

Engineering Sheet

Job Name _____

Contractor _____

Job Location _____

Approval _____

Engineer _____

Contractor's P.O. No. _____

Approval _____

Representative _____

LEAD FREE^{*}

Series PVS-7000

Flood Protection Valve Station with SentryPlus Alert[®] Technology

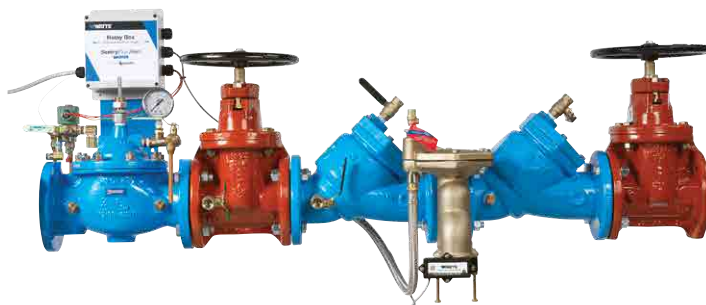
Series PVS-7000 Flood Protection Valve Station with SentryPlus Alert technology is a configured water flow control system assembled from proven, reliable components to meet exacting project application requirements. The configuration consists of Series LFF113FP automatic shutdown control valve and relay box, Reduced Pressure Zone backflow preventer (Series LF909 Large or Series 957), and SentryPlus Alert sensor technology. Flood protection against property damage is engineered through the automatic control valve, which regulates flow by hydraulic actuator, and the RPZ backflow preventer assembly equipped with a flood sensor. The relay box provides power to the Solenoid bypass valve mounted on the control valve and, when installed, the activation module attached to the flood sensor. These drop-in valve stations are factory preassembled and tested, ensuring quality and flow performance for critical building demands.

SentryPlus Alert technology consists of the flood sensor mounted on the exterior of the assembly relief valve and the activation module that ships with the control valve. Once activated, the sensor can detect continuous discharge and trigger the module to relay a signal energizing the Solenoid valve to shut down the control valve. NOTE: The sensor technology does not affect assembly functions or certifications.

Designed for use with building management systems, the alert system is also compatible with cellular network connectivity to suit the preference for wireless communication by text, email, or phone call. Cellular communication channels through Syncta[®], a web-based platform supporting the inspection and monitoring of backflow preventer assemblies. (NOTE: The Cellular Gateway must be purchased separately for this configuration.)

NOTICE

SentryPlus Alert technology is required to activate the flood sensor on the relief valve of the backflow preventer assembly. Without activation, the flood sensor is a passive component that has no communication with any other device. (For more information, download IS-LFF113FP.)



Protection Valve Station including Series LFF113FP shutdown control valve, relay box, and Series LF909 Large backflow prevention assembly with flood sensor and activation module on assembly relief valve

Features

- Protects property by shutting off supply to the backflow preventer
- Prevents costly losses arising from flooding and property damage, including higher insurance premiums and expensive mop-up operations
- Reduces the need for off-hour maintenance personnel, as the alert system, when activated, not only detects the failure but also triggers shutdown of the control valve and notification to a BMS application if configured
- Is ideal for medium to large line sizes up to 8"
- Includes UL Classified, FM Approved, ASSE, IAPMO, and USC certified or listed components as required for service
- For use with Series LF909 Large and Series 957 backflow preventer assemblies (Refer to ES-LF909L, ES-909RPDA, ES-957, and ES-957RPDA for product specification.)

NOTICE

The information contained herein is not intended to replace the full product installation and safety information available or the experience of a trained product installer. You are required to thoroughly read all installation instructions and product safety information before beginning the installation of this product.

