

2-IQ Series

Smart Valve Positioner

Marwin's 2-IQ Smart Positioner has superior accuracy, long-term reliability and ease of use. The unit is available with or without Profibus PA or HART protocols, and is designed so that optional modules for alarms and positioner feedback are easily plugged in or snapped on.

- Automatic five step positioner setting
- Excellent in combination with Marwin UT Series pneumatic actuators
- Very low air consumption when idle, regardless of supply air pressure
- Fully integrated gage block resulting in a compact positioner complete with pressure gauges
- The display is visible while the instrument is in operation so the operating data may be continually reviewed
- Four modes of operation: automatic, manual, configuration, and initialization

Description

The unique positioners can give unequalled performance from Marwin ball valves when used for control in a process. The 2-IQ is loaded with many standard features including:

- The ability to change the valve's action at the touch of a button
- Characterization of the flow pattern through the positioner
- Deadband adjustment
- Tight closing feature

Other impressive standard features include loop powered control. There is no need to have a separate power supply as the positioner runs from the signal leads. The 2-IQ will withstand 175°F (79°C) ambient temperature and a shock resistance of 10g. It has a resolution accuracy of <0.05%.



Configurations

Marwin Valve offers the 2-IQ in three primary configurations

- Basic Version: smart positioner only without gauge, HART protocol. gauge and FM Approval (IS) for Class I, Div. 1 locations. Specify part number 26-00738 (single) or 26-00219 (double)
- Standard Version: same basic unit but with HART protocol. Specify part number 26-00739 (single) or 26-00218 (double)
- Other configurations available – contact factory

Marwin Valve

2-IQ Series – Operation & Design

The primary module of the 2-IQ is the electronic board comprised of the microprocessor, along with the indicating and control elements. The unit is designed so that optional modules for alarms and position feedback are easily plugged in or snapped on.

The current command (which typically serves as the power supply to the instrument) is compared to the internal position feedback signal. By comparing the input and feedback signals, an adaptive controller determines the positioning signal, which follows an optimized algorithm. The parameters for this algorithm are determined from valve and actuator characteristics analyzed during initialization and as modified during the real-time performance of the actuator.

The positioning signal controls piezo electric solenoid valves which respond based on the size of the control deviation.

Analog Option

The Analog J_y Module supplies an analog 4-20mA feedback signal.

Binary Option

The binary option permits alarm response. Two binary inputs allow the logical linkage of the binary input signals with alarm reports, or positioning the actuator at its fail-safe position.

Profibus PA Protocol Option

The Profibus PA version is fully digital and allows complete integration into Profibus DP networks.

HART Protocol Option

The HART version superimposes a digital signal over the analog signal which allows digital communication with a PC or HART communicator via the two wire analog control signal.

With the optional software and HART protocol, you have the ability to track:

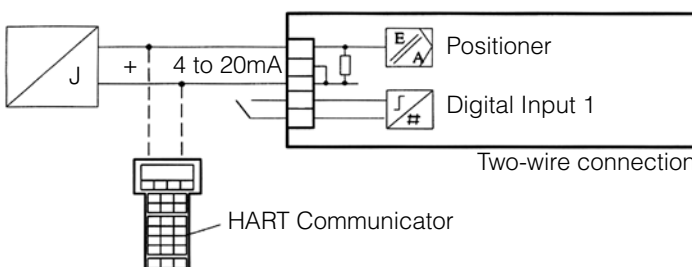
- change in valve performance
- number of alarms
- number of position changes

The software also permits remote changes to any of the set-up parameters and is ideal for critical processes or when downtime due to failure is costly.

With the optional SIPROM PS2 HART Software interface, the current maintenance data can be compared with previous information to quickly detect any deviations so that corrective action can be taken. And, actuator and valve problems can be caught early to allow ample time to schedule repairs.

