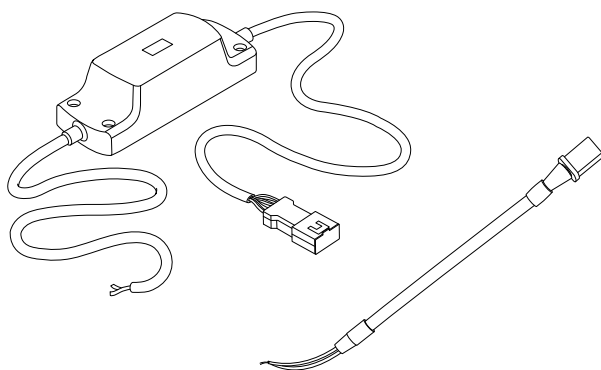
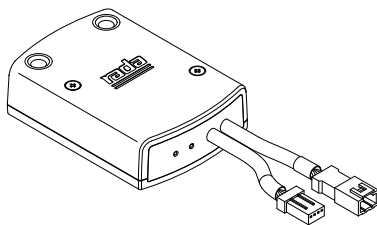


Rada Digital Faucet Networking Guide



Please read and save these instructions

496-EN V1.3



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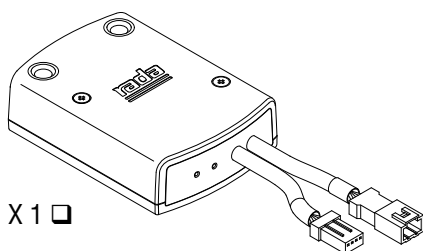
General

Modbus is a well established protocol that is commonly used and ideally suited for connecting multiple devices in a commercial/institutional or industrial environment. This is largely because of its resilience when it comes to electrical interference. The Rada Digital Faucet products are designed for serial communications protocols, but can be configured to communicate with a BMS (Building Management System) using the Modbus protocol. When configured for Modbus, the product acts as an RTU (Remote Terminal Unit) that is monitored by the BMS.

The following is a guide for connecting a Rada Digital Faucet product to a BMS using a Modbus RTU protocol. Please review the Product Manual available at www.radacontrols.com to familiarize yourself with the product specification and installation before attempting to connect the BMS.

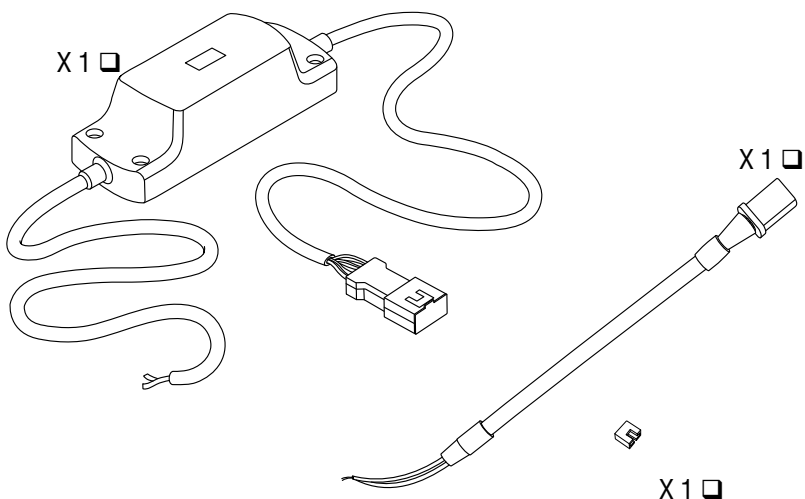
Sub networks can have up to 31 valves.

Each product requires commissioning via the Rada Digital Faucet App “RADA AP1” available for Apple iPad. Commissioning must be done at the product location over a Bluetooth® wireless network so that it can be monitored. All settings for the products are applied from the App. Each product in a network will need a unique network address (1 - 31) which is set from the App before the network is made live. Links to download the “RADA AP1” App and the Guide are found at www.armstronginternational.com be conducted strictly in accordance with the information supplied with the disinfectant and with all relevant Guidelines/Approved Codes of Practice.



X 1 □

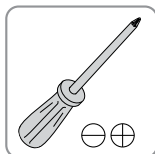
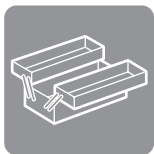
End of Line Kit



The end of line kit is used on the last product in the network series.

