



RCVC

Red Circle

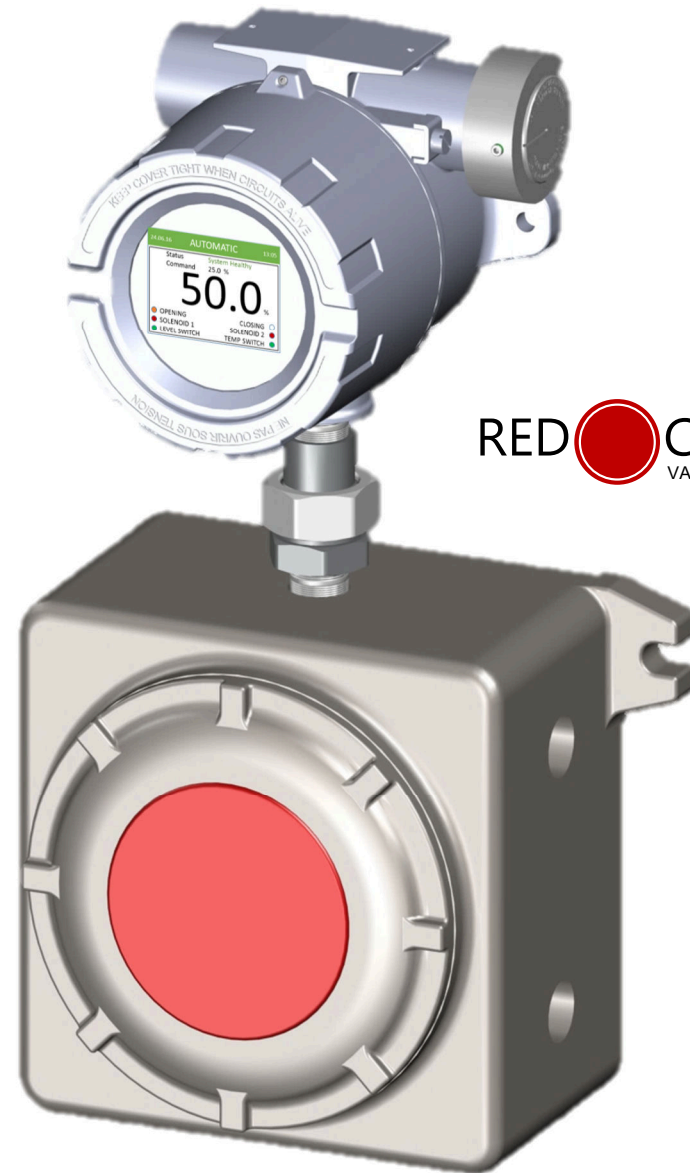
Valve Controller

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RCVC Red Circle Valve Controller

Rugged and Intelligent Valve Control with Zero Steady State Emissions for Natural Gas Control Valves

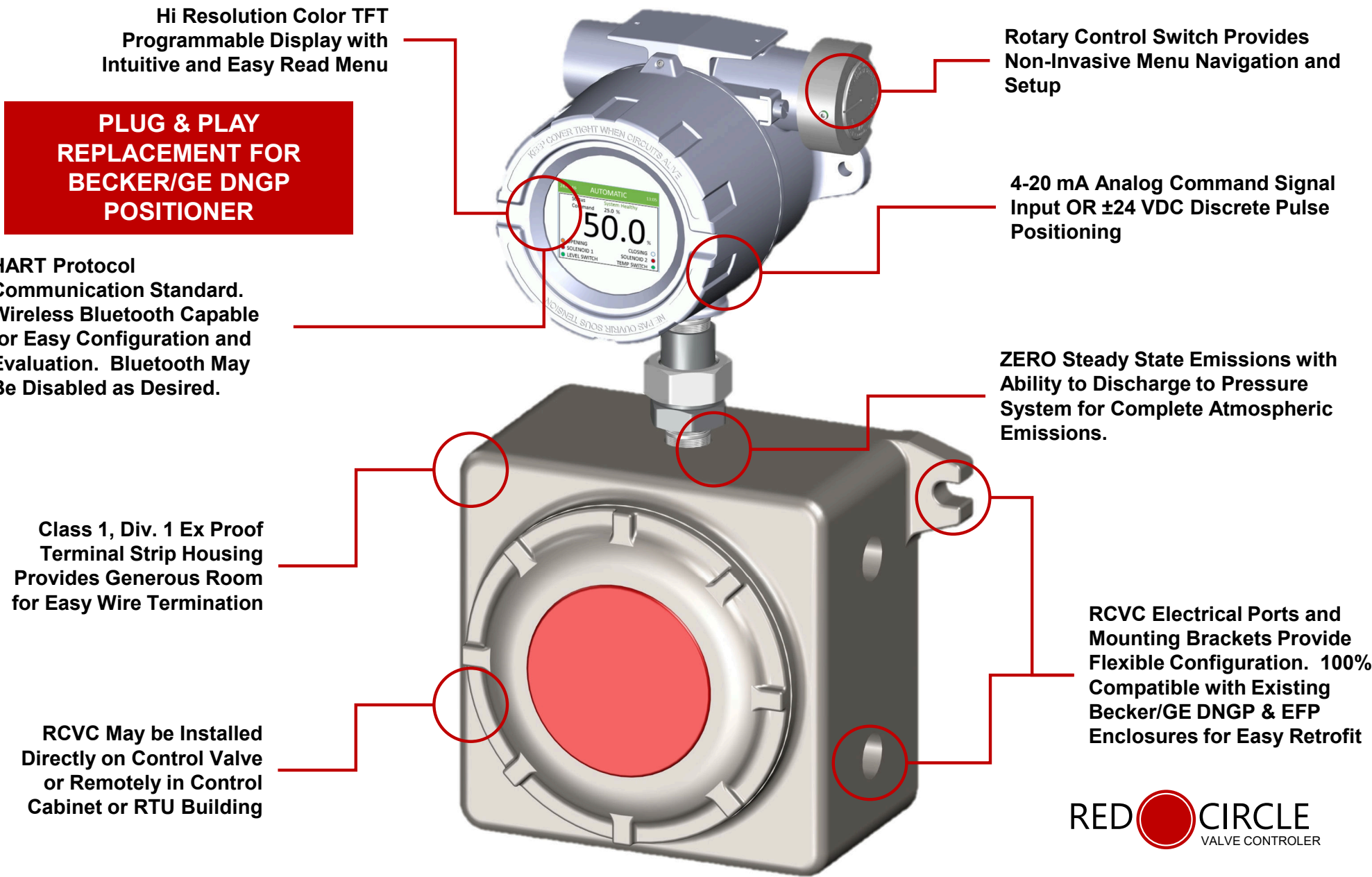
The VRG Red Circle Valve Controller provides accurate positioning of natural gas control valves via electronic signal. The RCVC can accept analog or discrete input signals. The RCVC is compatible with all VRG Controls control valve actuators and may also be installed on virtually any design of pneumatic control valve actuator. The Red Circle Control Valve features zero steady state consumption with an ability to discharge emissions to a suitable nearby pressure system. The high pressure capability of the RCVC system allows for efficient use of more compact pneumatic actuators. The RCVC is equipped with the most advanced programmable control capabilities, diagnostics and operational features to ensure the highest performance and easiest integration on new or retrofit applications.



RED  CIRCLE
VALVE CONTROLLER

RCVC Red Circle Valve Controller

Features and Functions Designed For Gas Pipelines



RCVC Red Circle Valve Controller



RCVC Exclusive Features – Only with VRG!

