



BU-xH16R
900 MHz and 2.4 GHz Base Units

Manual

U095.1.1

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FCC Statements

15.19 – Two Part Warning

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

15.21 – Unauthorized Modification

NOTICE: The manufacturer is not responsible for any unauthorized modifications to this equipment made by the user. Such modifications could void the user's authority to operate the equipment.

15.105(b) – Note:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Industry Canada Statement

This device complies with Canadian RSS-210.

The installer of this radio equipment must ensure that the antenna is located or pointed such that it does not emit RF field in excess of Health Canada limits for the general population; consult Safety Code 6, obtainable from Health Canada's website <https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/radiation/safety-code-6-health-canada-radiofrequency-exposure-guidelines-environmental-workplace-health-health-canada.html>.

Le présent appareil est conforme à la norme CNR-210 d'Industrie Canada.

L'installateur de cet équipement radio doit s'assurer que l'antenne est située ou orientée de façon à ne pas émettre un champ RF dépassant les limites de Santé Canada pour la population générale; consulter le Code de sécurité 6, disponible sur le site Web de Santé Canada <https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/radiation/safety-code-6-health-canada-radiofrequency-exposure-guidelines-environmental-workplace-health-health-canada.html>.

Industry Canada Statement

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. Le fonctionnement est soumis aux deux conditions suivantes : (1) cet appareil ne doit pas causer d'interférences, et (2) cet appareil doit accepter toute interférence, y compris les interférences susceptibles de causer un fonctionnement non désiré de l'appareil.

Industry Canada Unlicensed Devices EIRP Statements for Removable Antennas

Part 1: Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (EIRP) is not more than that necessary for successful communication.

Partie 1 : Conformément à la réglementation d'Industrie Canada, cet émetteur radio ne peut fonctionner qu'avec une antenne dont le type et le gain maximal (ou inférieur) sont approuvés pour l'émetteur par Industrie Canada. Pour réduire les interférences radioélectriques potentielles avec d'autres utilisateurs, le type d'antenne et son gain doivent être choisis de telle sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne soit pas supérieure à celle nécessaire pour une communication réussie.

Part 2: This radio transmitter (LOBSRF-305) has been approved by Industry Canada to operate with the antenna type listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Partie 2 : Cet émetteur radio (LOBSRF-305) a été approuvé par Industrie Canada pour fonctionner avec le type d'antenne indiqué ci-dessous avec le gain maximal admissible et l'impédance d'antenne requise pour chaque type d'antenne indiqué. Il est strictement interdit d'utiliser avec cet appareil un type d'antenne ne figurant pas dans cette liste ou ayant un gain supérieur au gain maximum indiqué pour ce type.

RoHS Compliance Statement

Cervis, Inc. complies with the requirements of **Restriction of Hazardous Substances (RoHS/WEEE) Specification** based on in-house practice and declaration of compliance from our vendors. For additional information concerning RoHS compliance, please contact Cervis, Inc. at:

CERVIS, Inc.

170 Thorn Hill Road • Warrendale, PA 15086

Phone: 724.741.9000 • Fax: 724.741.9001



This product may contain material that may be hazardous to human health and the environment. In compliance with EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE):

- ✓ Do not dispose of the product as unsorted municipal waste.
- ✓ This product should be recycled in accordance with local regulations. Contact local authorities for detailed information.
- ✓ This product may be returnable to the distributor for recycling. Contact your distributor for details.

Table of Content

List of Figures.....	i
List of Tables	i
Definitions/Notes	ii
Cervis, Inc. Safety Precautions	1
1.0 Smart BU-xH16R Base Unit and Handheld Remote Control	2
2.0 Smart BU-xH16R Base Unit.....	3
2.1 Base Unit Installation.....	4
2.2 Smart BU-xH16R Wiring Information	4
2.3 External Protection Devices for Relay Contacts	7
2.4 Base Unit Troubleshooting	8
3.0 Specifications	9
Appendix A: BU-xH16R Hardware Options.....	10
Appendix B: BU-xH16R Wiring Harness Options.....	11
Appendix C: Exposure to Radio Frequency Energy	11
Appendix D: Agency Identification Label Locations.....	11

List of Figures

Figure 1. Smart BU-xH16R with Smart Handheld Remote Control Examples.....	2
Figure 2. BU-xH16R LEDs.....	3
Figure 3. Mounting Holes and Cable Connectors P1 and P2	4
Figure 4. P1 and P2 Cable Wiring Assignments.....	5
Figure 5. Dual Connectors/Pin Numbers (enhanced)	5
Figure 6. P1 and P2 Cable Field Wiring Layout	6
Figure 7. Suggested MOV Wiring Across the Contactor Coils	7
Figure 8. Agency Identification Label Locations.....	11

List of Tables

Table 1. P1 and P2 Connectors Pin Assignments.....	7
Table 2. Base Unit LED Troubleshooting	8
Table 3. Smart BU-xH16R Base Unit Specifications	9
Table 4. BU-xH16R Hardware Options.....	10
Table 5. BU-xH16R Wiring Harness	11

Definitions/Notes

Associate

Mode where by SmaRT handhelds and base units are paired for operation (IDs exchanged). This mode is used to commission spare handhelds or base units.

