Communication

Versatronik®502 & 502D

Communication Gateway
MODBUS

Document Applicable to:
Versatronik 502 & 502D NR2/Modbus
Versatronik 502 NR2/MODBUS P/N 704087
Versatronik 502D NR2/MODBUS P/N 704088

Applicable Controls
Vitocontrol-S, MW1 and MW2
Vitotronic 300-K, MW1B and MW2B
Vitotronic 100, GC1/GC1B
Vitotronic 300, GW2
Vitotronic 300, GW5B
Vitotronic 200, HO1
Vitodens 200 B2HA

Technical, Installation and Configuration Information

Cautionary Statement

The information presented in this document is only to be used by those familiar with its application and use.

C US LR 102874

IMPORTANT

Read and save these instructions for future reference

About these instructions

Take note of all symbols and notations intended to draw attention to potential hazards or important product information. These include “WARNING”, “CAUTION” and “IMPORTANT”. See below.

WARNING

Indicates an imminently hazardous situation which, if not avoided, could result in death, serious injury or substantial product/property damage.

→ *Warnings draw your attention to the presence of potential hazards or important product information.*

CAUTION

Indicates an imminently hazardous situation which, if not avoided, may result in minor injury or product/property damage.

→ *Cautions draw your attention to the presence of potential hazards or important product information*

CAUTION

Static sensitive components may be damaged by improper handling or work within the control. Ensure all possible measures are taken to eliminate build-up of static electricity.

IMPORTANT

→ *Helpful hints for installation, operation or maintenance which pertains to the product.*

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Important Regulatory and Installation Requirements

Codes
The installation of this unit must be in accordance with local codes.

→ *Please carefully read this manual prior to attempting installation. Any warranty is null and void if these instructions are not followed.*

All electrical wiring is to be done in accordance with the latest edition of CSA C22,1 Part 1 and/ or local codes. In the U.S. use the National Electrical Code ANSI/NFPA 70.

→ *The completeness and functionality of field supplied electrical controls and components must be verified by those installing the device*

The installing contractor must comply with the Standard of Controls and Safety Devices for Automatically-fired Boilers, ANSI/ ASME CSD-1 where required by the authority having jurisdiction.

WARNING

More than one live circuit. See wiring diagram in this manual. Turn off power supply to control and damper/blower before servicing. Contact with live electrical components can result in serious injury or death

Working on the equipment
The installation, adjustment, service and maintenance of this unit must be done by a licensed professional heating contractor or persons who are qualified and experienced in the installation, service, and maintenance of similar products. There are no user serviceable parts on this control.

Power supply
Install power supply in accordance with the regulation of the authorities having jurisdiction or in absence of such requirements, in accordance with National Codes.

Purpose of Device and Operation

The Versatronik 502 gateway provides a communication translation between applicable controls and DDC systems which are capable of MODBUS communications.

The Versatronik gateway may be either part of a control panel or stand-alone control device.

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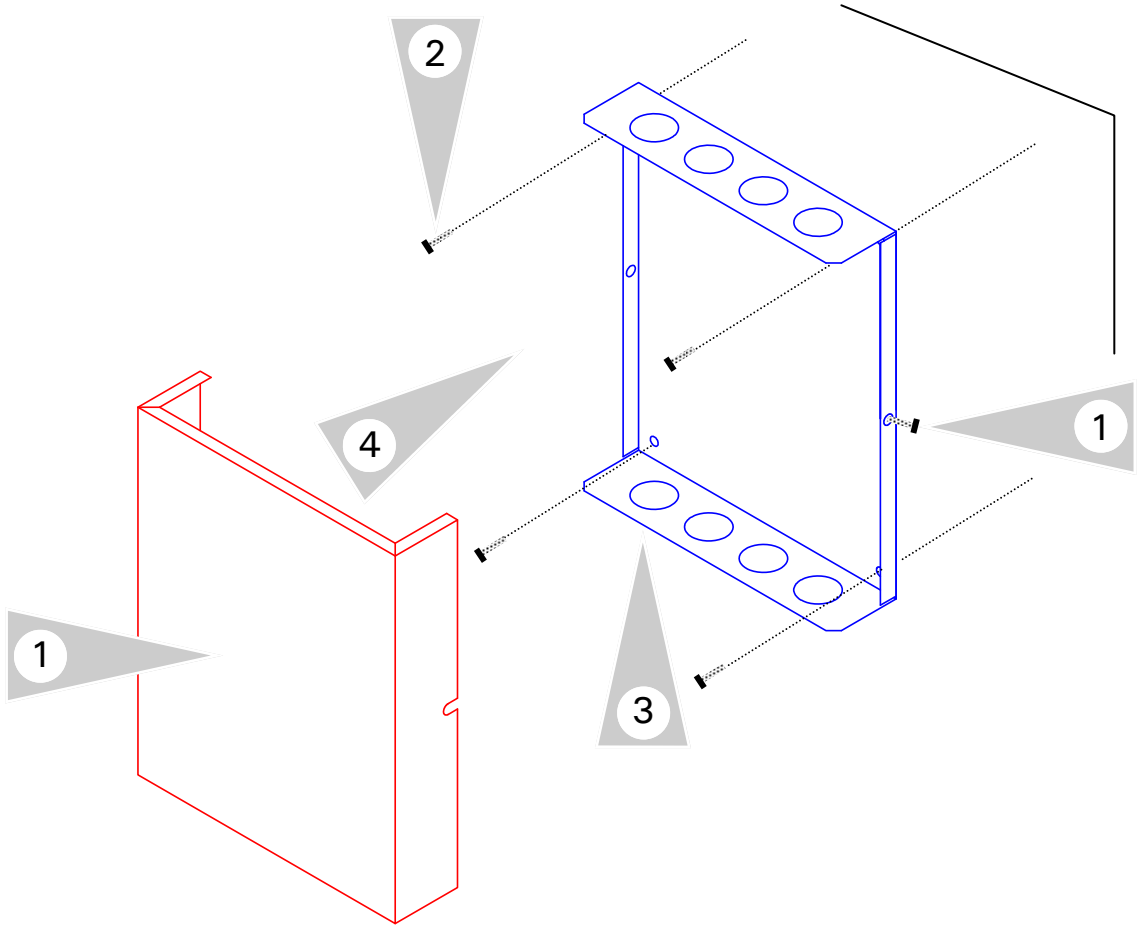
Installation

Mounting Versatronik Gateway—120VAC Unit



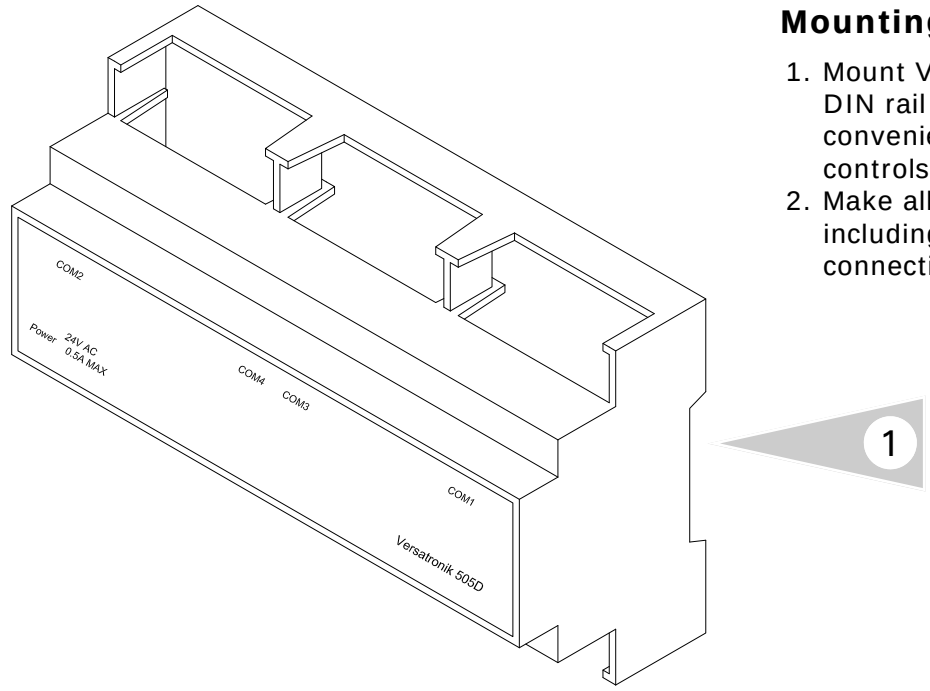
Mounting Steps

1. Mount Versatronik 502 Gateway in a convenient location near the connected boiler controls control. Remove cover by loosening the two screws on either side of base to release the cover.
2. Fasten base to wall using field-supplied screws/fasteners.
3. Remove knockout and installed wire strain relief or box connector. Removal of remaining knockouts is required to make further connections.
4. Once all of the 120VAC and low voltage connections are complete and verified, reinstall the cover from Step 1.

WARNING

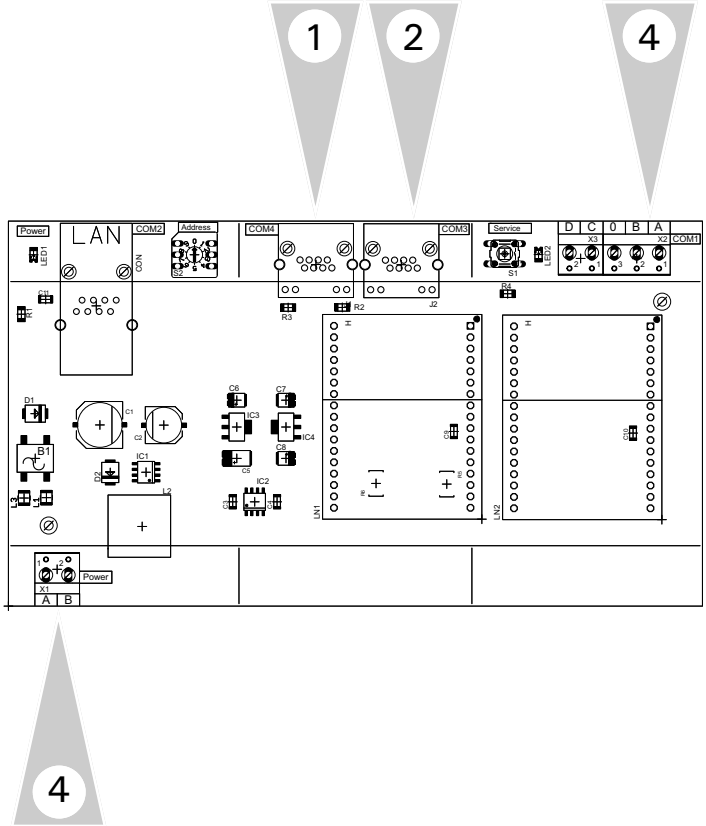
When extending wire there is the possibility of exposure to electromagnetic interference. Avoid running wires beside or near high voltage 120/240 VAC conductors. If proximity to high voltage conductors cannot be avoided, use stranded, twisted pair of shield design wire. Ensure that only one end of the shielding is grounded.

