Communication

Versatronik® 532 & 532D Solar

Communication Gateway for solar controls
Modbus

Document Applicable to:
Versatronik 532 Solar/Modbus P/N 704089
Versatronik 532D Solar/Modbus P/N 704090

Applicable Controls
Resol Deltasol M
Resol Deltasol BS Plus
Resol Deltasol BS1/2/3/4
Resol Deltasol BX/BXL
Resol Deltasol E/ES/BX/MX/SKSC3
Viessmann Vitosolic 200
Viessmann SCU 124
Viessmann SCU 224
Viessmann SCU 345

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.*

Trademark Information

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For more information please visit **www.resol-gmbh.de**

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Please visit:
www.viessmann.ca
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KWE P/N 394047 Versatronik 532 Solar/Modbus Gateway V1.0 09/2013 Technical information subject to change without notice

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.

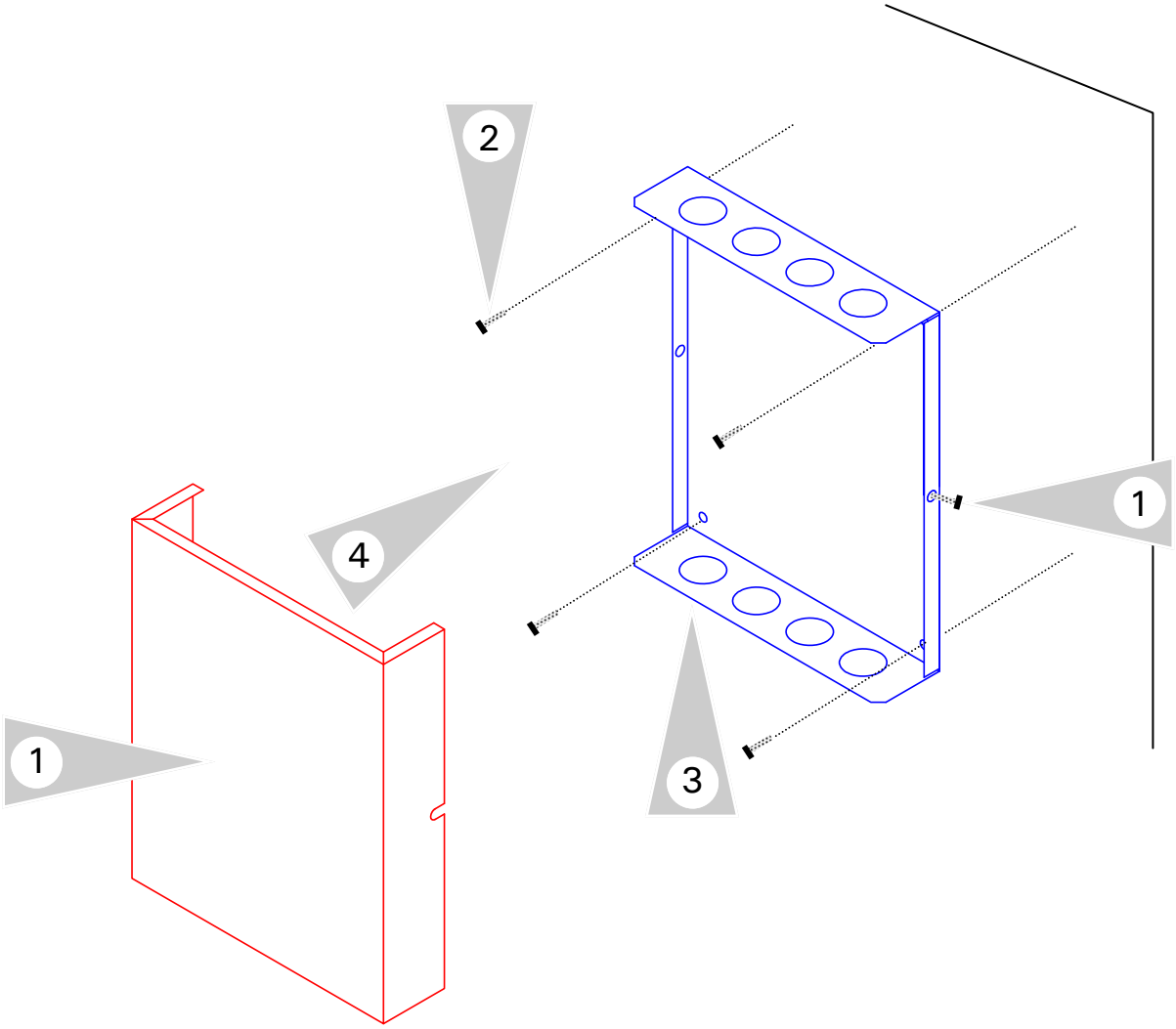
Power supply
Install power supply in accordance with the regulation of the authorities having jurisdiction or in absence of such requirements, in accordance with National Codes.

Purpose of Device and Operation

The Versatronik 532 Solar gateway provides a communication translation between applicable controls and DDC systems which are capable of Modbus RS485 communications.

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

Mounting Versatronik Gateway—120VAC Unit



Mounting Steps

1. Mount Versatronik 532 Gateway in a convenient location near the solar 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.