DSSS

Direct Sequence Spread Spectrum; an advanced wireless communication technology.

Dissociate or Disassociate

The process of decommissioning a handheld from a base unit ID memory.

PTO (Push-to-Operate)

Command broadcast only while a button is depressed. The command ends when the button is released.

Latch

Command broadcast while a switch is placed in position or when a button is pressed. The command ends when switch is repositioned or when the button is released, or in some cases when the button is pressed again (toggle).

SmaRT Base Unit

I/O unit to which the controlled machine is connected. SmaRT base units communicate with each other and SmaRT handheld, console, mini-console, and 18-Button Handheld remote controllers.

SmaRT x18 Remote Control System

SmaRT wireless remote control system consisting of one or more SmaRT base units and a SmaRT remote control unit that commands the base unit input and output functions. The system operates either in the 900 MHz or 2.4 GHz range.

Line of Sight (aka Direct-Line-of-Sight)

Term used to describe RF communication where the pathway between the units is clear of physical obstacles such as walls, earth, and other obstructions.

TX/RX

Transmit/Receive

CANbus

Usually a hardline communications network (umbilical, remote to base unit) using the SAE J1939 communications protocol.

Cervis, Inc. Safety Precautions

- ✓ *Read and follow all instructions.*
- ✓ *Failure to abide by Safety Precautions may cause equipment failure, loss of authority to operate the equipment, and personal injury.*
- ✓ *Use and maintain proper wiring. Follow equipment manufacturer instructions. Improper, loose, and frayed wiring can cause system failure, equipment damage, and intermittent operation.*
- ✓ *Changes or modifications made to equipment not expressly approved by the manufacturer will void the warranty.*
- ✓ *Equipment owner/operators must abide by all applicable Federal, State, and Local laws concerning equipment installation and operation. Failure to comply could result in penalties and could void user authority to operate the equipment.*
- ✓ *Make sure that the machinery and surrounding area is clear before operating. Do not activate the remote control system until certain that it is safe to do so.*
- ✓ *Turn off the handheld remote and remove power from the base unit before attempting any maintenance. This will prevent accidental operation of the controlled machinery.*
- ✓ *Remove power from the Base Unit either by detaching the 12-pin cables from the base unit connectors P1 and P2 or by removing the source power from the circuit.*
- ✓ *Use a damp cloth to keep units clean. Remove mud, concrete, dirt, etc. after use to prevent obstructing or clogging the buttons, levers, wiring, and switches.*
- ✓ *Do not allow liquid to enter the handheld or base unit enclosures. Do not use high-pressure equipment to clean the handheld remote or base unit.*
- ✓ *Disconnect the radio base unit before welding on the machine. Failure to disconnect the base unit may cause destruction of or damage to the base unit.*
- ✓ *Operate and store units only within the specified operation and storage temperatures defined in the specifications of this document.*
- ✓ *Keep high-energy RF devices away from handheld remotes. Activating high-power communication radios, for instance, in close proximity to handheld remotes can cause interference and “false” circuit activation.*
- ✓ *Do not key two-way radios while using the handheld remote.*

CAUTION



Outputs under control should only change states when the appropriate button or switch of the handheld remote is pressed or positioned. If the function is a momentary control function, the output should only actuate for the duration of time that particular function is pressed. Investigate any unexpected motion that occurs when using the output controls of the handheld remote.

Immediately stop operation if a jerkiness of motion occurs while pressing or using an output remote control. Check the base unit diagnostic LEDs for any indication of a problem. Diagnostic descriptions are found in the manual of the particular Smart base unit in use.

Be aware that even if the diagnostic LEDs of the handheld remote and base unit do not indicate a problem, one may be present and further troubleshooting steps may be needed.

If a problem is found, do not operate the Smart System until the problem is resolved.

Contact us with questions during installation or troubleshooting at (724) 741-9000.

1.0 SmARt BU-xH16R Base Unit and Handheld Remote Control

✓ **Note:** The “x” in BU-xH16R represents both 900 MHz (9) and 2.4 GHz (2) base units.