- RCVC Override – Apply 24 VDC to OPEN/CLOSE Valve – No Additional Hardware Required
- OPEN/CLOSE on loss 24 VDC Power Supply – For Spring Return Actuated Control Valves
- Directionally Adjustable Deadband and Pulse Control in OPEN or CLOSE Direction
- Alarm Output (24 VDC) to Indicate Failure of:
 - Command Signal
 - Feedback Signal
 - RCVC Placed in Manual Mode
 - Any RCVC System Fault
- Pulse Control Allows Adjustable “Asymptote Response” to Eliminate Valve Overshoot
- Alarm Output (24 VDC) can Register in Control System and/or Trigger a Device Such as Solenoid Valve
 - Can Swap Between VPC Control and RCVC Control via Alarm Output
 - Anti-Surge Control Valves use Alarm Output for Rapid Surge Response

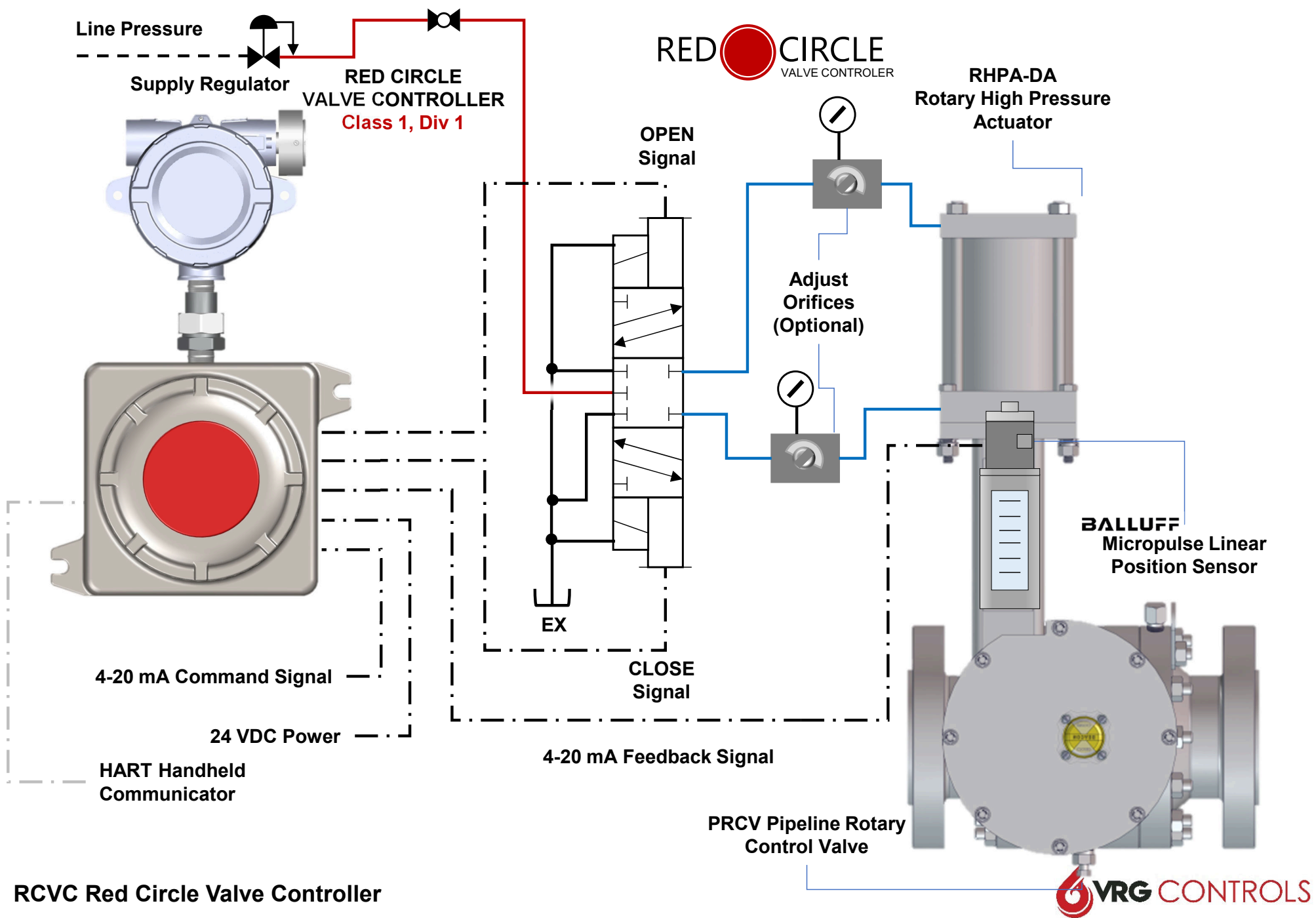


RCVC Standard Features – Designed for Natural Gas

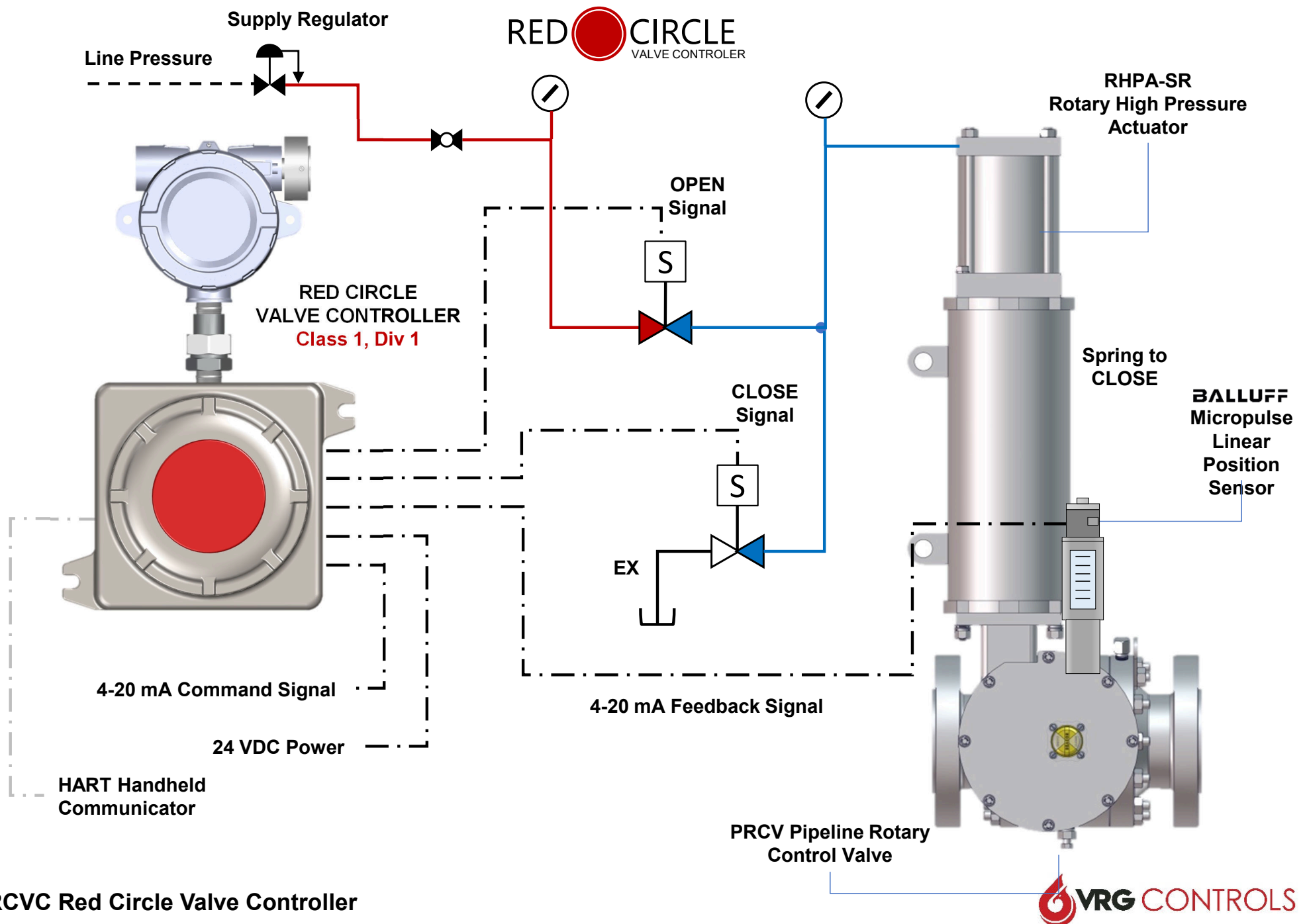
- Lock Last Position on Loss of 4-20 mA Command and/or 24 VDC Power Supply
- Supply Pressure (Pneumatic) from 30 psig to 250 psig
- ZERO Steady State Gas Emissions
- Gas-Tight to Ensure any Discharge Directed Safely Outside Building or Enclosure
- Discharge to a Pressure System up to 200 psig for Complete Elimination of Emissions
- Rotary Control Switch Provides Non-Invasive Menu Navigation and Setup
- Class 1, Div 1 Explosion Proof Designed for Natural Gas
- Easy RCVC Reversible Action (Reverse / Direct)
- “RCVC-REM” Version Designed for Remote Install in Building
- Solenoid Counter Pulse Signal May be Communicated Remotely
- HART Protocol for Advanced Communication and Remote Configuration Features
- USB Link for Setup and Diagnostics of RCVC System
- Portable Data Settings for Safeguard and Consistent Configuration