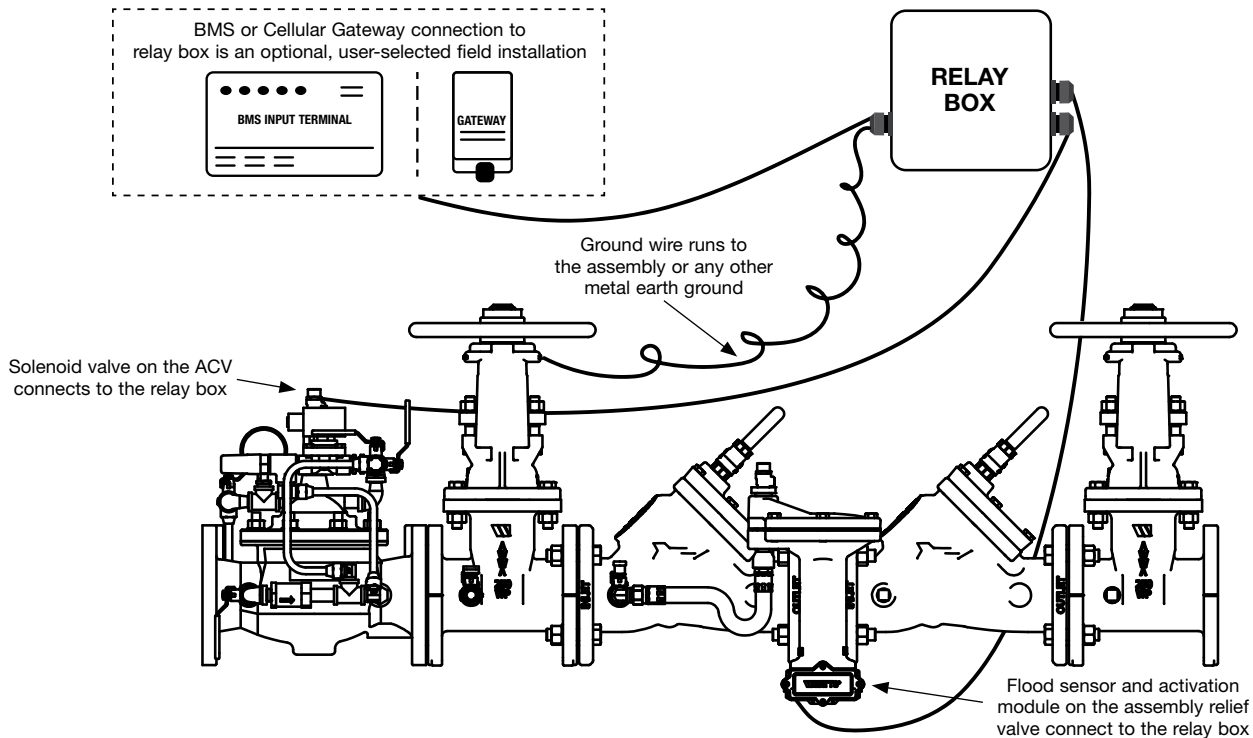
NOTICE

Use of the Flood Protection Valve Station with SentryPlus Alert technology does not replace the need to comply with all required instructions, codes, and regulations related to the installation, operation, and maintenance of an RPZ backflow preventer, including the need to provide proper drainage in the event of a discharge.

Watts is not responsible for the failure of alerts due to connectivity issues, power outages, or improper installation.

^{*}The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.

Typical Installation



Operation

Series PVS-7000 Flood Protection Valve Station with SentryPlus Alert technology helps protect against property damage that can occur from continuous relief valve discharge during normal operation. Continuous discharge can result from the following typical conditions:

- Fouled first check seat caused by dirt, debris, or rocks
- Failed first check spring
- Clogged or blocked relief valve sensing line
- Failed relief valve diaphragm

The shutdown control valve is a normally open valve designed for installation upstream of a Reduced Pressure Zone (RPZ) backflow preventer. With the integration of SentryPlus Alert technology, the valve closes when continuous discharge is detected by the flood sensor on the assembly relief valve. The sensor relays a signal to the activation module, which energizes the relay box and Solenoid bypass valve, both connected to the control valve.

The activation module receives a signal from the flood sensor when a discharge is detected. If the discharge meets the conditions of a qualifying event, the normally open contact is closed to provide a signal to the relay box. In turn, the relay box energizes the Solenoid valve (normally closed), which manually closes the main valve when engaged to provide automatic shutdown for flood protection. (The activation module mounted on the flood sensor has an adjustable time delay to avoid valve closure from intermittent or nuisance relief valve discharge.) The position indicator provides a visual sign of valve closure. The valve remains closed and cannot be reopened if flow stops or electrical service is interrupted; it must be manually reset after the RPZ is diagnosed and/or repaired.