Mounting Versatronik Gateway—24VAC DIN Rail Unit



Mounting Steps

1. Mount Versatronik 502D Gateway onto DIN rail within an enclosure in a convenient location near the boiler controls.
2. Make all the necessary connections including the field supplied 24VAC power connection.



Connection Overview

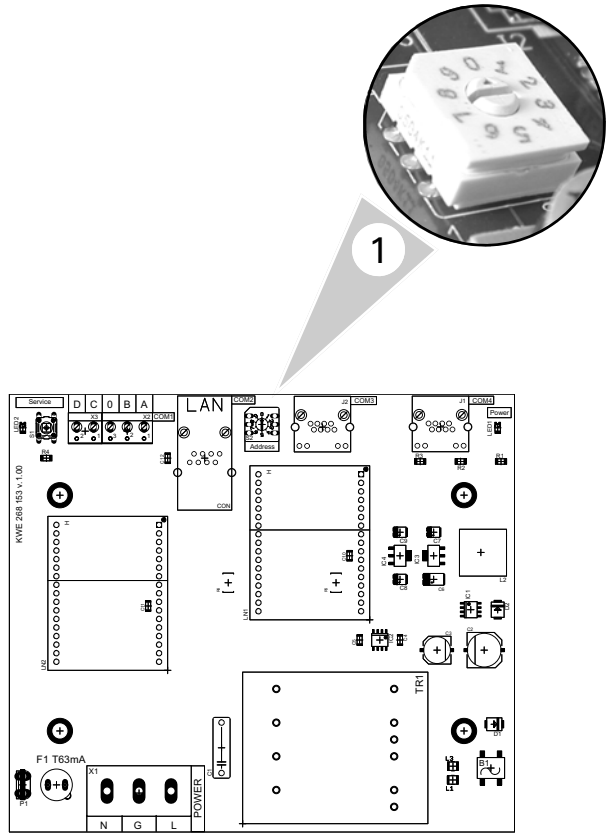
1. Control Connection RJ45
2. Paralleled BUS connection
3. Modbus connection A+ and B—
4. 24VAC Power Connection

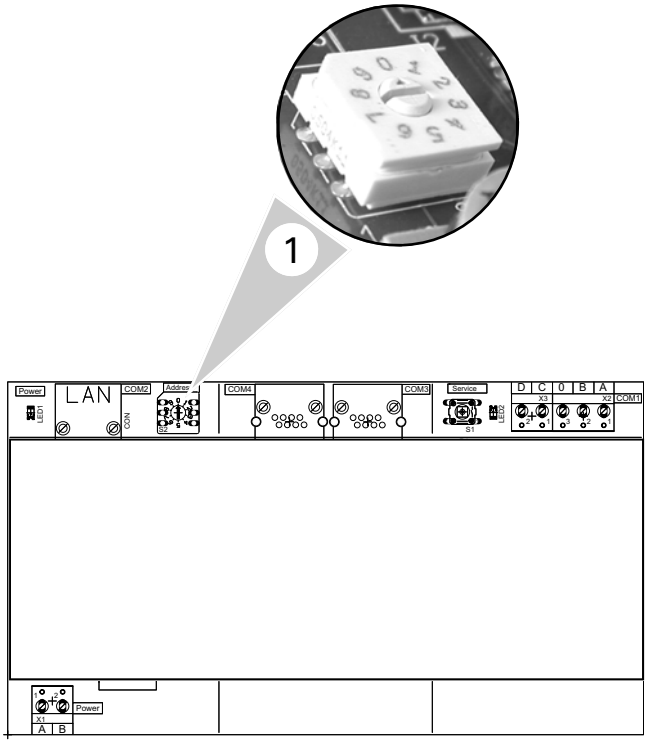
WARNING

When extending wire there is the possibility of exposure to electromagnetic interference. Avoid running wires beside or near high voltage 120/240 VAC conductors. If proximity to high voltage conductors cannot be avoided, use stranded, twisted pair of shield design wire. Ensure that only one end of the shielding is grounded.

Versatronik 502 Dial Setting Overview

Rotary Dial Setting





Setting Overview

1. The rotary dial setting on the Versatronik Gateways provides addressing information for systems that may utilize a number of Versatronik Gateways.

   It is not required to make adjustments to the rotary dial setting. It should be left in the factory default position setting of 0.

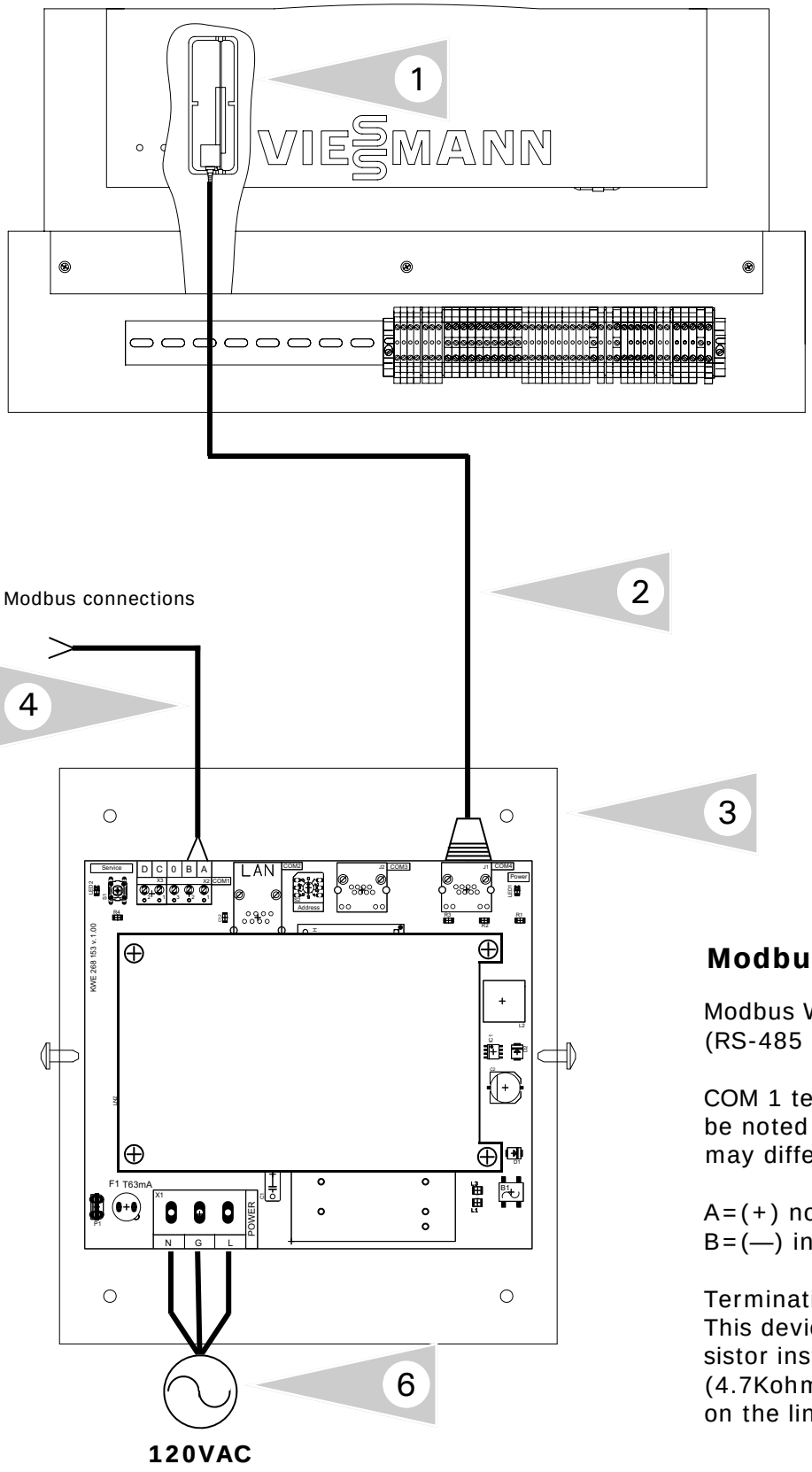
Modbus Applications

The Modbus device address can be set to either 88 or 1 through 9. The addressing can be accomplished with the rotary dial labelled “Address” on the PCB.

Rotary Switch Position	Modbus Address
0	88
1-9	1-9

Connection Overview—120VAC

Communication connections—Vitotronic 100, GC1 or 300, GW2
Modbus



Connection Overview

Refer to manual specific to boiler control. Ensure necessary LON communication card installed.

1 Control showing location of LON card and its location within.

2 A 3'/91cm CAT-5 cable is supplied with the gateway. The RJ45 is plugged into the control and terminates into the RJ45 socket inside of the Versatronik 502 gateway.

3 Versatronik 502 gateway.

4 Modbus wiring connections

5 Plug-in power cord for 120VAC Versatronik 502 gateways.

Modbus Wiring Connections

Modbus Wiring Connections
(RS-485 Network)

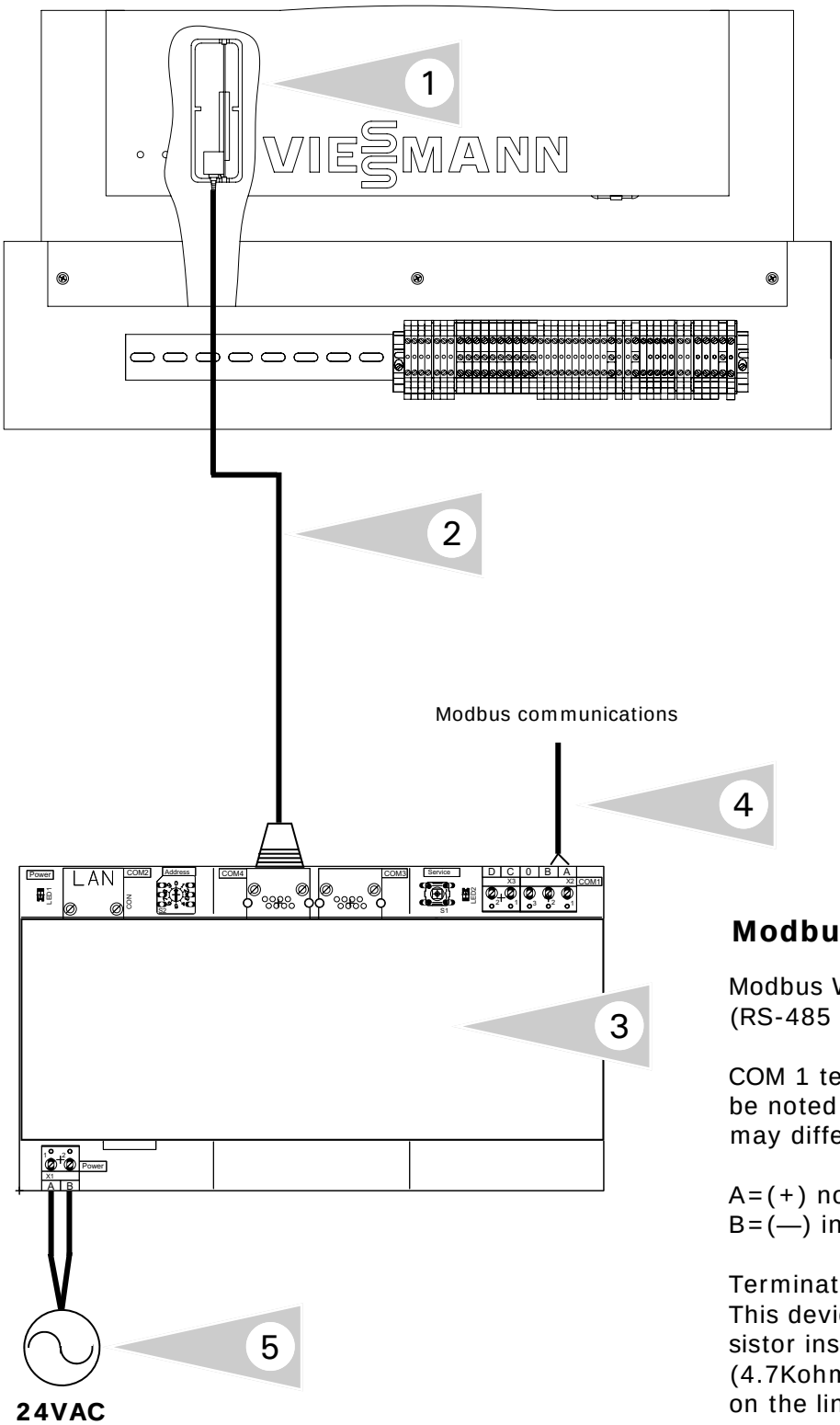
COM 1 terminals A and B are used. It is to be noted that the A/B naming convention may differ across manufacturers.