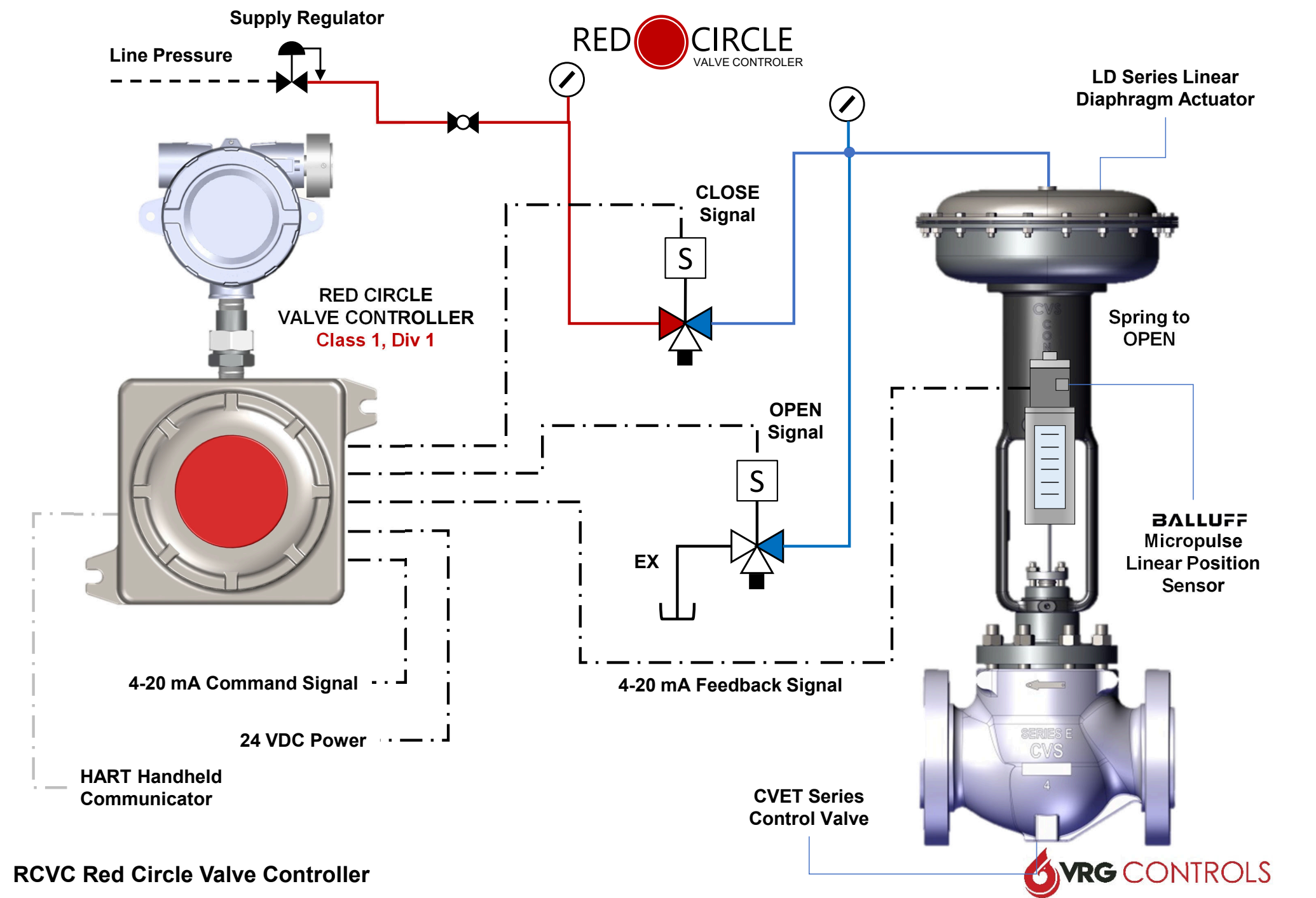
RCVC Schematic – Hi Pressure Double Acting Configuration



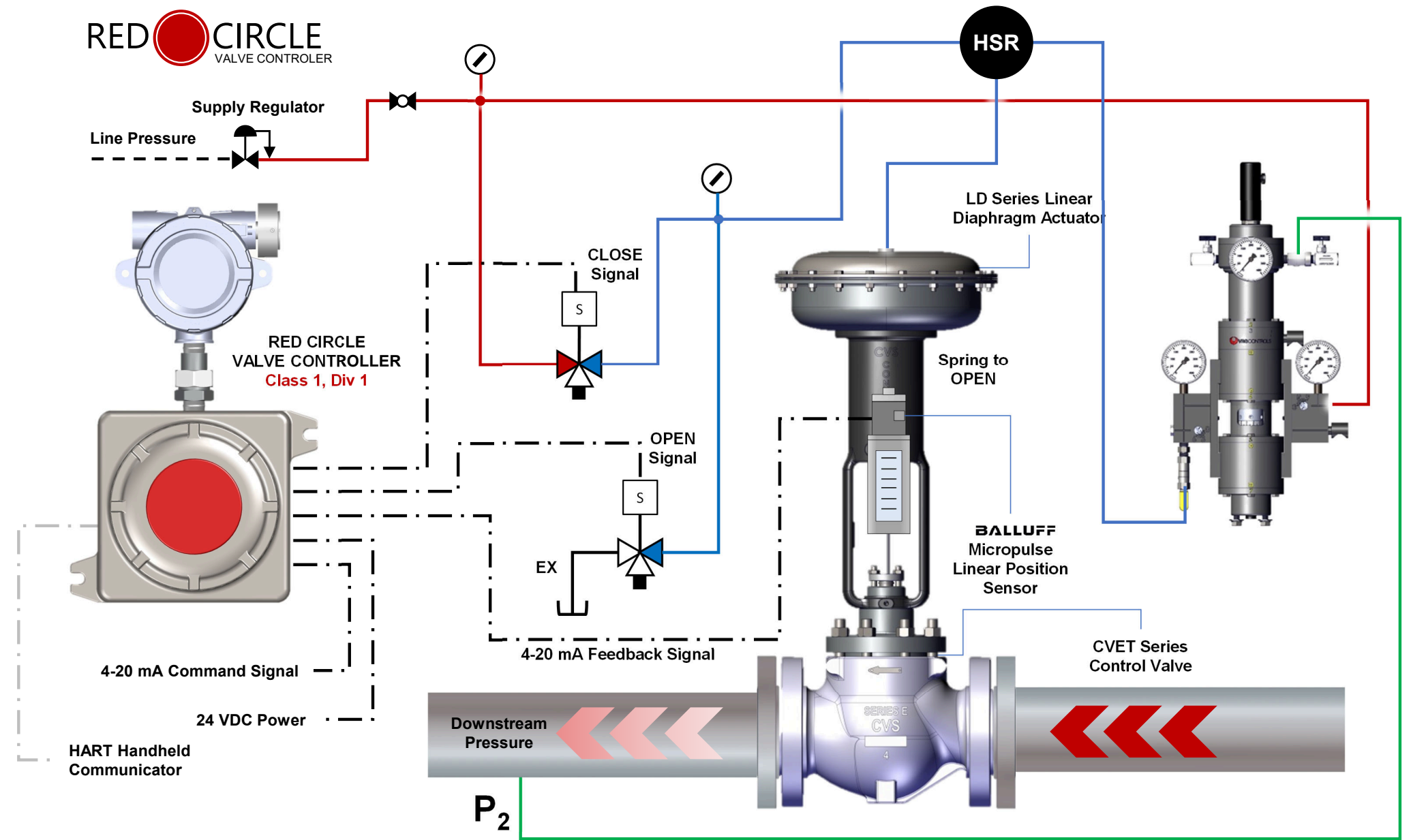
RCVC Schematic – Hi Pressure Single Acting Configuration