The flood sensor comes installed on the backflow preventer assembly. (The sensor is installed on the valve exterior and does not alter valve functions or certifications.) The alert system is

designed for use with BMS, with the activation module as a field installation. The alert system is also compatible with cellular networks to suit preference for wireless communication by text, email, or phone call. Cellular communication channels through the Syncta platform. The Cellular Gateway is a separate purchase.

Functional Specification

Operating Pressure: 175 psig

Operating Temperature:

- 957 backflow: 33°F – 140°F
- LF909 backflow: 33°F – 110°F continuous, up to 140°F intermittent

Hydrostatic Test Pressure: 350 psig

End Connections: 150# Flanged

Size: 2½ – 8"

Backflow Preventer: 957, LF909 Large

Shutoff Valve: OSY, NRS

Agency Approval (Backflow Preventers Only)

- Approved by the Foundation for Cross-Connection Control and Hydraulic Research at The University of Southern California (FCCCHR-USC)
- ASSE 1013 Listed
- UL Classified (US & Canada)**
- FM Approved**
- AWWA Standard C511 Compliant
- End connections compliant to ASME B16.1 Class 125 and AWWA Class D Flange
- NSF certified to NSF/ANSI 61-G

**Assembly configured with UL Classified and FM Approved OS&Y and BFG valves. Less valve or NRS assemblies are not UL Classified and FM Approved configurations.

Technical Specification

Connected Valve Stations with LF909 Backflow and ACV

A Reduced Pressure Zone assembly shall be installed at each cross-connection to prevent backsiphonage and backpressure backflow of hazardous materials into the potable water supply. The assembly shall consist of a pressure differential relief valve located in a zone between two positive seating check valves and captured springs. Backsiphonage protection shall include provision to admit air directly into the reduced pressure zone through a separate channel from the water discharge channel. The assembly shall include two tightly closing shutoff valves before and after the valve and test cocks. The Lead Free* Reduced Pressure Zone assembly shall comply with state codes and standards, where applicable, requiring reduced lead content. The assembly shall meet the requirements of ASSE Standard 1013; AWWA Standard C511-92; CSA B64.5; and UL Classified File No. EX3185. Listed by IAPMO (UPC). Approved by the Foundation for Cross Connection Control and Hydraulic Research at the University of Southern California. The assembly shall be Watts Series LF909, and shall include a flood sensor on the relief valve for flood detection.

The Flood Protection Shutdown Control Valve shall be a normally open diaphragm valve installed upstream of the Reduced Pressure Zone backflow preventer assembly, and shall automatically close if the RPZ relief valve begins to discharge continuously. The shutdown shall be triggered by the flood sensor and activation module mounted to the assembly relief valve. (A time delay function in the activation module shall prevent the valve from closing when intermittent discharges occur.) If a continuous discharge occurs, the flood sensor installed on the assembly relief valve shall send a signal to the activation module, which in turn shall trigger the relay box to energize the Solenoid bypass valve to close the main control valve. Once closed, the control valve shall be reset manually.

The relay box shall be valve mounted with the relay prewired to the Solenoid valve. The valve shall be equipped with a position indicator to provide a visual sign of valve closure. The position indicator shall be a stainless steel indicating rod that follows main valve stem movement as seen through a cylindrical borosilicate glass sight tube.

The relay box may also be connected to the input terminal of a Building Management System (BMS)/PLC controller. Alerts on potential flooding shall be handled by the BMS application. The alert technology shall also be compatible with cellular networks to suit user preference for wireless communication by text, email, or phone call. Cellular communication shall channel through the Syncta platform. The Cellular Gateway shall be a separate purchase and field installed.

The RPZ backflow assembly, flood protection shutdown control valve, relay box, and SentryPlus Alert technology shall be provided by the same manufacturer and be covered by a single warranty policy.

Connected Valve Stations with 957 Backflow and ACV

The Reduced Pressure Zone assembly shall consist of two independent torsion spring check modules, a differential pressure relief valve located between and below the two modules, two drip-tight shutoff valves, and required torsion spring check modules. The relief valve shall be contained in sleeve-accessible single housing constructed from 304 (Schedule 40) stainless steel pipe with groove end connections. The torsion spring checks shall have replaceable elastomer discs and in operation produce drip-tight closure against the reverse flow of liquid caused by backpressure or backsiphonage. The assembly shall be Watts Series 957, and shall include a flood sensor on the relief valve for flood detection.