A=(+) non-inverting
B=(—) inverting

Termination and Bias:
This device does not have a termination resistor installed. There are two weak (4.7Kohm) pull up/down resistors located on the lines to maintain a bias.

Connection Overview—24VAC

Communication connections—Vitotronic 100, GC1 or 300, GW2
Modbus



Connection Overview

Refer to manual specific to boiler/system control. Ensure necessary LON communication card installed.

1 Control showing location of LON card and its location within.

2 A 3'/91cm CAT-5 cable is supplied with the gateway. The RJ45 is plugged into the control and terminates into the RJ45 socket inside of the Versatronik 502 gateway.

3 Versatronik 502 gateway.

4 Field wiring for Modbus connection to terminals A and B.

5 Field supplied 24VAC power supply for gateway.

Modbus Wiring Connections

Modbus Wiring Connections
(RS-485 Network)

COM 1 terminals A and B are used. It is to be noted that the A/B naming convention may differ across manufacturers.

A=(+) non-inverting
B=(—) inverting

Termination and Bias:
This device does not have a termination resistor installed. There are two weak (4.7Kohm) pull up/down resistors located on the lines to maintain a bias.

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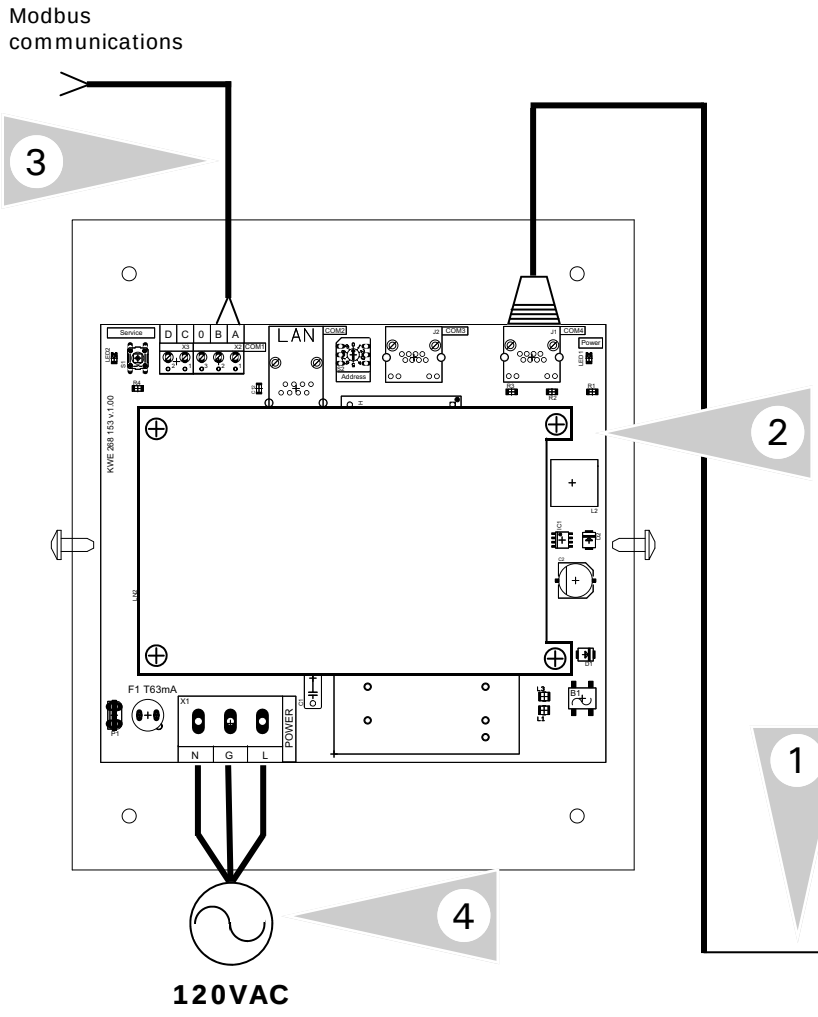
Connection Overview—120VAC

Communication connections—Vitocontrol-S, CT3/VD2A
Modbus



Connection Overview

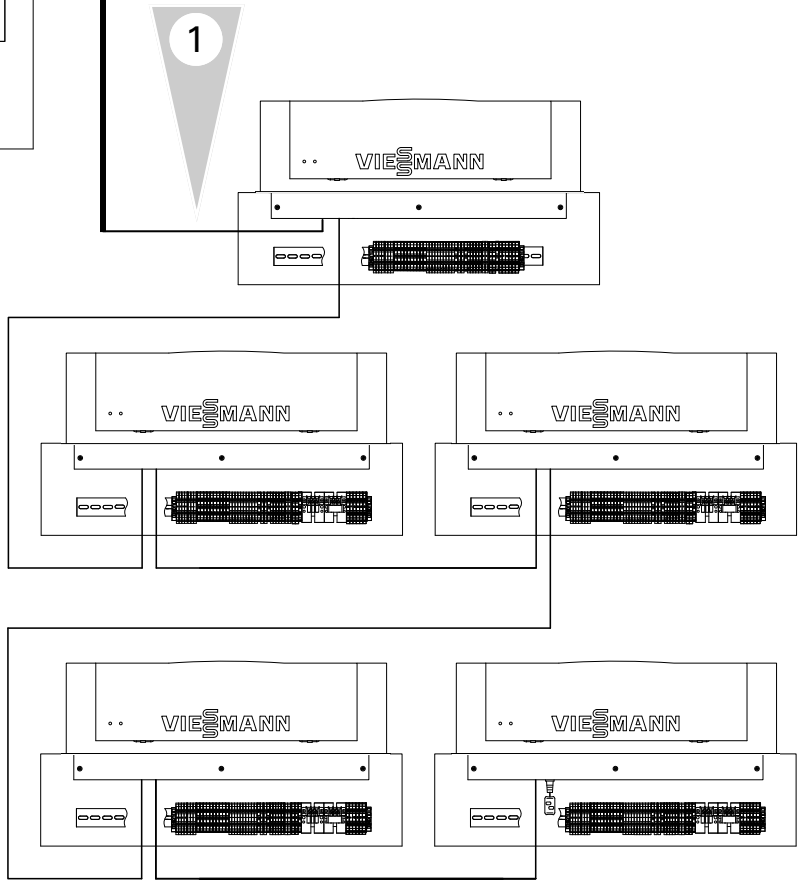
Refer to manual specific to boiler/ system control. Ensure necessary LON communication card installed.

1 A 3'/91cm CAT-5 cable is supplied with the gateway. The RJ45 is plugged into the control and terminates into the RJ45 socket inside of the Versatronik 502 gateway.
Vitocontrol-S will need LON card installed.

2 Versatronik 502 gateway.

3 Field wiring for Modbus connection to terminals A and B.

4 Plug-in power cord for 120VAC Versatronik 502 gateways.



Modbus Wiring Connections

Modbus Wiring Connections
(RS-485 Network)

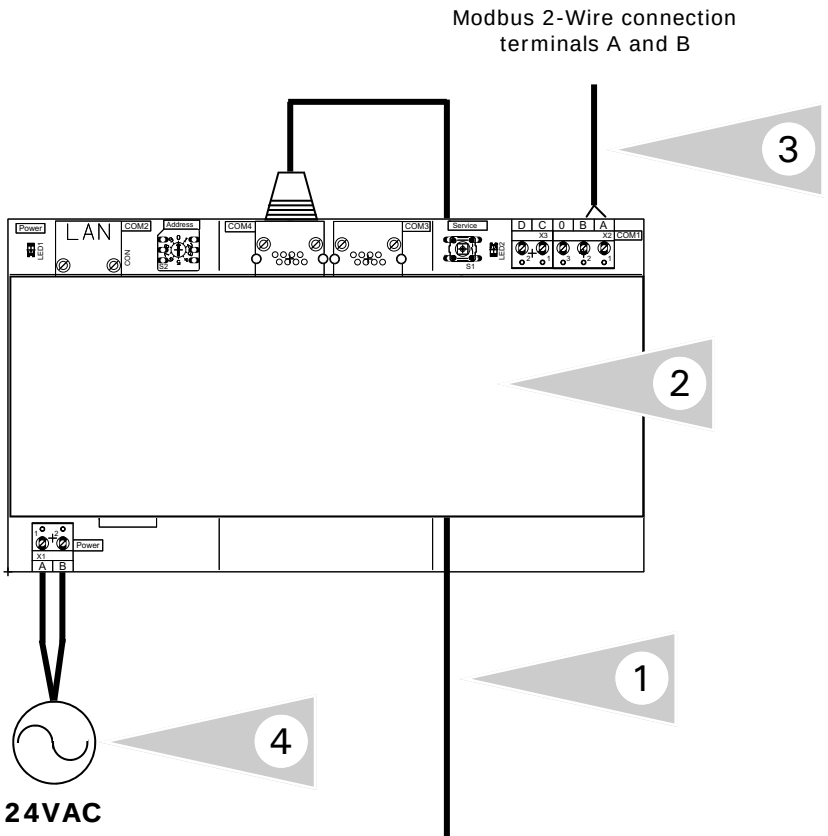
COM 1 terminals A and B are used. It is to be noted that the A/B naming convention may differ across manufacturers.

