication includes controls such as the Dekamatik M1/D1, E/DE, Vitotronic 300 and Vitodens 200, WB2.

Set point and actual temperatures, as

well as slope, shift and operational mode settings, are transmitted digitally between the devices. This allows for real time information to be shared via BACnet communications.

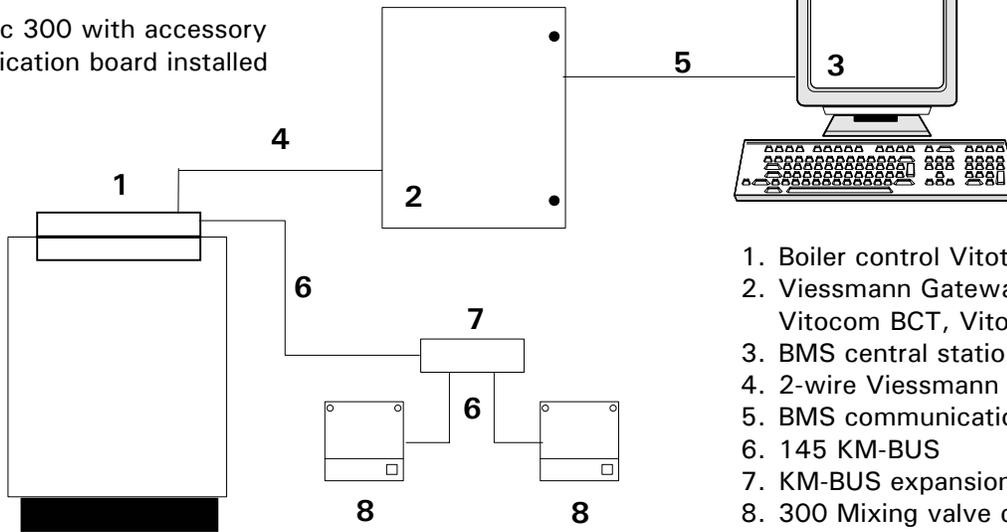
### Vitocom N2

The Vitocom N2 provides a gateway for Johnson Controls N2 enabled controls to communicate with the Viessmann specific 141 2-wire BUS.

Set point and actual temperatures, as well as slope, shift and operational mode settings, are transmitted digitally between the devices. This allows for real time information to be shared via N2 communications.

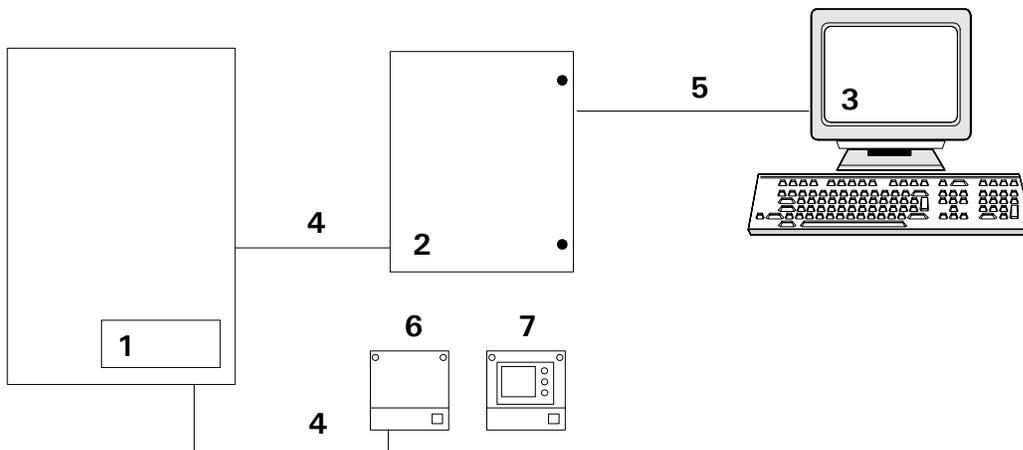
## Residential/Light Commercial Examples

Vitotronic 300 with accessory communication board installed



1. Boiler control Vitotronic 300
2. Viessmann Gateway: Vitocom 0-10V, Vitocom BCT, Vitocom N2, Vitocom LON
3. BMS central station (LON, N2, BACnet)
4. 2-wire Viessmann 141 BUS
5. BMS communications
6. 145 KM-BUS
7. KM-BUS expansion module
8. 300 Mixing valve controller

Vitodens 200, WB2 boiler with accessory communication module installed

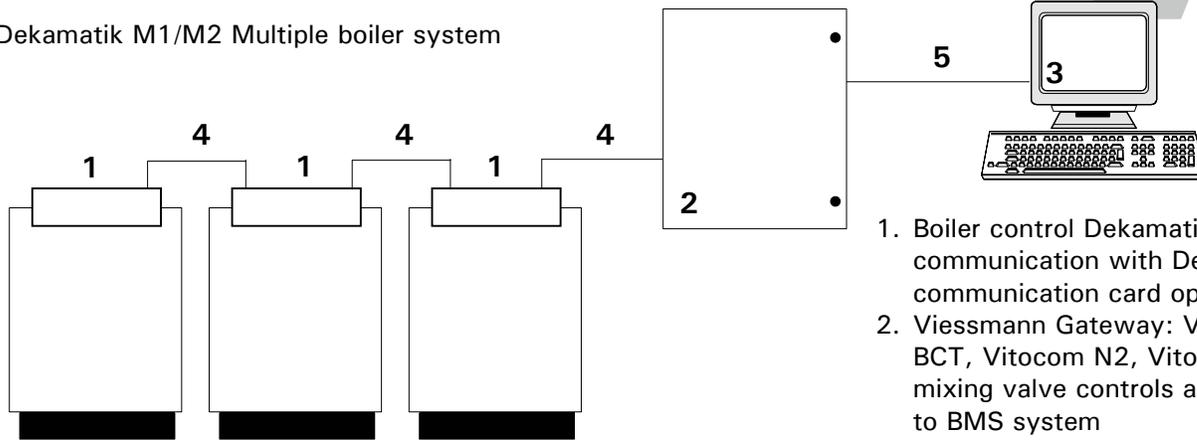


1. Vitodens
2. Viessmann Gateway: Vitocom 0-10V, Vitocom BCT, Vitocom N2, Vitocom LON
3. BMS central station
4. 2-wire Viessmann 141 BUS
5. BMS communications (LON®, N2, BACnet)
6. 300 Mixing valve controller
7. HK1 Mixing valve control with communication card for multiple mixing valves

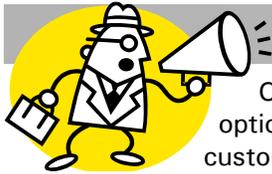
## Local BMS Communication Continued

### Commercial Example

Dekamatik M1/M2 Multiple boiler system



1. Boiler control Dekamatik M1/M2. Single boiler communication with Dekamatik E with communication card option
2. Viessmann Gateway: Vitocom 0-10V, Vitocom BCT, Vitocom N2, Vitocom LON. Optional mixing valve controls available to communicate to BMS system
3. BMS central station (LON®, N2, BACnet)
4. 2-wire Viessmann 141 BUS
5. BMS communications



### Remote Communication Products Overview

Communication options for your customers' new or existing control systems has never been more complete. Whether in their home, cottage, apartment or commercial building, system information has never been so accessible. Communication to their system can be either dial-up, DSL, Cable or wireless web enabled PDA type devices. Extra remote locations, where there are no phone lines or cable, a GPRS connection to their system may be the way to go.

There are a number of options that are currently available to interface a communication package with Viessmann boiler controls. The most economical of these is the telephone

dialer. However, if your customer needs go beyond the functionality of the phone dialer, Vitocom RMA-S or C may fit the bill.