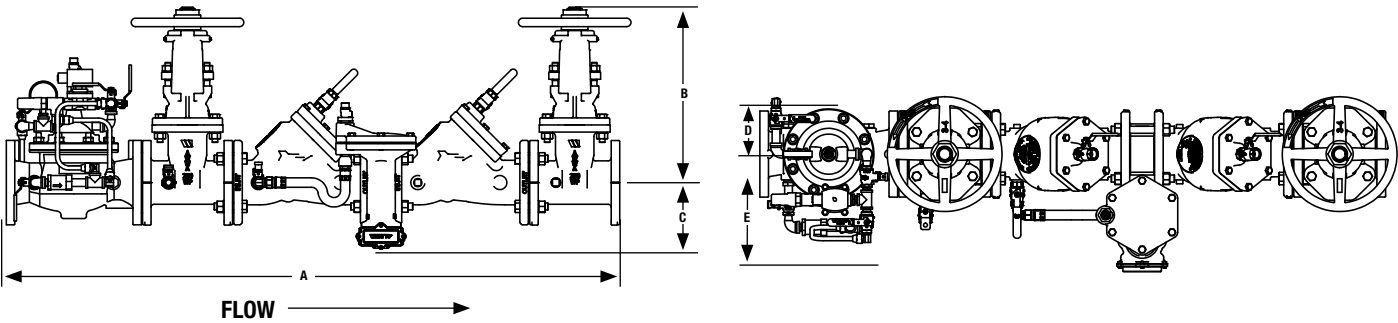
The Flood Protection Shutdown Control Valve shall be a normally open diaphragm valve installed upstream of the Reduced Pressure Zone backflow preventer assembly, and shall automatically close if the RPZ relief valve begins to discharge continuously. The shutdown shall be triggered by the flood sensor and activation module mounted to the assembly relief valve. (A time delay function in the activation module shall prevent the valve from closing when intermittent discharges occur.) If a continuous discharge occurs, the flood sensor installed on the assembly relief valve shall send a signal to the activation module, which in turn shall trigger the relay box to energize the Solenoid bypass valve to close the main control valve. Once closed, the control valve shall be reset manually.

The relay box shall be valve mounted with the relay prewired to the Solenoid valve. The valve shall be equipped with a position indicator to provide a visual sign of valve closure. The position indicator shall be a stainless steel indicating rod that follows main valve stem movement as seen through a cylindrical borosilicate glass sight tube.

The relay box may also be connected to the input terminal of Building Management System (BMS)/PLC controller. Alerts on potential flooding shall be handled by the BMS application. The alert technology shall also be compatible with cellular networks to suit user preference for wireless communication by text, email, or phone call. Cellular communication shall channel through the Syncta platform. The Cellular Gateway shall be a separate purchase and field installed.

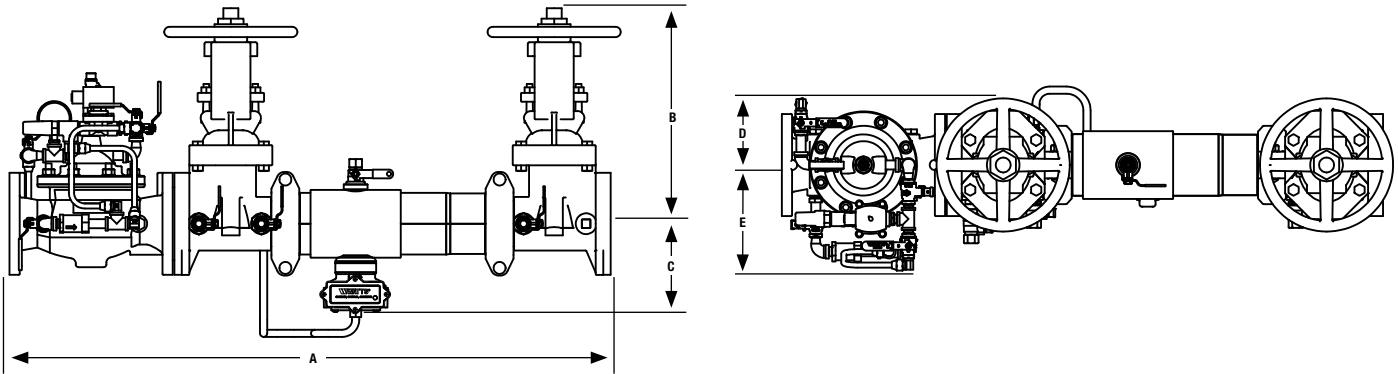
The RPZ backflow assembly, flood protection shutdown control valve, relay box, and SentryPlus Alert technology shall be provided by the same manufacturer and be covered by a single warranty policy.