RCVC Schematic – Low Pressure Single Acting Configuration



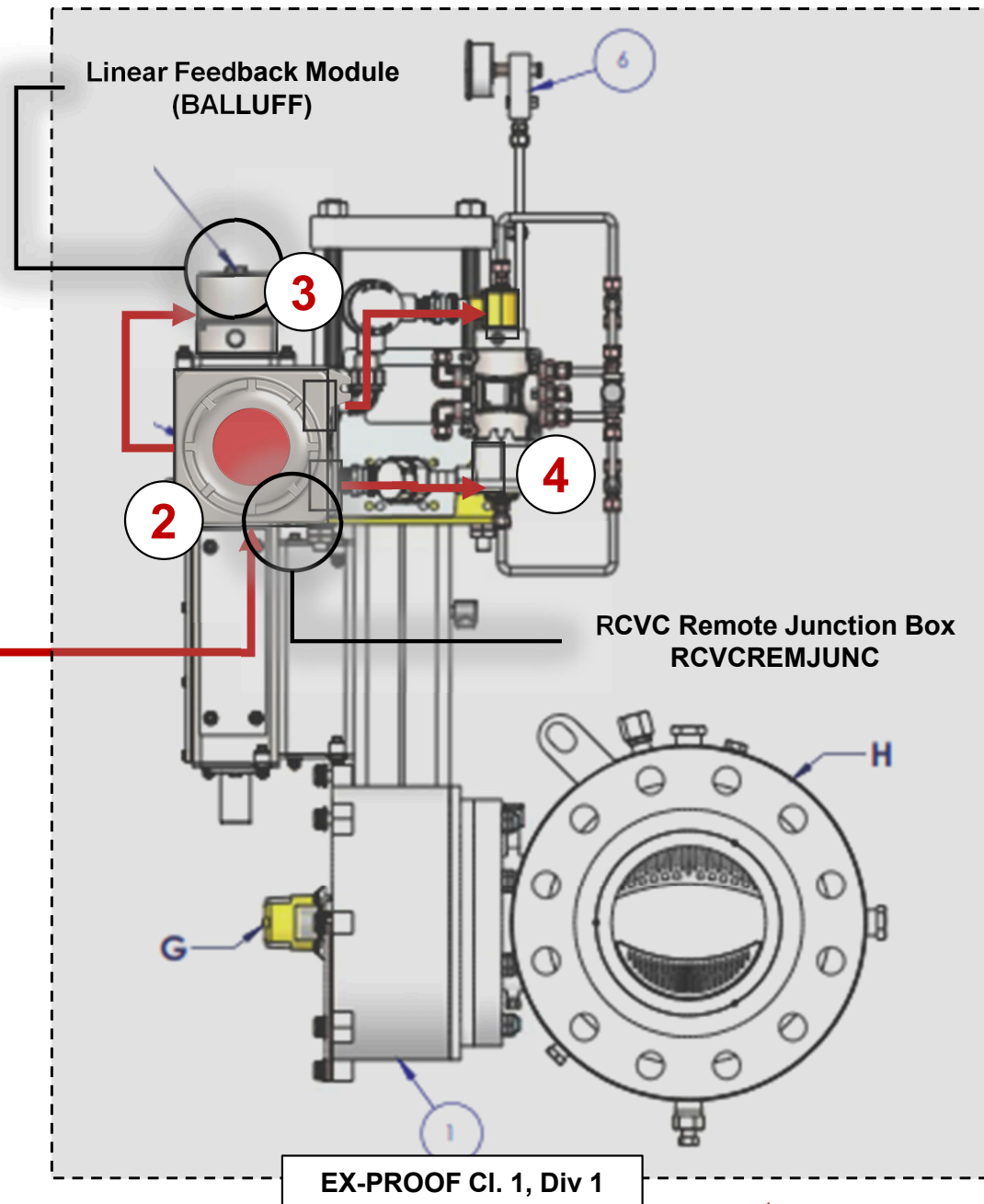
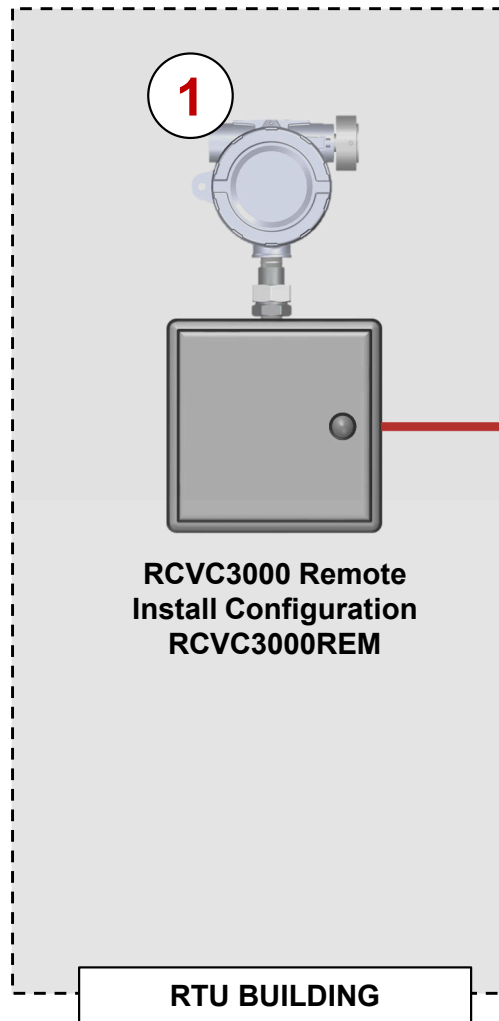
PCO Pressure Control Override – Low Pressure Single Acting



RCVC Remote Installation Configuration

Primary Remote RCVC Components

1. RCVC Remote Module
2. RCVC Remote Terminal Box
3. Balluff Linear Feedback
4. RCVCSOLDA (AAA) Solenoid Pack





RCVC Solenoid Pack Selection – Double Acting

	Double Acting Standard Pressure Solenoid Pack	Double Acting High Pressure Solenoid Pack
	 A 3D rendering of the AAA Model SY4X solenoid pack, showing its black body, brass ports, and a red label with the AAA logo. Below the image is the AAA Products International logo.	 A 3D rendering of the AAA Model SY4XZ solenoid pack, showing its black body, brass ports, and a red label with the AAA logo. Below the image is the AAA Products International logo.
Supply	20 – 150 psig	151 – 250 psig
Model	AAA Model SY4X (Internal Pilot)	AAA Model SY4XZ (External Pilot)
Voltage	24 VDC	24 VDC
Type	3-Position, 5-Way Self-Centering	3-Position, 5-Way Self-Centering
Other Specs	Cv 0.50, 24 VDC, 3-Position, 5-Way, Self-Centering, Internal Pilot, Mod. Temperature (-20F), Aluminum Construction, Universal, UL CSA CE Approved, Ex Proof Cl. 1 Div 1., Buna N Elastomers, .500 NPT Primary Ports, 0.125 NPT Exhaust Ports, Tapped Exhaust	Cv 0.50, 24 VDC, 3-Position, 5-Way, Self-Centering, External Pilot, Mod. Temperature (-20F), Aluminum Construction, Universal, UL CSA CE Approved, Ex Proof Cl. 1 Div 1., Buna N Elastomers, 0.500 NPT Primary Ports, 0.125 NPT EX-Pilot / Exhaust Ports, Tapped Exhaust


RCVC Solenoid Pack Selection – Single Acting

	Single Acting High Pressure Solenoid Pack	Single Acting Low Pressure Solenoid Pack
	 ASCO®	 ASCO®
Supply	41 - 150 psig	20 – 40 psig
Model	ASCO EV8327G052 (QTY 2)	ASCO 8262G220 (QTY 2)
Voltage	24 VDC	24 VDC
Type	2-Position, 3-Way One Port Plugged 2/2	2-Position, 2-Way
Other Specs	Cv 0.50, 24 VDC, 2-Position, 3-Way (One Port Plugged), Low Temp. (-40F), Stainless Steel Body, Universal, UL CSA CE Approved, Ex Proof Cl. 1 Div. 1., Buna N Elastomers, 0.250 NPT Ports, Tapped Exhaust. One (1) for CLOSE and One (1) for OPEN.	Cv 0.50, 24 VDC, 2-Position, 2-Way, Low Temp (-40F), Stainless Steel Body, Universal, UL CSA CE Approved, Ex Proof Cl. 1 Div 1., Buna N Elastomers, 0.250 NPT Ports, Tapped Exhaust. One (1) for CLOSE and One (1) for OPEN.