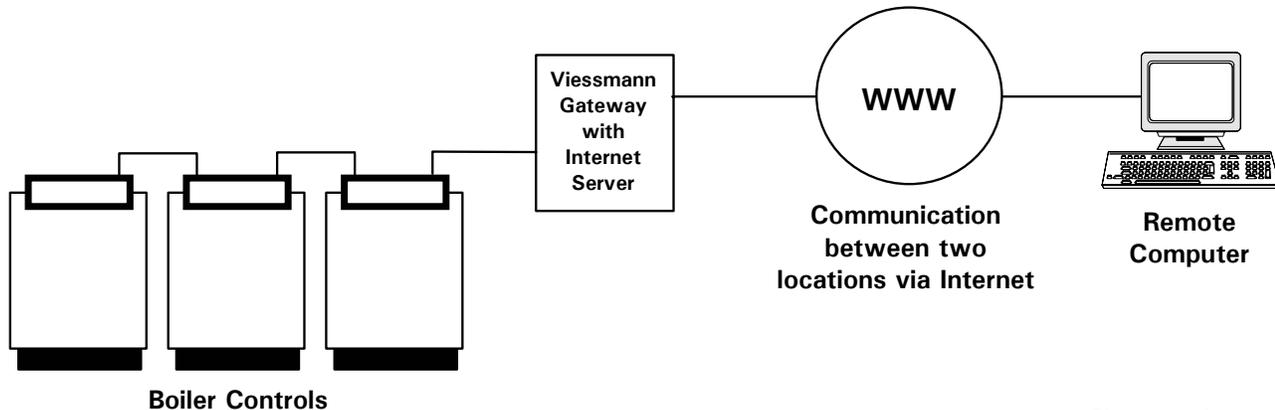
The **Vitocom RMA** name is an acronym for Remote Monitoring Access. The RMA panels are available in Standard and Custom models. The needs and requirements of the customer will dictate the application of either the Standard or Custom communication panel models.

When connecting via dial-up, a remote computer communicates with the Internet Service Provider (ISP) over regular phone lines. Once the dial up connection has been established with the ISP, the user/homeowner enters their Internet Server's web address to

gain access to their remote system. System information will be displayed on a standard web browser.

Using a Cable or DSL connection provides a fast connection as well as not requiring a dedicated phone line. Once the IP address has been entered, the user will view all available system information on a standard web browser.

Independent of the connection method, is the amount of information that can be viewed from the web browser. The information that is available is a function of the boiler control and the installed accessories. Non-Viessmann LON enabled devices may also be included.



Please continue reading on page V5



# Dialer Details

Currently, the most basic communication product that is available is the phone dialer. While it

may seem relatively narrow in its operating scope, it provides some valuable features that the most basic of control systems can utilize.

While some may argue its validity for a *Communication Product* status, it does provide usable information that can be utilized locally and remotely.

There are a number of benefits and features that this unit can offer the typical homeowner. Some of the features that are most commonly used are heating zone program changeover, pool/spa enabling, snow melting enabling for driveway/walkway. It is important to recognize that this unit has the ability to be combined with any On/Off control strategies.

As far as benefits go, because of the phone dialers relatively affordability, the homeowner can have a certain amount of peace of mind when away from home. This may also be combined with the feature of turning on a hot tub or snow melt for remote locations such as a cottage or cabin.

Along with the remote control aspect, the phone dialer provides an alarm call-

out if a failure should occur. They include, but are not limited to, indication of power loss, low battery alarm, high or low temperature alarm as well as monitoring of a remote contact.

Upon detection of an alarm, up to 3 phone numbers can be called out to

inform those responsible. Because each dialer has the ability to program a specific location number, incorrect failure identification for multiple residences is kept to a minimum.

When the unit calls out during an alarm

condition, a recorded voice will alert the intended caller of an alarm status at a specific location ID number. Along with the alarm notifiers, all of the operational prompts use the same simulated voice technology.

## System Examples

Shown below are a few examples of typical system configurations. The two Vitotronic systems require the use of a

Switching Module V (7133 387).

The Switching Module V provides the necessary interface between the phone dialer and the boiler control to perform the change of operating mode or external demands. You will note that the Vitodens boiler does not require the use of a Switching Module V to interface with a phone dialer.

## Connections and Terminations

The Switching Module V is shipped with a 145 KM BUS cable. This cable is plugged into the 145 socket within the Vitotronic 200/300 and the module itself. If a KM BUS expansion

module is already installed, the Switching Module V is plugged in to the expansion module rather than directly into the boiler control.

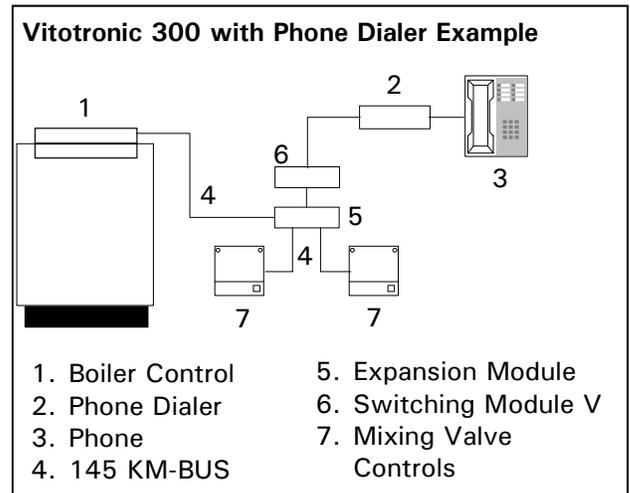
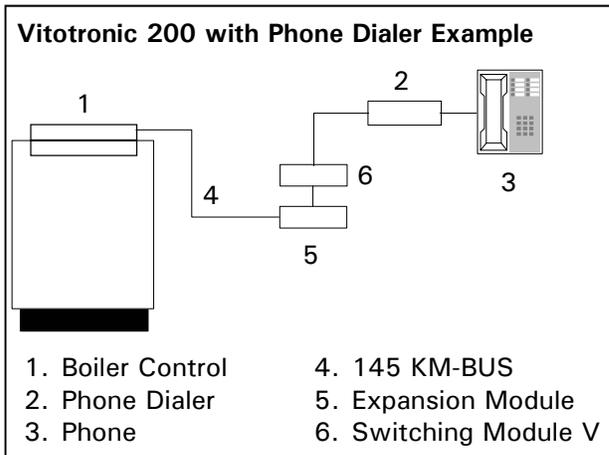
Once the Switching Module V is plugged in and the boiler control is turned on, it is automatically



Picture: Front of Freeze Alarm phone dialer.



Picture: Rear of Freeze Alarm phone dialer.



recognized by the Vitotronic boiler control. Address 94 is changed from the factory default of 0 to 2. Refer to Vitotalk 1 for more details on connection of the Switching Module V to Vitotronic boiler controls.

Since the phone dialer does not





## Remote Communication Vitocom RMA

The line-up of control panels which incorporate the ability to communicate are called **Vitocom RMA**. There are two distinct models of the Vitocom RMA control panels, Standard and Custom.

The Standard panels incorporate standard items which provide the consumer with the functionality without all the bells and whistles that a Custom panel provides. On the other hand, the Custom panels allow for a multitude of features that can be incorporated which takes a control package from mild to wild!

### Vitocom RMA-S (Standard)

The Vitocom RMA-S is a standard remote access communication device which includes the Viessmann Vitocom LON gateway and an Internet Server. The standard version of the Vitocom RMA panel provides digital interface to Viessmann boiler and system controls. Communication connections to the Internet Server are by either a RJ-45 Ethernet connection or a RJ-11 telephone connection.

Once connected to the Internet Server, the user can view information on a standard web browser program such as Internet Explorer. Information from the boiler/mixing valve controls via the Vitocom LON is displayed on web pages which are resident within the server. The information, or data points, that can be viewed is a function of the information that is available via the LON network points.

As part of the standard control communication panel, 2 digital inputs,

2 pulse (analog) inputs and 2 digital outputs are included. These inputs/outputs can be configured to meet the users requirements. As well, the panel has a main disconnect switch and terminal strip connections at the top of the panel.

### Vitocom Gateway

Application of the Vitocom 200 Gateway control is necessary for all aspects of communicating to controls equipped with the 141 2-wire BUS communication card. Set point, actual temperatures as well as slope, shift and operating mode settings are transmitted digitally between the devices. This data transfer allows information to be shared over the entire LON network when properly bound.