Dimensions and Weights



Series LFF113FP ACV and LF909 Large Backflow Preventer

MODEL SIZE	DIMENSION (approximate)												WEIGHT (NRS)		WEIGHT (OSY)	
	A			B (NRS)		B (OSY)		C		D		E				
<i>in.</i>	<i>in.</i>	<i>mm</i>	<i>in.</i>	<i>mm</i>	<i>in.</i>	<i>mm</i>	<i>in.</i>	<i>mm</i>	<i>in.</i>	<i>mm</i>	<i>in.</i>	<i>mm</i>	<i>lb</i>	<i>kg</i>	<i>lb</i>	<i>kg</i>
2½	48¾	1238	9⅞	259	16⅜	416	5¼	133	9⅞	230	11	279	260	118	263	119
3	50¼	1276	10¼	289	18⅞	479	5¼	133	9⅞	230	11⅞	289	320	145	325	147
4	64⅞	1629	12½	352	22¾	578	6	152	14⅞	365	12¼	311	645	293	660	299
6	76	1930	16⅞	470	30⅞	765	6	152	14⅞	365	14	356	1038	471	1082	491
8	90	2286	20⅞	575	37¾	959	9¾	248	19¼	489	15¾	400	2000	907	2106	955



Series LFF113FP ACV and 957 Backflow Preventer

MODEL SIZE	DIMENSION (approximate)												WEIGHT (NRS)		WEIGHT (OSY)	
	A			B (NRS)		B (OSY)		C		D		E		lb	kg	lb
in.	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm				
2½	41¾	1060	9⅞	238	16⅜	416	6½	165	9⅞	230	11	279	183	83	193	88
3	43¾	1137	10¼	260	18⅞	479	6⅞	170	9⅞	230	11⅞	289	229	104	243	110
4	48¾	1238	12⅞	310	22¾	578	7	178	14⅞	365	12¼	311	354	161	354	161
6	63½	1613	16	406	30⅞	765	8½	216	14⅞	365	14	356	596	270	618	280
8	75⅞	1908	19⅞	506	37¾	959	9⅞	246	19¼	489	15¾	400	1091	495	1133	514

SentryPlus Alert Technology

The alert system can be installed with no disruption to service.

Activation module with 8-foot cable

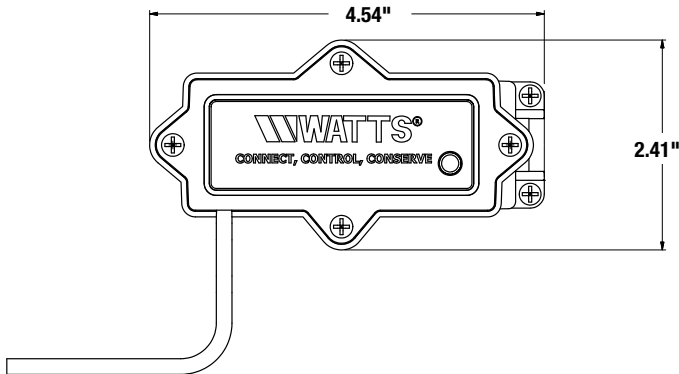
Ground wire



Activation module
with cable



Ground wire



Activation Module

The activation module contains the electronic circuit assembly, interfaces with the flood sensor, and provides connectivity to the BMS input terminal or the Cellular Gateway. Weight: <0.25 lb.

The module is designed with adjustable settings for wet threshold (sensitivity to water discharge) and timer delay (duration before alarm). For more information on custom flood sensor settings, download IS-FloodSensor-Settings 2144.