A=(+) non-inverting
B=(—) inverting

Termination and Bias:
This device does not have a termination resistor installed. There are two weak (4.7Kohm) pull up/down resistors located on the lines to maintain a bias.

Connection Overview—24VAC

Communication connections—Vitocontrol-S, CT3/VD2A
Modbus



Connection Overview

Refer to manual specific to boiler control. Ensure necessary LON communication card installed.

1 A 3'/91cm CAT-5 cable is supplied with the gateway. The RJ45 is plugged into the control and terminates into the RJ45 socket inside of the Versatronik 502 gateway.

2 Versatronik 502 gateway.

3 Field wiring for Modbus connection to terminals A and B.

4 Field supplied 24VAC power supply for gateway.

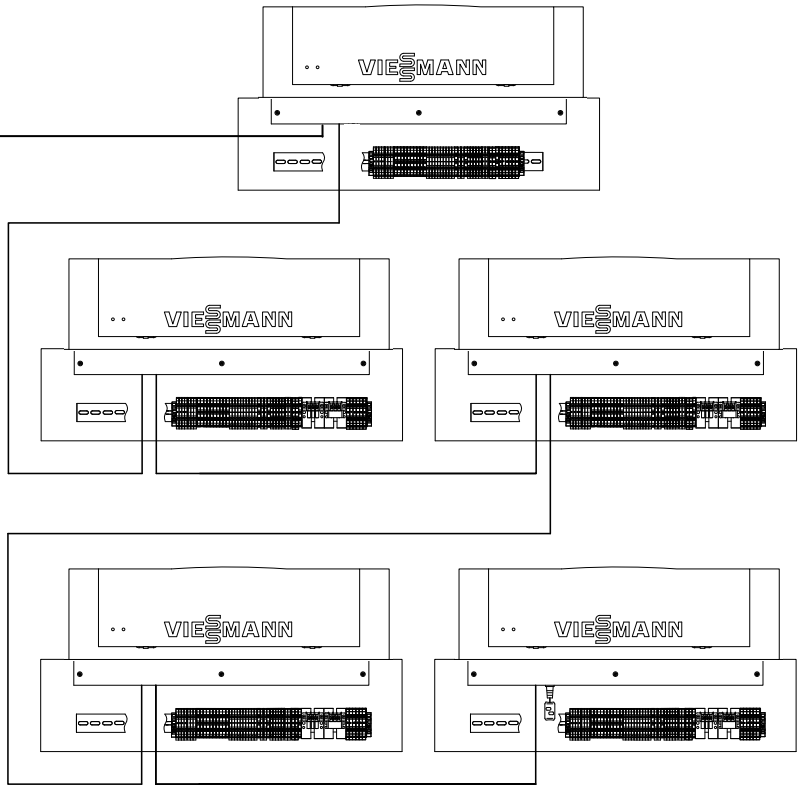
Modbus Wiring Connections

Modbus Wiring Connections
(RS-485 Network)

COM 1 terminals A and B are used. It is to be noted that the A/B naming convention may differ across manufacturers.

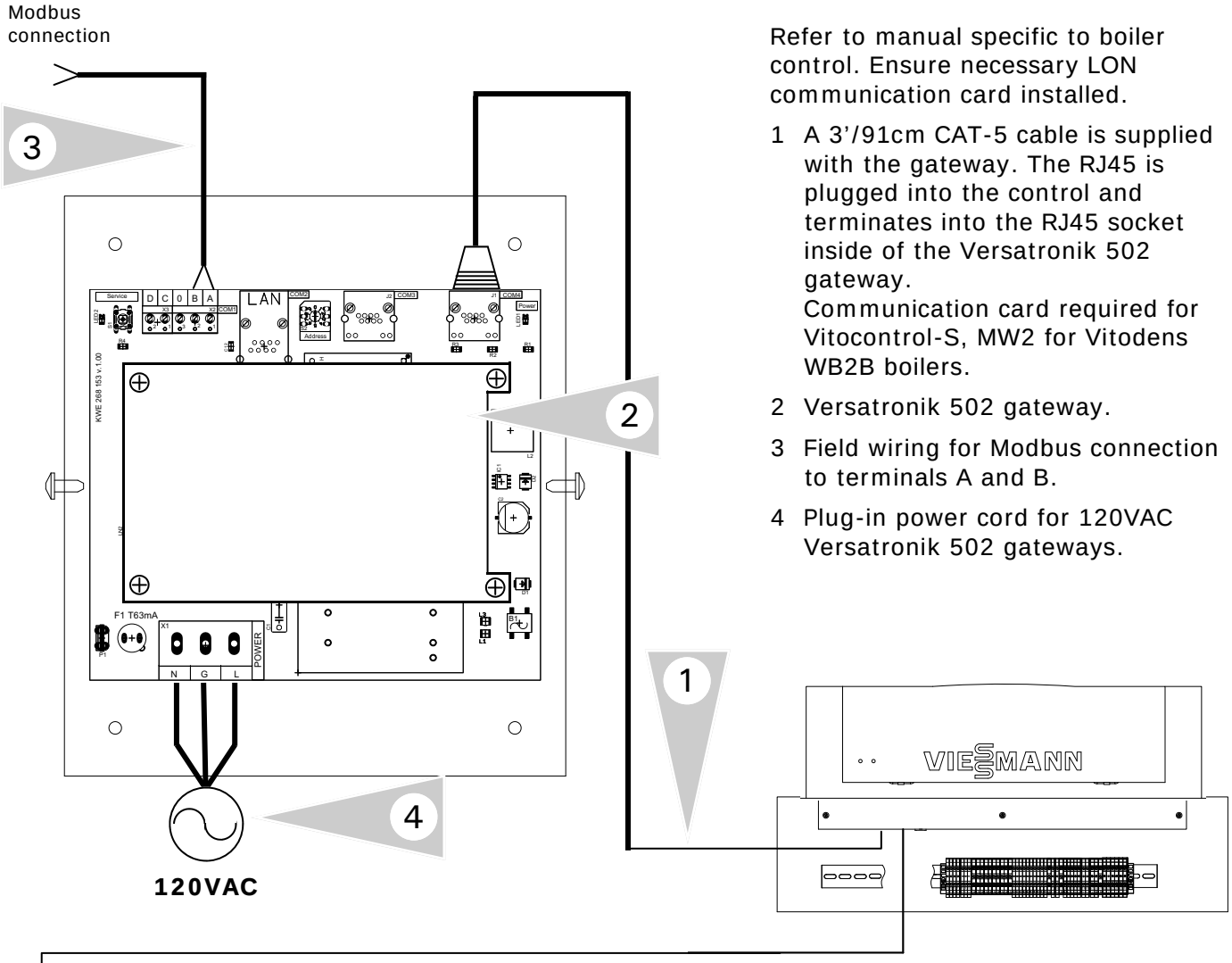
A=(+) non-inverting
B=(—) inverting

Termination and Bias:
This device does not have a termination resistor installed. There are two weak (4.7Kohm) pull up/down resistors located on the lines to maintain a bias.



Connection Overview—120VAC

Communication connections—Vitocontrol-S, MW2 for Vitodens 200, WB2B Modbus



Connection Overview

Refer to manual specific to boiler control. Ensure necessary LON communication card installed.

1 A 3'/91cm CAT-5 cable is supplied with the gateway. The RJ45 is plugged into the control and terminates into the RJ45 socket inside of the Versatronik 502 gateway.
Communication card required for Vitocontrol-S, MW2 for Vitodens WB2B boilers.

2 Versatronik 502 gateway.

3 Field wiring for Modbus connection to terminals A and B.

4 Plug-in power cord for 120VAC Versatronik 502 gateways.

Modbus Wiring Connections

Modbus Wiring Connections (RS-485 Network)

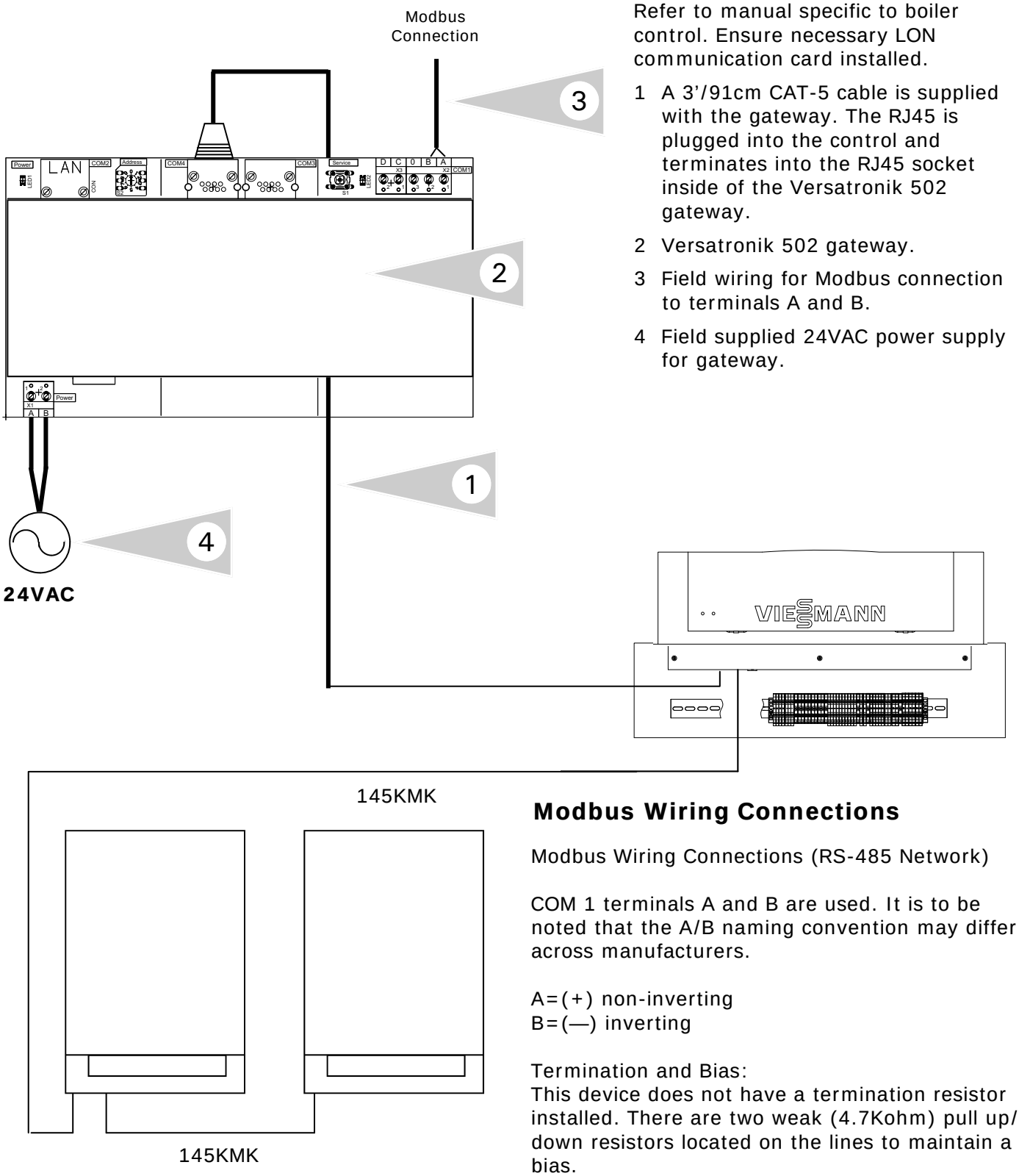
COM 1 terminals A and B are used. It is to be noted that the A/B naming convention may differ across manufacturers.