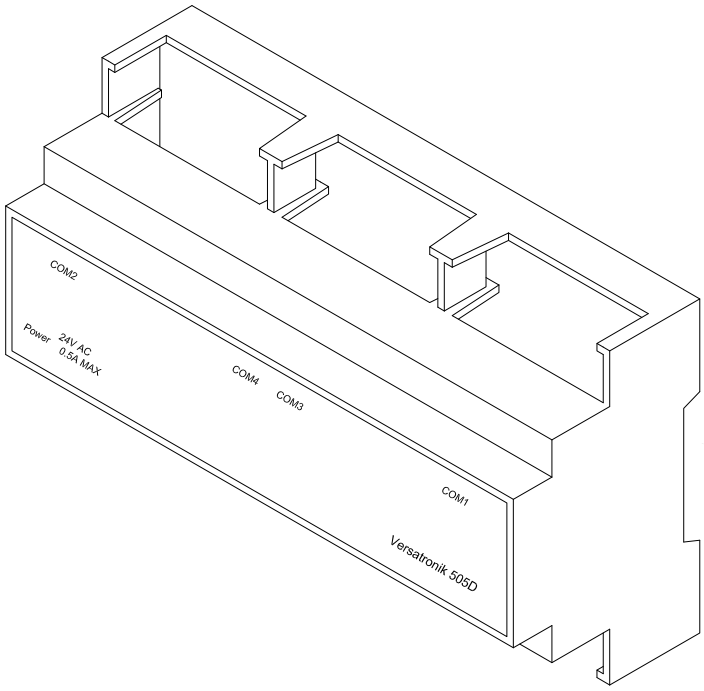
WARNING

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.

KWE P/N 394047 Versatronik 532 Solar/Modbus Gateway V1.0 09/2013 Technical information subject to change without notice

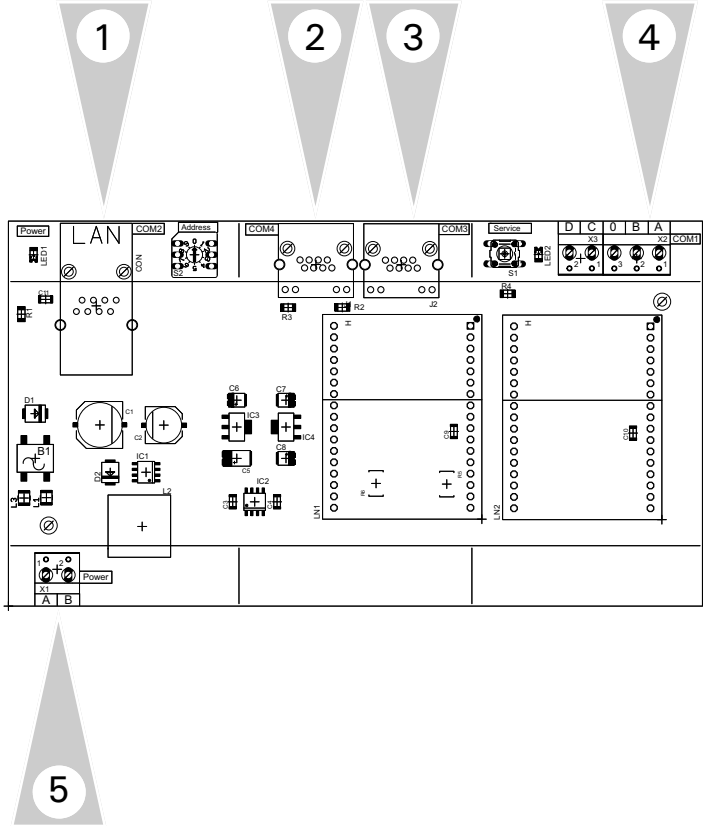
Installation

Mounting Versatronik Gateway—24VAC DIN Rail Unit



Mounting Steps

1. Mount Versatronik 532d Gateway onto DIN rail within an enclosure in a convenient location near the solar control.
2. Make all the necessary connections including the 24VAC power connection.



Connection Overview

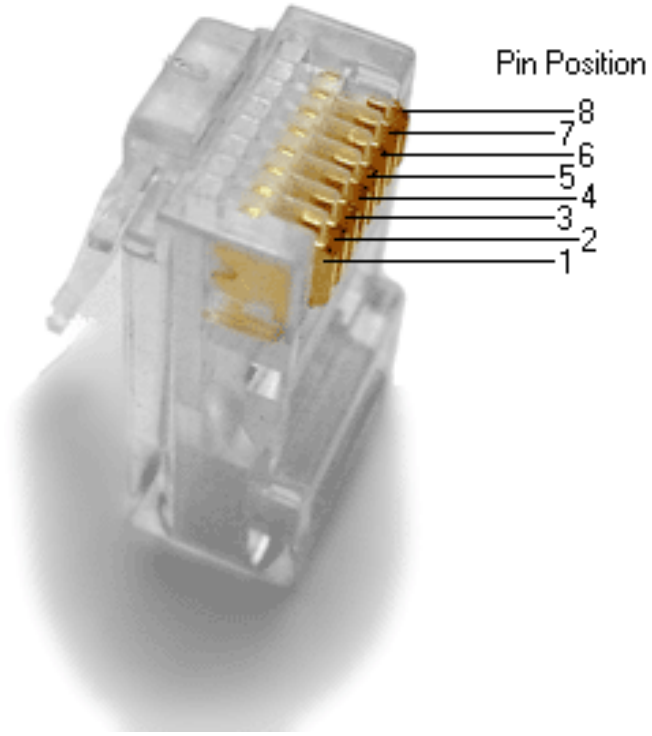
1. BACnet IP connection.
2. Solar Control Connection RJ45
3. Paralleled BUS connection
4. LON connection terminals A and B
5. 24VAC Power Connection

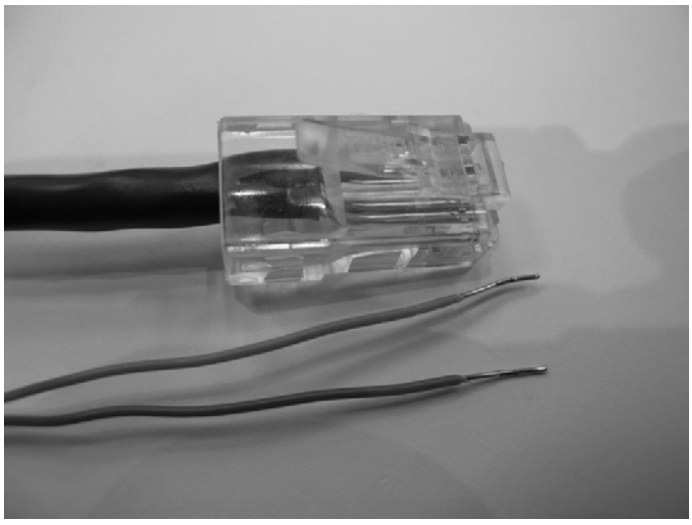
WARNING

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.