Ground Wire

24 AWG

Solid core, uninsulated, tinned copper wire

RoHS compliant

5 feet



Cellular Gateway

The Cellular Gateway is hardwired to the relay box for constant communication between the two devices. In turn, the Cellular Gateway communicates to the Watts Syncta platform when a qualifying discharge event occurs. Specifically, a signal about potential flood conditions from the Cellular Gateway prompts the Syncta application to alert users by email, phone call, or text message.

NOTE: This item is sold separately.

Wiring the Relay Box

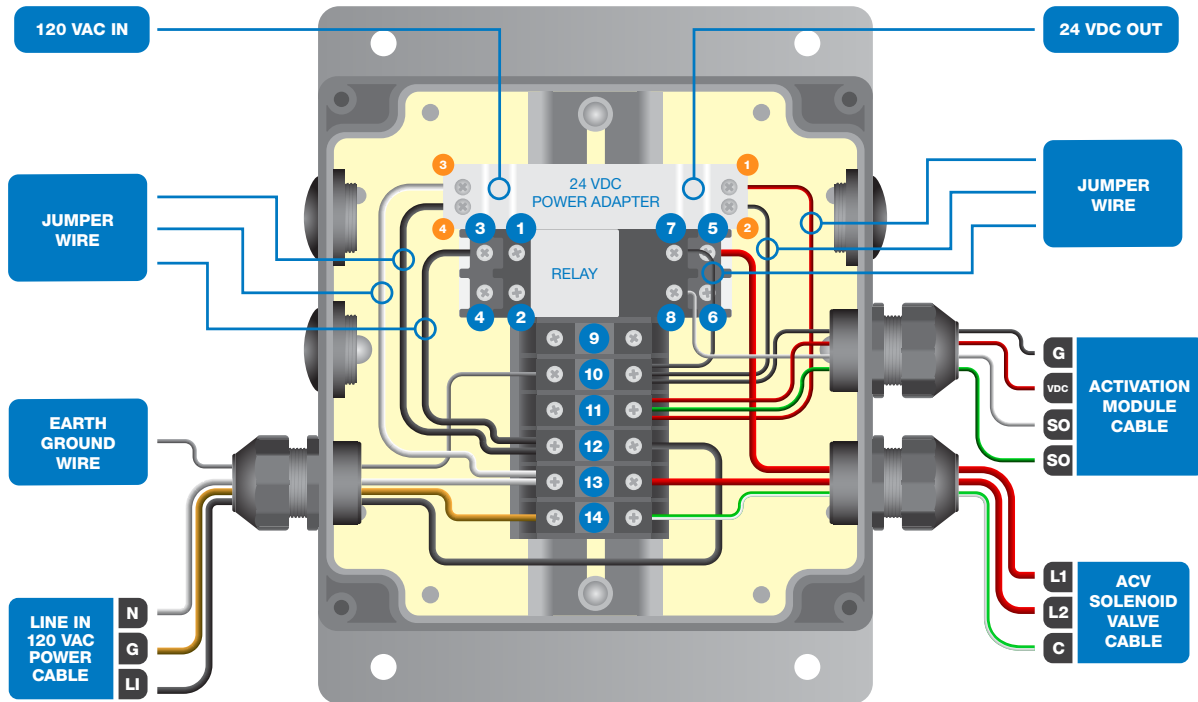
The relay box shall contain the electromagnetic device used to operate the LFF113FP Solenoid bypass valve. The relay box shall receive the signal from the flood sensor activation module and in turn shall be wired directly to the Solenoid valve.

Here, terminals 9 to 14 are numbered for reference and can be used in any order to make the cross-connections between the left and the right sides of the terminal block.

Relay terminals 4 and 6 shall be assigned for connection to the input terminals of the a building management system (BMS) or Cellular Gateway for real-time notification of potential flooding.

NOTICE

Certified electrician required to connect to the mains power and activation module to relay box.



