WESTLOCK
CONTROLS

INTELLIS NETWORK CONTROL MONITORS
NON-INCENDIVE, INTRINSICALLY SAFE AND EXPLOSIONPROOF - NEC

Intellis is a family of fully-integrated control monitors that provide cost-effective valve automation and intelligent networking via all the major network protocols

FEATURES

- Dedicated network modules (PACs) for all major protocols.
- Simple in-field conversion of network protocols.
- Multiple housing options (resin, aluminum, stainless steel).
- Models approved for all hazardous area applications.
- Control & monitoring for rotary and linear valves.
- Non-contact position monitoring by Hall effect sensors.
- Integrated pneumatic actuation control via pre-wired Falcon solenoid valves.
- On-line predictive and maintenance-related diagnostics.
- Eliminates wiring cost of conventionally-hardwired I/O systems.
- Reduces design engineering man-hours
- Range of drive shaft options.
- Visual indication Beacon available in a choice of styles and colors.

TECHNICAL DATA

Agency approvals
Area Classification (NEC 500)

Non-incendive	Class I, Division 2, Groups A, B, C & D
	Class II & III, Division 2, Groups F & G
Intrinsically Safe	Class I, Division 1, Groups A, B, C & D
	Class I, None 0, IIC
	Class I, Division 2, Groups A, B, C & D
	Class II & III, Division 2
Explosionproof	Class I, Division 1, Groups C & D
	Class II & III, Division 2, Groups E, F & G

Enclosure standards (ANSI/NEMA 250)

All Enclosures	Type 4, 4X

Network protocols supported

Intellis 7200	PROFIBUS DP
Intellis 7300	FOUNDATION Fieldbus™
Intellis 7400	ModBus® Direct
Intellis 7500	ModBus®
Intellis 7600	DeviceNet™
Intellis 7700	AS-interface® Ver. 2.1

Enclosures

Engineered resin
Aluminum

GENERAL APPLICATION

Intellis network control monitors use embedded control systems to automate valves and link field I/O to the host PLC or DCS. They incorporate all the features of standard Westlock control monitors with the addition of a network I/O module.

NETWORK SYSTEMS FOR VALVE AUTOMATION

Intellis is a family of field network control monitors which use embedded control systems to automate valves and link field I/O to the host PLC or DCS. They incorporate all the features of our standard control monitors with the addition of a network I/O module.

Each network monitor houses two discrete Hall effect sensors for valve position monitoring, a low power solenoid valve for actuation control and a network interface module for communication via the chosen network protocol. Monitors are available for linear and rotary applications in all area classifications.

THE NETWORK MODULE

Each Intellis model contains a dedicated network module (Pac) that is integrated within its enclosure. A different Pac is factory-integrated depending upon the network protocol selected. The Pacs' modular design enables the simple conversion of units from one network protocol to another (with the sole exception of FOUNDATION Fieldbus™) in the field by authorized personnel, should the need arise.

Integrated network modules have protective diodes and optical isolation as standard. They are housed in general purpose, Division 2 Non-incendive or Explosionproof enclosures with a 16 point terminal block for simple wiring.

Peripheral interface devices
• Cables
• Power supplies
• Gateways
• Repeaters
• Extenders
• Configuration tools
• Software/diagnostics
• Junction boxes

STANDARD NETWORK PROTOCOLS

The development of standard network protocols has made it possible to integrate process control components into a network effectively. ModBus®, DeviceNet™, AS-interface®, PROFIBUS and FOUNDATION Fieldbus™ are now the standards for interfacing discrete devices. They are proven to be extremely reliable, simple to understand and consistently cost-effective. They integrate simply with all major PLCs and DCS systems via off-the-shelf gateway interfaces.

ACCESSORIES

We are committed to making your network design, procurement and installation experience easier. To complement our wide array of network valve monitoring and control products, we offer a variety of accessories to meet your network connectivity and power requirements. From power supplies and cables to gateways and junctions, we've got what you need to get the job done efficiently.

SERVICES

We offer expert services for the design and installation of ASi®, DeviceNet™, ModBus®, PROFIBUS and FOUNDATION Fieldbus™ networks. This includes the specification of all equipment from the PLC or DCS down.

Application support
• Engineering design
• Integration
• Start-up support
• Training
• Turnkey installations

Network module

Gateway interface

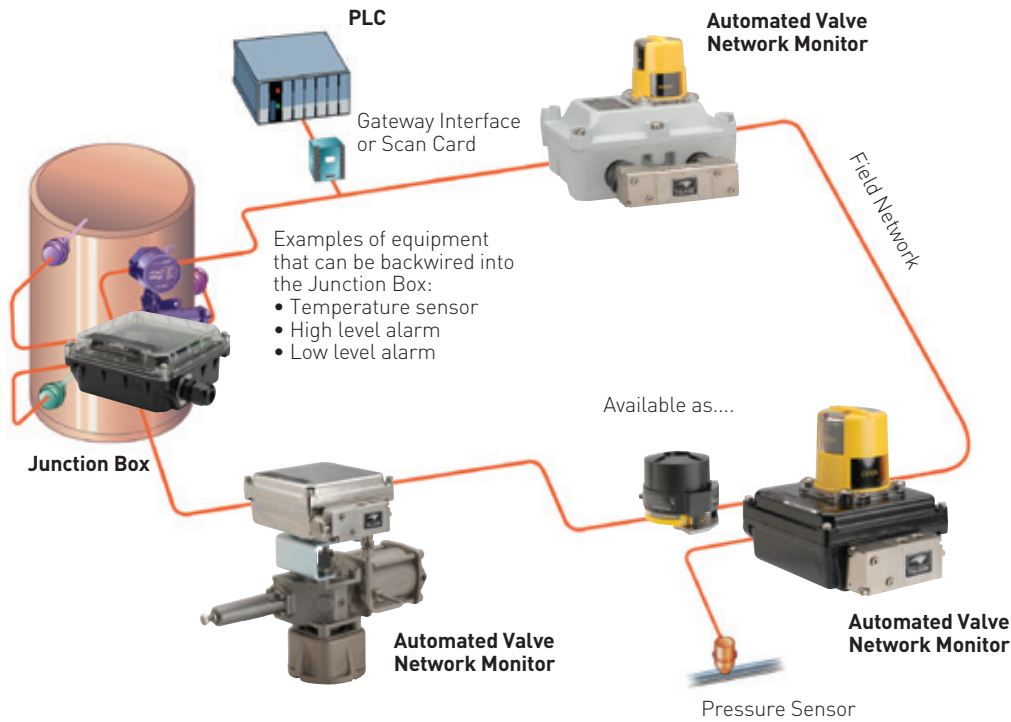Active network tee (ANT)

Junction box

Interconnects

INTELLIS NETWORK CONTROL MONITORS
NON-INCENDIVE, INTRINSICALLY SAFE AND EXPLOSIONPROOF - NEC

FIELD NETWORK

A field communications network comprises a specific number of network monitors interconnected by a common communications protocol. Network monitors may be placed on the field network in any physical order. Each monitor is assigned a unique address and accepts input/output signals from valve position sensors, solenoids and external devices.