Specifications

Electrical	PSU
Supply Voltage	100 - 240 V 50/60 Hz
Rated Input Current	1 A
Water Ingress Protection	IP X4
Protection Against Electric Shock	Class II (double insulated)

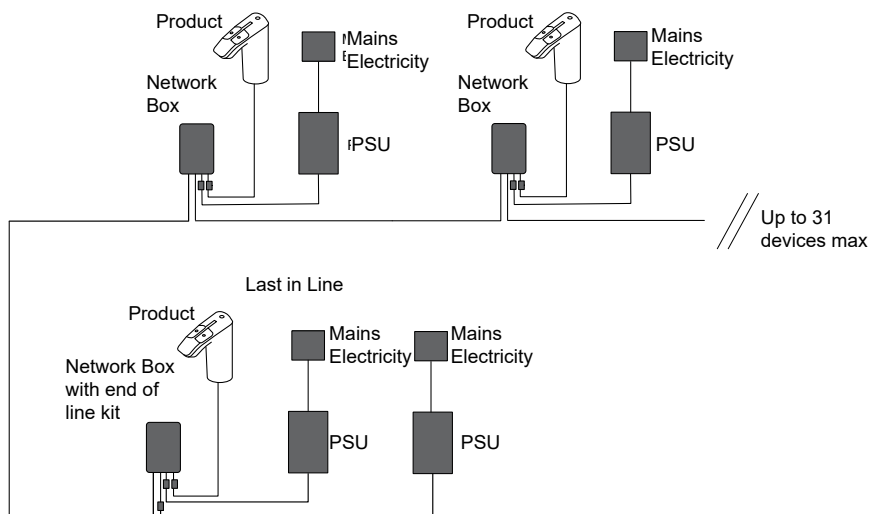


Cable Installation for Rada Network Junction Box

The cable connecting to the BMS should be 2 x twisted pair cable, 22 AWG with a maximum outer sheaf diameter of 6.5mm.

Belden cable recommended. Do not use CAT 5. Connecting cable should be in a 'daisy chain' arrangement as shown. Do not connect in a 'star formation' (all network boxes to one point).

Total cable run length in each sub network is 11,811 ft (300m) MAX.

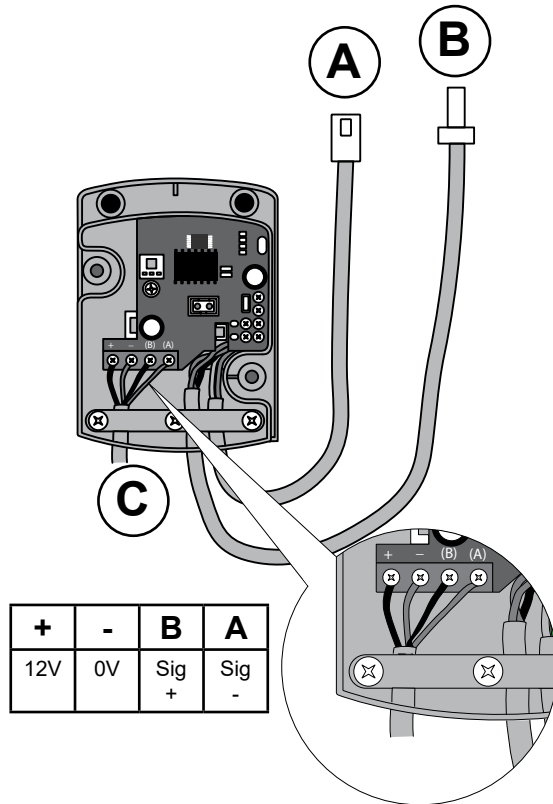


Rada Network Junction Box

Connection **A** connects to the Valve

Connection **B** connects to the PSU

Connection **C** connects to the next and previous network box in the series.