Jumper Wire

Auxiliary terminal 12A to power adapter terminal 4 (AC/L)

Auxiliary terminal 12A to relay terminal 3

Auxiliary terminal 13A to power adapter terminal 3 (AC/N)

Earth Ground Wire

Metal base to auxiliary terminal 10A

Line In 120 VAC Power Cable

L1 to auxiliary terminal 12B

Ground to auxiliary terminal 14A

Neutral to auxiliary terminal 13A

BMS Cable (see page 7)

Input 1 to relay terminal 4

Input 1 to relay terminal 6

Cellular Gateway Cable (see page 7)

Input 1 to relay terminal 4

Input 1 to relay terminal 6

Ground to auxiliary terminal 10A

Power (+) 24VDC to auxiliary terminal 11A

Jumper Wire

Auxiliary terminal 11B to power adapter terminal 1 (+V)

Auxiliary terminal 10B to power adapter terminal 2 (-V)

Auxiliary terminal 10B to relay terminal 7

Activation Module Cable

Ground to auxiliary terminal 10B

24 VDC In to auxiliary terminal 11B

Signal Out (white) to relay terminal 8

Signal Out (green) to auxiliary terminal 11B

ACV Solenoid Valve Cable

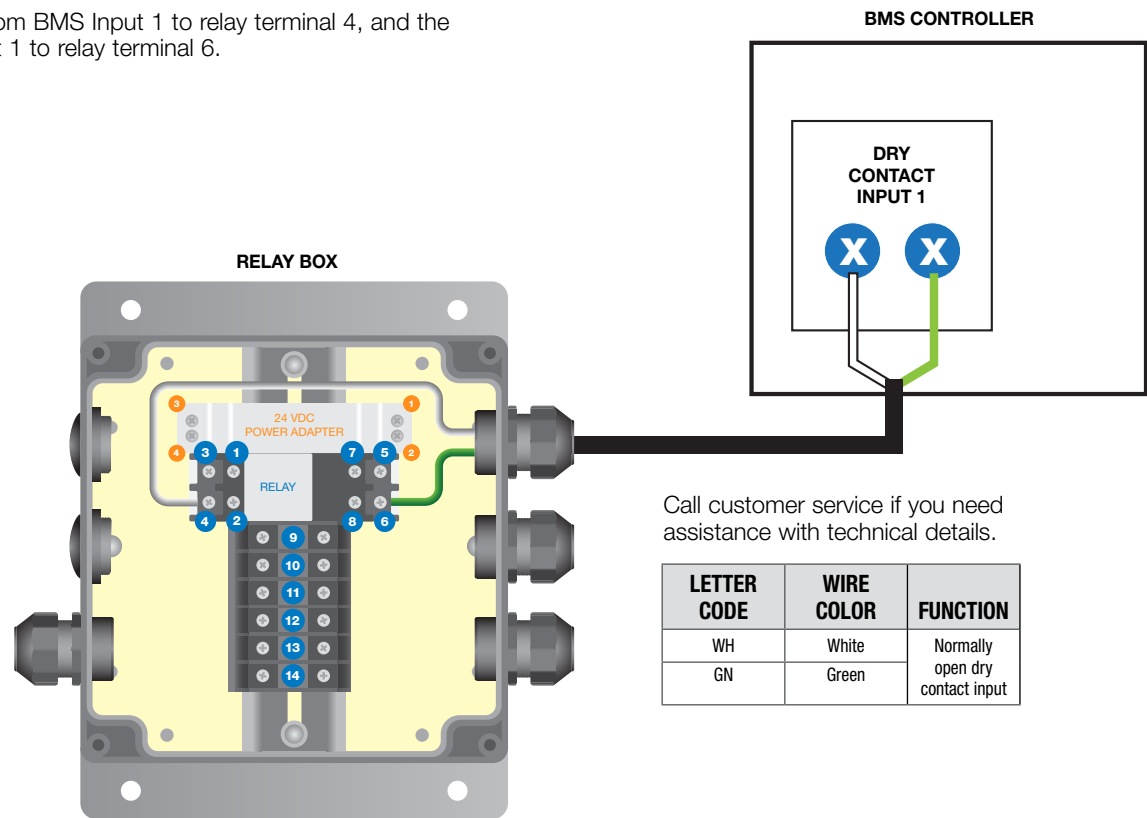
L1 to relay terminal 5

L2 to auxiliary terminal 13B

Common to auxiliary terminal 14B

Connecting the BMS to the Relay Box

One wire shall run from BMS Input 1 to relay terminal 4, and the other wire from Input 1 to relay terminal 6.