A=(+) non-inverting
B=(—) inverting

Termination and Bias:
This device does not have a termination resistor installed. There are two weak (4.7Kohm) pull up/ down resistors located on the lines to maintain a bias.

Connection Overview—120VAC

Communication connections—Vitocontrol-S, MW2 for Vitodens 200, WB2B
Modbus



Connection Overview

Refer to manual specific to boiler control. Ensure necessary LON communication card installed.

1 A 3'/91cm CAT-5 cable is supplied with the gateway. The RJ45 is plugged into the control and terminates into the RJ45 socket inside of the Versatronik 502 gateway.

2 Versatronik 502 gateway.

3 Field wiring for Modbus connection to terminals A and B.

4 Field supplied 24VAC power supply for gateway.

Modbus Wiring Connections

Modbus Wiring Connections (RS-485 Network)

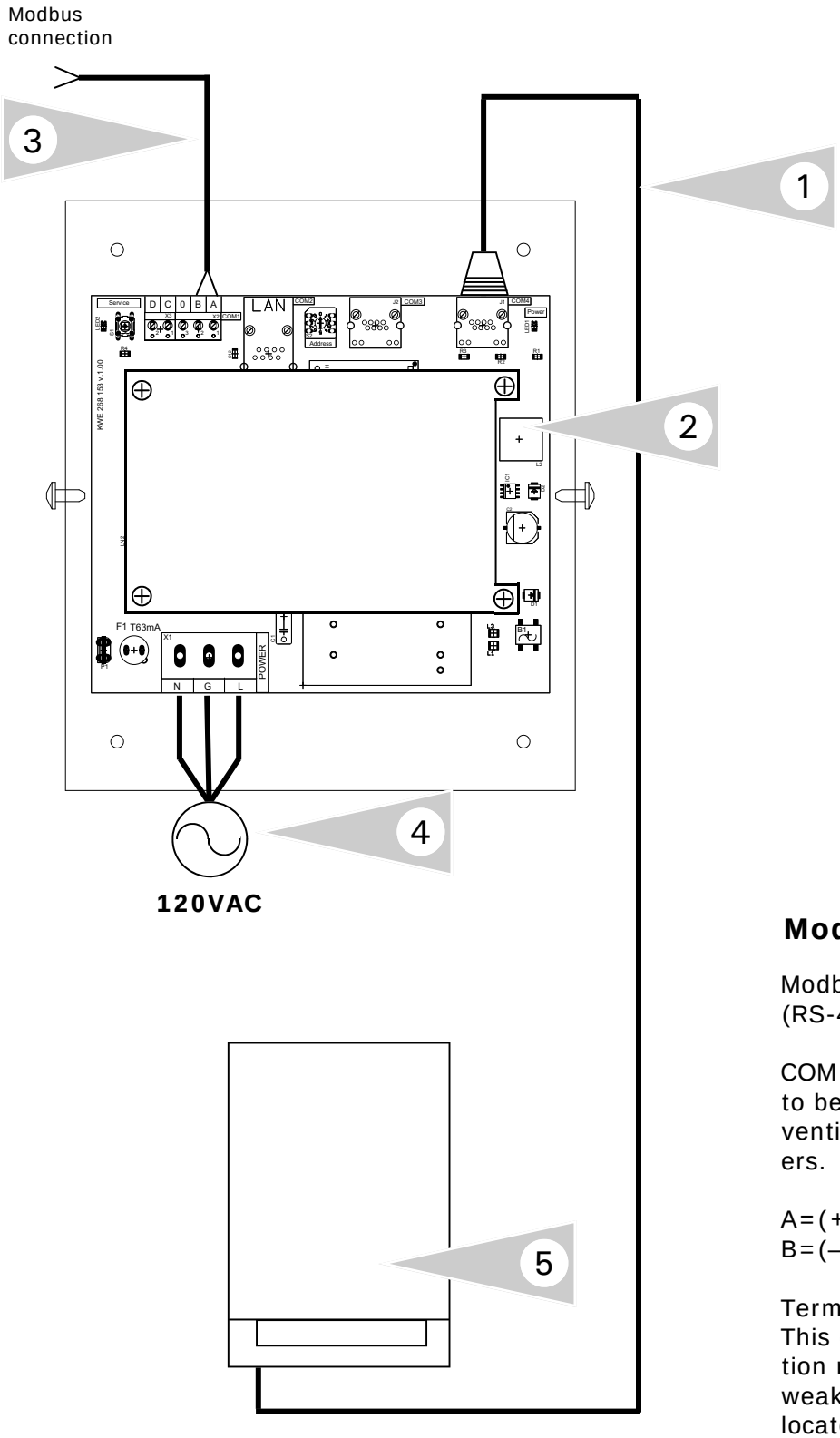
COM 1 terminals A and B are used. It is to be noted that the A/B naming convention may differ across manufacturers.

A=(+) non-inverting
B=(—) inverting

Termination and Bias:
This device does not have a termination resistor installed. There are two weak (4.7Kohm) pull up/ down resistors located on the lines to maintain a bias.

Connection Overview—120VAC

Communication connections—Vitodens 200, WB2B, HO1
Modbus



Connection Overview

Refer to manual specific to boiler control. Ensure necessary LON communication card installed.

1 A 3'/91cm CAT-5 cable is supplied with the gateway. The RJ45 is plugged into the control and terminates into the RJ45 socket inside of the Versatronik 502 gateway.

2 Versatronik 502 gateway.

3 Field wiring for Modbus connection to terminals A and B.

4 Plug-in power cord for 120VAC Versatronik 502 gateways.

5 Refer to boiler manual with respect to installing LON communications card inside of boiler control.

Modbus Wiring Connections

Modbus Wiring Connections
(RS-485 Network)

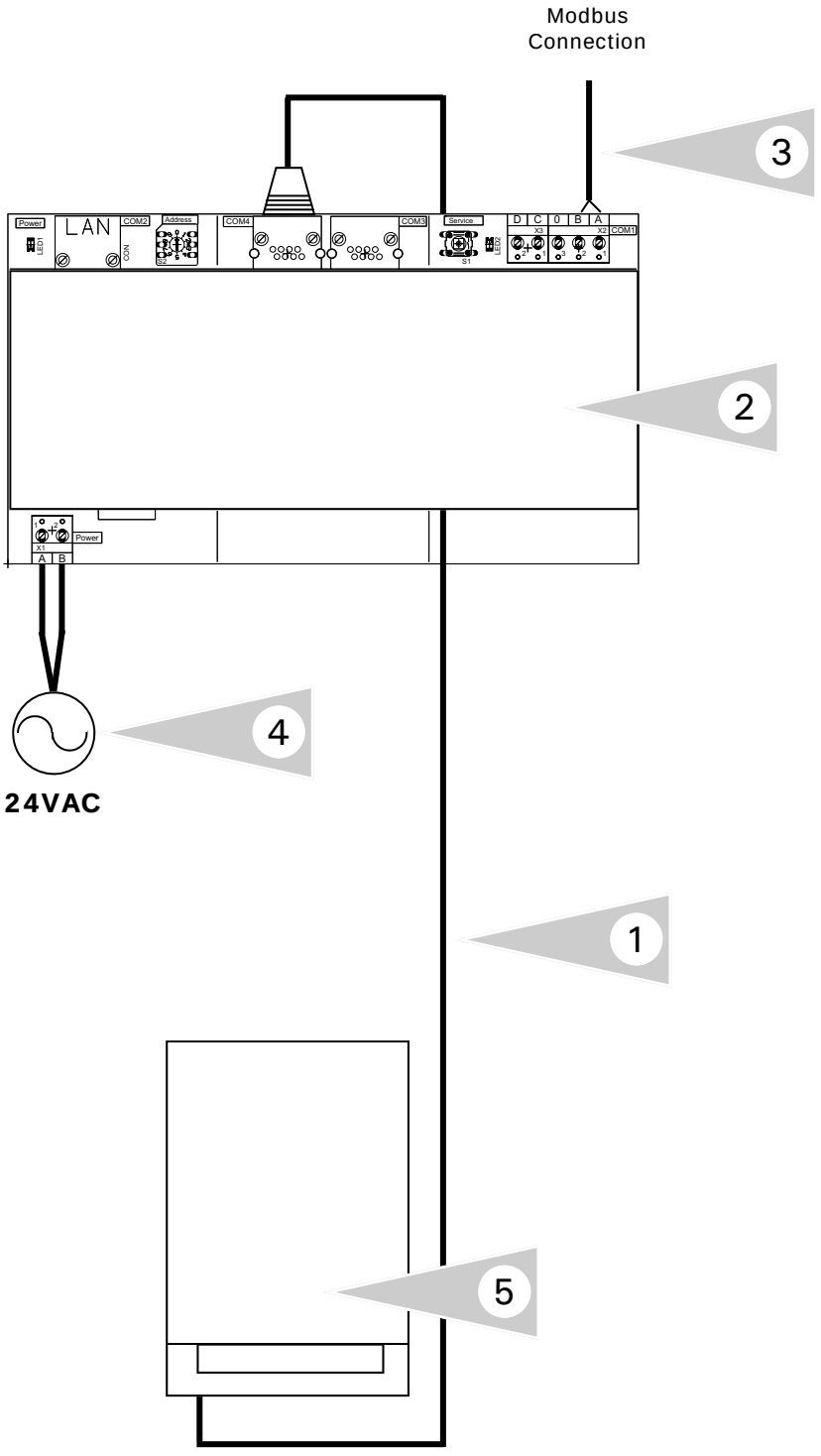
COM 1 terminals A and B are used. It is to be noted that the A/B naming convention may differ across manufacturers.

A=(+) non-inverting
B=(—) inverting

Termination and Bias:
This device does not have a termination resistor installed. There are two weak (4.7Kohm) pull up/down resistors located on the lines to maintain a bias.

Connection Overview—24VAC

Communication connections—Vitodens 200, WB2B, HO1
Modbus



Connection Overview

Refer to manual specific to boiler control. Ensure necessary LON communication card installed.

1 A 3'/91cm CAT-5 cable is supplied with the gateway. The RJ45 is plugged into the control and terminates into the RJ45 socket inside of the Versatronik 502 gateway.