A standard SmARt BU-xH16R remote control system consists of a SmARt BU-xH16R base unit, a SmARt handheld remote control unit, and the cable(s) that connect the base unit to the controlled machinery. A SmARt system can communicate in congested radio environments using Channel-Hopping Direct Sequence Spread Spectrum (DSSS) wireless technology in the 900 MHz or 2.4 GHz range. System options offer selection from a variety of SmARt remote control units—some of which are shown in Figure 1. Although standard systems generally use one remote, in some cases SmARt base units can communicate with up to eight remotes.

Communication between a remote control and base unit is established at the factory using the Associate Procedure, a process that can also be performed in the field. The procedure will seamlessly link without the need to open the enclosures of either the base unit or remote control unit.

✓ **Note:** Associate and Dissociate details are available in the manual of the particular SmARt handheld remote that is used in your SmARt wireless remote control system.



Figure 1. SmARt BU-xH16R with SmARt Handheld Remote Control Examples

2.0 SmaRT BU-xH16R Base Unit

The SmaRT™ BU-xH16R features sixteen Form A control relay outputs divided into two banks of eight, with a separate internal relay contact to control the common power to each bank.

The BU-xH16R accepts a broad range of operating input power with nominal operating voltages of 12 VDC, 24 VDC, 115 VAC/DC, or 230 VAC/DC. The rugged weatherproof enclosure allows the unit to operate worry-free in harsh weather conditions. All connections are made using either two 12-wire or a 24-wire harness that has dual 12-pin uniquely keyed connectors to guard against cross connection.

SmaRT™ base units feature seamless association with a SmaRT™ handheld unit without the need to open the case. Using DSSS wireless technology at 2.4 GHz, the base unit provides a robust link with a SmaRT handheld remote in congested radio environments.

The BU-xH16R can include a CAN bus interface for applications requiring wired connectivity or multiple base units.

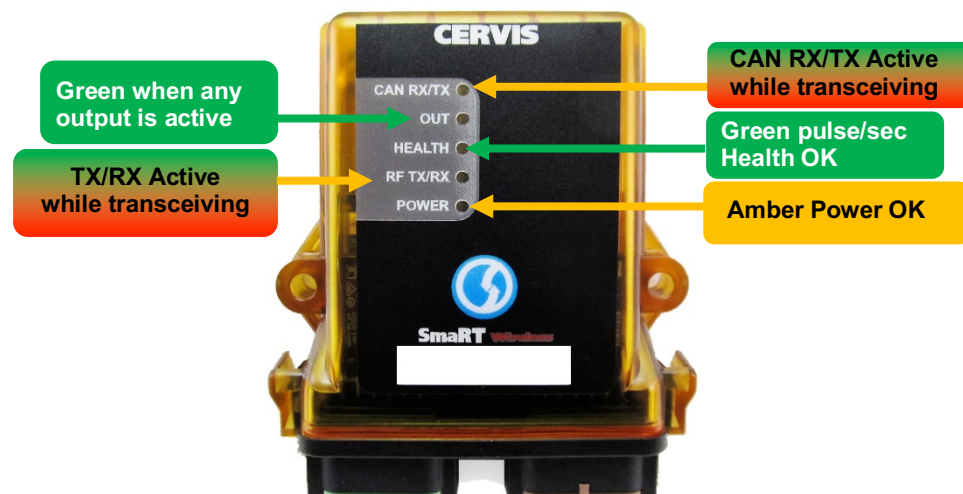


Figure 2. BU-xH16R LEDs

Input power depends of the type of BU-xH16R used. The following types are available:

- BU-xH16R-INT-HVU accepts an input power of 100 to 240 VAC @ 47 to 440 Hz, or +120 to +340 VDC
- BU-xH16R-EXT-HVU accepts an input power of 100 to 240 VAC @ 47 to 440 Hz, or +120 to +340 VDC
- BU-xH16R-INT-LVD accepts an input power of +7 to +32 VDC
- BU-xH16R-EXT-LVD accepts an input power of +7 to +32 VDC
- BU-xH16R-INT-LVA accepts an input power of 7 to 28 VAC @ 47 to 62 Hz
- BU-xH16R-EXT-LVA accepts an input power of 7 to 28 VAC @ 47 to 62 Hz

BU-xH16R Base Unit Features

- Capable of communicating with up to eight SmaRT handheld remotes
- License free 900 MHz or 2.4 GHz DSSS technology
- Direct line-of-sight extended range of up to 1,000 feet (300 m)
- Sixteen independent Form A control relay outputs divided into two banks of eight

- Rugged compact high-impact polymer, weatherproof design IP65 enclosure
- Three available input voltage platforms
- Five easy-to-see external diagnostic LEDs

2.1 Base Unit Installation

CAUTION



Make sure that the machine the base unit will be attached to is disabled during installation.