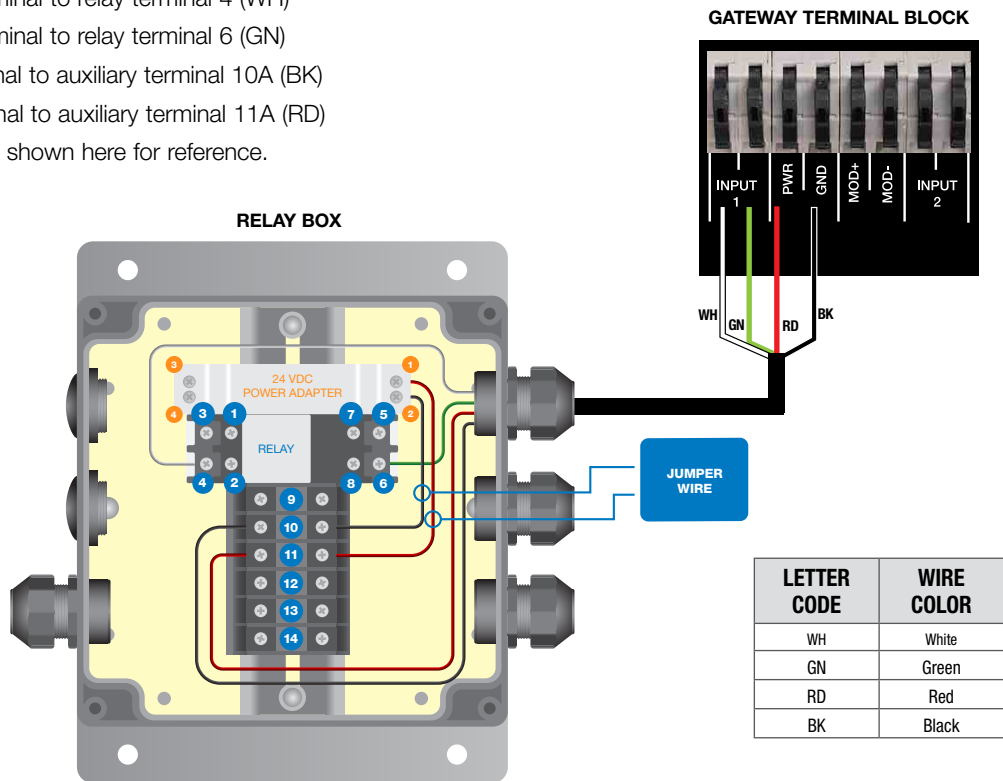


Connecting the Gateway to the Relay Box

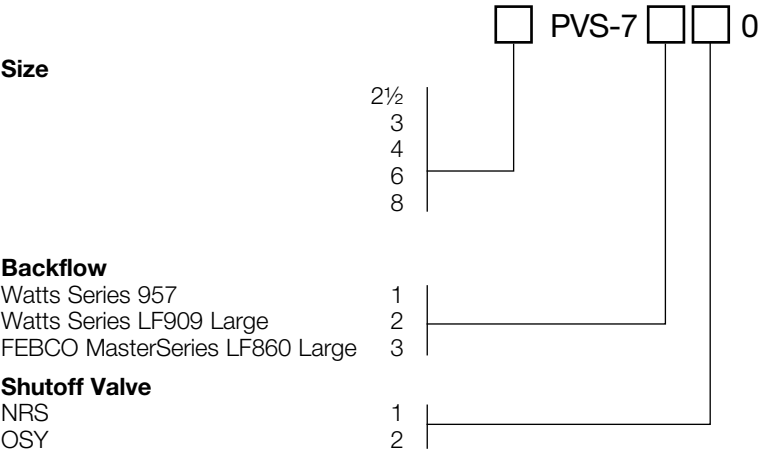
OPTIONAL: Cellular network connectivity to receive alerts through Syncta is an optional field installation that is chosen and completed by the user.

A 4-conductor cable shall connect the Cellular Gateway terminals to the relay box terminals.

- Gateway Input 1 terminal to relay terminal 4 (WH)
 - Gateway Input 1 terminal to relay terminal 6 (GN)
 - Gateway GND terminal to auxiliary terminal 10A (BK)
 - Gateway PWR terminal to auxiliary terminal 11A (RD)
- NOTE: Jumper wires shown here for reference.



Ordering Information



Example: A 4" Valve Station with an LF909 backflow preventer and NRS shutoffs would be **4 PVS-7210**.