RCVC Feedback and Limit Switch Components

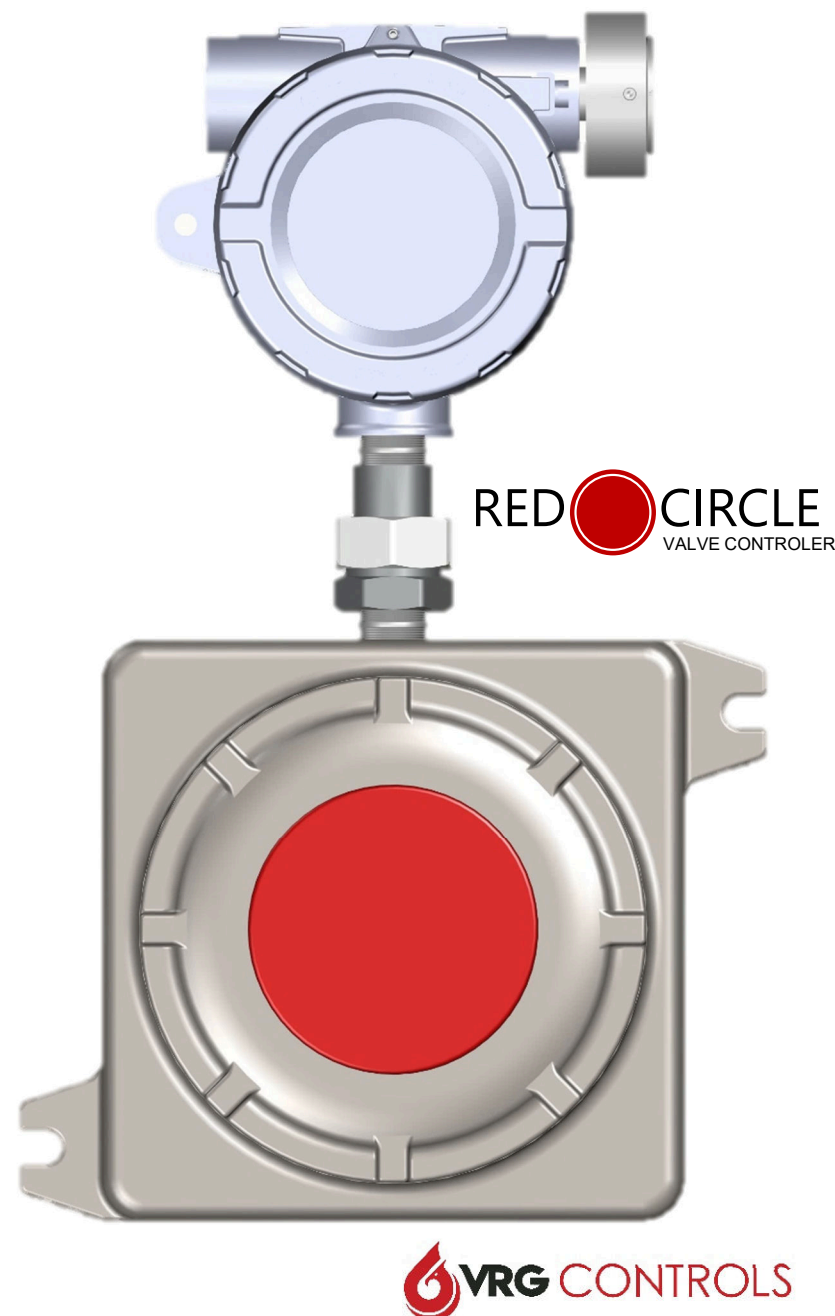
	Rotary Feedback Module	Linear Feedback Module
	<div><p>ROTARY FEEDBACK NOT RECOMENDED</p><p>WESTLOCK CONTROLS CORPORATION</p></div>	<div><p>BALLUFF</p></div>
Model	Westlock 2007X-2-SPDT	Balluff BTL7-E501-M0153-J-DEXC-TA12
Type	Rotary Limit Switch Assembly	Micropulse Linear Position Sensor
Limit Switches	SP-DT, DP-DT, QTY 2 or 4 Mechanical or Proximity Type	Not Available
Visual Indicator	Beacon High Visibility Position Indicator	Linear Travel Scale (10% Increments)
Other Specs	90 Degree Rotary Limit Switches, w High Visibility Beacon Travel Indicator, Area Classification Cl 1 Div 1 Groups C&D / T6, NAMUR Output Shaft, Various Limit Switch Configurations, Powder Coat Aluminum Housing, Available w Optional 4-20 mA Analog Feedback (Passive Use Only)	4-20 mA Micropulse Transducer, 0.250 FNPT Elec. Connections, UL CSA CE Approved, Ex Proof Cl. 1 Div 1, Stroke Lengths Available: 4, 6, 8, 12 and "SHORT LENGTH" 2.0 IN or less adjustable, Linear Feedback Mounting Kits Available

RCVC Primary Module Specifications

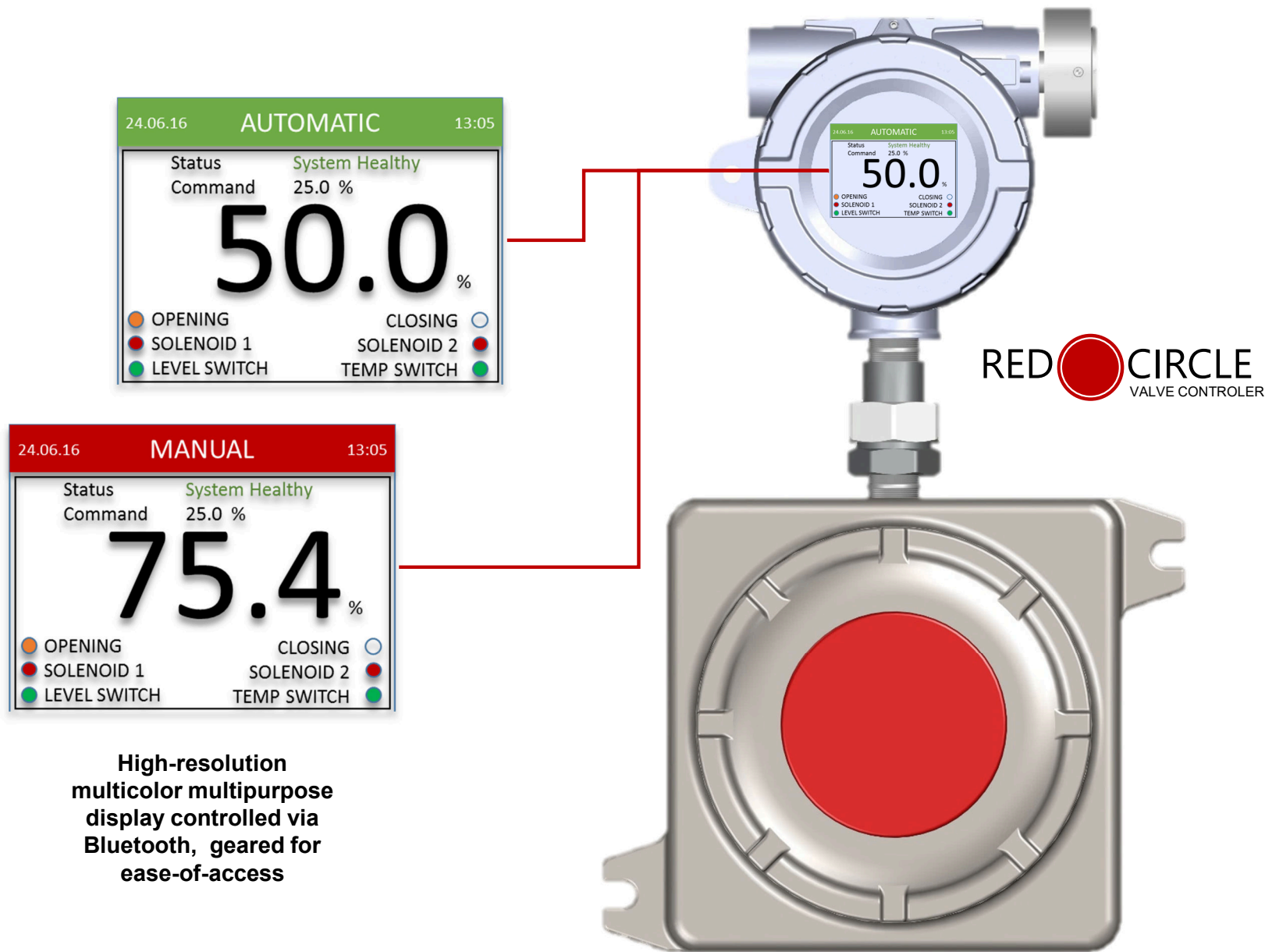
Model:	RCVC-2000 Red Circle Valve Controller
Installation:	Valve Mount or Remote Installation
Diagnostics:	Onboard Graphical Performance Evaluation
Display:	High Resolution, Programmable, Multi-Color Display
Command Signal:	4 – 20 mA Analog OR 24 VDC Discrete Pulse
Feedback Signal:	4 – 20 mA (Internal or External Loop Power) Remote/Local Trigger Counter Digital Feedback
Deadband:	Adjustable 0.1% to 2.0% Travel, Typically Set 0.5% Standard
Hysteresis:	0.5% Full Scale (with standard Rotary Position Feedback Module)
Linearity:	0.5% Full Scale (with standard Rotary Position Feedback Module)
Failure Mode:	OPEN, CLOSE, or LOCK on Loss Command Signal
 Consumption:	ZERO STEADY-STATE Bleed to Pressure System Capable
Rating:	EXPLOSION PROOF, Class 1, Div. 1
Connections:	½ FNPT Pneumatic Connections Port ¾ FNPT Electrical Connections
Temperature:	-20°F to +120°F (-29°C to +49°C)
Compatibility:	Dimensions, Ports, Connections 100% Compatible with Existing GE/Becker DNGP Replacement
Communication:	HART Protocol Compliant, USB Computer Interface
Manual Override:	Local Manual Valve Positioning Onboard
Adjustment:	Non-Intrusive Local Thumbwheel Adjustment
Area Classification:	Class 1, Div. 1 EXPLOSION PROOF