Connection Overview

RJ45 Communication Cable Supplied



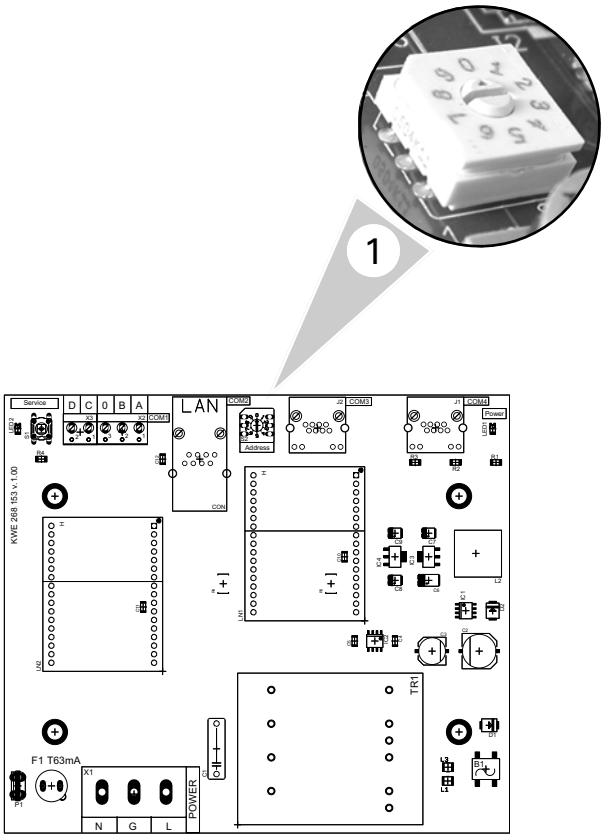


Connection Overview

1. Cut UTP cable to 2m length.
2. Strip insulation and crimp plug on one end.
3. Strip other end, cut all wires but wire 1 and 2.
4. Strip wire 1 and 2.
5. Wires 1 and 2 used to make connections to the solar control.

Versatronik 532 Dial Setting Overview

Rotary Dial Setting



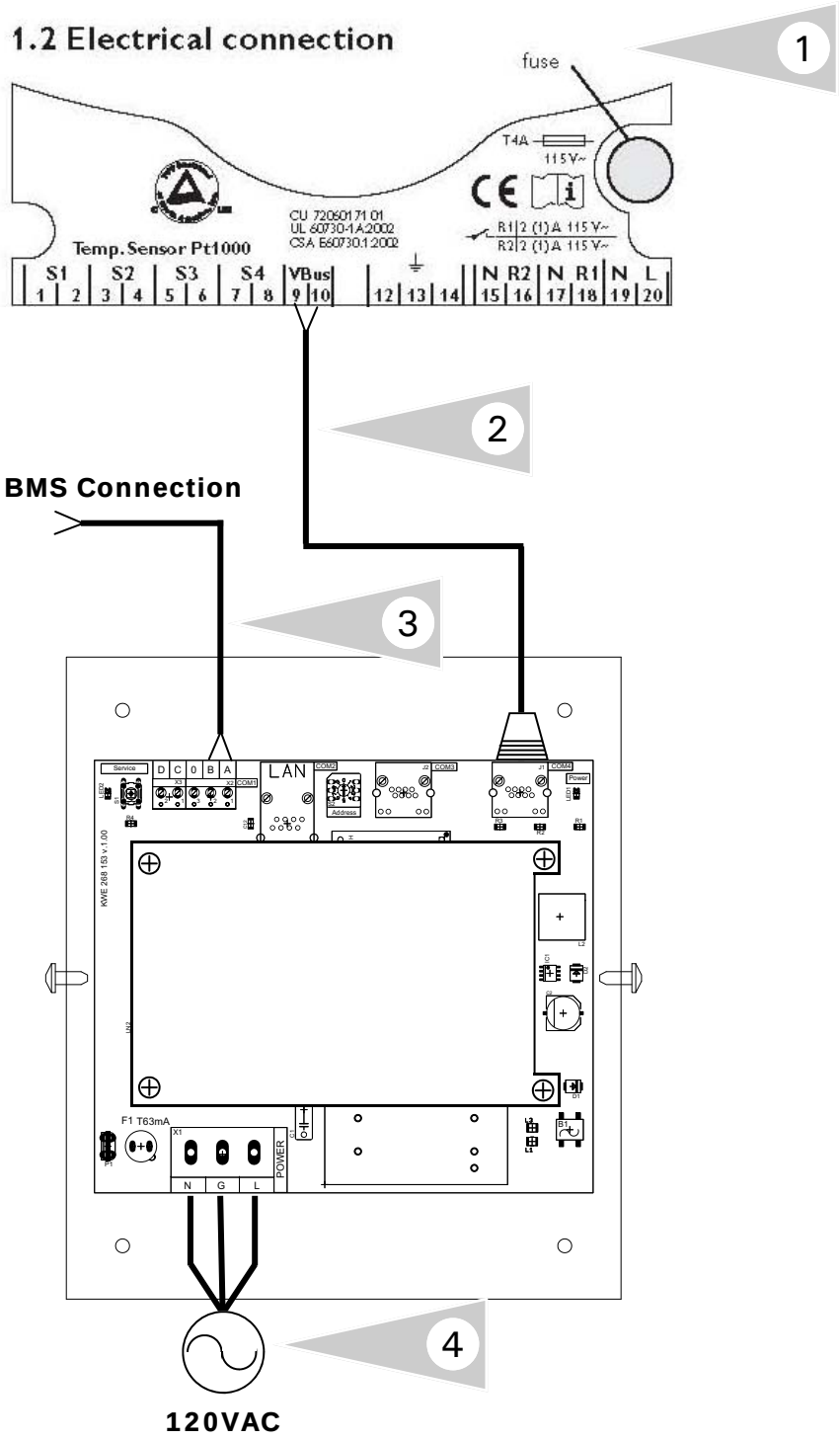
Setting Overview

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

   Applications with the Versatronik 532 Solar with RESOL controls, it is not required to make adjustments to the rotary dial setting. It should be left in the factory default position setting of 0.