Use the configuration diagrams supplied by Cervis, Inc. to guide you in mounting the base unit and connecting your wiring harness cables. Base unit mounting is left much to your discretion with the following guidelines:

- Before installing, make sure that the configuration diagrams supplied with the system are available. Keep them where they are available at all times.
- Make sure the wiring harness cables (Figure 4) are on hand.
- Always mount the base unit away from any intense radio or electric disturbance sources.
- Make sure the mount is secure. Mount the unit where you have enough room for your wiring harness connections.
- Mount so that the connectors are positioned down (see Figure 3).

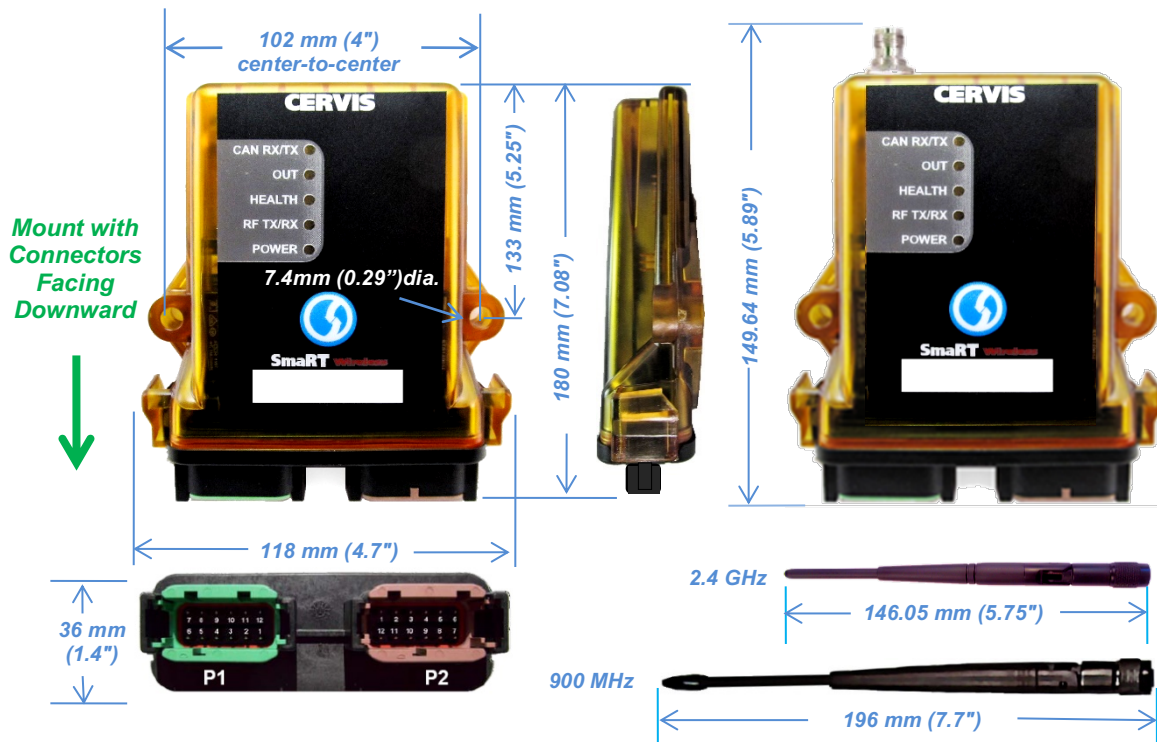


Figure 3. Mounting Holes and Cable Connectors P1 and P2

2.2 SmaRT BU-xH16R Wiring Information

- ✓ **Note:** P1 and P2 cable wires are either numbered or color-coded, depending on the harness supplied with the system. For specific information on cable wiring, reference the Cervis, Inc. applications materials included with your system.