Communication with a PLC, DCS or host computer is accomplished by a compatible gateway interface or scanner card.

PLC

Gateway Interface
or Scan Card

Automated Valve Network Monitor

Field Network

Examples of equipment
that can be backwired into
the Junction Box:
• Temperature sensor
• High level alarm
• Low level alarm

Junction Box

Available as....

Automated Valve Network Monitor

Automated Valve Network Monitor

Pressure Sensor

AUTOMATED VALVE NETWORK MONITOR

The network monitor for automated valves couples directly onto the pneumatic or electric actuator. Each unit can accept input/output signals from position sensors and solenoid valves while simultaneously performing on-line diagnostics. In addition, each network monitor will interact with a comprehensive range of external field devices for control or alarm purposes.

EXTERNAL DEVICE NETWORK MONITOR

Network monitors are available for control or monitoring of non-valve related devices including sensors, alarms, actuators, indicating lights, etc. Depending on the protocol, each stand-alone network monitor is capable of accepting up to six external devices within the primary control network.

INTELLIS NETWORK CONTROL MONITORS
## INTELLIS 7200 PROFIBUS

INTELLIS 7200 PROFIBUS

PROFIBUS (Process Field Bus) has been a standard for field bus communication in automation technology since it was first developed in 1989.

PROFIBUS

Physical media	Twisted pair for communications, two wires for power
Maximum distance	3960 ft. (1200 m) trunk
Maximum network monitors per system	32/segment; 126/system using repeaters
Maximum I/O points per system	1125/system
Current consumption per network monitor	120 mA
Interface capability	All PLCs and DCS supporting the PROFIBUS protocol
Communications method	Peer to peer and cyclic Master/slave
Error checking	CRC check
Network topology	Linear, prefered, drops allowed at Baud rates below 500 kbps
Transmission speed	9.6, 19.2, 93.75, 187.5, 500, 1500, 12000 kbps
Redundancy	No
Valves specific diagnostics	Yes

NOTES

1. Please contact your sales office for guidance on selecting the best possible combination for your control and monitoring requirements.
2. See Hazardous area classification technical bulletin for further information on global standards.
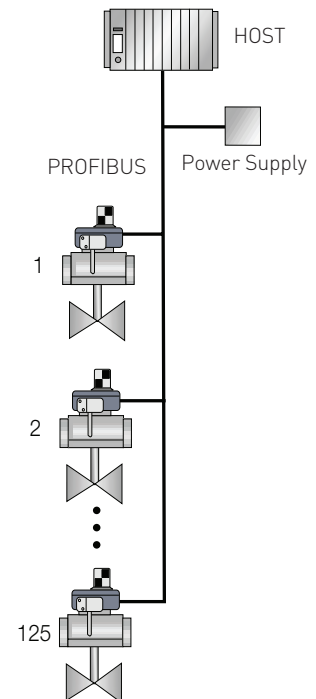
INTELLIS NETWORK CONTROL MONITORS

INTELLIS 7300 FOUNDATION FIELDBUS™

Foundation Fieldbus is an all-digital, serial two-way communications system that is an open architecture, developed and administered by the Fieldbus Foundation.


FOUNDATION FIELDBUS™

Physical media	Two wire cable (communications and power)
Maximum distance	6720 ft. (1900 m) including spurs
Maximum network monitors per system	6/segment if bus powered & IS; 12/segment if bus powered & non-IS; 32/seg. if neither bus powered nor IS
Maximum I/O points per system	192/system
Current consumption per network monitor	18-24 mA IS
Interface capability	All PLCs and DCS supporting the FF protocol
Communications method	Peer to peer
Error checking	CRC check
Network topology	Daisy chain, trunk/drop (spurs), branching drop (spurs), point to point
Transmission speed	31.25 kbps
Redundancy	Yes
Valves specific diagnostics	Yes

NOTES

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2. See Hazardous area classification technical bulletin for further information on global standards.
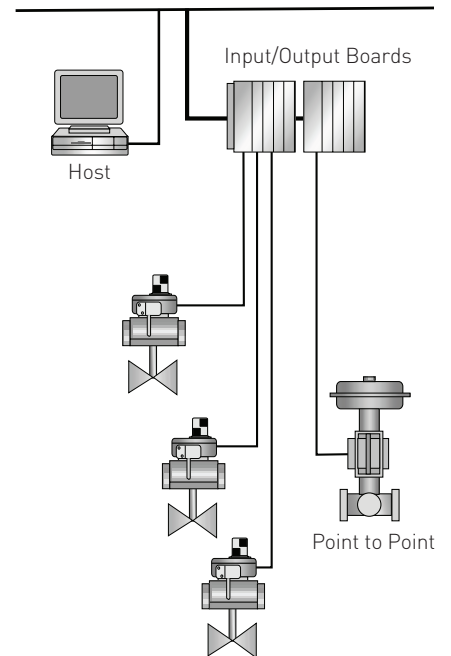
INTELLIS NETWORK CONTROL MONITORS

## INTELLIS 7400 MODBUS® DIRECT

INTELLIS 7400 MODBUS® DIRECT

ModBus® Direct devices can be connected to any PLC or DCS with a ModBus® port.