*Pictured: Vitocom 200 LON Gateway for communications*

### Internet Servers

Provide access to the Internet. Information from all of the LON enabled devices, Viessmann or other manufacturers can be viewed locally or remotely.



*Pictured: Internet Server to provide internet communications either through DSL or dial up connection*

The meter inputs can be used to trend consumption or usage over time.

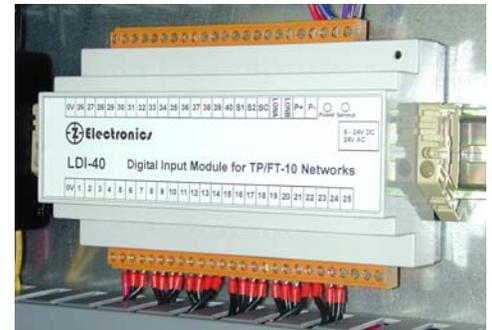
Communications to the Internet Server can be made with the Ethernet (RJ-45) or Telephone (RJ-11) ports. Connection to these ports are dependant on whether dial-up, DSL or Cable services are used.

Indication lights on the front of the server allow for visual status of the analog inputs, digital inputs as well as digital outputs.

### Vitocom RMA-C

In addition to the Vitocom RMA-S a LDI-40 Digital Input Module for TP/FT-10 Networks may be included in the Vitocom RMA-C. The LDI-40 provides connection terminals for up to 40 digital inputs and two analog sensor inputs. It was designed to maximize the number of digital inputs into one device.

This optional device, not included with standard Vitocom RMA-S, is used in conjunction with the Internet Server and the Viessmann Vitocom gateway. The LDI-40 communicates via LON with the Internet Server. It is used to provide status indication of any simple on/off output device such as a pump, valve or switch. The operation status of connected devices allows for trending or diagnostic purposes. The



communicated status information can be bound within the LON environment to be used where ever necessary. The LDI-40 also provides connection for two analog temperature sensors. Like the digital inputs, the temperature sensors can be bound with the LON **Vitocom RMA-C** Communication environment to provide temperature information.

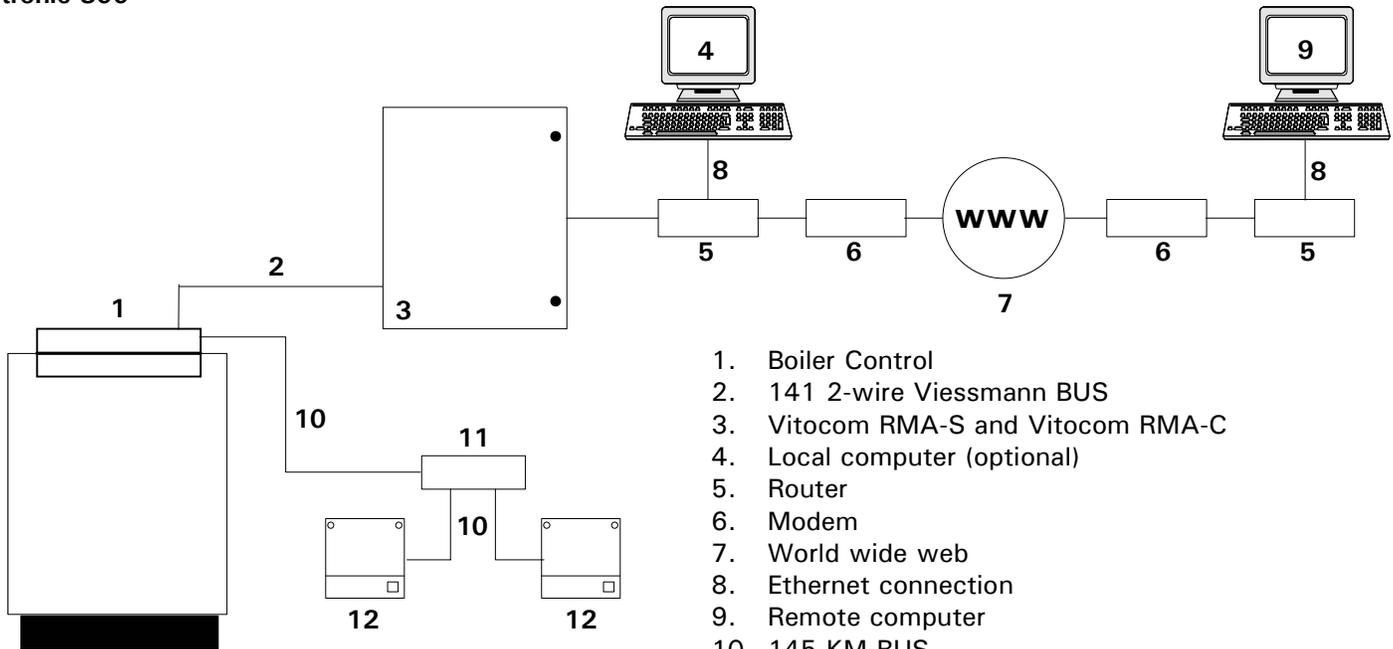
The unit provides a standard DIN rail mounted housing with power and communication indicators. Terminal blocks can be unplugged from LDI-40 for installation ease as well as diagnostic purposes.



## Remote Communication Application Examples

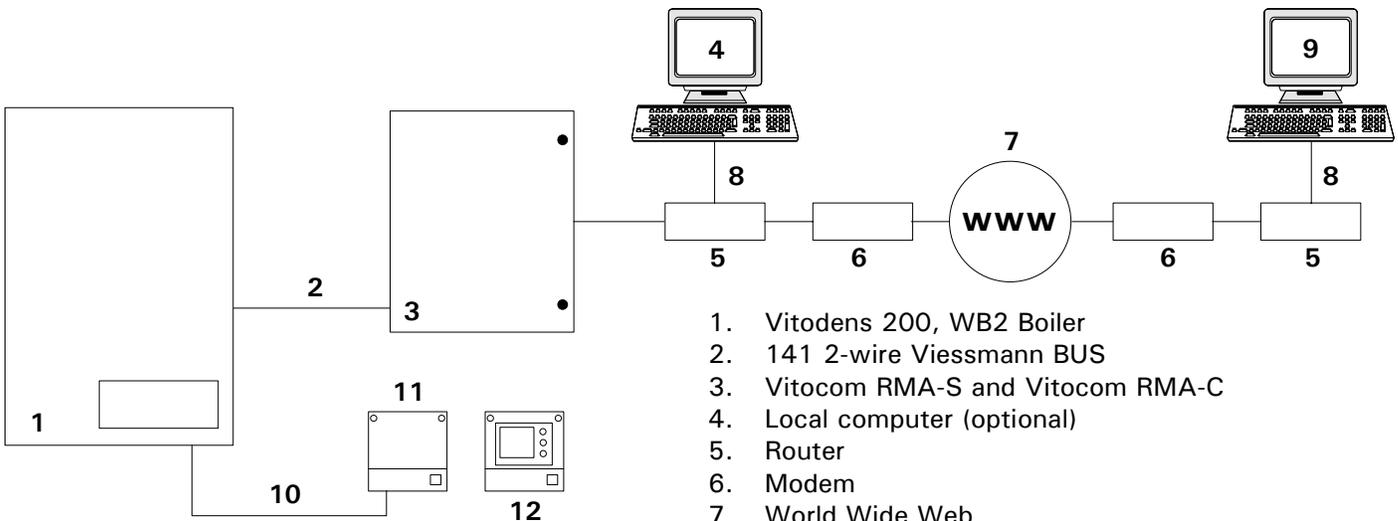
The pictures shown here are basic connection examples of the components required.