2 Versatronik 502 gateway.

3 Field wiring for Modbus connection to terminals A and B.

4 Field supplied 24VAC power supply for Versatronik gateway.

5 Refer to boiler manual with respect to installing LON communications card inside of boiler control.

Modbus Wiring Connections

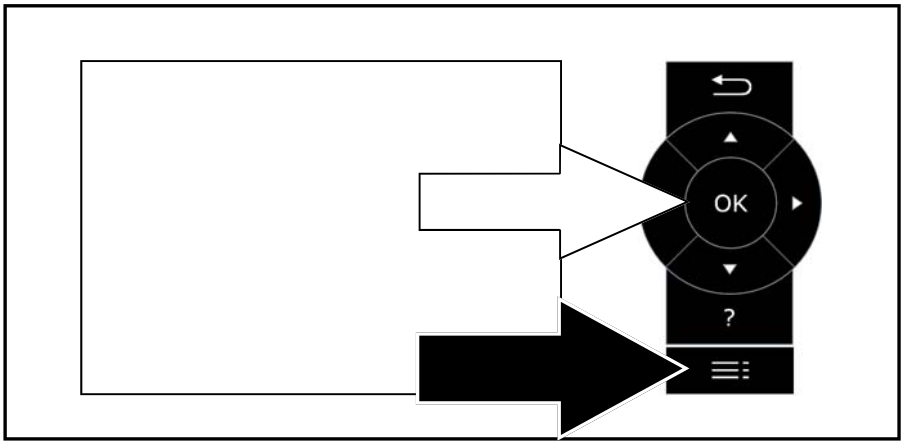
Modbus Wiring Connections
(RS-485 Network)

COM 1 terminals A and B are used. It is to be noted that the A/B naming convention may differ across manufacturers.

A=(+) non-inverting
B=(—) inverting

Termination and Bias:
This device does not have a termination resistor installed. There are two weak (4.7Kohm) pull up/down resistors located on the lines to maintain a bias.

Update Participant List for Vitocontrol-S, Cascade Control



Participant Update

This is to be carried out after all the communication connections have been completed and the Vitocontrol-S, is coded as the error manager.

Requirements:
Vitocontrol-S, must be coded as the error manager (default). Refer to the Vitocontrol-S manual address 79:01.

The LON participant number must be assigned in each of the Versatronik 502 gateway units. Refer to the rotary dial setting and ensure there are no duplicates.

Press the OK and lined Menu button simultaneously to bring up the ***Service*** menu option and press ***OK***.

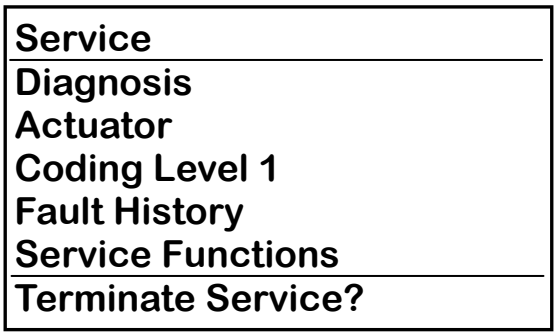
Arrow down to ***Service Functions*** and press ***OK***.

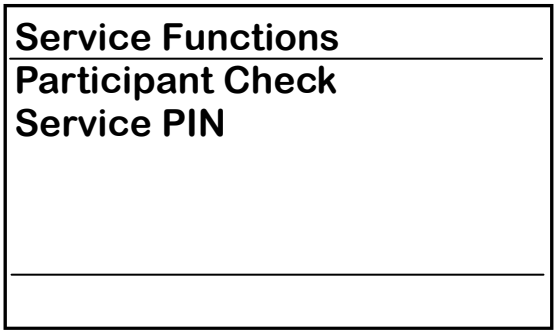
When in the ***Service Functions*** screen, ensure ***Subscriber Check*** is highlighted. Arrow up or down to highlight if not and press ***OK***.

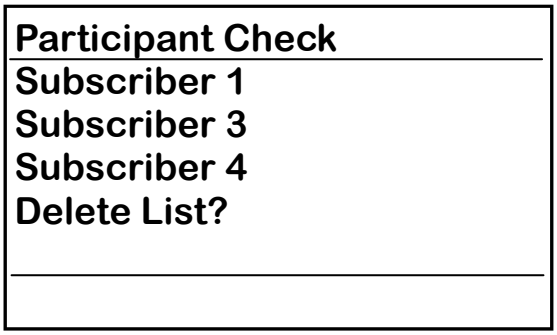
Arrow down to ***Delete List?*** and press ***OK***.

The LON Participant information will be updated as to the boiler controls and any other Versatronik LON devices.

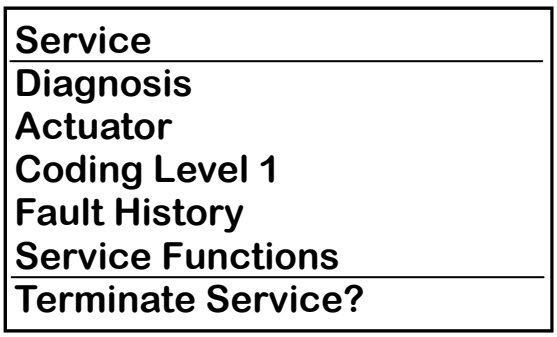
Note:
Re-entering the Subscriber Check too early will result in the screen showing No Subscriber. Continue

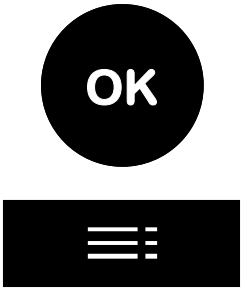


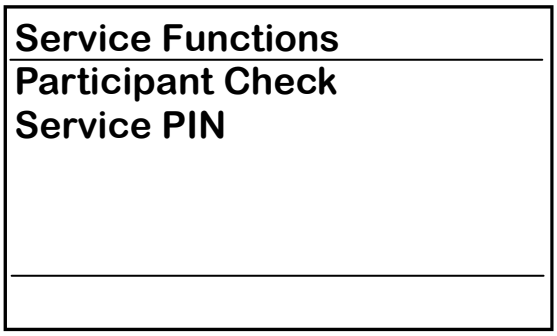


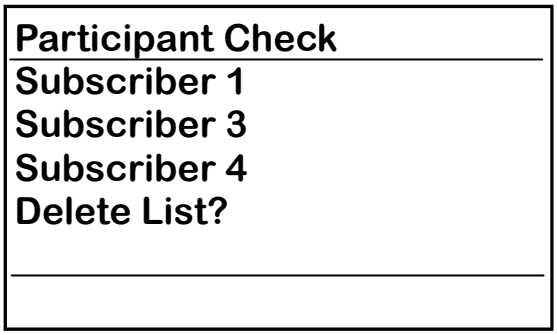


Participant Check Vitocontrol-S, Cascade Control









Rotary Switch Position	Participant Value
0	55
1	56
2	57
3	58
4	59
5	60
6	61
7	62

Participant Check

The participant check is used to confirm communication between the boiler controls and the Vitocontrol-S, system control.

Requirements:
Vitocontrol-S, must be coded as the error manager (default). Refer to the Vitocontrol-S manual address 79:01. The LON participant number must be assigned in each of the Versatronik 502 gateway units. Refer to the rotary dial setting and ensure there are no duplicates.

1. Press the ***OK*** and ***Menu*** buttons simultaneously for approximately 2 seconds. This will allow the Service screen to appear.
2. With the arrow down button, select the ***Service Functions*** menu option.
3. Select ***Subscriber Check*** if not already highlighted and press ***OK***.
4. With the arrow up or down buttons, select a subscriber and press OK. The screen with show the check is active and will report back if it is okay or not.
5. If the check was successful, select a different user by using the arrow up or down buttons. Once selected press OK and repeat the same procedure as outlined in point 4.
6. To exit the subscriber check, press the return button ⮌.

Modbus Information

Overview:

Wiring

RS-485 Network
COM1 terminals A and B are used.
The A and B naming convention may differ across manufacturers.

Refer to individual wiring/installation pages in this manual.

A=(+) non-inverting
B=(—) inverting

Termination and Bias

- This device does not have a termination resistor installed
- There are two 4.7kohm pull up/down resistors located on the lines to maintain bias.

LED Operation

LED2 will blink every time a Modbus request is seen on the network

Modbus Communication

Configuration Settings

The gateway is a Modbus slave and all communication has to be initiated by a master. To set up successful communication with the gateway all connection parameters have to be set correctly to the following: 9600 8-N-1 RTU.

Mode	RTU
Baud Rate	9600bps
Data Bits/Length	8
Parity	None
Stop bits	1
Address/Device ID	88, 1-9

Trouble-Shooting

Problem: Not getting a response from the gateway device

- Ensure the connection is set to 9600 8-N-1
- Check the rotary dial switch for the device addressing and it not in between dial settings
- Ensure the communication cables match their polarity

Modbus Information

Registers

- This device considers Holding Registers and Input Registers Identical; the same data will be found in either.
- Holding Register 1 begins at address 40001.
- Registers 1 to 23 are stored internally in EEPROM and will be remembered during power cycle.
- Do not read more than 40 Registers simultaneously, and do not exceed address 78 or an exception response will be produced.
- Coil and Input Status are not used on this device.

Important Configuration Settings

Holding Register	Point Description	Details
1	Boiler 1 LON Address	Participant # / Node ID (Address 77) Default 1 -4 for Vitotronic 100 controls Rotary Dial Position for KK10LON and KW10B Add 100 (101 - 104) for KK10LON control Add 200 (201 - 204) for KW10B control
2	Boiler 2 LON Address	
3	Boiler 3 LON Address	
4	Boiler 4 LON Address	
5	Zone/Cascade/Boiler LON Address	Participant # of cascade/zone control Default 5 for Vitotronic 300 control Add 200 (205) for MW2 control (for use with WB2B boiler over KM-BUS)
6	Number of Zones on the Zone/Cascade/Boiler	Number of zones on the cascade/zone control. Including the common supply zone (A1). Set 0 if no cascade or 1 through 3 for number of zones.