MODBUS® DIRECT

Physical media	Twisted pair for communications, two wires for power
Maximum distance	3000 ft. (909 m)
Maximum network monitors per system	127 per one ModBus master
Maximum I/O points per system	256/network plus optional 4/20mA analog I/O 256/system
Current consumption per network monitor	27 mA + 20-25 mA/coil
Interface capability	All PLCs and DCS with ModBus® port
Communications method	Master/slave with cyclic polling
Error checking	CRC check
Network topology	Zero drop
Transmission speed	9.6 kbps, 19.2 kbps
Redundancy	No
Valves specific diagnostics	Yes

NOTES

1. Please contact your sales office for guidance on selecting the best possible combination for your control and monitoring requirements.
2. See Hazardous area classification technical bulletin for further information on global standards.
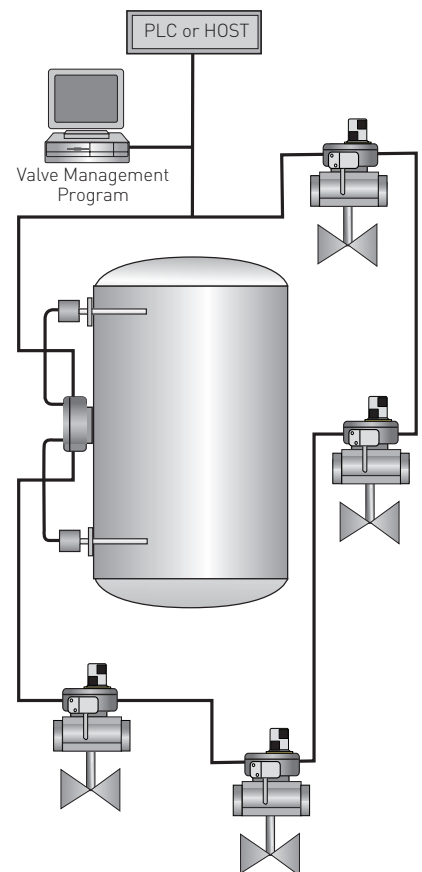
INTELLIS NETWORK CONTROL MONITORS
## INTELLIS 7500 MODBUS®

INTELLIS 7500 MODBUS®

The ModBus® protocol operates over a serial interface and is supported by almost every PLC, DCS and operator interface (OI) company.

MODBUS®

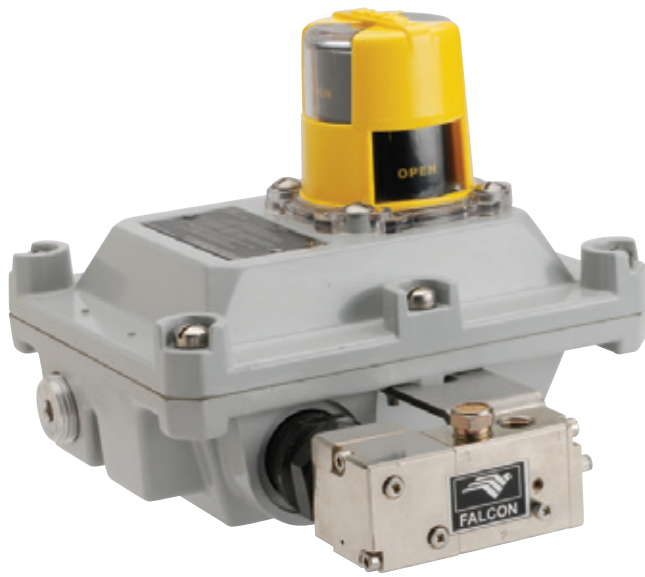|	
Physical media	Twisted pair for communications, two wires for power
Maximum distance	3000 ft. (909 m)
Maximum network monitors per system	100/network; 10 networks/system
Maximum I/O points per system	800/network; 8000/system
Current consumption per network monitor	27 mA + 20-25 mA/coil
Interface capability	All PLCs and DCS with ModBus® port
Communications method	Master/slave with cyclic polling
Error checking	CRC check
Network topology	Closed loop bus
Transmission speed	9.6 kbps
Redundancy	Yes
Valves specific diagnostics	Yes

NOTES

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2. See Hazardous area classification technical bulletin for further information on global standards.
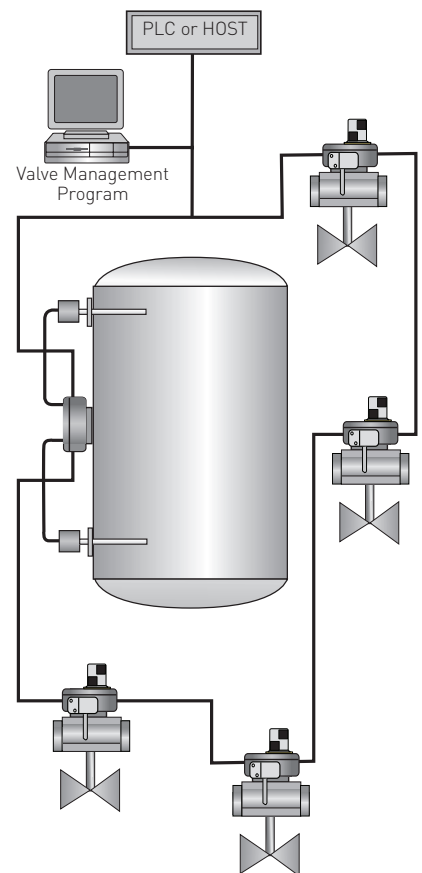
INTELLIS NETWORK CONTROL MONITORS
INTELLIS 7600 DEVICENET™


INTELLIS 7600 DEVICENET™

DeviceNet™ is an open device network standard based upon proven Controller Area Network (CAN) technology.

DEVICENET™

|	
Physical media	Twisted pair for communications, two wires for power
Maximum distance	1600 ft.(485 m) trunk + 512 ft. (155 m) drop
Maximum network monitors per system	63/network;
Maximum I/O points per system	378/network plus optional 4/20mA analog I/O 756/system
Current consumption per network monitor	45 mA + 20-25 mA/coil
Interface capability	All PLCs and DCS with DeviceNet™ Interface
Communications method	Master/slave multimaster, peer-to-peer
Error checking	CRC check
Network topology	Zero drop, trunk/drop, daisy chain, branch
Transmission speed	125 kbps, 250 kbps, 500 kbps
Redundancy	No
Valves specific diagnostics	Yes

NOTES

1. Please contact your sales office for guidance on selecting the best possible combination for your control and monitoring requirements.
2. See Hazardous area classification technical bulletin for further information on global standards.