### Vitotronic 300



1. Boiler Control
2. 141 2-wire Viessmann BUS
3. Vitocom RMA-S and Vitocom RMA-C
4. Local computer (optional)
5. Router
6. Modem
7. World wide web
8. Ethernet connection
9. Remote computer
10. 145 KM-BUS
11. KM-BUS Expansion module
12. 300 Mixing valve controllers

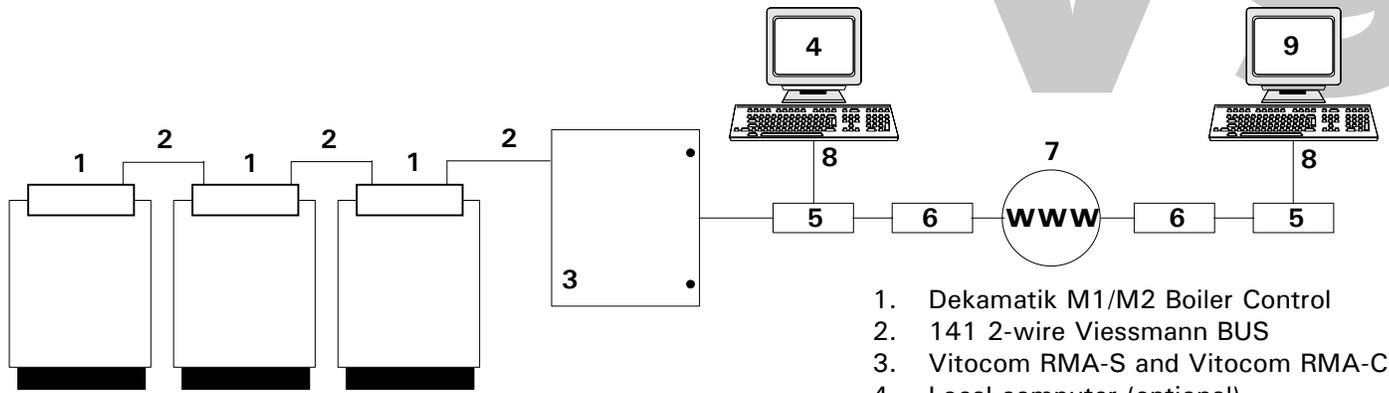
### Vitodens 200, WB2



1. Vitodens 200, WB2 Boiler
2. 141 2-wire Viessmann BUS
3. Vitocom RMA-S and Vitocom RMA-C
4. Local computer (optional)
5. Router
6. Modem
7. World Wide Web
8. Ethernet connection
9. Remote computer
10. 141 2-wire Viessmann BUS
11. 300 Mixing valve controllers
12. Optional Dekamatik HK1 Mixing valve control

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### Dekamatik M1/M2 Commercial Control System



1. Dekamatik M1/M2 Boiler Control
2. 141 2-wire Viessmann BUS
3. Vitocom RMA-S and Vitocom RMA-C
4. Local computer (optional)
5. Router
6. Modem
7. World wide web
8. Ethernet connection
9. Remote computer

The Dekamatik example above shows three boilers which communicate with a control panel. Communication between takes place via the 141 2-wire BUS.

Depending on the system, the control panel may include HK mixing valve controls. The HK controls also communicate 141 Viessmann BUS to the Dekamatik boiler controls. Other LON controls such as sensors, stats, or cameras may be connected.

A local computer may be used to view the information locally for use by on-

site service personnel. Communication between the control panel and all the devices before it take place over an Ethernet connection. The local Router makes it possible to connect multiple computers or work stations.

The Modem shown can be a DSL type unit. If a dial up connection is used, the Internet Server has the option of having an internal modem inside.

The Remote computer must have the ability to connect to the Internet either through a dial up connection, DSL or Cable.

Alternate communication mediums are also available by utilizing GSM or GPRS wireless connections. Those areas which are not serviced by telephone or Cable do not need to be excluded from the convenience of remote communications.

### Dekamatik M1/M2: BMS or RMA

#### Boiler M1/D1

Slope adjustment	Outdoor temperature actual	Flue gas temperature
Shift adjustment	Outdoor temperature dampened	Return temperature actual
Boiler temperature actual	Control error	Return temperature set point
Supply temperature actual	Supply temperature set point	DHW temperature actual
Normal room temperature set point	Reduced room temperature set point	DHW temperature set point

#### Boiler M2/D2

Boiler temperature actual	Flue Gas Temperature
Return temperature actual	Return temperature set point

#### Mixing Valve Circuit(s)

Outdoor temperature actual	Outdoor temperature set point
Supply temperature actual	Supply temperature set point
Maximum supply temperature	Operational Mode

Note:  
Information available dependant on equipment installed

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## Vitotronic 300: BMS or RMA Viewable Point Examples

### Boiler: High Temperature Circuit

|                              |                                    |                                    |
|------------------------------|------------------------------------|------------------------------------|
| Flue gas temperature actual  | Outdoor temperature actual         | Burner operation hour counter      |
| Slope adjustment             | Outdoor temperature dampened       | Normal room temperature set point  |
| Shift adjustment             | Boiler temperature limit set point | Reduced room temperature set point |
| Room temperature actual      | Operational mode                   | System failure                     |
| Boiler temperature set point | Maximum boiler limit temperature   |                                    |

### Mixing Valve Circuit 1

|                                   |                                    |                              |
|-----------------------------------|------------------------------------|------------------------------|
| Return temperature actual         | Slope                              | Supply temperature actual    |
| Return temperature set point      | Shift                              | Supply temperature set point |
| Room temperature actual           | Operation mode                     |                              |
| Normal room temperature set point | Reduced room temperature set point |                              |

### Mixing Valve Circuit 2

|                                   |                                    |                              |
|-----------------------------------|------------------------------------|------------------------------|
| Return temperature actual         | Slope                              | Supply temperature actual    |
| Return temperature set point      | Shift                              | Supply temperature set point |
| Room temperature actual           | Operation mode                     |                              |
| Normal room temperature set point | Reduced room temperature set point |                              |

### DHW Circuit

|                                       |                                          |
|---------------------------------------|------------------------------------------|
| Domestic Hot Water temperature actual | Domestic Hot Water temperature set point |
|---------------------------------------|------------------------------------------|

## Vitodens 200, WB2 with Low Loss Header (communication card installed)

### Boiler Circuit

|                              |                                   |                                    |
|------------------------------|-----------------------------------|------------------------------------|
| Slope adjustment             | Shift adjustment                  | Outdoor temperature actual         |
| Outdoor temperature dampened | Boiler temperature actual         | Supply temperature actual          |
| Supply temperature set point | Normal room temperature set point | Reduced room temperature set point |
| DHW temperature actual       | DHW temperature set point         | Faults                             |

### Mixing Valve Circuit with HK1 (Communication Card Option)

|                                        |                               |
|----------------------------------------|-------------------------------|
| Outdoor temperature actual             | Outdoor temperature set point |
| Supply temperature actual              | Supply temperature set point  |
| Operational Mode (Sun/Moon adjustment) |                               |

**Note:**

Information available dependant on equipment installed



# How-to Install Communication Boards

The all knowing book of "How-to" with Viessmann controls

Installation of communication boards in Vitotronic, Dekamatik and Vitodens controls is a relatively easy task. The tools required are generally a small flat blade screwdriver, Torx driver, Philips driver and pliers/side cutters.

## Vitotronic 300 Part Number 7450 564

The Vitotronic 300 communication board is installed inside of the control under the internal cover.

Tilt open the top of the control to access the insides. To



accomplish this, flip down the lower "Viessmann" door.



Upper picture showing control head tilted upwards. Middle picture showing upper cover release. Bottom picture showing cover supported by prop rod.

Looking at the upper right hand corner, once the "Viessmann" is down, you will note an elongated hole. Insert tool (screwdriver or pen) to release cover lock and tilt control top.

Once the cover is tilted upwards, there is a support rod that can be folded downwards to allow for the top cover of the control to remain open while working inside.

Once inside the control, remove the coding card and fuse holder. These pieces will need to be reinstalled following installation of communication board and inside cover.

To gain access to the area where the communication board is installed, removal of the inside cover is necessary. There are four clips which fasten the cover down. Release the clips one at a time while gently pulling upwards on the cover so as not to allow the clips to slip back into position.