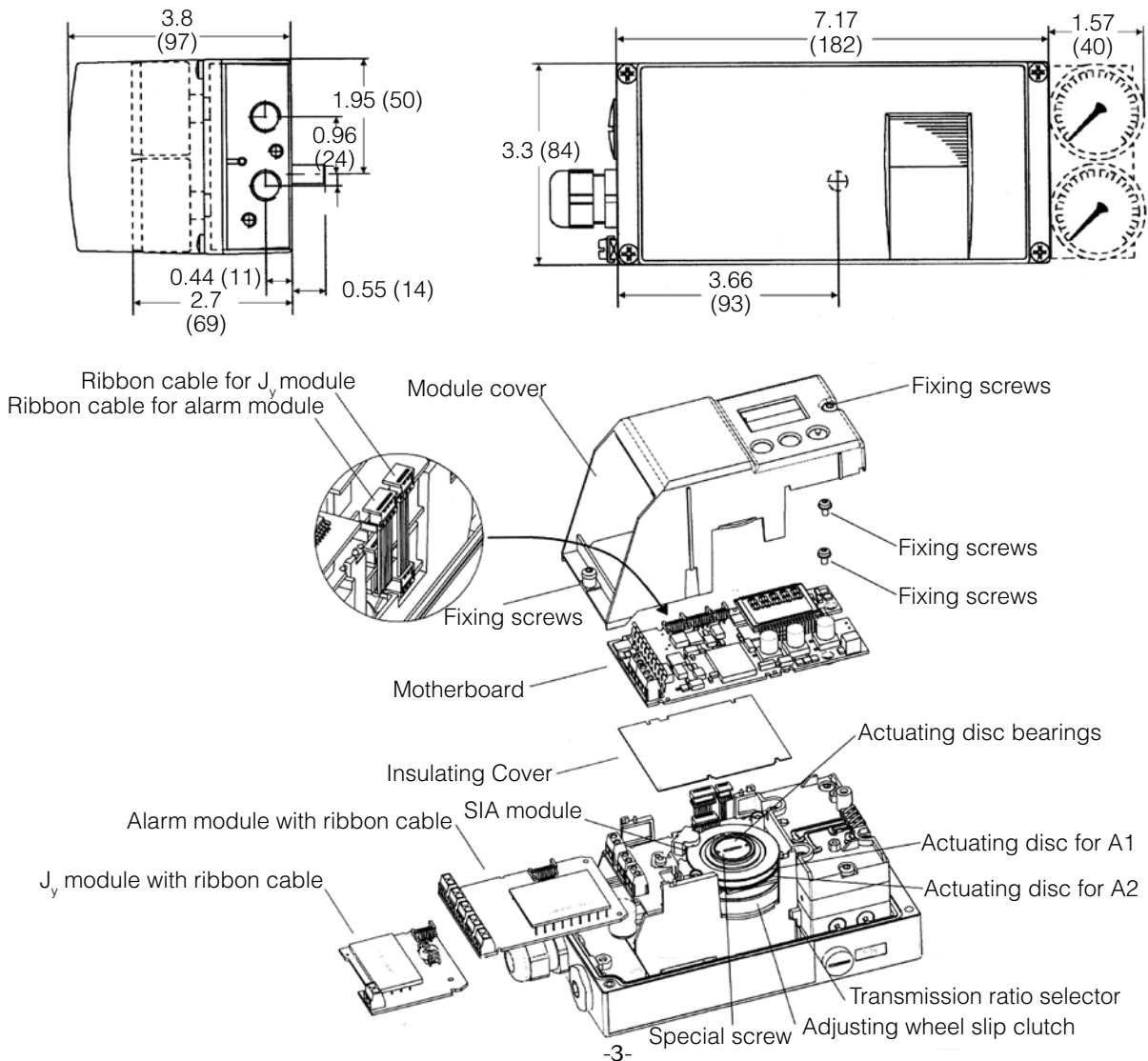
Hazardous Location Approvals

- Basic unit & Standard unit:
 - FM/CSA: (IS) Class I, Div. 1, Groups ABCD, T6/T5/T4
 - NEC 505: Class I, Zone 2 Group IIC T6/T5/T4
 - NEC 500: Class I, Div 2 Group IIC T6/T5/T4
 - EU: II 2G EEx ia/ib IIC T6/T5/T4
- For explosion proof installations (i.e. (XP) Class 1, Div. 1), please contact factory for option.