PLC
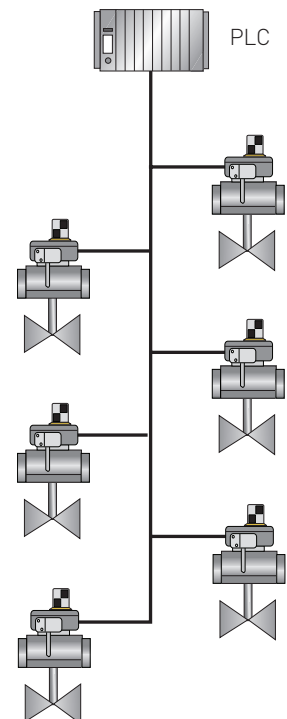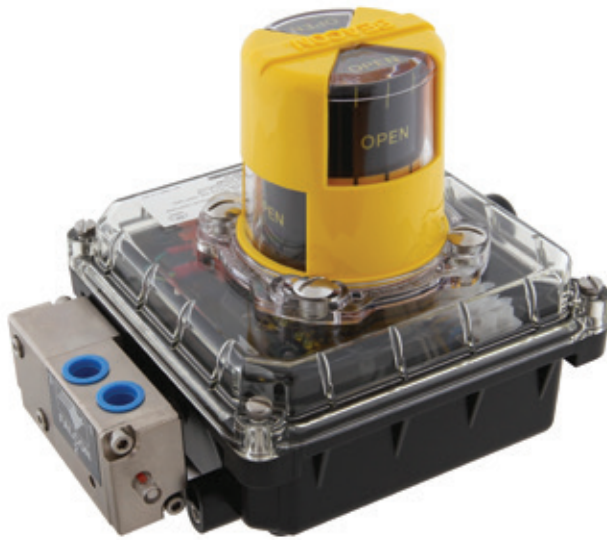
INTELLIS 7700 AS-INTERFACE® VER. 3.0

The AS-Interface® protocol was developed by a consortium of major European companies. Designed specifically for use in low level automated systems, AS-i can communicate via a gateway to most higher-level bus systems such as DeviceNet™, Modbus® and PROFIBUS.
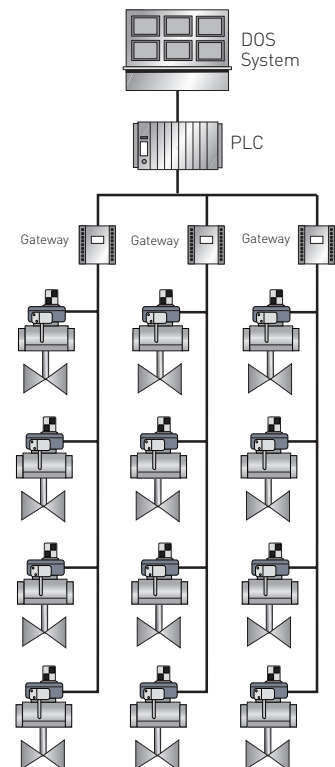
AS-INTERFACE® VER. 3.0

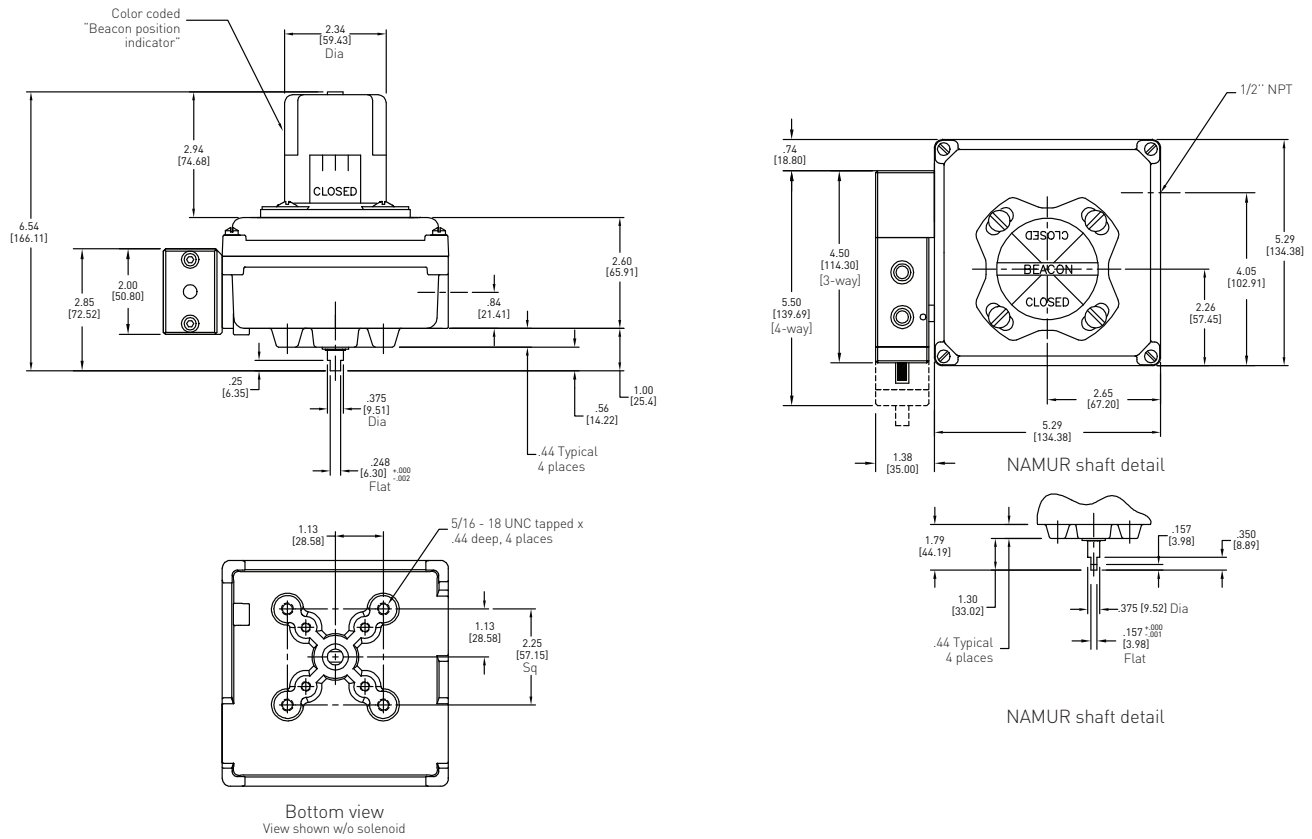|	
Physical media	Two wire cable (communications and power)
Maximum distance	300 ft. (90.9m) 900 ft. (273 m) with repeater
Maximum network monitors per system	62/network with 2.1 Master ,1 network/system
Maximum I/O points per system	434/network, 434/system
Current consumption per network monitor	(2 in/2 out) 11 mA (power) - 59 mA (1 in/1 out)
Interface capability	All PLC's and DCS with ModBus®, DeviceNet™, PROFIBUS port
Communications method	Master/slave with cyclic polling
Error checking	Control sum, parity
Network topology	Trunk/drop, zero drop
Transmission speed	167 kbps
Redundancy	No
Valves specific diagnostics	No