Set the inside cover with the coding card and fuse holder.

Looking inside of the control, you will note a long black socket at the far left hand side of the motherboard. This position is assuming that the installer is standing in front of the control at the time of installation.

Remove the communication board from its packaging and plug it into the socket. When positioning the

communication board into the control, the communication plug sockets will face the rear of the control. A communication cable or RIKO plug adapters will be used to interconnect

the control to external control devices such as mixing valves or Vitocontrol-C control panel.

Depending on the vintage of communication board, there may be a couple of rotary dials on top. The single dial boards will require the dial to be set to position 1. Those boards with two dials will have dial S1 (closest to edge) set to 1 and S2 set to 0.

The rear of the control must be cut to allow the communication cables to exit the control housing. You will note the plastic has been already prepared for easy cutting with side cutters or just a set of regular pliers.

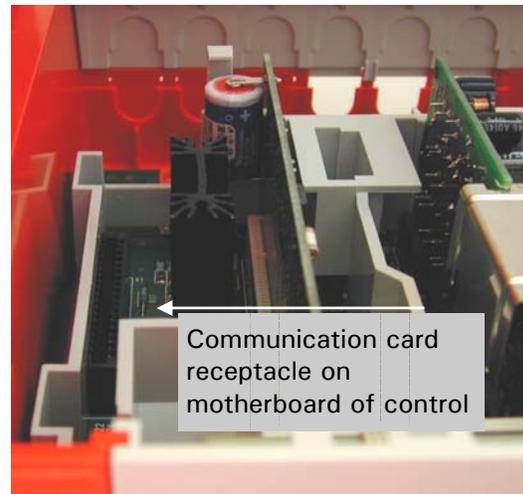
The communication plug is plugged into the bottom 141 socket. Use the supplied strain relief to prevent wire

from coming unplugged from the communication board.

Interconnection to the communication board can be done with a RIKO plug (Vi P/N 7450 061) or a 141 2-wire bus



Picture showing 4 clips holding cover over PCB.



Communication card receptacle on motherboard of control



Picture showing installed communication board inside of control. Sockets pointing to rear.

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# How-To? Continued

communication cable similar to those shipped with HK1's with the communication board option.

When using the RIKO plugs, terminate wires into terminals 23 and 24 and ensure polarity is kept consistent.

Once the board has been installed, reinstall the cover over the circuit boards along with the coding card and fuse holder.

### Faults

Look for fault code CF. This is an indication of communication. Check wiring connections or ensure the communications board has been plugged in all the way.

### Codes

Verify code 98 has changed to 1 from the factory default of 0. This is generally an automatic change of this coding address, but it is best practice to ensure that the communication board is recognized before continuing.

### Scan Codes

Another method of verifying the presence of the communication card is to refer to the scan codes. Scan code 1 digits 5 and 6 indicate the number of participants on the 141 2-wire Viessmann BUS. Generally, if the Vitotronic 300 is communicating to a single Vitocom LON panel this would count as two participants.



Picture showing the VR20 access into control

### Vitodens 200, WB2 Part Number 7134 276

The communications board for Vitodens boilers is installed into the boiler by piggybacking onto the VR20 board.

Once the outer cover of the boiler has been removed, loosen the two Philips screws which fasten the control console to the boiler support. The screws do not come out all the way but rather just loosen to allow the console to be pulled forward and tilted downwards.

After pulling the console forward and down, you will note the Torx screw which fastens the clear plastic cover to the housing. Under the cover, there is a rectangular panel which covers the VR20 board. Removing the panel provides access to the VR20 board.

Removal of the VR20 board is accomplished by using tool supplied with the communication board module. By hooking the board with the supplied tool, pulling upwards unplugs the board from the LGM motherboard.

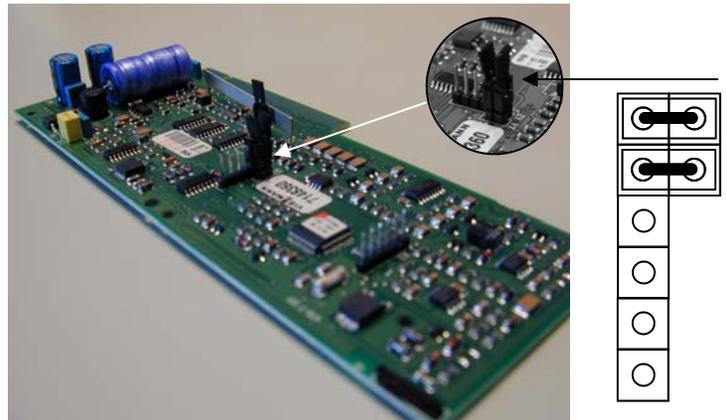
Inspection of the VR20 board shows a couple of jumpers which will need to be removed before installing the communications board. The two circuit boards connect to each other by pushing

comm. board pin sockets to the pin rows of the VR20.

You will note a white plastic positioning pin on the comm. Board. This does not hold the two boards together but rather is used as a locator when mating the VR20 to the communications board.

Reinstall the VR20 board into the control by aligning it with the guides. Push the board downwards and ensure the board is plugged in all the way. It should be noted that the pins do not completely disappear into the sockets of the communication board. In other words, the pins are longer than the socket will allow.

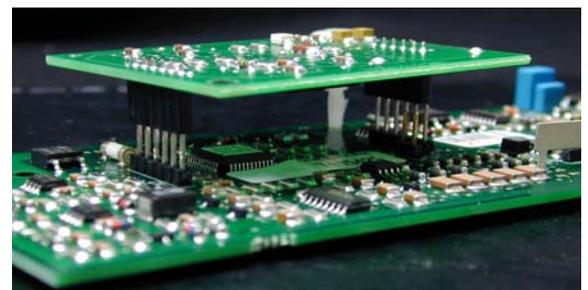
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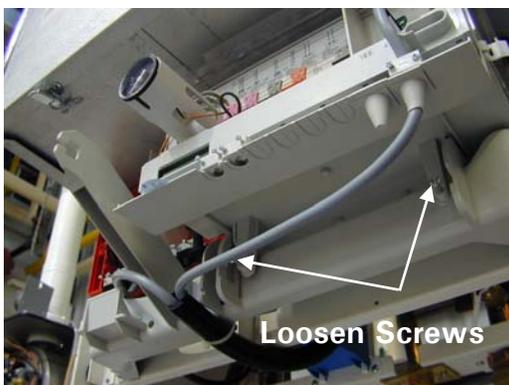
Picture showing jumpers to be removed from VR20 for comm. board.



Picture showing VR20 board of the Vitodens boiler.



Picture showing the communication board mated to the VR20 board.



Picture showing screws to be loosened to allow control to be tilted downwards



Continued from page V12



# How-To? Continued

Once the covers have been reinstalled and the control tilted upwards again, you can check the scan codes to verify that it has been recognized.

## Scan Codes

By referring to the boiler manual, verify that the board has been automatically recognized. A "1" digit at the end of scan code 2 indicates the boards presence within the boiler. Digit #2 within scan code 2 will indicate the number of participants talking with one another. If the boiler control is only "talking" with the Vitocom LON, you will see a "2" digit. If a HK1 is added to the system, you will see the digit will change to 3 from 2.

Connections to HK1's will allow you to see the outdoor temperature reading on the Comfortrol display of the HK1. As well, by adjusting slope and shift adjustments, you can influence the calculated boiler temperature set point of the Vitodens boiler.

As we have talked about in Vitotalk 4, once the communication board is installed, 145 KM BUS communication is changed to 141 2-wire BUS communication.

## Faults

All the faults that would normally be displayed on the boiler Comfortrol will still be viewable. Communication fault will show as a "2-wire BUS" fault. This is generally due to field wiring practices rather than component troubles. Check connections to X5.3 and X5.4 as well as any wiring that has been fastened down with staples or nails which may have pierced the communication wire jacketing.

## Dekamatik E Part Number 7818 069

The Dekamatik E control is the third control which may need a communication board installed. Early versions of the Dekamatik E control may already have a communication board installed.