**REQUIRES PAIRED SOLENOID VALVE(S) ASSEMBLY
PAIRED VALVE POSITION TRANSMITTER**

RCVC Red Circle Valve Controller

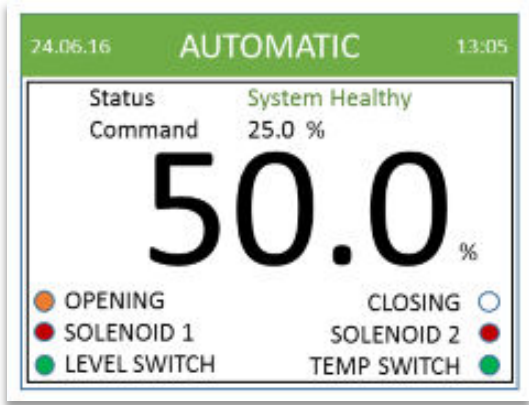


Easy Setup and Configuration via Menu Driven Platform

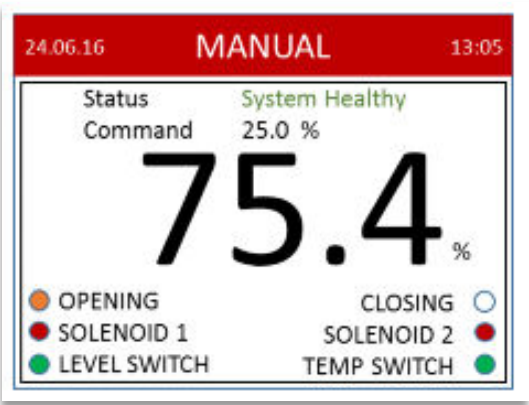


High-resolution
multicolor multipurpose
display controlled via
Bluetooth, geared for
ease-of-access

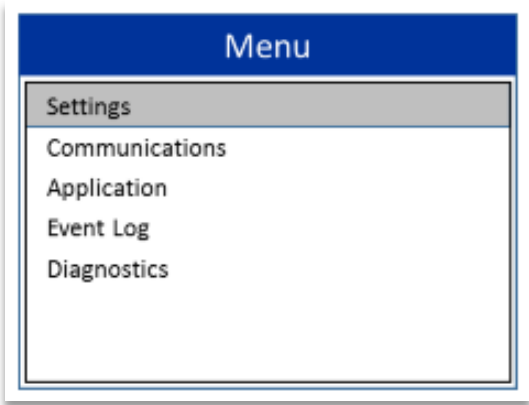
Sample of RCVC Menu Screens



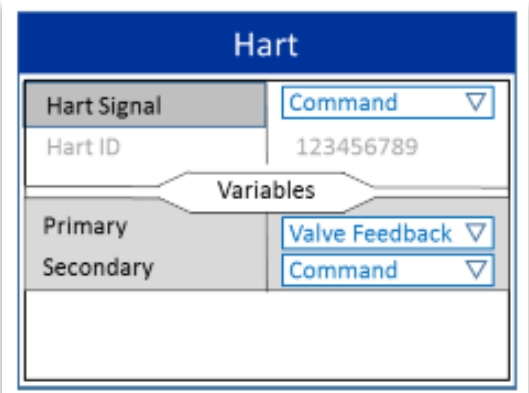
AUTOMATIC Mode



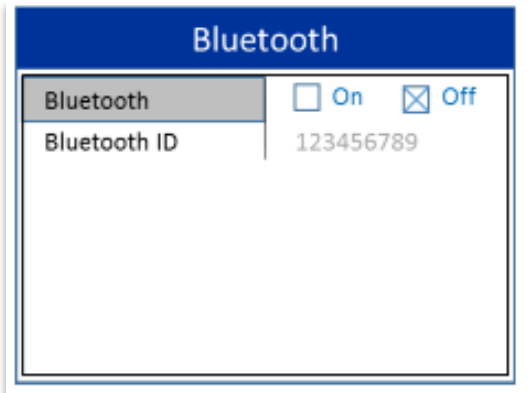
MANUAL Mode



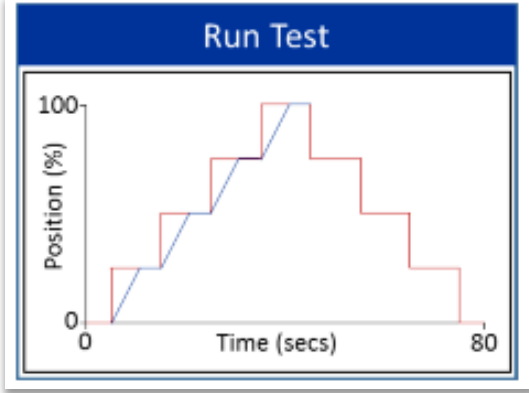
Main Top Level Setup Menu



HART Top Level Menu



BLUETOOTH Top Level Menu

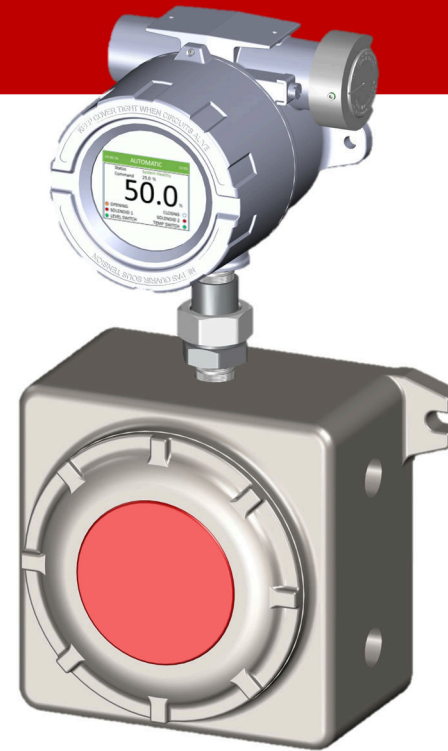


Example STEP TEST Output Graph



RCVC 3000 Configuration Methods

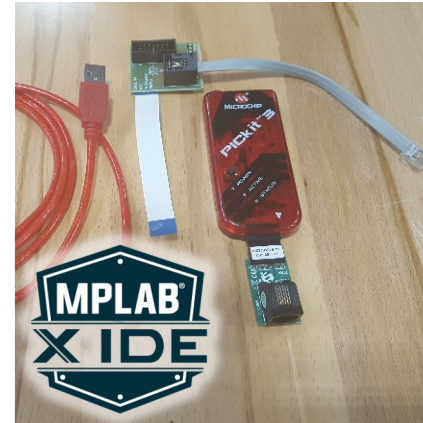
1. Navigation Wheel
2. Setup Application via USB Setup Cable
3. Display Board Serial Interface
4. HART Handheld Communicator