NOTES

1. Please contact your sales office for guidance on selecting the best possible combination for your control and monitoring requirements.
2. See Hazardous area classification technical bulletin for further information on global standards.

INTELLIS NETWORK CONTROL MONITORS
NON-INCENDIVE ALUMINUM ENCLOSURE DIMENSIONS

Color coded "Beacon position indicator"

2.34 [59.43] Dia

2.94 [74.68]

CLOSED

6.54 [166.11]

2.60 [65.91]

.84 [21.41]

2.85 [72.52]

2.00 [50.80]

.25 [6.35]

1.00 [25.4]

.56 [14.22]

.375 [9.51] Dia

.248 [6.30] Flat

.44 Typical 4 places

1/2" NPT

.74 [18.80]

4.50 [114.30] [3-way]

5.50 [139.69] [4-way]

5.29 [134.38]

4.05 [102.91]

2.26 [57.45]

CLOSED
BEACON
CLOSED

2.65 [67.20]

5.29 [134.38]

1.38 [35.00]

NAMUR shaft detail

5/16 - 18 UNC tapped x .44 deep, 4 places

1.13 [28.58]

1.13 [28.58]

2.25 [57.15] Sq

1.79 [44.19]

1.30 [33.02]

.44 Typical 4 places

.157 [3.98]

.350 [8.89]

.375 [9.52] Dia

.157 [3.98] Flat

NAMUR shaft detail

Bottom view
View shown w/o solenoid

Dimensions in inches, metric dimension (mm) in parentheses

TECHNICAL SPECIFICATIONS

Materials of construction

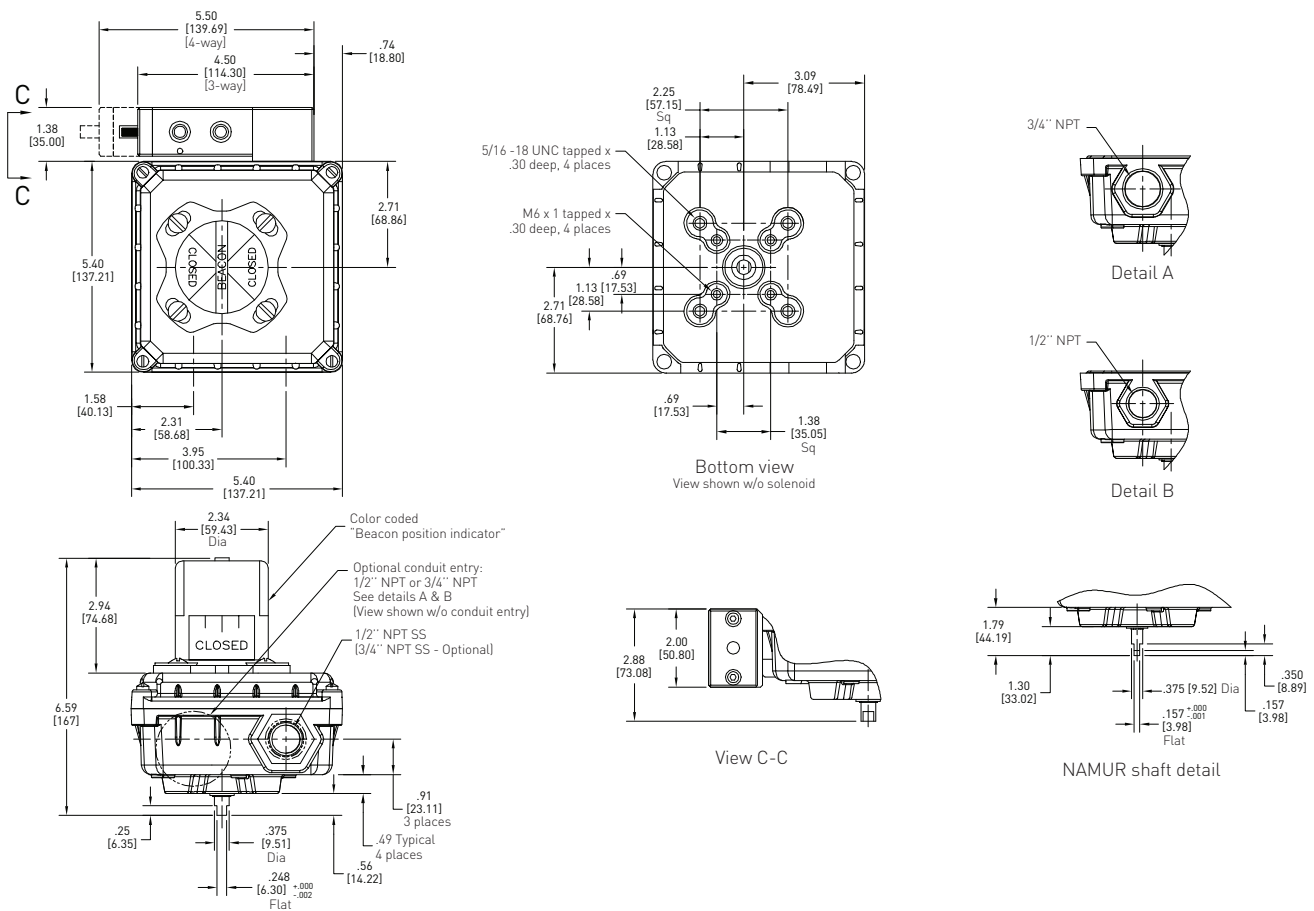|	
Enclosure	Aluminum with powder coat finish
Shaft and hardware	Stainless steel
Beacon visual indicator	Co-polyester
Bushing	Oil impregnated bronze
Drive shaft	
Westlock standard	Double-D with ¼" A/F
NAMUR standard	NAMUR standard VDI/VDE 3845

SOLENOID VALVES

The Falcon range of solenoid valves allows you to choose the material, voltage, number of ports, number of coils and C_v to best suit your application. See the Falcon data sheet for more information.