Before the Dekamatik E, there was a DE control which had communication board already installed. The DE is identified by the multi-button user interface.

Before diving into the control to determine the presence of a communication board, it is possible check this by looking at address values in coding level 2.

Once you have accessed coding level 2 (refer to manuals for individual E and DE), check that address 002. When a communications board is installed into the control, address 002 should have a value of 001. If you find this value is 001, then it is a safe bet the board is installed.



Picture showing open rear end of Dekamatik B style boiler control.

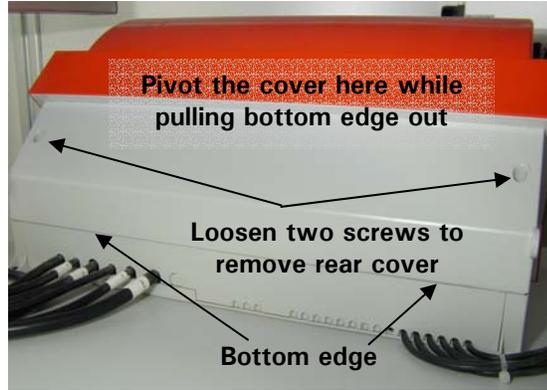
removed, look for the blue rotary dial selector. Older Dekamatik DE's will require you to remove the user interface and again look through a small square access hole

## Installation

Preparation of the control to install the communication board requires the rear

cover to be removed. Once this is done, the board can then be slid into place and the board can be plugged into the ribbon cable at the front.

Loosen the two Philips screws at the rear of the control housing. You do not



Picture showing removal of rear cover from Dekamatik B series housing.

need to remove these fully, but just loose enough to remove the cover.

When removing the cover, it will "pivot" on the orange part of the housing. If you find the cover is not coming easily, continue

loosening the screws.

When the control is opened, you will note there is a motherboard on one side of the control and a processor board on the other. The motherboard is generally identified by the blue transformer. The processor board is recognized by all the sensor connections plugged into it. These would include outdoor, boiler and possibly DHW and mixing valve sensors.

When working with Dekamatik E controls, a quick visual check is to remove the small square access cover under the long orange "Viessmann" door at the bottom front of the control. Once the cover is

Before the communication board is installed, the rotary dial must be changed to position 1. This change of rotary dial positioning can be done afterwards as well, by removing the small square access cover to view the dial.

Take note of how the processor board is held in place in the control by the "rack" support. The pictures on the following page show this in detail. The communication board is slid into the rack above the processor board. A large plug on the ribbon cable will be plugged into the communication board when it is slid in all the way. You will be able to identify its correct installation by the fact the board cannot be slid back out without releasing the clips on the rack.

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Continued from page V13



# How-To? Continued

Once the board has been fully installed and plugged in, you may connect the communication cable. Looking at the rear socket connections, you will note a 141A and 141B. Similar to the Vitotronic 300 or an HK1 (with communication board installed) a RIKO plug or 141 interconnection cable is plugged into these sockets.

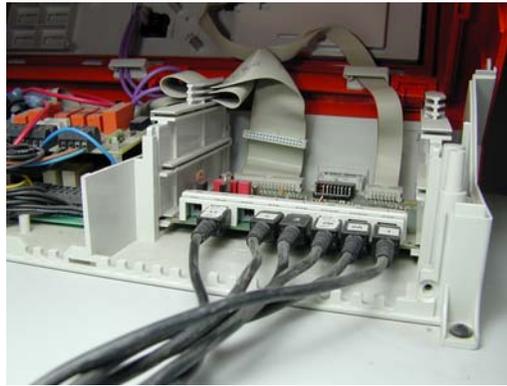
Generally, the communication connection from the Vitocom LON is plugged into the 141A. Communication to mixing valve controls (if present) continue from 141B of the Dekamatik E to HK controls.

### Verification

As a matter of practice, the communication board should be checked to ensure it was recognized before continuing. It is possible to do this by referring to the Scan Codes or verifying address 02. When the board is installed and recognized, the value of 02 address should have changed to 01. If it did not change automatically, manually code address 02 to value 01.

Scan codes of the Dekamatik E/DE control will indicate when it is communicating to other 141 participants. Refer to scan 2 in the scan code screen in the Operating Status menu option of the Comfortrol. The second digit of scan code two will indicate the number of participants talking with one another. If the digit is 0, this would indicate that the boiler control is not communicating with other participants. If the value is 1, the control should be looking for other controls to talk to. A number higher than 1 would indicate mixing valve controls or some kind of Vitocontrol LON or 0-10VDC control.

When verifying participant communication to other controls with a Dekamatik DE, depress the red and blue double II buttons. Again, refer to the second digit to indicate the number of participants communicating.



Picture showing location of communication board into rack. Note slots above present processor board.



Picture showing communication board sliding into rack above processor board.



Picture showing communication board pushed in all the way. Ribbon cable plugged in at front.



Picture showing communication connection to 141A to Vitocom LON panel.

Once the board has been properly installed and verified that it is recognized, connection to the communication panel would be next.

The standard practice is to plug the communications input into the 141A of the Dekamatik E control. Depending on the controls installed in the control panel it is also best practice to refer to the wiring schematic.

Connection to the Dekamatik can be done using a RIKO plug (Vi P/N 7450 061) or 141 2-wire BUS communication cable

The RIKO plug is a four terminal plug which can be used for the interconnection of sensors or communication. When using for communication purposes, connect the wires to terminals 23 and 24.

To allow for the wiring to exit the boiler control, it is necessary remove one of the access holes on the wire gate. This can be done either by using side cutters or a simple needle nose pliers.

The Dekamatik control can now be reassembled. When assembling the Dekamatik housing, caution must be taken as not to pinch the AHL and FHL capillary tubing with the wire gate. Ensure the tubes are run through the slot provided.

The rear Dekamatik cover needs to be reinstalled in the reverse order of which it was taken off. Allow the rear cover to pivot from the orange housing. Once it has been repositioned, tighten the two Philips screws to secure the cover to the base of the control.

Along with looking at the scan codes to verify communication, it is also possible to determine proper operation by the information that is read by other controls. When communicating to HK mixing valve controls, it is possible to view outdoor temperature on all the controls which communicate with the Dekamatik E. As well, adjustments in heating curve, and shift will all cause recalculation of boiler temperature set points. ▼





## Telephone Dialer Communications

As mentioned earlier, the phone dialer is generally overlooked for its remote communication ability. This may be partially due to peoples unfamiliarity or misunderstanding of its functions. Hopefully, this stops here.

Connections to the phone dialer are quite simple. Fundamentally, there are two reasons for installing a dialer: Call in change of operating mode and alarm call out. Both of these features are accomplished with a contact closure.

### Connections

There are five fundamental connections that have to be done by the installer when setting up a phone dialer.

- Outlet to Wall jack
- Sensor
- Auxiliary Alarm Inputs
- Demand TT contacts
- Power supply

### Outlet to Wall Jack

The outlet to wall jack is the connection from the phone line to the dialer. The supplied bit of phone cable is plugged into a standard phone jack and then into the dialer. Once the dialer has been installed and set up, this should be the final step.

### Sensor

A supplied sensor is plugged into this socket. The sensor is supplied with three feet of cord and a phone style plug. Depending on where the sensor is to be installed, the wire can be extended by using a regular extension cord used for telephones.

A common question asked of the sensor placement is "Where do I put this?". The answer to this question is

simple: What temperature do you want to sense for alarm call out? The sensor can be used to sense room temperature, boiler temperature, DHW tank temperature or any temperature that is dictated by the desired operation.

### Auxiliary Alarm Inputs

There are two terminals that are used for connections for alarm input. The dialer will "monitor" the status of an open external contact and when it changes state, contact closure, an

two set point temperatures are shown as two room thermostats in the accompanying manual. In applications with Viessmann controls, instead of room thermostats, the typical connection is for "Change of Operating Mode" programming.