Connection Overview—120VAC Unit

MODBUS Communication connections to BMS:
Example: Resol Deltasol BS Plus



Connection Overview

1 Control sensor portion of control.

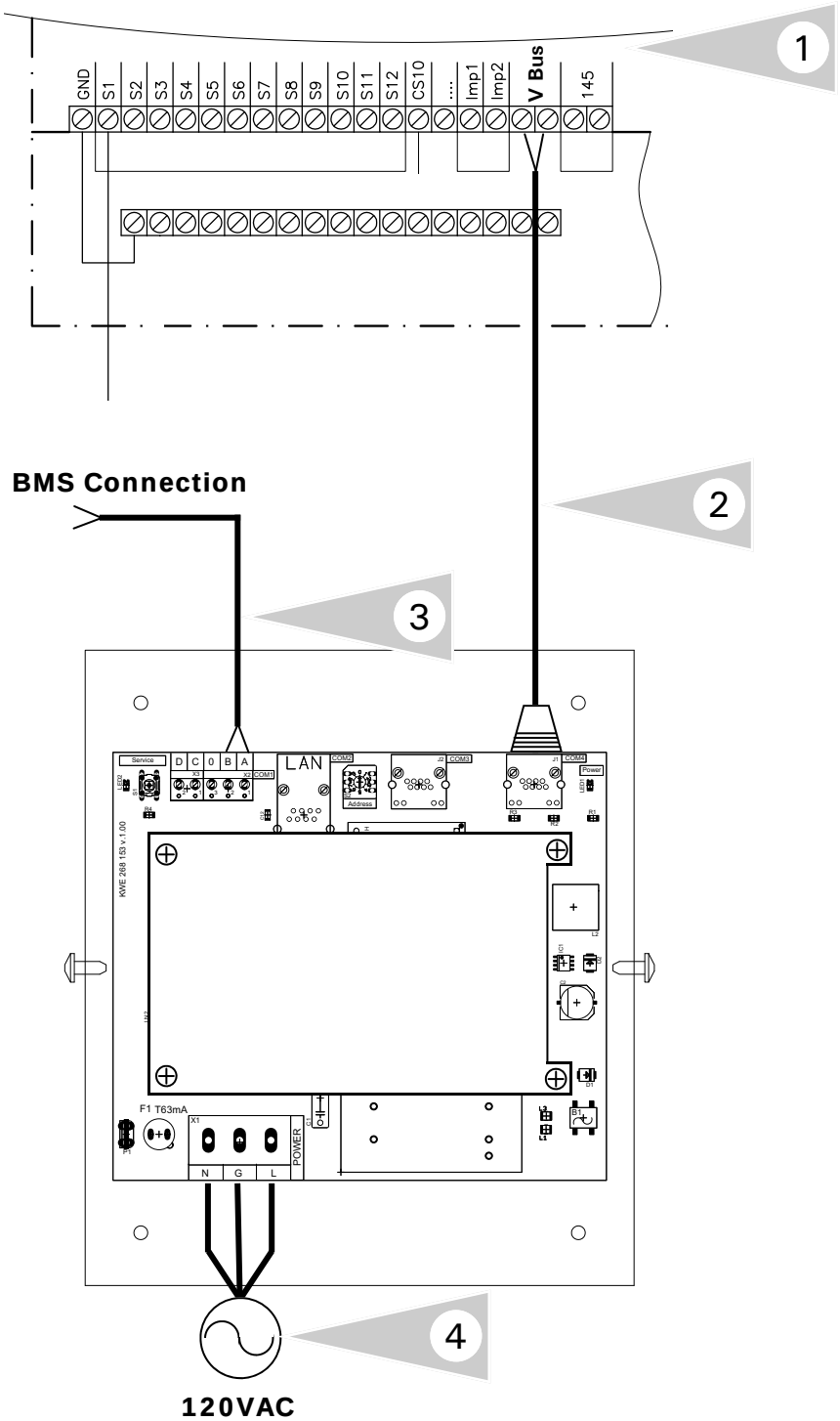
2 A CAT-5 cable is supplied with the Versatronik Solar Gateway. The RJ45 is plugged into the gateway and terminates into the control.