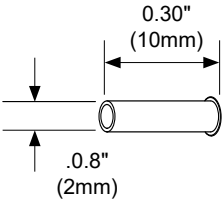


To Connect to the Network Box

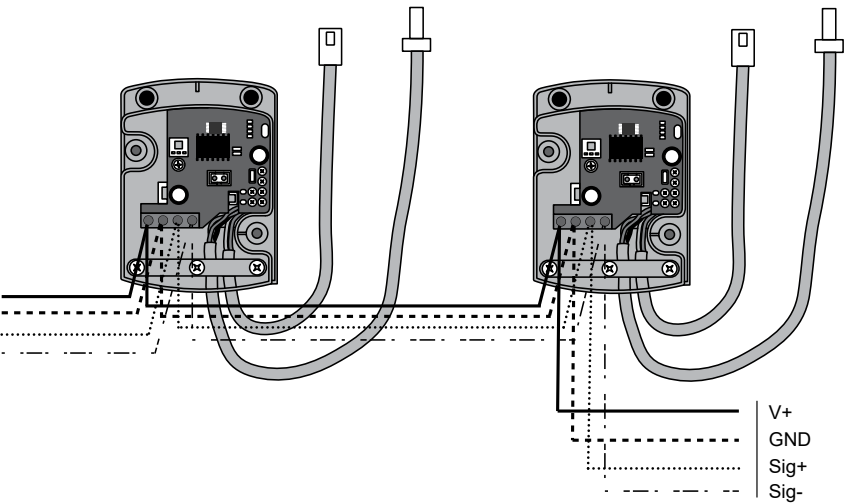
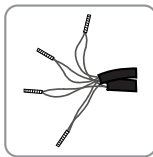
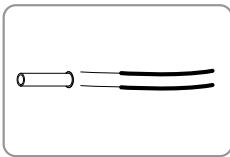
1. Unscrew and remove the cover.
2. Pierce a hole in the rubber base to accept the cable(s).
3. Make the connections (refer to the connection diagrams).
4. Make sure that the outer sheath of the cable is correctly clamped.
5. Make sure that the End of Line Kit is used on the last product.
6. Refit the cover and secure with the screws.

Network Cable Connections

Join cores and crimp using Bootlace Ferrules.