The change of operating mode from Sun to Moon (normal and reduced mode) and back is possible with most Viessmann controls. This includes Dekamatik M1/E, Vitotronic 200/300 and Vitodens 200. The change-over of

modes is a function of the control "seeing" a contact closure.

### Power Supply

The remaining connection is the 12VDC power supply. A wall plug in power supply is supplied with the phone dialer. Plug this in to a regular Duplex wall outlet and the other end into the dialer.

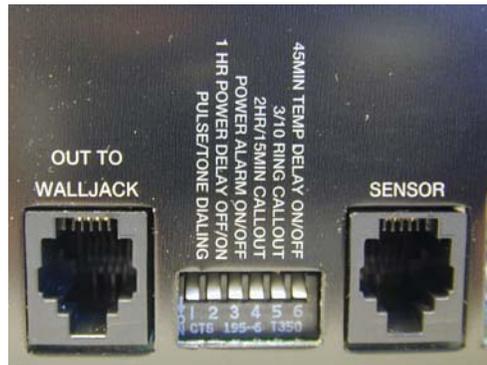
A back-up 9V battery is necessary to provide alarm call out in times of power failure. This battery plugs in the rear of the dialer beside the sensor connection.

### Remote Switch T1/T2

To change the contact status of the T1/T2 contacts without calling into the phone dialer, press this button. Upon pressing, the relay inside of the control will change states. This has the identical function of calling-in to perform the same task.



Pictures showing rear of phone dialer plugs and wiring terminals. Note location for 9V battery



Picture showing phone jack, DIP switches and plug in sensor connection



Picture showing Auxiliary alarm inputs, TT connections, power supply and remote switch.

alarm call out will occur.

The alarm contact can take many forms, relay dry contact, high limit thermostat or aquastat or even a motion sensor input. Just as long as the contact is open during normal operation and close in times of alarm.

### Demand TT Contacts

The T1, T2 and Com connections are used to allow the user to call-in and switch between two set points. These

## Phone Dialer Communications Continued

Continued from page V15

### Applications

#### Vitodens 200, WB2

Connection to a Vitodens boiler is made behind the Comfortrol where all the sensor connections are located. Change of operating mode is connected to terminals X4.1 and X4.2.

Depending on the application, you may also want to tie into the "Disable" terminals. This is done at terminal X6.1 and X6.2.

#### Change of Operating Program

There are two options for "External Switching of Heating Program". These are shown in the manual at address OC8 values 001 and 000.

Changes in the coding settings work in conjunction with the timer settings of the boiler. The timer settings will dictate the operation of the boiler.

If OC8 is set to 001 and the contact is open, space heating will be a function of the Sun dial setting. During this time DHW production is capable of functioning.

Closing the "Change of Operating Mode" contact when address OC8 is at value 001 has the effect of putting the boiler into frost protection mode. This is a much lower operating temperature than that of the "Moon" reduced mode. The DHW production is not capable of production.

Instead of having the boiler go from Sun mode to frost protection, you can change address OC8 to 000. This address change will allow the boiler to switch between Sun and Moon mode.

Operation of the two modes is a function of timer settings in

conjunction with the change over program contact. The benefit of this change over is that the room temperature set point is a function of either the Sun or Mood dial settings on the front of the Comfortrol.

mode and make DHW as well. When the homeowner leaves again, it will be necessary to call the phone dialer again to return into reduced mode.

### Alarm Input

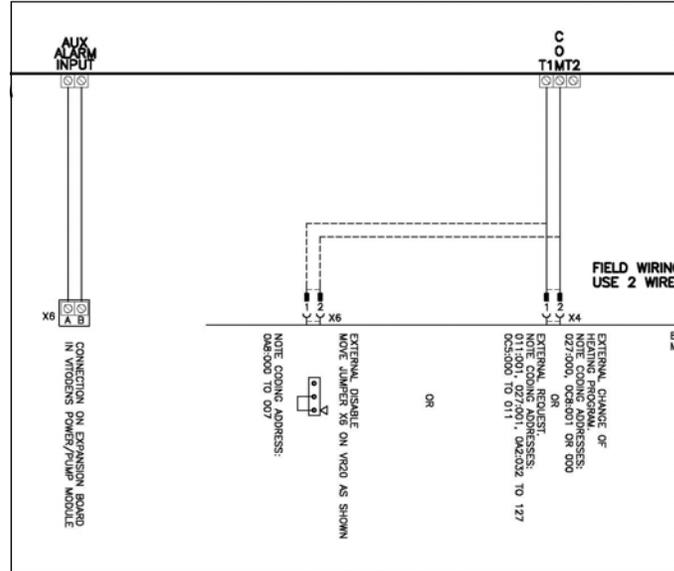
Looking at the sample drawing for the Vitodens boiler, you will note the alarm input comes from the boiler PPM. This is the optional alarm board that is installed into the PPM. When an alarm occurs, the phone dialer will register the "change of state" contact and dial out the programmed numbers.

Aside from the interconnection with the phone dialer, you may also want to tie in other dry contacts in parallel with the one from the PPM.

### Vitotronic 200/300

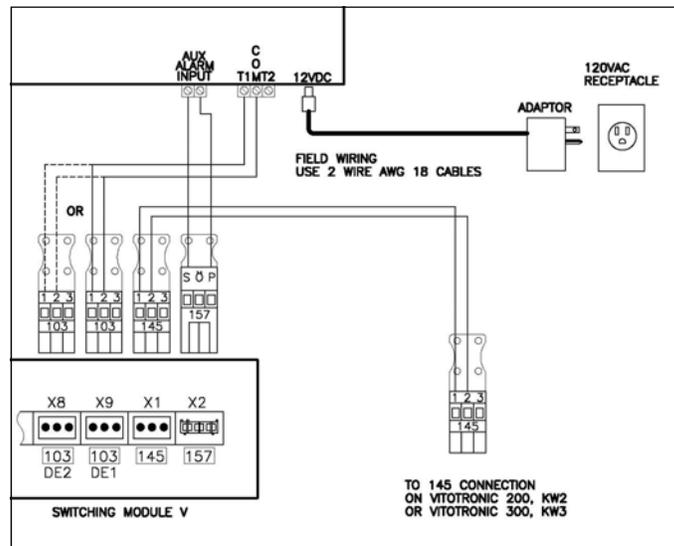
Connections to the Vitotronic controls are a little different than the Vitodens boiler. To interface the Vitotronic 200 with the phone dialer, a Switching Module V is required P/N 7133 387. Whether a Vitotronic 200 or 300 is used, the functionality is identical with respect to the two controls.

When connecting a phone dialer to a Vitotronic 300, it may or may not require a Switching Module V. This is a function of what the homeowner wants to control with the phone dialer. The reason for this is that there is a "Change of Operating Program" input within the Vitotronic 300 control. This input along with coding changes will dictate the need for the switching module. A Vitotronic 300 when used in conjunction with a Switching Module V, has three spots to tie into for a "Change of Operating Program": one for the boiler, one for mixing valve 1 and one for mixing valve 2. The tie in for mixing valve one and boiler are in the Switching Module-V and the tie in for the second mixing valve is in the control itself.



Drawing showing typical interconnection with Vitodens 200, WB2

Most applications of weekend homes or cottages, the homeowner wants to operate the system in reduced mode while away and normal mode when they return. To accomplish this, adjust the timer settings on --:-- to --:-- . Once



Drawing showing connection of phone dialer to Switching Module V

this has been done, an open "Change of Operating Program" contact will allow the boiler will be in reduced mode and DHW will not function. Closing the contact, calling into the phone dialer, will allow the boiler to operate in Sun

## Phone Dialer Communications Continued

Continued from page V16

The 143 connection inside the control does control the second mixing valve, however, it only does this if it is coded to do so. The factory coding is set to allow control of operating program for all three circuits not just MV2. If a homeowner wants the change of operating program input to only affect MV2, address 91 must be changed from 7 to 4. This allows control over the different circuits without a Switching Module-V.

Along with controlling MV2, address 91 can be programmed to change: boiler, boiler/MV1, boiler/MV2, MV1/MV2, all circuits or none.