Holding Register	Description	Notes	Units	Writeable
1 (40001)	Boiler 1 LON Address (Configured Value must be set during commissioning)	1..99	N/A	Writeable
2	Boiler 2 LON Address (Configured Value must be set during commissioning)	1..99	N/A	Writeable
3	Boiler 3 LON Address (Configured Value must be set during commissioning)	1..99	N/A	Writeable
4	Boiler 4 LON Address (Configured Value must be set during commissioning)	1..99	N/A	Writeable
5	Zone/Cascade/Boiler LON Address (Configured Value must be set during commissioning)	1..99	N/A	Writeable
6	Number of Zones on the Zone/Cascade/Boiler (Configured Value must be set during commissioning)	1..3	N/A	Writeable
7	Zone/Cascade/Boiler DHW Writeable Set-Point		°C/°F	Writeable
8	Zone/Cascade/Boiler Zone A1 Writeable Curve Shift		°K	Writeable
9	Zone/Cascade/Boiler Zone A1 Writeable Curve Slope	0.1 Res.	N/A	Writeable
10	Zone/Cascade/Boiler Zone A1 Writeable Curve Room Temp. Normal		°C/°F	Writeable
11	Zone/Cascade/Boiler Zone A1 Writeable Curve Room Temp. Reduce		°C/°F	Writeable
12	Zone/Cascade/Boiler Zone A1 Writeable Supply Set-Point		°C/°F	Writeable
13	Zone/Cascade/Boiler Zone M2 Writeable Curve Shift		°K	Writeable
14	Zone/Cascade/Boiler Zone M2 Writeable Curve Slope	0.1 Res.	N/A	Writeable
15	Zone/Cascade/Boiler Zone M2 Writeable Curve Room Temp. Normal		°C/°F	Writeable
16	Zone/Cascade/Boiler Zone M2 Writeable Curve Room Temp. Reduce		°C/°F	Writeable
17	Zone/Cascade/Boiler Zone M2 Writeable Supply Set-Point		°C/°F	Writeable
18	Zone/Cascade/Boiler Zone M3 Writeable Curve Shift		°K	Writeable

Continued

Holding Register	Description	Notes	Units	Writeable
19	Zone/Cascade/Boiler Zone M3 Writeable Curve Slope	0.1 Resolution	N/A	Writeable
20	Zone/Cascade/Boiler Zone M3 Writeable Curve Room Temp. Normal		°C/°F	Writeable
21	Zone/Cascade/Boiler Zone M3 Writeable Curve Room Temp. Reduce		°C/°F	Writeable
22	Zone/Cascade/Boiler Zone M3 Writeable Supply Set-Point		°C/°F	Writeable
23	Units (0-Celsius, 1-Fahrenheit)		N/A	
24	Not used			
25	Boiler 1 State		%	Read-Only
26	Boiler 2 State		%	Read-Only
27	Boiler 3 State		%	Read-Only
28	Boiler 4 State		%	Read-Only
29	Not used			
30	Boiler 1 actual temperature		°C/°F	Read-Only
31	Boiler 1 actual return temperature sensor 1		°C/°F	Read-Only
32	Boiler 1 actual return temperature sensor 2		°C/°F	Read-Only
33	Boiler 1 flue gas actual temperature		°C/°F	Read-Only
34	Boiler 1 fault code (Appendix A)		N/A	Read-Only
35	Boiler 1 relay state (Appendix B)	Unsigned Int	N/A	Read-Only
36	Boiler 2 actual temperature		°C/°F	Read-Only
37	Boiler 2 actual return temperature sensor 1		°C/°F	Read-Only
38	Boiler 2 actual return temperature sensor 2		°C/°F	Read-Only
39	Boiler 2 flue gas actual temperature		°C/°F	Read-Only
40	Boiler 2 fault code (Appendix A)		N/A	Read-Only
41	Boiler 2 relay state (Appendix B)	Unsigned Int	N/A	Read-Only
42	Boiler 3 actual temperature		°C/°F	Read-Only
43	Boiler 3 actual return temperature sensor 1		°C/°F	Read-Only
44	Boiler 3 actual return temperature sensor 2		°C/°F	Read-Only
45	Boiler 3 flue gas actual temperature		°C/°F	Read-Only
46	Boiler 3 fault code (Appendix A)		N/A	Read-Only
47	Boiler 3 relay state (Appendix B)	Unsigned Int	N/A	Read-Only
48	Boiler 4 actual temperature		°C/°F	Read-Only
49	Boiler 4 actual return temperature sensor 1		°C/°F	Read-Only
50	Boiler 4 actual return temperature sensor 2		°C/°F	Read-Only
51	Boiler 4 flue gas actual temperature		°C/°F	Read-Only
52	Boiler 4 fault code (Appendix A)		N/A	Read-Only
53	Boiler 4 relay state (Appendix B)	Unsigned Int	N/A	Read-Only
54	Zone/Cascade/Boiler Outdoor temperature		°C/°F	Read-Only
55	Zone/Cascade/Boiler Relay State (Appendix B)	Unsigned Int	N/A	Read-Only
56	Zone/Cascade/Boiler Fault Code (Appendix A)		N/A	Read-Only
57	Zone/Cascade/Boiler DHW Set-Point		°C/°F	Read-Only
58	Zone/Cascade/Boiler DHW Actual Temperature		°C/°F	Read-Only
59	Zone/Cascade/Boiler Zone A1 Supply Set-Point		°C/°F	Read-Only
60	Zone/Cascade/Boiler Zone A1 Supply Actual Temperature		°C/°F	Read-Only
61	Zone/Cascade/Boiler Zone A1 Actual Return Temperature		°C/°F	Read-Only

Continued

Holding Register	Description	Notes	Units	Writeable
62	Zone/Cascade/Boiler Zone A1 Curve Shift		°K	Read-Only
63	Zone/Cascade/Boiler Zone A1 Curve Slope	0.1 Resolution	N/A	Read-Only
64	Zone/Cascade/Boiler Zone A1 Curve Room Temp. Normal		°C/°F	Read-Only
65	Zone/Cascade/Boiler Zone A1 Curve Room Temp. Reduce		°C/°F	Read-Only
66	Zone/Cascade/Boiler Zone M2 Supply Set-Point		°C/°F	Read-Only
67	Zone/Cascade/Boiler Zone M2 Supply Actual Temperature		°C/°F	Read-Only
68	Zone/Cascade/Boiler Zone M2 Curve Shift		°K	Read-Only
69	Zone/Cascade/Boiler Zone M2 Curve Slope	0.1 Resolution	N/A	Read-Only
70	Zone/Cascade/Boiler Zone M2 Curve Room Temp. Normal		°C/°F	Read-Only
71	Zone/Cascade/Boiler Zone M2 Curve Room Temp. Reduce		°C/°F	Read-Only
72	Zone/Cascade/Boiler Zone M3 Supply Set-Point		°C/°F	Read-Only
73	Zone/Cascade/Boiler Zone M3 Supply Actual Temperature		°C/°F	Read-Only
74	Zone/Cascade/Boiler Zone M3 Curve Shift		°K	Read-Only
75	Zone/Cascade/Boiler Zone M3 Curve Slope	0.1 Resolution	N/A	Read-Only
76	Zone/Cascade/Boiler Zone M3 Curve Room Temp. Normal		°C/°F	Read-Only
77 (40077)	Zone/Cascade/Boiler Zone M3 Curve Room Temp. Reduce		°C/°F	Read-Only

Appendix A—Fault Codes

Error codes for Viessmann control units based on controls/equipment installed

Fault Code (hex)	Fault Code (Dec)	Description
00	00	System without fault
0F	15	Perform maintenance check-up
10	16	Short circuit, outdoor temperature sensor
18	24	Interruption, outdoor temperature sensor
20	32	Short circuit, supply temperature sensor HC1/system
28	40	Interruption, supply temperature sensor HC1/system
30	48	Short circuit, boiler water temperature sensor
38	56	Interruption, boiler water temperature sensor
40	64	Short circuit, supply temperature sensor heating circuit 2
41	65	Short circuit, return temperature sensor heating circuit 2
44	68	Short circuit, supply temperature sensor heating circuit 3
45	69	Short circuit, return temperature sensor heating circuit 3
48	72	Interruption, supply temperature sensor heating circuit 2
49	73	Interruption, return temperature sensor heating circuit 2
4C	76	Interruption, supply temperature sensor heating circuit 3
4d	77	Interruption, return temperature sensor heating circuit 3
50	80	Short circuit, DHW tank temperature sensor
51	81	Short circuit, DHW tank temperature sensor 2
58	88	Interruption, DHW tank temperature sensor
59	89	Interruption, DHW tank temperature sensor 2
60	96	Short circuit, return temperature sensor 17
68	104	Interruption, return temperature sensor 17
70	112	Short circuit, supply/return temperature sensor 17B
78	120	Interruption, supply/return temperature sensor 17B
92	146	Solar: collector temperature short circuit
93	147	Solar: collector return temperature short circuit
94	148	Solar: collector DHW tank temperature sensor short circuit
9A	154	Solar: collector temperature sensor open circuit
9B	155	Solar collector return temperature sensor open circuit
9C	156	Solar: DHW tank temperature sensor open circuit
9F	159	Solar: general fault message
A7	167	Fault control unit wireless clock module
AE	174	Internal fault mixing valve
AF	175	Internal fault mixing valve
b0	176	Short circuit, flue gas temperature sensor
b1	177	Communication fault, programming unit (internal)
b4	180	Internal fault
b5	181	Internal fault
b6	182	Internal fault, invalid hardware recognition
b7	183	Internal fault, boiler protection coding card
b8	184	Interruption, flue gas temperature sensor
bA	186	Fault, mixing valve module (KM-BUS)
bC	188	Fault, Vitotrol heating circuit 1 (KM-BUS)
bd	186	Fault, Vitotrol heating circuit 2 (KM-BUS)
bE	190	Fault, Vitotrol heating circuit 3 (KM-BUS)
C1	193	External fault indication, boiler
C2	194	Communication fault solar control unit (KM-BUS)