NOTES

1. Intellis control monitors are available with a choice of conduit entries. Please see the selection guide for standard entries

2. Please consult your sales office for any other requirements

INTELLIS NETWORK CONTROL MONITORS
NON-INCENDIVE ENGINEERED RESIN ENCLOSURE (SINGLE COIL) DIMENSIONS

Bottom view
View shown w/o solenoid

Detail A

Detail B

View C-C

NAMUR shaft detail

Dimensions in inches, metric dimension (mm) in parentheses

TECHNICAL SPECIFICATIONS

Materials of construction

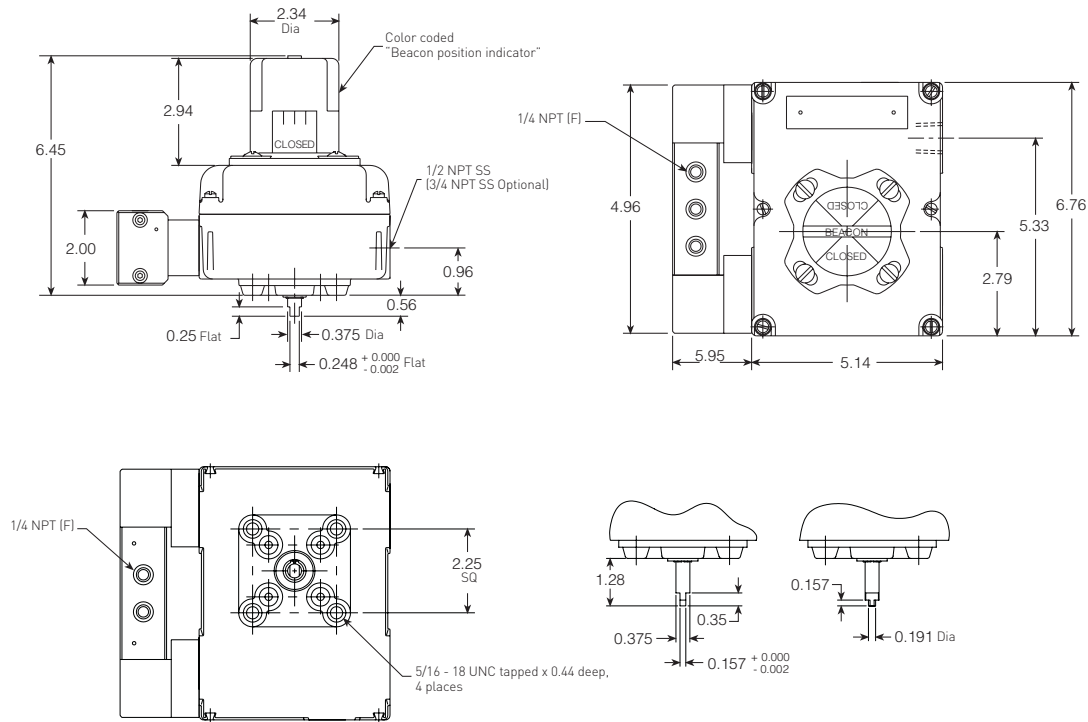|	
Enclosure	Engineered polyamide resin
Shaft and hardware	Stainless steel
Beacon visual indicator	Co-polyester
Bushing	Nylon
Drive shaft	
Westlock standard	Double-D with ¼" A/F
NAMUR standard	NAMUR standard VDI/VDE 3845

NOTES

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2. Please consult your sales office for any other requirements

SOLENOID VALVES

The Falcon range of solenoid valves allows you to choose the material, voltage, number of ports, number of coils and C_v to best suit your application. See the Falcon data sheet for more information.

INTELLIS NETWORK CONTROL MONITORS
NON-INCENDIVE ENGINEERED RESIN ENCLOSURE (DUAL COIL) DIMENSIONS

Dimensions in inches

TECHNICAL SPECIFICATIONS

Materials of construction

Enclosure	Engineered polyamide resin
Shaft and hardware	Stainless steel
Beacon visual indicator	Co-polyester
Bushing	Nylon
Drive shaft	
Westlock standard	Double-D with ¼" A/F
NAMUR standard	NAMUR standard VDI/VDE 3845

SOLENOID VALVES

The Falcon range of solenoid valves allows you to choose the material, voltage, number of ports, number of coils and C_v to best suit your application. See the Falcon data sheet for more information.