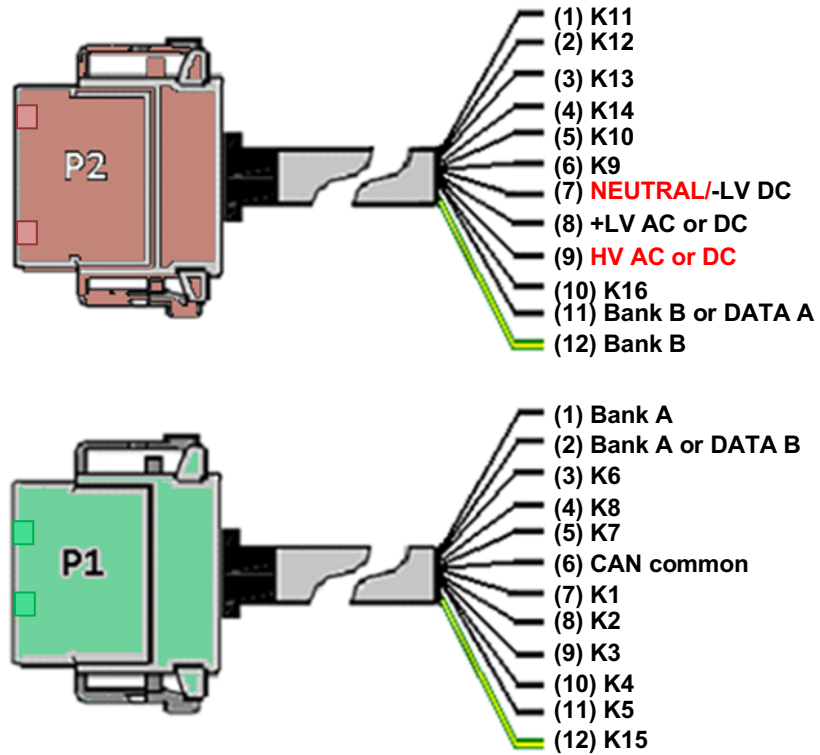


Figure 4. P1 and P2 Cable Wiring Assignments

CAUTION To protect against short circuits, be sure the ends of all unused wires are insulated when making connections.



Figure 5. Dual Connectors/Pin Numbers (enhanced)