Navigation Wheel



**USB Setup Cable
RCVC Setup Program**

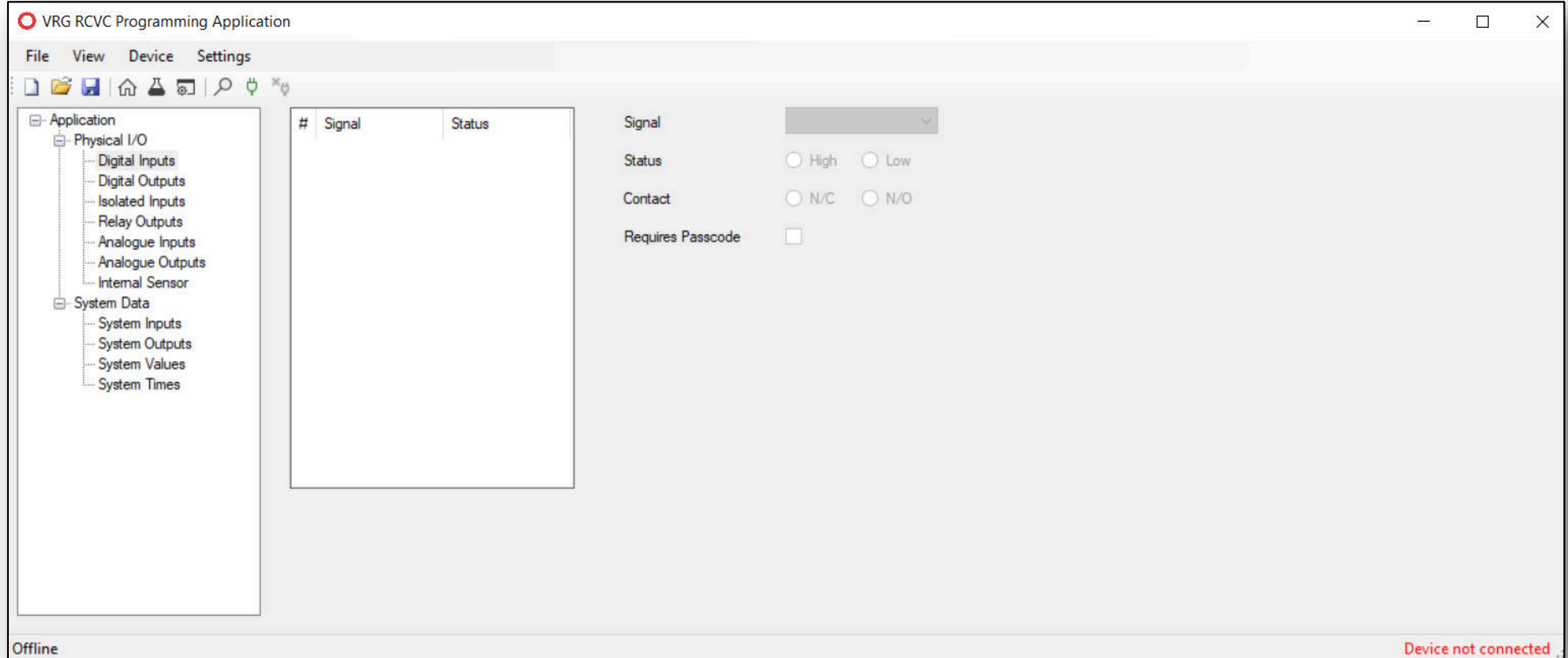


**RCVC Serial Display
Board Programming
Kit**



**HART Handheld
Communicator**

RCVC 3000 Configuration Methods – NEW Standalone EXE Program



ESTIMATED RELEASE 4th QTR 2018
EXE Eliminates Excel / VBasic Version Setup Program

RCVC Programming Kit – Firmware Upgrade

Using RCVC Programming Kit To Update RCVC Firmware (STEPS 1 – 8)

1. Open MPLABX® v4.1 EXE application from USB Device Provided with the Programming Kit, OR Download “RCVC v 4.24.6.ZIP” from VRG Controls website (www.vrgcontrols.com). See PRODUCTS/VALVE POSITIONERS/RCVC 3000 Configuration/Setup Tools.
2. In the DEVICE dropdown menu of MPLABXIDE Application select “PIC24FJ128GC010”
3. Plug the EXTENSION into the RCVC PROGRAMMER (If not already done so)
4. Connect the ADAPTER to the EXTENSION with the grey RJ12 cable provided.
5. Apply 24 Volt DC power to RCVC Assembly
6. Put RCVC into “MANUAL” mode by doing a SHORT PUSH on RCVC Navigation Wheel
7. Unscrew and Remove RCVC Module Cover (Cylindrical Ex Proof Housing)
8. Plug the ADAPTER ribbon connector into the lower right hand side of the RCVC display board at “5 O'clock Position.” A RED LED will light on the ADAPTER when successfully connected.