Marwin Valve 2-IQ Series – Operation & Design

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|----------------------|--|
| Input | Signal range: 20wire circuit – 4-20mA 3/4 wire circuit – 0/4-20 mA Loaded voltage: 2 wire circuit ~ ≥11V with HART; >10V without HART Auxiliary Voltage: 3/4 wire circuit ~ 18-30 V |
| Output | 0 - 100 psi (0 - 6,9 psi) |
| Pneumatic System | Air Supply Pressure: 20 - 100 psi (1,4 - 6,9 bar) Air Capacity: ≥5.3 scfm; throttleable Standard Consumption: 0.02 (3.4x10 ² std m ³ /hr) scfm independent of air supply pressure |
| Gauge Block | Standard with two gauges for input air supply and positioning pressure |
| Ambient Temperature | -20°F to 175°F (-28,9°C - +79°C) |
| Weight | 2.86 lbs (1,3 kgs) |
| Control Data | Sensing Time A/D Converter: 12.5ms Resolution A/D Converter: ≤0.05% Transmission Error A/D Converter: ≤0.2% Dead Bank Controller: adaptive or adjustable, 0.1 - 10% Setting Time Controller: 1.5 - 150 s |
| Stroke/Angular Range | Rotary Actuators: 30 - 100° |
| Connections | Pneumatic: 1/4" NPT Electric: screwed terminals max 1.5mm ² cable union size PG 13 |
| Protection Class | IP 65 (similar to NEMA 4) |
| Shock Resistance | 10g |



Recommendations

For optimal success with these units, the following recommendations are suggested:

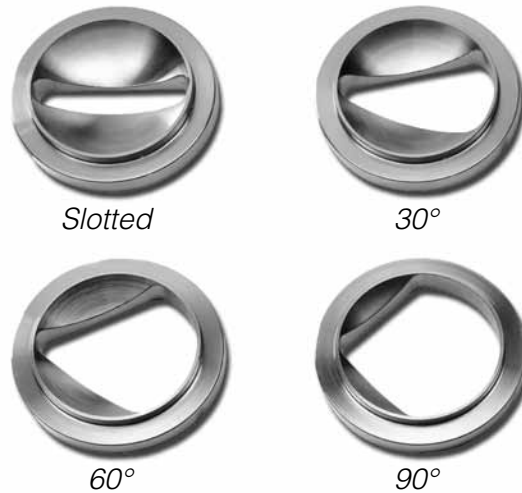
- Use the smallest valve possible for the application. Oversizing reduces the useful range in which the positioner will operate.
- Use the largest actuator feasible for the valve size chosen. This increases the positioning accuracy of the positioner.
- Use in conjunction with the Marwin CV3000 Series characterized plate ball valve to compete with control valves.

CV3000 Series

The 2-IQ positioner is especially well-suited for use with the Marwin's control valve offering, the CV Series. The programmability of the 2-IQ allows for greater flexibility in taking advantage of the characterized flow inserts and rigid actuation coupling of the CV3000 Series.

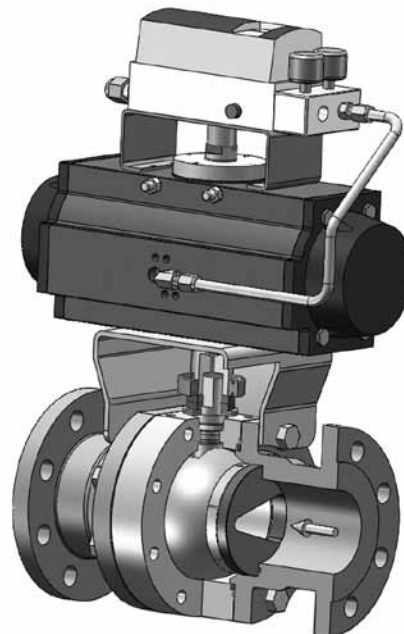
The CV3000 Series is available in a wide range of alloy materials including Duplex, 254 SMO, Alloy 20, Hastelloy and Titanium in addition to standard carbon and stainless steels. The CV Series may be used in a variety of critical applications including flow control, pressure control, liquids containing solids and level control.

Refer to Bulletin CV3000 Series for more information, and request the Marwin Valve Sizing Program to "get the right valve for the right application".



The Marwin CV3000 Series control valve is a ball valve equipped with a characterized plate to provide specific throttling curves. The standard plate is designed with a rectangular slot or with a 30°, 60°, or 90° V-style opening.

Typical Application



CV Series characterized seat control ball valve with a 2-IQ positioner