3 BMS connection.

4 Standard plug-in power connection supply for the gateway. It requires 120VAC for its operation.

Connection Overview—120VAC Unit

MODBUS Communication Connections to BMS:
Example: Resol Deltasol M



Connection Overview

1 Control sensor portion of control.

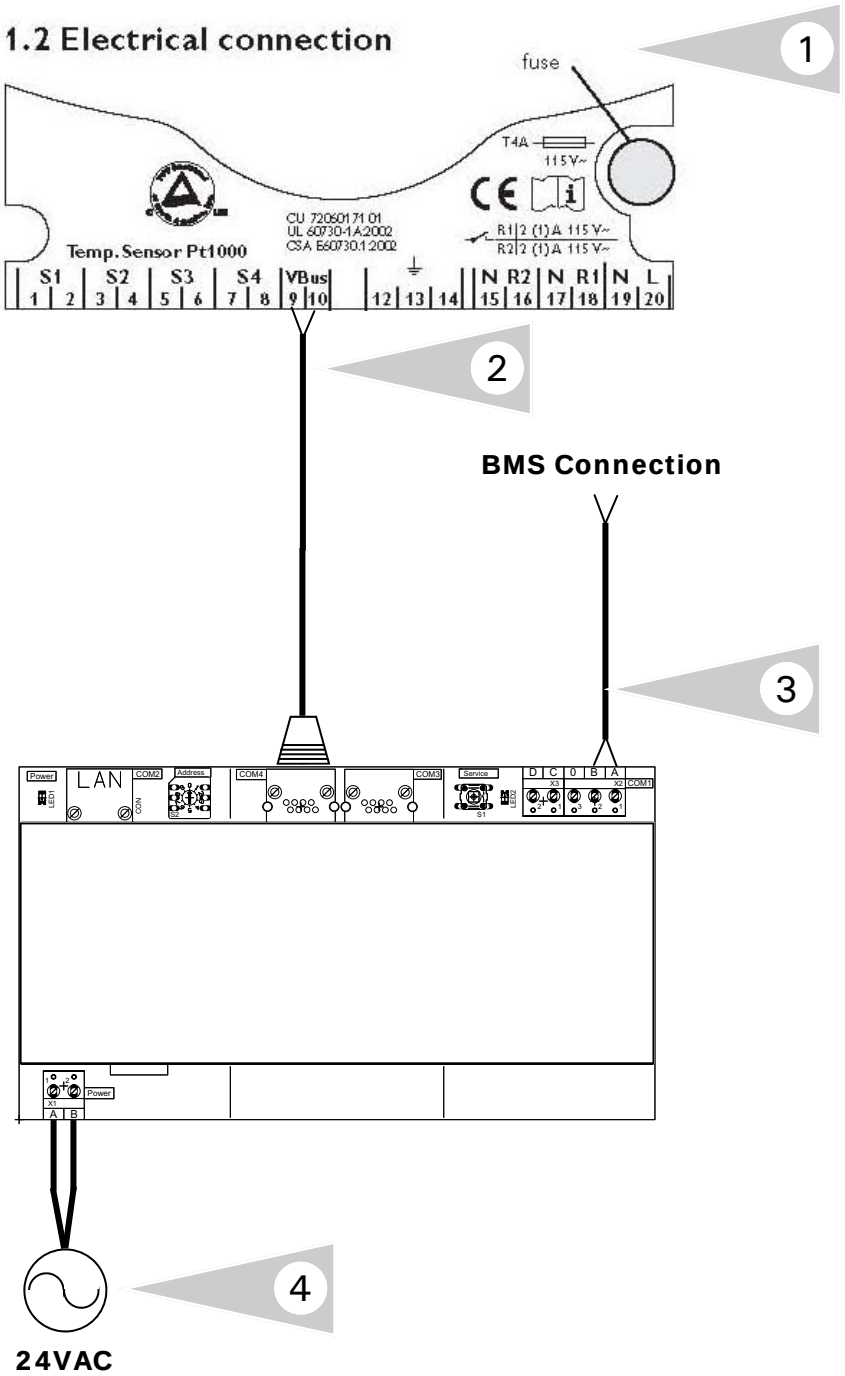
2 A CAT-5 cable is supplied with the Versatronik Solar Gateway. The RJ45 is plugged into the gateway and terminates into the control.

3 BMS connection.

4 Standard plug-in power connection supply for the gateway. It requires 120VAC for its operation.

Connection Overview—24VAC DIN Rail Unit

MODBUS Communication Connections to BMS:
Example: Resol Deltasol BS Plus



Connection Overview

1 Control sensor portion of control.

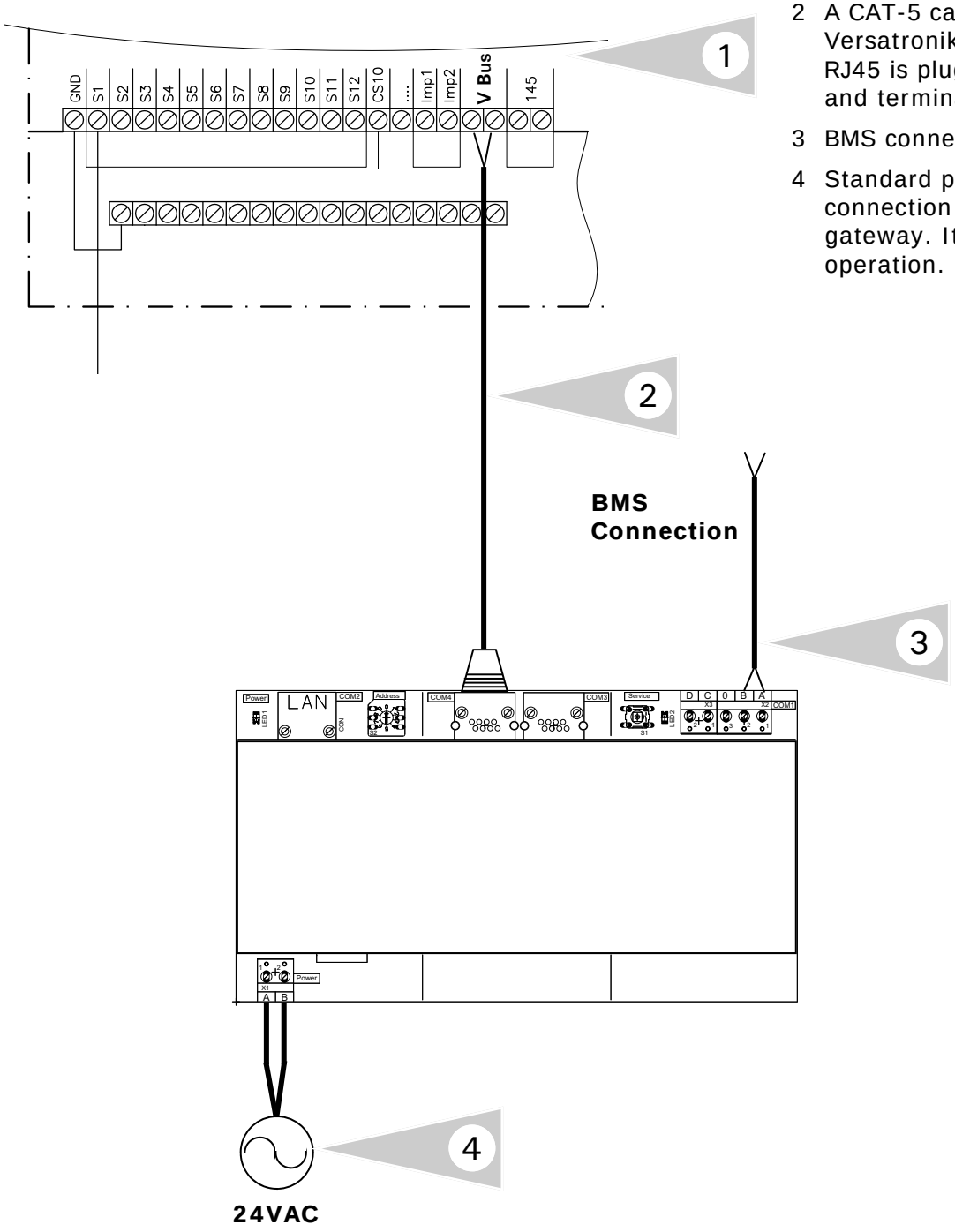
2 A CAT-5 cable is supplied with the Versatronik Solar Gateway. The RJ45 is plugged into the gateway and terminates into the control.