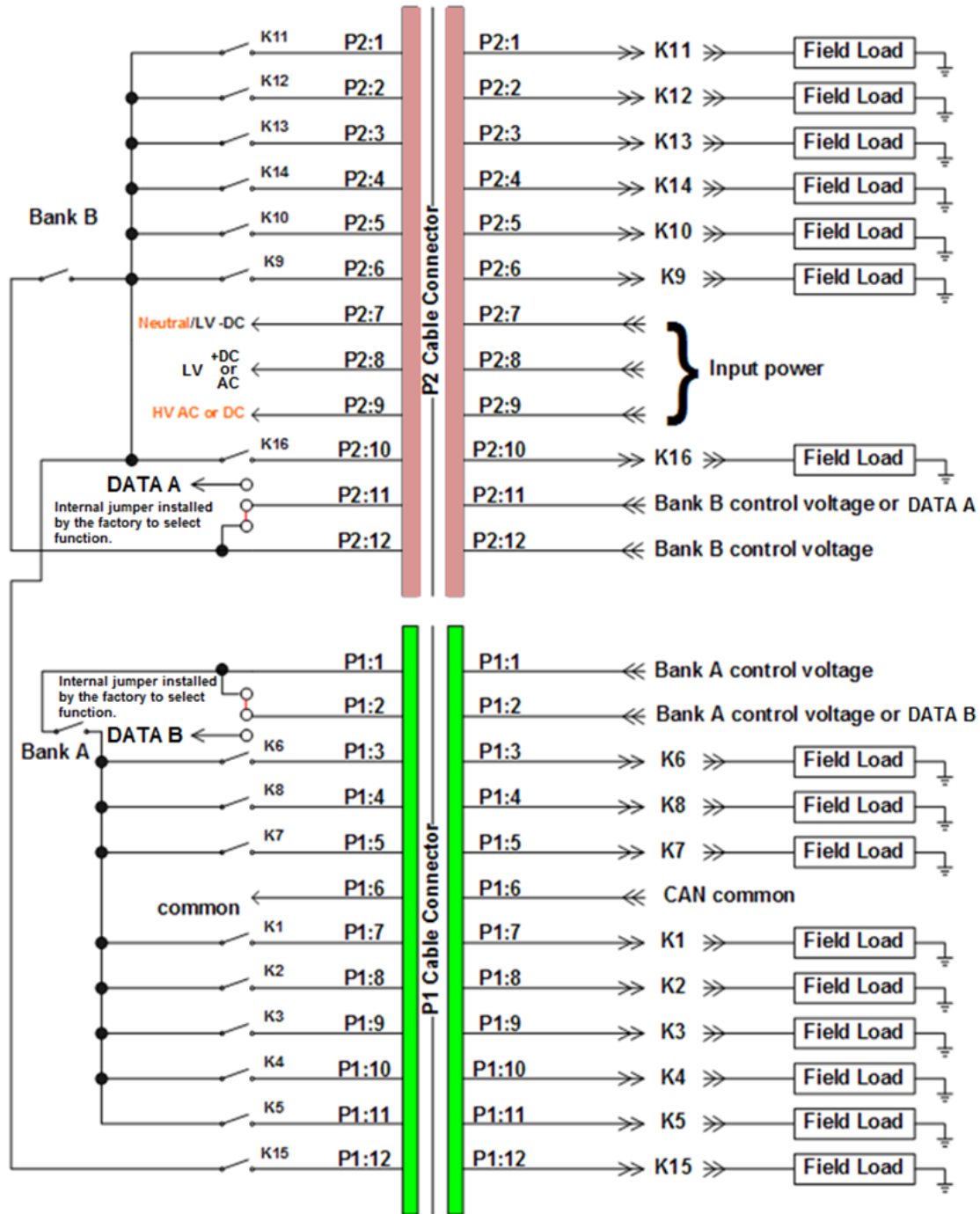


Figure 6. P1 and P2 Cable Field Wiring Layout

Table 1. P1 and P2 Connectors Pin Assignments

P1 Pin	Assignment	P1 Pin	Assignment
P1:1	Bank A Common	P1:7	K1
P1:2	Bank A or CANL or RS-232 RX	P1:8	K2
P1:3	K6	P1:9	K3
P1:4	K8	P1:10	K4
P1:5	K7	P1:11	K5
P1:6	CAN common	P1:12	K15
P2 Pin	Assignment	P2 Pin	Assignment
P2:1	K11	P2:7	Neutral/-LV AC or DC
P2:2	K12	P2:8	+LV AC or DC
P2:3	K13	P2:9	HV AC or DC
P2:4	K14	P2:10	K16
P2:5	K10	P2:11	Bank B or CANH or RS-232 TX
P2:6	K9	P2:12	Bank B Common

2.3 External Protection Devices for Relay Contacts

The BU-xH16R has internal snubbing circuits to protect the relay contacts. However, the internal snubbers may not be adequate for all loads and applications. An MOV, or Metal Oxide Varistor, is a protection device used to suppress high-transient voltages that can cause deterioration of the relay contacts, especially when switching inductive loads such as solenoids or relay coils. They protect circuits against excessive transient voltages by clamping the voltage to a safe level and dissipating the unwanted energy. To provide proper protection, the MOV must have a voltage rating and an energy dissipation rating appropriate to the application. Other devices, such as power Zener diodes or R-C snubbers, may be necessary depending on the application and whether the switched circuits are AC or DC.

When using contactors or solenoids with Smart systems, it is advisable to use external protective devices by connecting them across the coils as shown in the examples below using MOVs.

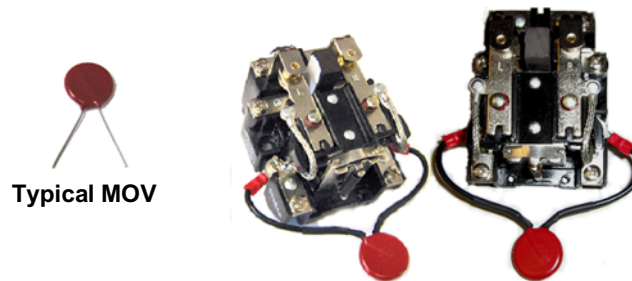


Figure 7. Suggested MOV Wiring Across the Contactor Coils

2.4 Base Unit Troubleshooting

Table 2. Base Unit LED Troubleshooting

Indication	Interpretation – Recommendation
Power LED not active	<ul style="list-style-type: none"> ✓ Is input power present? ✓ Check input power polarity.
Power LED Red or Green	Indicates an internal component failure. Contact Cervis, Inc. Service department.
CAN RX/TX not active	<ul style="list-style-type: none"> ✓ Check for obstructions preventing line-of-sight transmission. ✓ Check that the handheld remote is active. ✓ Is the system using CAN? Re-associate the handheld remote to the base unit.
RF TX/RX not active	<ul style="list-style-type: none"> ✓ Check for obstructions preventing line-of-sight transmission. ✓ Check that the handheld remote is active. ✓ Is the system using RF? Re-associate the handheld remote to the base unit.
Health LED rapidly blinking Amber	Indicates an internal problem. Contact Cervis, Inc. Service department
Health LED blinking Red	Over-temperature indicated. Remove power from BU, allow unit to cool down. Reconnect power after an hour and try again. If problem persists, contact Cervis, Inc. Service department.
Out LED not active	<ul style="list-style-type: none"> ✓ Check that the handheld LEDs are active when the appropriate buttons are pushed.

CAUTION



If the supply voltage of a base unit drops below a minimum volt level even momentarily—the unit may reset. Minimum supply voltages are:

- 7 VDC for a *BU-xH16R-LVD*
- 16 VDC for a *BU-xH16R-LVA*
- 90 VAC for a *BU-xH16R-HVU*

If the supply voltage drops below minimum input volts for a consistent period of time, the LEDs (including the TX/RX LEDs if transceiving) will dim and flicker.

These circumstances are symptoms of a battery or power source that cannot sustain the present current load. Remedy this situation as soon as possible.