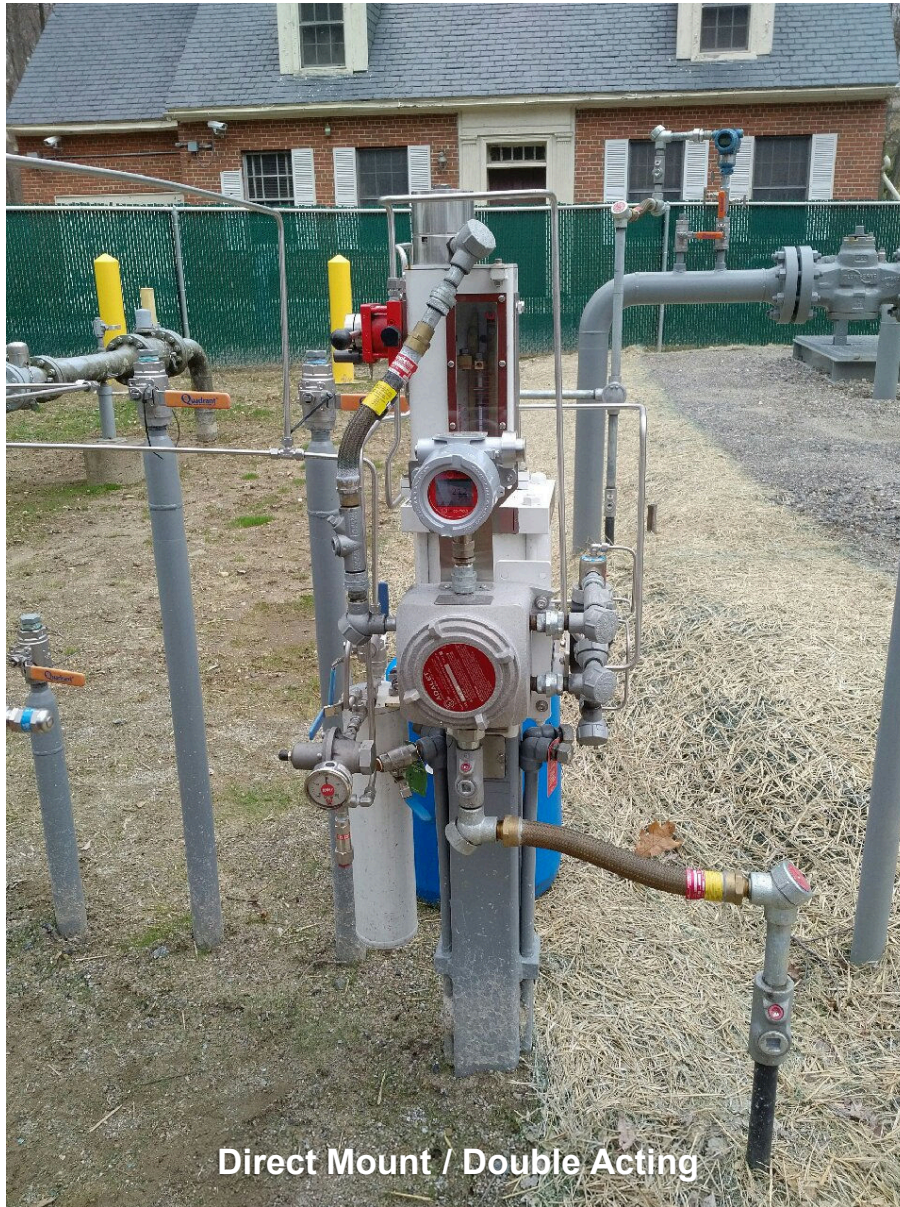
RCVC Programming Kit



Connect ADAPTER Ribbon Connector Here



RCVC Application – Kinder Morgan – Rye NY Meter Station FCV

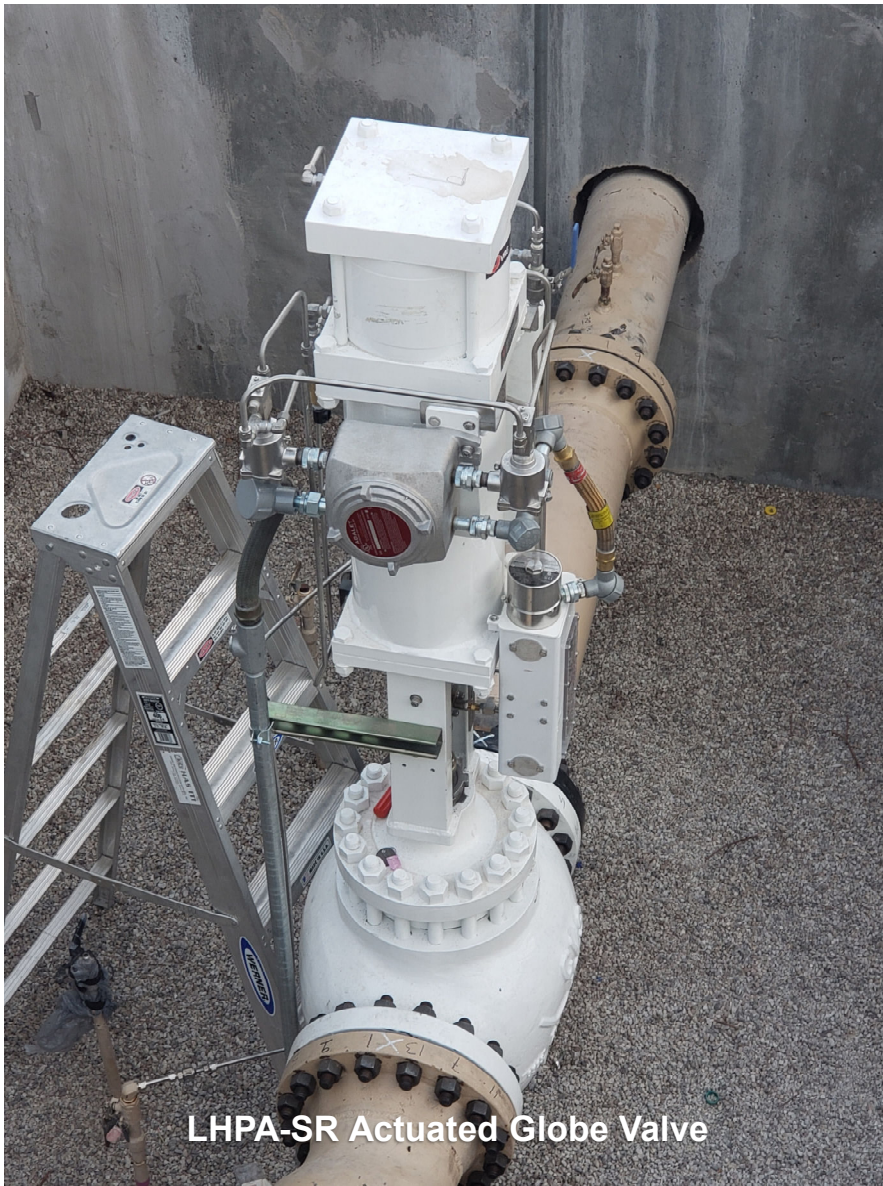


RCVC Application – SWG Corp. – Remote RCVC Installation

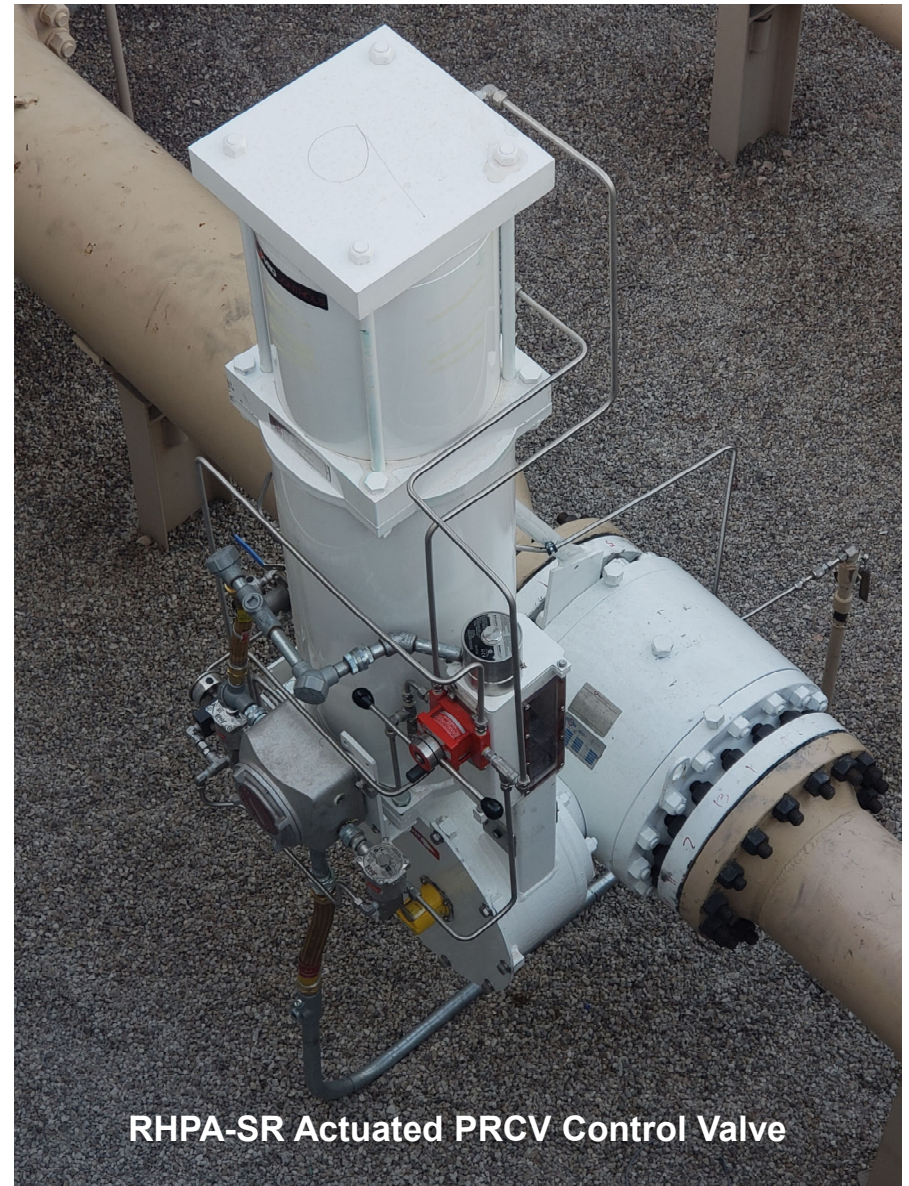


Remote Mount RCVC Configuration

RCVC Application – SWG Corp. – Remote RCVC Installation



LHPA-SR Actuated Globe Valve

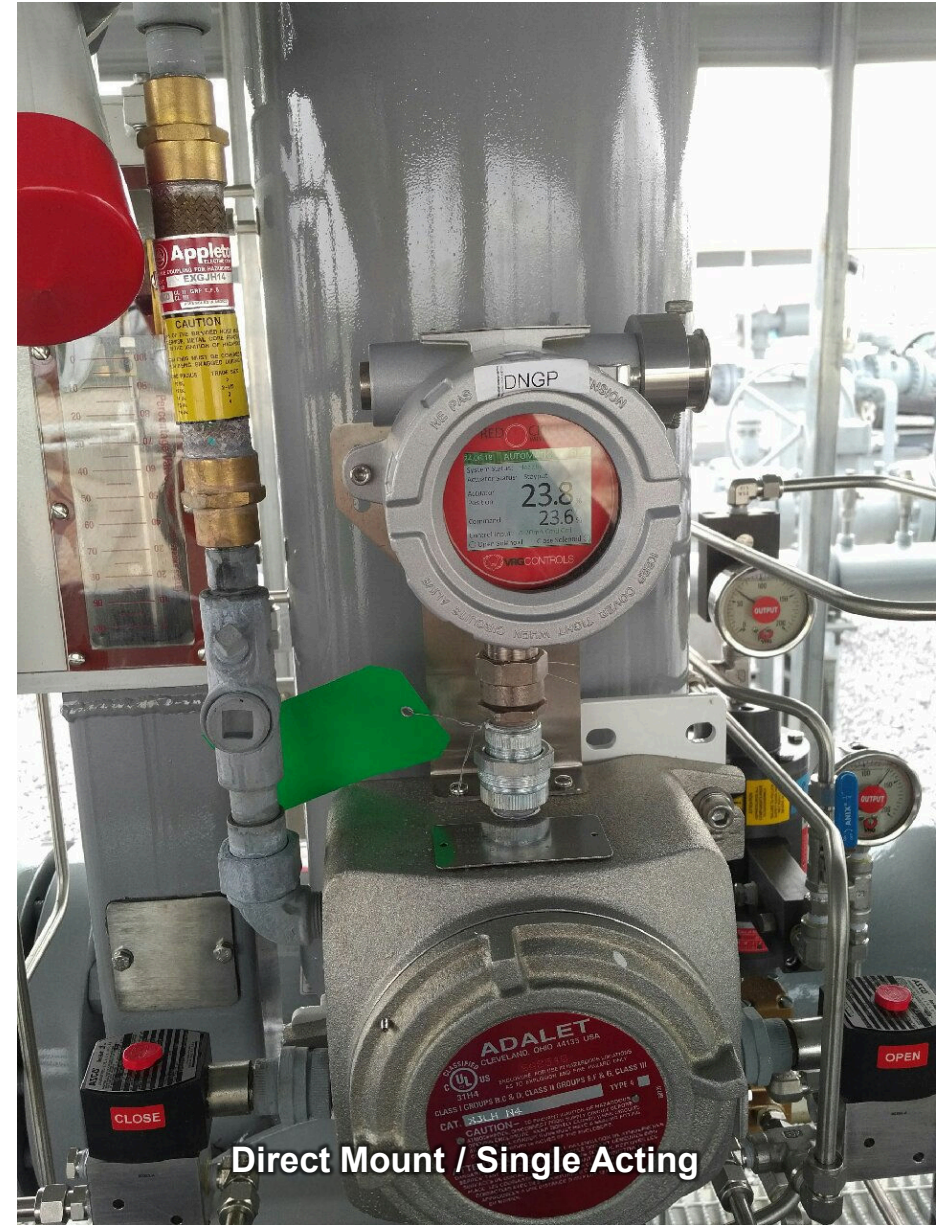


RHPA-SR Actuated PRCV Control Valve

RCVC Application – BWPL Little Gypsy – High Pressure Spring Return



Direct Mount / Single Acting



Direct Mount / Single Acting

Our Contact Information

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