3 BMS connection.

4 Standard plug-in power connection supply for the gateway. It requires 24VAC for its operation.

Connection Overview—24VAC DIN Rail Unit

MODBUS Communication Connections to BMS:
Example: Resol Deltasol M



Connection Overview

1. Control sensor portion of control.
2. A CAT-5 cable is supplied with the Versatronik Solar Gateway. The RJ45 is plugged into the gateway and terminates into the control.
3. BMS connection.
4. Standard plug-in power connection supply for the gateway. It requires 24VAC for its operation.

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

VBus Modbus Objects

See following page for configuration notes

Object	Description	Units	Deltasol-M, Vitosolic 200	SCU224, SCU124, Deltasol BS Plus	Deltasol BS1/2/3/4	Deltasol-E	Deltasol-ES	Deltasol-BX Deltasol-BXL/SCU345	Deltasol BX Plus	Deltasol-MX	Deltasol-SKSC3
Coil Register 97	Controls temperature units1	-	X	X	X	X	X	X	X	X	X
Discrete Inputs 10001-10016	Sensor 1-16 Open Error	Binary	X	-	-	-	-	-		-	X
Discrete Inputs 10017-10032	Sensor 1-16 Shorted Error	Binary	X	-	-	-	-	-		-	X
Discrete Inputs 10033-10048	Sensor 1-16 Connected	Binary	X	-	-	X	-	-		-	-
Discrete Inputs 10049-10064	Relay Flags 1-16	Binary	X	X	-	-	X	-		-	-
Discrete Inputs 10065-10080	Error Flags 1-16	Binary	X	X	X	X	-	X	X	X	X[6]
Discrete Inputs 10080-10096	Warning Flags 1-16	Binary	X	-	-	-	-	-	-	-	-
Input Register 30001	Temperature Sensor 1	C or F	X	X	X	X	X	X	X	X	X
Input Register 30002	Temperature Sensor 2	C or F	X	X	X	X	X	X	X	X	X
Input Register 30003	Temperature Sensor 3	C or F	X	X	X	X	X	X	X	X	X
Input Register 30004	Temperature Sensor 4	C or F	X	X	X	X	X	X	X	X	X
Input Register 30005	Temperature Sensor 5	C or F	X	-	-	X	X	X	X	X	X
Input Register 30006	Temperature Sensor 6	C or F	X	-	-	X	X	-	X	X	X
Input Register 30007	Temperature Sensor 7	C or F	X	-	-	X	X	-	X	X	X
Input Register 30008	Temperature Sensor 8	C or F	X	-	-	X	X	-	X	X	X
Input Register 30009	Temperature Sensor 9	C or F	X	-	-	X	-	-	X	X	-
Input Register 30010	Temperature Sensor 10	C or F	X	-	-	X	-	-	X	X	-
Input Register 30011	Temperature Sensor 11	C or F	X	-	-	-	-	-	X	X	-
Input Register 30012	Temperature Sensor 12	C or F	X	-	-	-	-	-	X	X	-
Input Register 30013	Irradiation	W/m2, W/ft2	X	-	-	X	X	-		X	X
Input Register 30014	Pulse Counter 1	-	X	-	-	X	-	-		-	-
Input Register 30015	Pulse Counter 2	-	X	-	-	-	-	-		-	-
Input Register 30016	Speed Relay 1	%	X	X	X	X	X	X	X	X	X
Input Register 30017	Speed Relay 2	%	X	X	X	X	X	X	X	X	X
Input Register 30018	Speed Relay 3	%	X	-	-	X	X	X	X	X	X
Input Register 30019	Speed Relay 4	%	X	-	-	X	-	X	X	X	X
Input Register 30020	Speed Relay 5	%	X	-	-	X	-	-	X	X	-
Input Register 30021	Speed Relay 6	%	X	-	-	X	-	-		X	-
Input Register 30022	Speed Relay 7	%	X	-	-	X	-	-		X	-
Input Register 30023	Speed Relay 8	%	X	-	-	-	-	-		X	-
Input Register 30024	Speed Relay 9	%	X	-	-	-	-	-		X	-
Input Register 30025	Speed Relay 10	%	X	-	-	-	-	-		X	-
Input Register 30026	Speed Relay 11	%	-	-	-	-	-	X[7]		X	-
Input Register 30027	Speed Relay 12	%	-	-	-	-	-	X[7]		X	-