3.0 Specifications

Table 3. SmaRT BU-xH16R Base Unit Specifications

Item	Description	
Power	BU-xH16R-HVU	100–240 VAC @ 47 Hz to 440 Hz, or +120 to +340 VDC
	BU-xH16R-LVD	+7 VDC to +32 VDC
	BU-xH16R-LVA	7 VAC to 28 VAC @ 47 Hz to 62 Hz
	Operating Power	5 W max.
Environment	Operating Temp	–20° C to 70° C (–4° F to 158° F)
	Storage Temp	–40° C to 85° C (–40° F to 185° F)
	Humidity	0 to 100%
Radio	Frequency	2405–2480 MHz
	License	None required (License-Free)
	Modulation	DSSS
	Antenna	Internal
Enclosure	Dimensions	119 mm x 133 mm x 36 mm (5.24" x 4.69" x 1.42")
	Durability	High Impact Polymer
	Mounting Holes	7.4 mm (0.29") dia. 102 mm center-to-center (4" center-to-center)
Indicators	CAN RX/TX	Green – Receive Red – Transmit
	Out	Green – Output On
	Health	Green – pulse/sec. OK
	TX/RX	Green – Receive Red – Transmit
	Power	Yellow – OK Red/Green – Fault
Outputs	Sixteen Current	Relays, 1 Form A (SPST) per Resistive: 5 A at 250 VAC or 30 VDC Inductive: 2 A at 250 VAC or 30 VDC 10 A max per bank with Serial COM 20 A max per bank without Serial COM
	Bank A	Relays K1 – K8
	Bank B	Relays K9 – K16
	CAN	Protocol

Appendix A: BU-xH16R Hardware Options

Table 4. BU-xH16R Hardware Options

Model	Frequency	RF Pwr.	Input Pwr.	Antenna	Serial Port	AC Sup.
BU-9H16R-INT-LVD	900 MHz	10 mW	7–32 VDC	Internal	No	Yes
BU-9H16R-INT-LVD-CAN✓	900 MHz	10 mW	7–32 VDC	Internal	CAN	Yes
BU-9H16R-INT-LVD-NOS	900 MHz	10 mW	7–32 VDC	Internal	No	No
BU-9H16R-INT-LVD-NOS-CAN✓	900 MHz	10 mW	7–32 VDC	Internal	CAN	No
BU-9H16R-INT-LVA	900 MHz	10 mW	7–28 VAC	Internal	No	Yes
BU-9H16R-INT-LVA-CAN✓	900 MHz	10 mW	7–28 VAC	Internal	CAN	Yes
BU-9H16R-INT-LVA-NOS	900 MHz	10 mW	7–28 VAC	Internal	No	No
BU-9H16R-INT-LVA-NOS-CAN✓	900 MHz	10 mW	7–28 VAC	Internal	CAN	No
BU-9H16R-INT-HVU	900 MHz	10 mW	100–240 VAC	Internal	No	Yes
BU-9H16R-INT-HVU-CAN✓	900 MHz	10 mW	100–240 VAC	Internal	CAN	Yes
BU-9H16R-INT-HVU-NOS	900 MHz	10 mW	100–240 VAC	Internal	No	No
BU-9H16R-INT-HVU-NOS-CAN✓	900 MHz	10 mW	100–240 VAC	Internal	CAN	No
BU-9H16R-EXT-LVD	900 MHz	10 mW	7–32 VDC	External	No	Yes
BU-9H16R-EXT-LVD-CAN✓	900 MHz	10 mW	7–32 VDC	External	CAN	Yes
BU-9H16R-EXT-LVD-NOS	900 MHz	10 mW	7–32 VDC	External	No	No
BU-9H16R-EXT-LVD-NOS-CAN✓	900 MHz	10 mW	7–32 VDC	External	CAN	No
BU-9H16R-EXT-LVA	900 MHz	10 mW	7–28 VAC	External	No	Yes
BU-9H16R-EXT-LVA-CAN✓	900 MHz	10 mW	7–28 VAC	External	CAN	Yes
BU-9H16R-EXT-LVA-NOS	900 MHz	10 mW	7–28 VAC	External	No	No
BU-9H16R-EXT-LVA-NOS-CAN✓	900 MHz	10 mW	7–28 VAC	External	CAN	No
BU-9H16R-EXT-HVU	900 MHz	10 mW	100-240 VAC	External	No	Yes
BU-9H16R-EXT-HVU-CAN✓	900 MHz	10 mW	100-240 VAC	External	CAN	Yes
BU-9H16R-EXT-HVU-NOS	900 MHz	10 mW	100-240 VAC	External	No	No
BU-9H16R-EXT-HVU-NOS-CAN✓	900 MHz	10 mW	100-240 VAC	External	CAN	No
BU-2H16R-INT-LVD	2.4 GHz	100 mW	7–32 VDC	Internal	No	Yes
BU-2H16R-INT-LVD-CAN✓	2.4 GHz	100 mW	7–32 VDC	Internal	CAN	Yes
BU-2H16R-INT-LVD-NOS	2.4 GHz	100 mW	7–32 VDC	Internal	No	No
BU-2H16R-INT-LVD-NOS-CAN✓	2.4 GHz	100 mW	7–32 VDC	Internal	CAN	No
BU-2H16R-INT-LVA	2.4 GHz	100 mW	7–28 VAC	Internal	No	Yes
BU-2H16R-INT-LVA-CAN✓	2.4 GHz	100 mW	7–28 VAC	Internal	CAN	Yes
BU-2H16R-INT-LVA-NOS	2.4 GHz	100 mW	7–28 VAC	Internal	No	No
BU-2H16R-INT-LVA-NOS-CAN✓	2.4 GHz	100 mW	7–28 VAC	Internal	CAN	No
BU-2H16R-INT-HVU	2.4 GHz	100 mW	100-240 VAC	Internal	No	Yes
BU-2H16R-INT-HVU-CAN✓	2.4 GHz	100 mW	100-240 VAC	Internal	CAN	Yes
BU-2H16R-INT-HVU-NOS	2.4 GHz	100 mW	100-240 VAC	Internal	No	No
BU-2H16R-INT-HVU-NOS-CAN✓	2.4 GHz	100 mW	100-240 VAC	Internal	CAN	No
BU-2H16R-EXT-LVD	2.4 GHz	100 mW	7–32 VDC	External	No	Yes
BU-2H16R-EXT-LVD-CAN✓	2.4 GHz	100 mW	7–32 VDC	External	CAN	Yes
BU-2H16R-EXT-LVD-NOS	2.4 GHz	100 mW	7–32 VDC	External	No	No
BU-2H16R-EXT-LVD-NOS-CAN✓	2.4 GHz	100 mW	7–32 VDC	External	CAN	No
BU-2H16R-EXT-LVA	2.4 GHz	100 mW	7–28 VAC	External	No	Yes
BU-2H16R-EXT-LVA-CAN✓	2.4 GHz	100 mW	7–28 VAC	External	CAN	Yes
BU-2H16R-EXT-LVA-NOS	2.4 GHz	100 mW	7–28 VAC	External	No	No
BU-2H16R-EXT-LVA-NOS-CAN✓	2.4 GHz	100 mW	7–28 VAC	External	CAN	No
BU-2H16R-EXT-HVU	2.4 GHz	100 mW	100–240 VAC	External	No	Yes
BU-2H16R-EXT-HVU-CAN✓	2.4 GHz	100 mW	100–240 VAC	External	CAN	Yes