Ferrule Dimensions

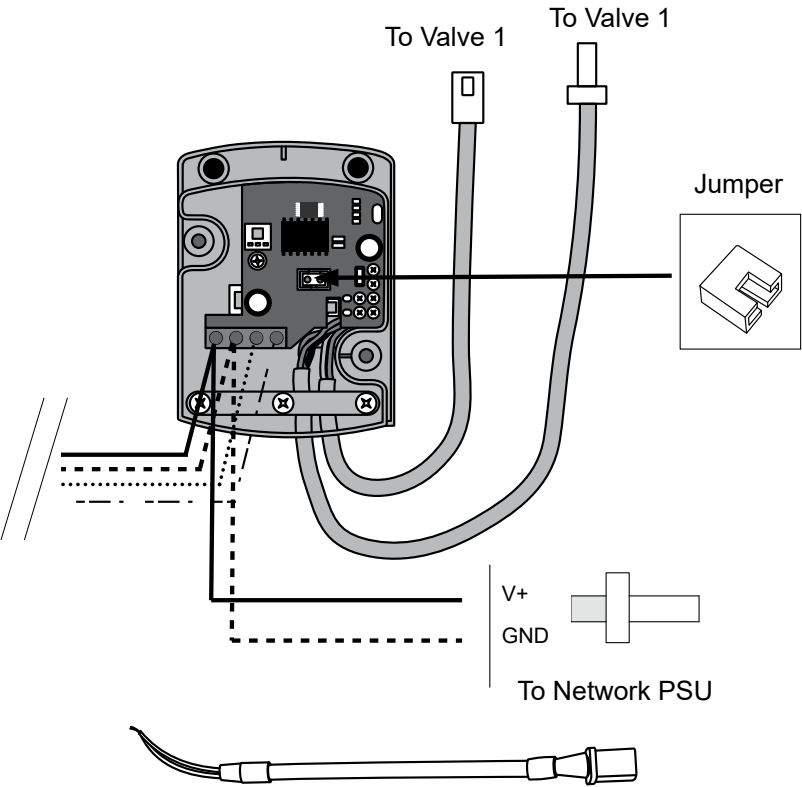


End of Line Kit Connection

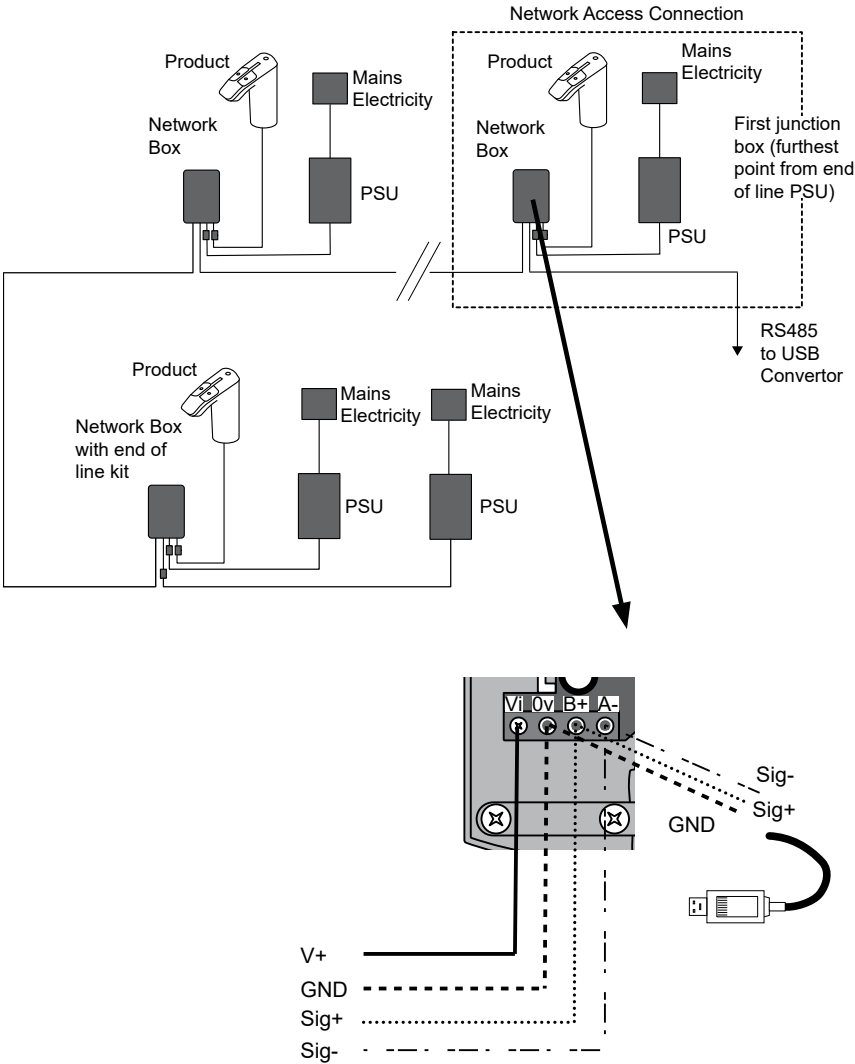
To power the network boxes a connection to a power supply is required.

Connect end of cable and connector.

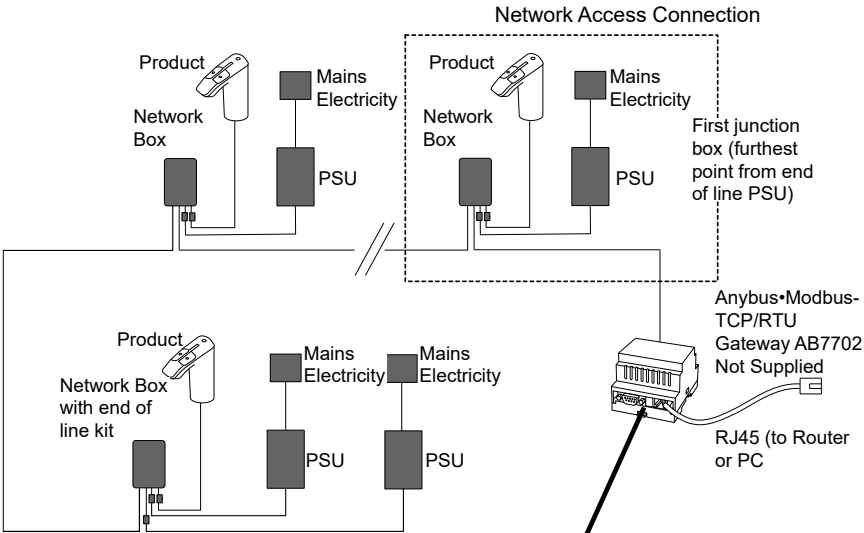
Place jumper on terminals shown below.