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INTELLIS NETWORK CONTROL MONITORS
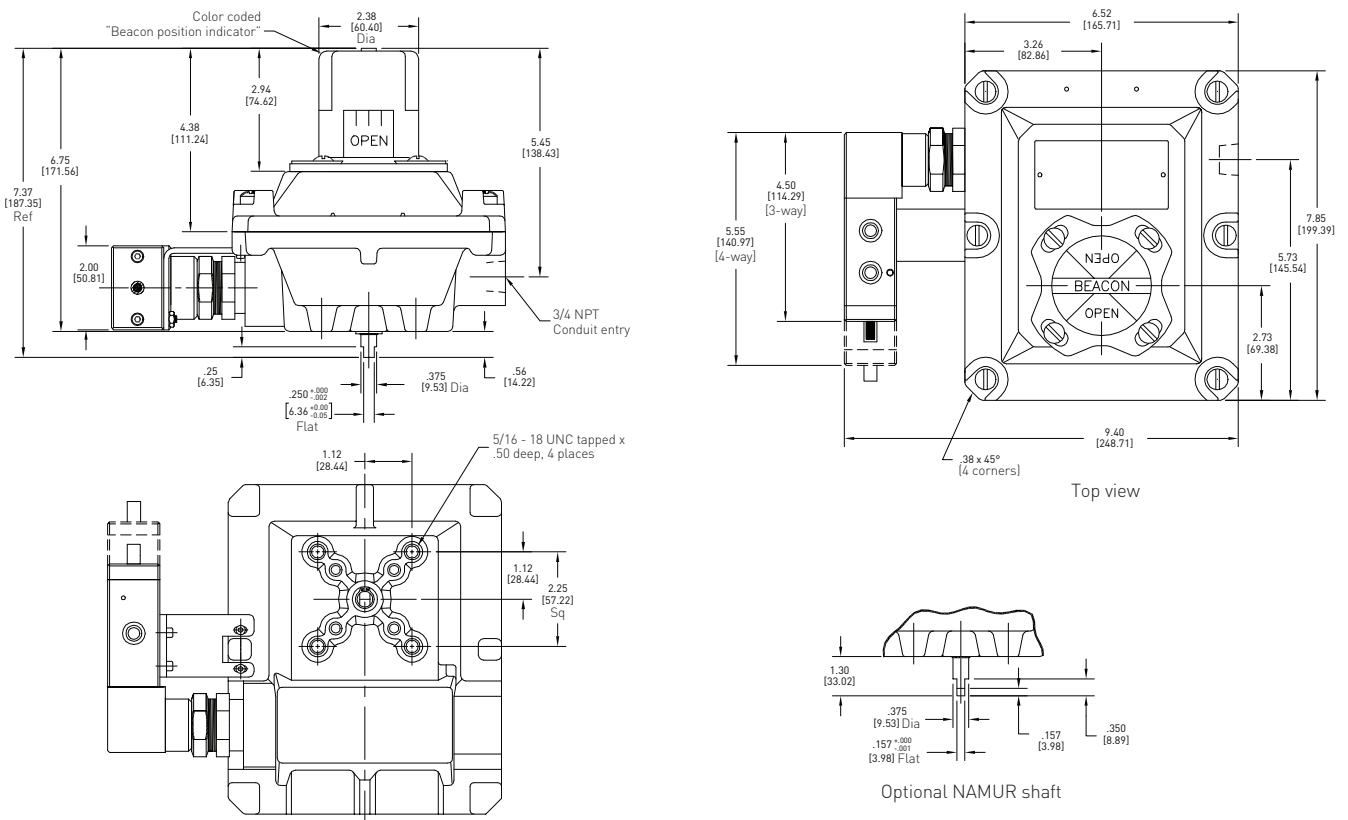
NON-INCENDIVE SELECTION GUIDE

Network protocol

72	PROFIBUS-DP
73	FOUNDATION fieldbus™ (Standard intrinsically safe, slass 1, all groups)
74	Modbus direct

75	Modbus
76	DeviceNet™
77	AS-interface® - Profile 3.0 (AS-i Profile 2.0 also available)

Enclosure (Enclosure options available in 316 SS)

04	Aluminum enclosure
44	Engineered resin enclosure
45	Engineered resin enclosure (for dual coil)

Shaft output

S	Standard (Double-D with 1/4˝ Flats)
N	NAMUR
0	None

Beacon

BY	BM2-Y (Standard)	B3	BM3-3
RG	BM2-RG	B5	BM3-5
FE	BM2-Y-FE (French/English)	B7	BM3-7
AB	BM2-B	B9	BM3-9
AR	BM2-R	FC	Flat cover
B1	BM3-1	JB	Junction box - flat cover, bushing plugged (use with '0' shaft output option)

Conduit

1A	One 1/2˝ NPT (F) with gland fitting
1B	One 3/4˝ NPT (F)
2A	Two 1/2˝ NPT (F) with gland fitting
1M	One 1/2˝ NPT fitted with mini-connector
1U	One 1/2˝ NPT fitted with micro-(Euro) connector
2M	One 1/2˝ NPT fitted with mini-connector and one extra 1/2˝ NPT (F)
2U	One 1/2˝ NPT fitted with micro-(Euro) conn. and one extra 1/2˝ NPT (F)

Position switches

2HEM	2 inputs / 2 outputs (only available for 76 or 77 Network protocols)
2HES	4 inputs / 2 outputs

On/off junction enclosure

00	Not available

Coil voltage

0	None
D	24 V DC (7.2 V DC for Fieldbus) – standard

Falcon V valve body

2V3	1.4 C_v, 3-way, brass	2V7	1.4 C_v, 4-way, brass
3V3	1.4 C_v, 3-way, aluminum	3V7	1.4 C_v, 4-way, aluminum
5V3	1.4 C_v, 3-way, 316 SS	5V7	1.4 C_v, 4-way, 316 SS
3V4	4.3 C_v, 3-way, aluminum**	3V8	4.3 C_v, 4-way, aluminum
2VY	1.4 C_v, dual coil, brass*	3VY	1.4 C_v, dual coil, aluminum*
5VY	1.4 C_v, dual coil, 316 SS*	3VZ	4.3 C_v, dual coil, aluminum*

Valve options

0	None
M	Momentary over-ride
L	Locking over-ride
R	Manual reset
N	Manual reset with latch
E	External pilot

73	44	N	BY	1U	2HES	00	D	3V3	0	= Model number **7344NBY1U2HES00D3V30**

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* Dual coil valve body options only available with enclosure '45'

** 3V4 valves are 3V8 valves with ports 2 and 3 plugged at factory for 3-way functionality.

INTELLIS NETWORK CONTROL MONITORS
EXPLOSIONPROOF ALUMINUM ENCLOSURE (SINGLE COIL) DIMENSIONS

Dimensions in inches, metric dimension (mm) in parentheses

Top view

Optional NAMUR shaft

TECHNICAL SPECIFICATIONS

Materials of construction

Enclosure	Aluminum with powder coat finish
Shaft and hardware	Stainless steel
Beacon visual indicator	Co-polyester
Bushing	Oil impregnated bronze