Model	Frequency	RF Pwr.	Input Pwr.	Antenna	Serial Port	AC Sup.
BU-2H16R-EXT-HVU-NOS	2.4 GHz	100 mW	100–240 VAC	External	No	No
BU-2H16R-EXT-HVU-NOS-CAN✓	2.4 GHz	100 mW	100–240 VAC	External	CAN	No

✓ **Note:** BU-xH16R-CAN units are internally terminated at 1.0 kΩ.
Termination can be removed at the factory.

Appendix B: BU-xH16R Wiring Harness Options

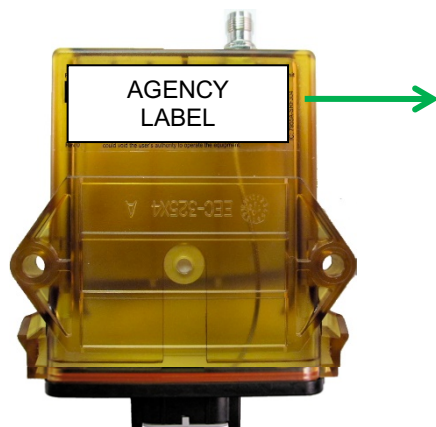
Table 5. BU-xH16R Wiring Harness

Wiring Harness	Part Number
Cable P1	HN-1003 (for P1)
Cable P2	HN-1004 (for P2)
9 ft. Smart Cable harness with brown (P2) and green (P1) connectors	HN-1006

Appendix C: Exposure to Radio Frequency Energy

SmaRT handheld remote units contain radio transceivers. When active, a handheld remote sends out radio frequency (RF) energy through its internal antenna. The SmaRT handheld remote complies with limits set by the United States Federal Communications Commission (FCC) for operating distance from human tissue.

Appendix D: Agency Identification Label Locations



✓ **Note:** All SmaRT base unit agency ID labels are located in the area shown. The base unit label position is identical for both internal antenna and external antenna base units.

Figure 8. Agency Identification Label Locations