Superscript references please refer to following page

VBus Modbus Objects Continued

See below for configuration notes

Object	Description	Units	Deltasol-M, Vitosolic 200	SCU224, SCU124, Deltasol BS Plus	Deltasol BS1/2/3/4	Deltasol-E	Deltasol-ES	Deltasol-BX Deltasol-BXL/SCU345	Deltasol BX Plus	Deltasol-MX	Deltasol-SKSC3
Input Register 30028	Option Mask / Schema	Binary or Dec.	-	X[3]	-	X[5]	X[3]	-		-	-
Input Register 30029	Heat Quantity in Wh4	Wh	-	X	X	-	X	X		-	X
Input Register 30030	Heat Quantity in kWh4	kWh	-	X	X	-	X	X		-	X
Input Register 30031	Heat Quantity in MWh4	MWh	-	X	X	-	X	X		-	X
Input Register 30032	Operating Hours 1	Hours	-	X	X	-	X	X		-	-
Input Register 30033	Operating Hours 2	Hours	-	X	X	-	X	X		-	-
Input Register 30034	Operating Hours 3	Hours	-	-	-	-	X	X		-	-
Input Register 30035	Operating Hours 4	Hours	-	-	-	-	X	X		-	-
Input Register 30036	Operating Hours 5	Hours	-	-	-	-	X	-		-	-
Input Register 30037	Operating Hours 6	Hours	-	-	-	-	X	-		-	-
Input Register 30038	Zone Supply 1	C or F	-	-	-	X	-	-		-	-
Input Register 30039	Zone Supply 2	C or F	-	-	-	X	-	-		-	-
Input Register 30040	Zone Supply 3	C or F	-	-	-	X	-	-		-	-
Input Register 30041	Zone Supply 4	C or F	-	-	-	X	-	-		-	-
Input Register 30042	Zone Status 1		-	-	-	X	-	-		-	-
Input Register 30043	Zone Status 2		-	-	-	X	-	-		-	-
Input Register 30044	Zone Status 3		-	-	-	X	-	-		-	-
Input Register 30045	Zone Status 4		-	-	-	X	-	-		-	-
Input Register 30046	Flow Volume (VFS)	l/h or gpm	-	-	-		X	X	X	-	X

Configuration Notes

Note 1: All input/holding registers are signed 16-bit integers with a multiplier of 1
Note 2: Depending on your unit, and the unit settings, it will transmit the values in Celsius or Fahrenheit.

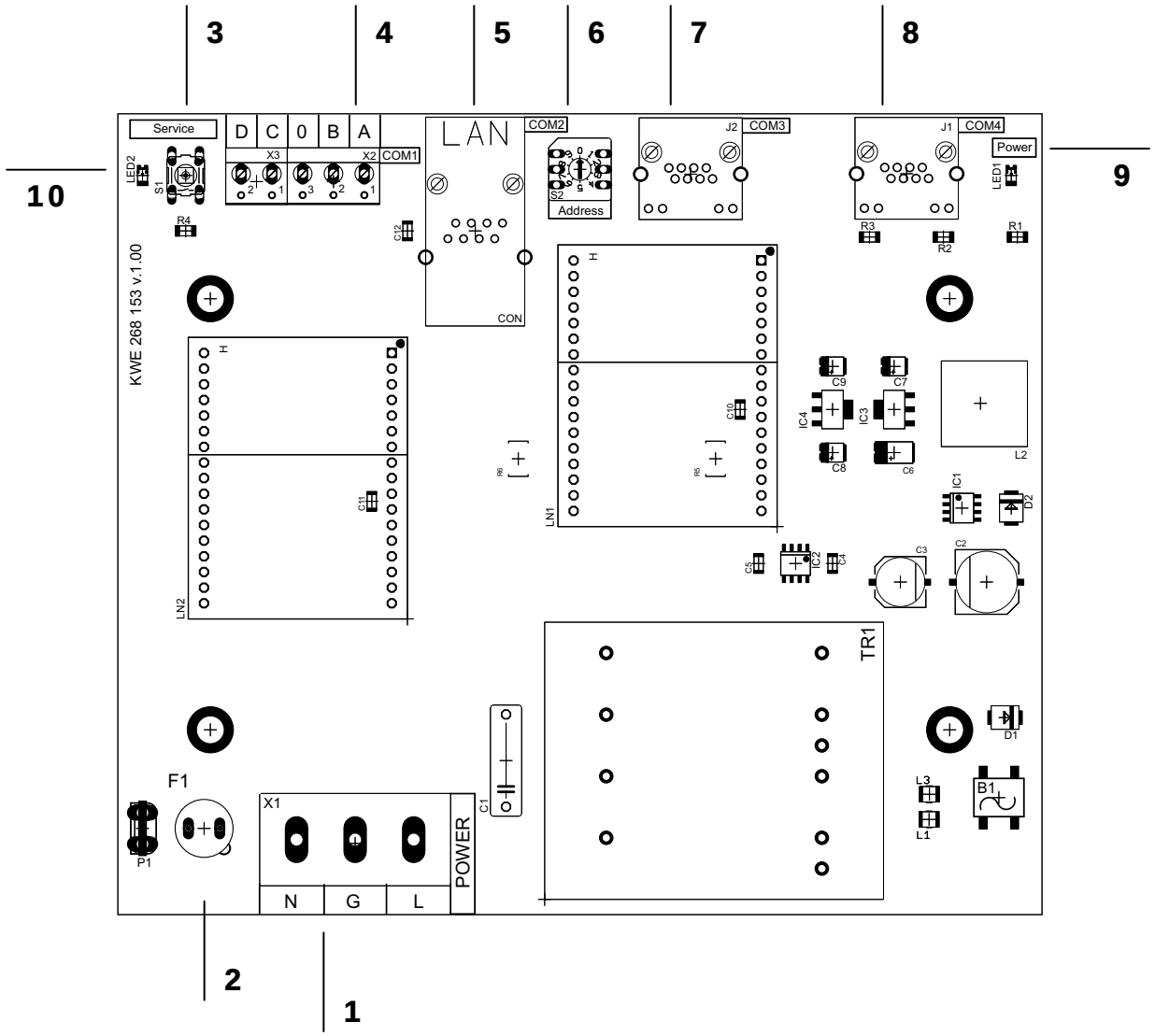
[2] Convert to binary
- Bit 0: Sensor/Relay 1 (least significant bit, furthest to the right)
- Bit 1: Sensor/Relay 2