### Timer Settings

As with the Vitodens boiler, timer settings are critical to the operation of the connected heating circuits. Referring to the Switching Module V manual, the manually preset operating mode is selected by the user as either Stand-by, DHW only or DHW/Space heating.

Operation of the control, with the operating mode contact open, mode switching is a function of timer programs for each of the circuits. If the timer is set to the homeowners regular schedule, the control will continue switching between normal and reduced mode as it normally would. Closing the "Change of Operating Program" contact will put the heating circuit into reduced mode. In the display, you will see the words "External Control" appear as well as the reduced mode indicator of a moon at the bottom of the screen.

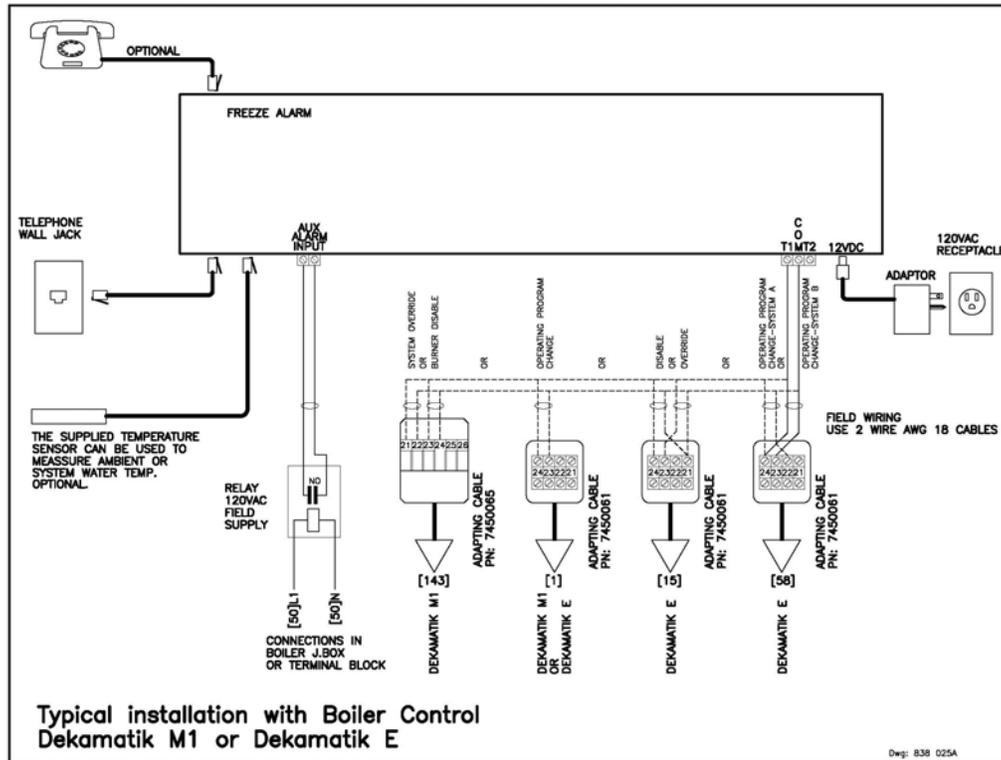
Exiting this mode is a simple matter of releasing the contact to allow to operate in normal mode.

### Alarm Input

The alarm input into the phone dialer is accomplished via the Switching Module V. As shown in the drawing, the alarm output is a dry contact and can be connected directly to the phone dialer. Depending on the boiler and equipment installed, certain alarms may not be

Looking in the manual shows a chart similar in nature to one found in the Switching Module V manual. Selection of Operating Program, programming of OC8 address, and setting of timer settings is critical.

You will notice that the biggest change is the additional relay from the 50 output. This takes the standard 120VAC output and changes it to a dry contact. Referring to the last Vitotalk addresses how a "wet" connection is made into a "dry" contact.



### Summary

When interconnecting any of these controls or other devices to the phone dialer, it is important that over all operation is verified. With all of these controls, it is possible to perform relay tests to ensure that the alarm output and subsequent input into the phone dialer are recognized.

If multiple control of heating circuits is necessary, it is important to

understand how the phone dialer can switch a relay to provide multiple outputs. The outputs of the relay may then provide input into change of operating mode of the control as well as a mode indicator remotely from the boiler room.

### Dekamatik Controls

Once again, connection of the phone dialer to a Dekamatik is very similar to that of a Vitotronic and Vitodens boiler. Setting of the timer program and over all operation is most similar to that of the Vitodens boiler.

While this input can be used with any Dekamatik, it is most of often implemented on Dekamatik E's.

Follow the manual when programming the dialer so as to ensure it will dial the correct numbers as well as remote access into the dialer. ▼

# What's Next?

Excellent question...

Now that we have a communications package for your homeowner to view his summer home from half way around the world or know how much laundry somebody is doing, the time has come to connect it to the Internet. This can be done a couple of different ways.

The most common possibility of connecting to an internet server within a control panel is via dial up. While this may be the easiest method, there are a number of considerations to be addressed.

The data transfer speed of a dial up connection can be much less than that of a DSL or cable connection. While the modem inside of the

Internet Server is rated for 56K, the actual data transfer rate can be as low as 28K. This translates into longer connection times which can mean higher long distance charges when connecting.

Regardless of long distance charges, the increased time required to view information may be a major consideration.

The number of available phone lines may be limited. Sharing a phone line is not the best choice since this may lead to inability to access the control panel when absolutely necessary.

The most common method to connect to a control panel is through a higher speed DSL or Cable connection. For the purposes of our example, we shall look at DSL connections.

While some may think it is common place to have a home computer and an internet connection, this may be a new proposition for some homeowners. While they would like to utilize a communication panel for their system, they also may want to look at Internet Service Providers (ISP) before making the final decision. There are hundreds, if not thousands, of ISP's available throughout North America. There are websites such as [www.thelist.com](http://www.thelist.com) which outlines providers in terms of the services and features that they offer.

*At no time in history has the need for Trades and Information Technology had to come together to work as a single, harmonious team as now.*

If your customer is not sure about their selection, there are websites which provide feedback of Internet Service Providers based on current or past customers. Just keep in mind what opinions are like...

Now that we have come this far, there is another aspect that has to be addressed...internet accessibility.

To ensure customers ability to connect to their communication system from anywhere in the world, an address has to be established. As a common everyday example, the telephone system uses a number set which is unique for every user. Without the structured numbering system, there would be no way to ensure connections to the intended recipients. The structure of the Internet web address system has to also ensure connections to intended websites.

A web address that is used by a web site is called their IP address. The letters IP stand for Internet Protocol.

The numerical address is a structured group of numbers. Similar to the telephone number set being comprised of local, area code and country codes, an IP address specific meanings.

However unlike the telephone system, where remembering the numbers is necessary, the IP addresses are generally linked to some kind of mnemonic word. This word is set up at the time of establishing presence on the internet to allow uses to easily remember the address.

*Think of it as a Marriage rather than the clash of technologies.*

Remembering the address is only a small part of the

battle in connecting to the web. Part of the functionality of how the internet works, each time that a user connects to the internet, their ISP assigns a IP address. This IP address is valid only for the period of time while the connection exists. If you "logoff" or get disconnected for some reason, the ISP will assign you a new IP address. So, in essence, your address keeps changing. But never fear, there is a solution and it is called "Dynamic DNS".

A Dynamic DNS service (Domain Name System) provides a "static" presence on the Internet all the while your IP address changes. Some of you may ask, "Why can't I just have a static IP address". Generally the answer to this is the cost and the decreasing number of addresses that are available.

**IP**  
**Internet Protocol**  
**DNS**  
**Dynamic Name System**  
**ISP**  
**Internet Service Provider**  
**TMA**  
**Too Many Acronyms**

Similar to that of ISP providers, there are those company's which provide a Dynamic DNS services as well. There are a number of sites which offer Dynamic DNS services for free as well. Depending on the services that the

customer chooses, they may or may not have a "direct" domain name but rather be a sub-domain name. Just ensure all the information is read over before deciding on one.