Drive shaft

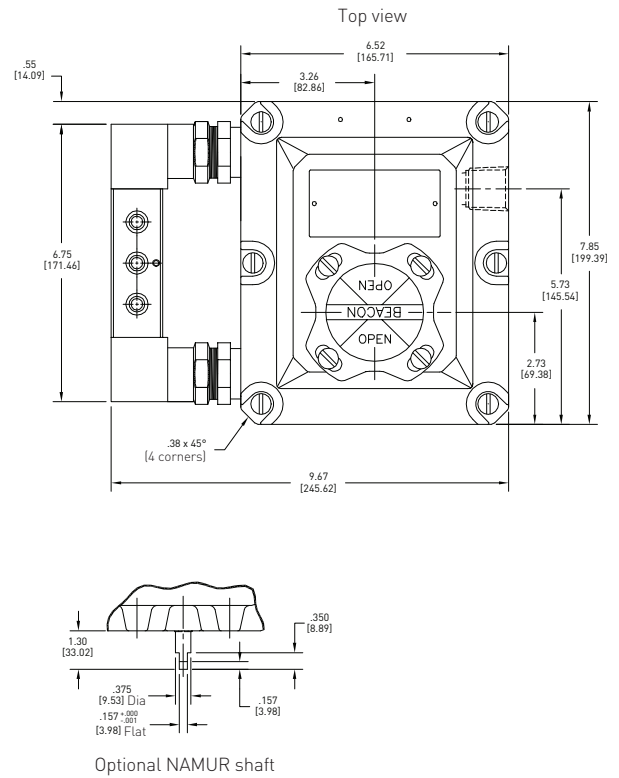|	
Standard	Double-D with ¼" A/F
Option	NAMUR standard VDI/VDE 3845

SOLENOID VALVES

The Falcon range of solenoid valves allows you to choose the material, voltage, number of ports, number of coils and C_v to best suit your application. See the Falcon data sheet for more information.

NOTES

1. Intellis control monitors are available with a choice of conduit entries. Please see the selection guide for standard entries
2. Please consult your sales office for any other requirements

INTELLIS NETWORK CONTROL MONITORS
EXPLOSIONPROOF ALUMINUM ENCLOSURE (DUAL COIL) DIMENSIONS

Dimensions in inches, metric dimension (mm) in parentheses

TECHNICAL SPECIFICATIONS

Materials of construction

Enclosure	Aluminum with powder coat finish
Shaft and hardware	Stainless steel
Beacon visual indicator	Co-polyester
Bushing	Oil impregnated bronze

Drive shaft

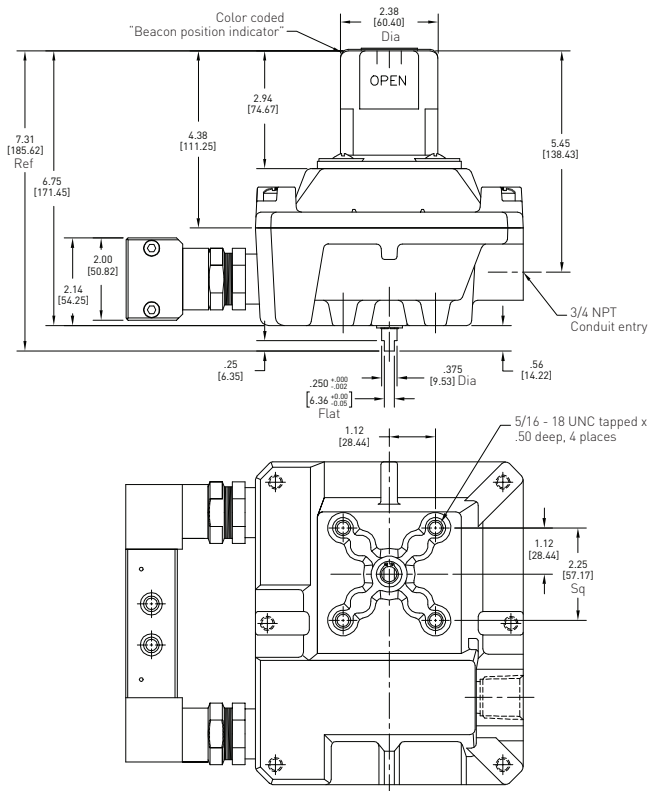|	
Standard	Double-D with ¼" A/F
Option	NAMUR standard VDI/VDE 3845

SOLENOID VALVES

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INTELLIS NETWORK CONTROL MONITORS

EXPLOSIONPROOF SELECTION GUIDE

Network protocol

72	PROFIBUS-DP	76	DeviceNet™
74	Modbus® Direct	77	AS-interface® - Profile 3.0 (AS-i Profile 2.0 also available)
75	Modbus®		

Enclosure

75	Aluminum enclosure (for dual coil)
79	Aluminum enclosure
89	Screw top aluminum enclosure (only available for 76 or 77 network protocol; only available for 2HEM position switches)

Shaft output

S	Standard (Double-D with 1/4" Flats)
N	NAMUR
0	None

Beacon

BY	BM2-Y (Standard)	B3	BM3-3
RG	BM2-RG	B5	BM3-5
FE	BM2-Y-FE (French/English)	B7	BM3-7
AB	BM2-B	B9	BM3-9
AR	BM2-R	FC	Flat cover
B1	BM3-1	JB	Junction box - flat cover, bushing plugged (use with '0' shaft output option)

Conduit

1B	One 3/4" NPT (F)
2B	Two 3/4" NPT (F)

Position switches

2HEM	2 inputs / 2 outputs (only available for 76 or 77 Network protocol)
2HES	4 inputs / 2 outputs (not available for enclosure option 89)

On/off junction enclosure

00	Not available
01	On/off junction enclosure

Coil voltage

0	None
X	24 V DC (XP coil)

Falcon V valve body

2V3	1.4 C_v, 3-way, brass	2V7	1.4 C_v, 4-way, brass
3V3	1.4 C_v, 3-way, aluminum	3V7	1.4 C_v, 4-way, aluminum
5V3	1.4 C_v, 3-way, 316 SS	5V7	1.4 C_v, 4-way, 316 SS
3V4	4.3 C_v, 3-way, aluminum**	3V8	4.3 C_v, 4-way, aluminum
2VY	1.4 C_v, dual coil, brass*	3VY	1.4 C_v, dual coil, aluminum*
5VY	1.4 C_v, dual coil, 316 SS*	3VZ	4.3 C_v, dual coil, aluminum*

Valve options

0	None
M	Momentary over-ride
L	Locking over-ride
R	Manual reset
N	Manual reset with latch
E	External pilot

| 77 | 75 | N | BY | 1B | 2HES | 01 | X | 3V3 | L | = Model number **7775NBY1B2HES01X3V3L** |

* Dual Coil valve body options only available with enclosure '75'

** 3V4 valves are 3V8 valves with ports 2 and 3 plugged at the factory for 3-way functionality.

WESTLOCK CONTROLS

www.westlockcontrols.com

Westlock. We reserve the right to change designs and specifications without notice.