[3] Convert to binary:
- Bit 0: Collector cooling, collector 1 (OCX)
- Bit 1: Minimum limitation, collector 1 (OCN)
- Bit 2: Antifreeze, collector 1 (OCF)
- Bit 3: Tube collector special function (OTC)
- Bit 4: Re-cooling function (OREC)
- Bit 5: Heat quantity measurement (OHQM)

[4] Values roll over when reaching the next base-1000 magnitude (i.e. 999 Wh becomes 0 Wh + 1 KWh.)
[5] System Arrangement
[6] Warning Flags:
- Flag 1: Broken sensor
- Flag 2: Short circuit sensor
- Flag 3: DT high
- Flag 4: Warning circulation at night

[7] Speed Pulse Width Modulation (PWM) 1,2

Technical Information



PCB Identifiers

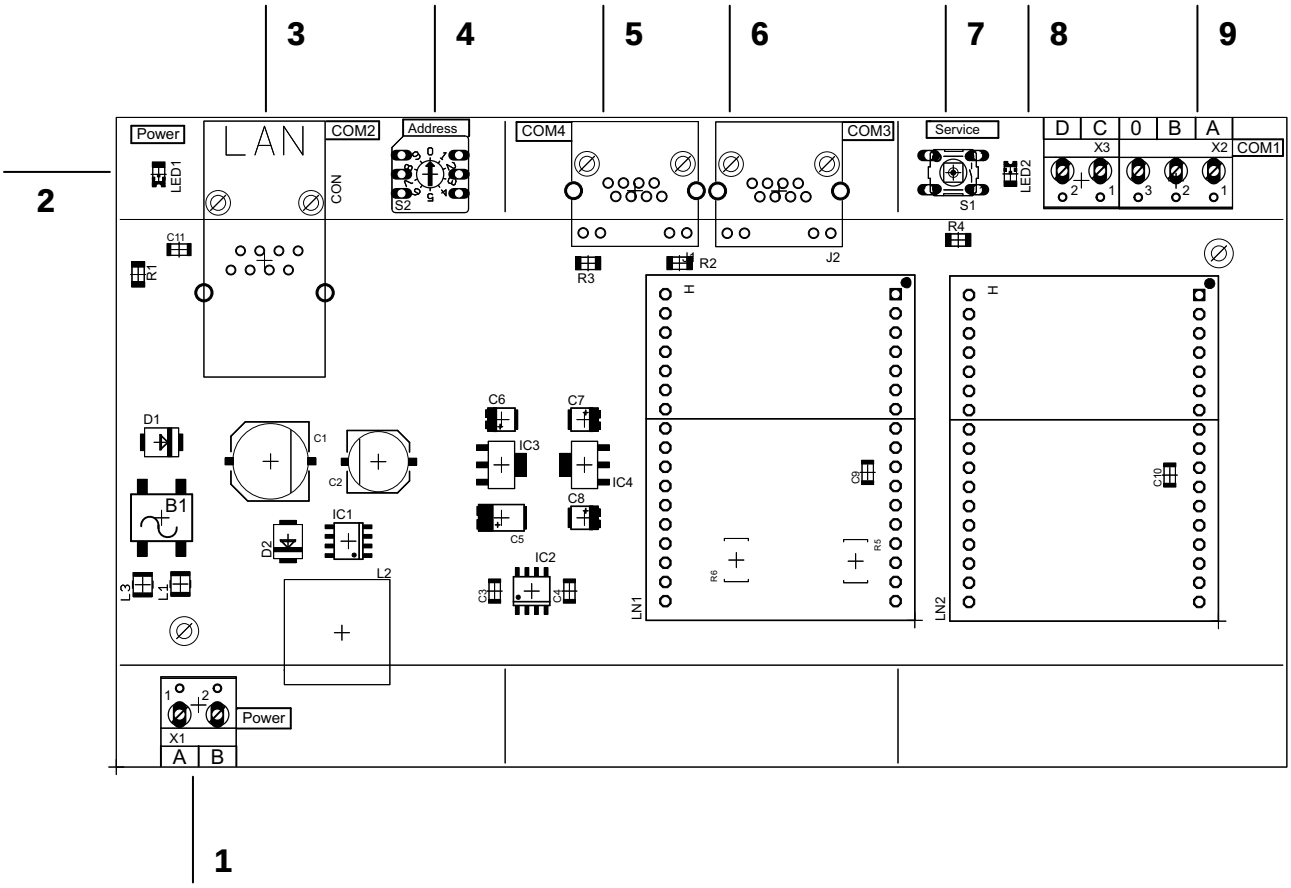
1	120VAC Power Supply Connections
2	Fuse
3	Service Button
4	LON Connections to BMS
5	RJ45 Connection to BMS BACnet
6	Addressing selector for multiple modules
7	COM3 for multiple BUS connections
8	COM4 RJ45 Connection to control
9	Power LED indicator
10	Service LED

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	BACnet RJ45 BMS Connection
4	Addressing dial for multiple units
5	COM4 RJ45 Connection to control
6	COM3 for multiple BUS connections
7	Service button
8	Service LED
9	LON 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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