Appendix A—Fault Codes Continued

Error codes for Viessmann control units based on controls/equipment installed

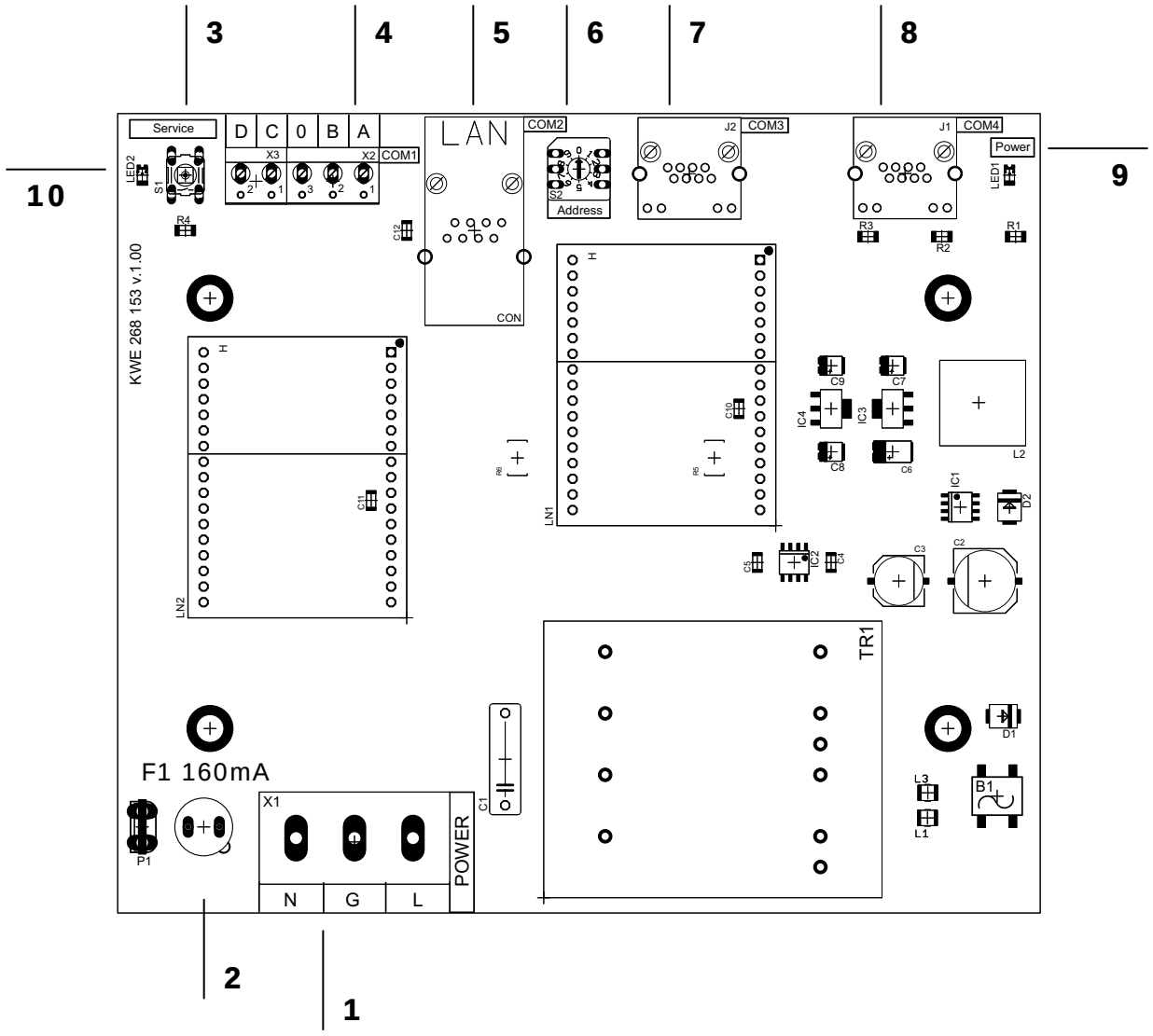
Fault Code (hex)	Fault Code (Dec)	Description
C5	197	Fault, speed controlled pump heating circuit 1 (KM-BUS)
C6	198	Fault, speed controlled pump heating circuit 2 (KM-BUS)
C7	199	Fault, speed controlled pump heating circuit 3 (KM-BUS)
C8	200	Fault, water level control
C9	201	Fault, maximum pressure
CA	202	Fault, minimum pressure/maximum pressure 2
Cb	203	Fault, maximum pressure 2
CC	204	Reserved, external periphery
Cd	205	Communication fault, Vitocom 300 (KM-BUS)
CE	206	Communication fault, fault indicator module (KM-BUS)
CF	207	Communication fault: wrong LON module
d1	209	Burner fault, boiler
d4	212	Fixed high limit fault, boiler
d5	213	Cascade: boiler is not responding
d6	214	External fault 1, plug-in adaptor
d7	215	External fault 2, plug-in adaptor
d8	216	External fault 3, plug-in adaptor
dA	218	Short circuit, room temperature sensor heating circuit 1
db	219	Short circuit, room temperature sensor heating circuit 2
dC	220	Short circuit, room temperature sensor heating circuit 3
dd	221	Interruption, room temperature sensor heating circuit 1
dE	222	Interruption, room temperature sensor heating circuit 2
dF	223	Interruption, room temperature sensor heating circuit 3
E0	224	Fault, external participant/device connected to LON
E4	228	Fault power supply voltage
E5	229	Internal fault combustion control unit
E6	230	Flue gas/air supply system blocked
F0	240	Communication fault combustion control unit
F1	241	Flue gas temperature limit has tripped
F2	242	Temperature limit has tripped
F3	243	Flame signal is present at burner start
F4	244	Flame signal is not present
F5	245	Air pressure switch not open for burner start
F6	246	Gas pressure switch not open for burner start
F7	247	Air pressure sensor short circuit or offset value outside of tolerances
F8	248	Fuel valve closure delayed
F9	249	Blower speed too low at burner start
FA	250	Blower speed too high at burner start
FC	252	Control of modulation valve defective
FD	253	Fault combustion control unit
FE	254	Coding plug defective or wrong EMV error
FF	255	Internal fault

Appendix B—Status Information

x = always available for this device
k = dependent on configuration of device
n = not available for this device

Bit	Relay State	Vitotronic 100, GC1/GC1B	Vitotronic 300, GW2/GW5B	Vitotronic 333/300-K MW1	Vitotronic 050/200H HK1M	Vitotronic 050 HK1 Panel	Vitotronic 050 HK3 Panel	Vitotronic 300-K, MW1B, MW2B	Vitotronic 200, HO1/Vitodens B2HA
0	bit 2^0 : DHW tank loading pump	k	k	k	n	k	k	k	k
1	bit 2^1 : Re-circulation pump	n	k	k	n	k	k	k	k
2	bit 2^2 : Heating circuit pump 1	n	k	k	x	x	k	k	x
3	bit 2^3 : Heating circuit pump 2	n	k	k	n	n	k	k	k
4	bit 2^4 : Heating circuit pump 3	n	k	k	n	n	k	k	n
5	bit 2^5 : Night-time contact HKP 1	n	k	k	x	x	k	k	x
6	bit 2^6 : Night-time contact HKP 2	n	k	k	n	n	k	k	k
7	bit 2^7 : Night-time contact HKP 3	n	k	k	n	n	k	k	n
8	bit 2^8 : Supply pump	n	n	n	k	k	k	n	n
9	bit 2^9 : Primary pump heat exchanger set for DHW tank loading	k	k	k	n	k	k	k	n
	bit 2^9 : DHW tank pump	n	n	n	n	n	n	n	k
10	bit 2^{10}: Boiler circuit and distribution (common supply) pump	k	k	k	n	n	n	n	k
	bit 2^{10}: Internal Pump	n	n	n	n	n	n	k	x
11	bit 2^{11}: Shunt pump	k	k	k	n	n	n	n	n
	bit 2^{11}: Diverting valve in space heating position	n	n	n	n	n	n	n	k
12	bit 2^{12}: Flue gas heat exchanger pump	x	n	n	n	n	n	n	n
13	bit 2^{13}: ThermControl switching contact	k	n	n	n	n	n	n	n
	bit 2^{13}: Diverting valve in DHW position	n	n	n	n	n	n	n	k
14	bit 2^{14}: Burner 1st stage	x	x	n	n	n	n	n	n
15	bit 2^{15}: Burner fault	x	x	n	n	n	n	n	n
	bit 2^{15}: Compiled fault	n	n	n	n	n	n	n	x

Technical Information—120VAC



PCB Identifiers

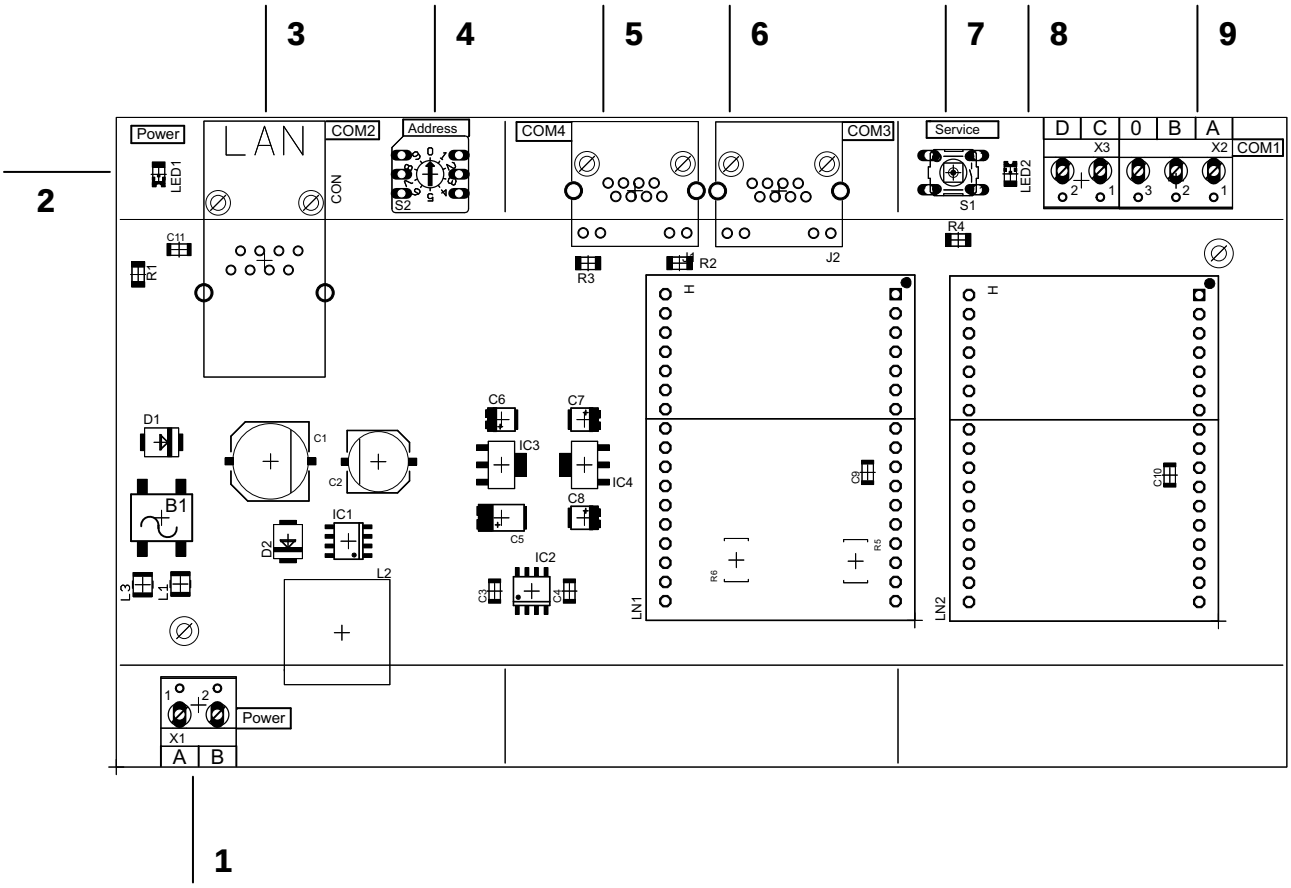
1	120VAC Power Supply Connections
2	Fuse
3	Service Button
4	Modbus Connections to BMS
5	N/A
6	N/A
7	COM3 for multiple BUS connections
8	COM4 RJ45 Connection to control
9	Power LED indicator
10	Service LED

Specifications

Voltage Requirements	120VAC
Fuse Rating	160mA Time Delay
Power	4VA
Communication Connections	Supplied cable between devices

CAUTION

Static sensitive components may be damaged by improper handling or work within the control. Ensure all possible measures are taken to eliminate build-up of static electricity.



PCB Identifiers

1	24VAC Power Supply Connections
2	Power LED indicator
3	N/A
4	N/A
5	COM4 RJ45 Connection to control
6	COM3 for multiple BUS connections
7	Service button
8	Service LED
9	Modbus Connections to BMS

Specifications

Voltage Requirements	24VAC
Fuse Rating	N/A
Power	4VA
Communication Connections	Supplied cable between devices

CAUTION

Static sensitive components may be damaged by improper handling or work within the control. Ensure all possible measures are taken to eliminate build-up of static electricity.

Notes

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