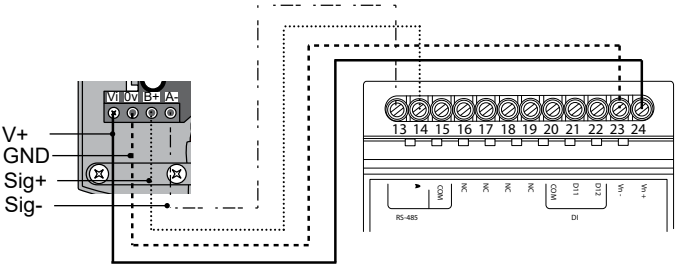
Connecting to a Building Management System (BMS)



Connecting Network to TCP-IP or WiFi



Connecting to Anybus to First Junction Box.



Communication with BMS

Communication standard:

- Baud Rate 9K6
- Parity None
- Data bits 8
- Stop Bits 1
- Mode RTU
- Electrical Interface RS-485 2w cabling no pull-up

Modbus functions supported:

- Read holding registers (0x03)
- Write Single register (0x06)
- Write Multiple registers (0x10)
- Read File record (0x14)

The tables below details the registers that perform status and error reporting:

Register Address	Description	Range	Comment
0	Modbus Address	1 - 31	Unique modbus address each valve
4	Valve Status	0 - 9	See Table 1
8	Error Codes	0 - 20	See Table 2
288	Time/Date		

Table 1 - Valve Status Codes

Enumeration	Description
0	Off
1	On
2	Full cold
3	Pause
4	Blend duty flush
5	Commissioning
6	Disinfection
7	Error
8	Forced disable
9	Cold_flush
10-14	Not Used IC
15	Cleaning Mode
16-18	Not Used IC

Table 2 - Error Codes

Enumeration	Description
0	No error
1	Over temp
2	Stuck motor
3	Motor calibration
4	Valve failure
5	Thermistor failure
6	Unconfigured
7	A to D error
8	Ram error
9	EE error
10	Flash error
11	Algorithm error
12	Controlled error
13	Not used
14	Scheduler error
15	Shut off mechanism
16	IR not calibration
17	Not used
18	Iinterface error
19	External eeprom error
20	Bluetooth® error

Limited Warranty and Remedy

Armstrong International, Inc. or the Armstrong division that sold the product ("Armstrong") warrants to the original user of those products supplied by it and used in the service and in the manner for which they are intended, that such products shall be free from defects in material and workmanship for a period of one (1) year from the date of installation, but not longer than 15 months from the date of shipment from the factory, [unless a Special Warranty Period applies, as listed below]. This warranty does not extend to any product that has been subject to misuse, neglect or alteration after shipment from the Armstrong factory. Except as may be expressly provided in a written agreement between Armstrong and the user, which is signed by both parties, Armstrong **DOES NOT MAKE ANY OTHER REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.**

The sole and exclusive remedy with respect to the above limited warranty or with respect to any other claim relating to the products or to defects or any condition or use of the products supplied by Armstrong, however caused, and whether such claim is based upon warranty, contract, negligence, strict liability, or any other basis or theory, is limited to Armstrong's repair or replacement of the part or product, excluding any labor or any other cost to remove or install said part or product, or at Armstrong's option, to repayment of the purchase price.

As a condition of enforcing any rights or remedies relating to Armstrong products, notice of any warranty or other claim relating to the products must be given in writing to Armstrong: (i) within 30 days of last day of the applicable warranty period, or (ii) within 30 days of the date of the manifestation of the condition or occurrence giving rise to the claim, whichever is earlier. **IN NO EVENT SHALL ARMSTRONG BE LIABLE FOR SPECIAL, DIRECT, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING, BUT NOT LIMITED TO, LOSS OF USE OR PROFITS OR INTERRUPTION OF BUSINESS.** The Limited Warranty and Remedy terms herein apply notwithstanding any contrary terms in any purchase order or form submitted or issued by any user, purchaser, or third party and all such contrary terms shall be deemed rejected by Armstrong.

Special Warranty Periods are as Follows:

Pre-packaged skid shall have a 2 year warranty from date of installation but not longer than 27 months from date of shipment.

DRV shall have a 5 year all components parts warranty from date of shipment other than preventative maintenance service items which include batteries and all 'wetted' O-Rings/Seals.

The heat exchanger shall have a 1 year warranty from date of installation but not longer than 18 months from date of manufacturing.

Rada Digital Faucets shall have a 3 year all mechanical and electrical parts and a 1 year all finish parts warranty from date of shipment.

Notes

Rada Digital Faucet Networking Guide

Designs, materials, weights and performance ratings are approximate and subject to change without notice.
Visit **armstrong**international.com for up-to-date information.



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