SERIAL RELAY SYSTEM

Greatly simplifies wiring and makes maintenance easy.

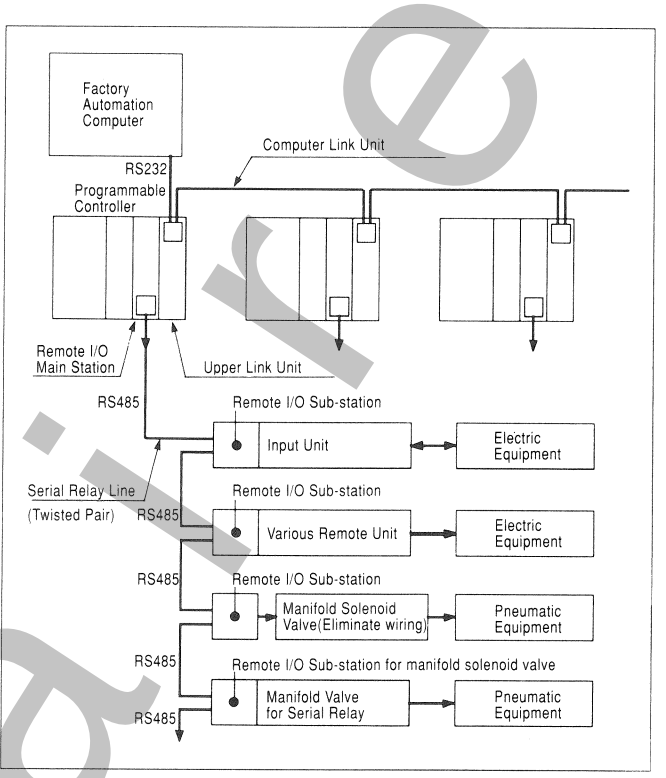
Plug-in type solenoid valve manifold enables valves to be disconnected or reconnected without disturbing the wiring.

Program alterations can be made with a minimum of downtime.

All types of automation processes can be controlled from a distance of up to 650 feet (200 meters).

This system features the dependable Humphrey H240 Series 24VDC valves with low power consumption (75mA/1.8W), all with built-in LEDs.

Options include single or double solenoid two position valves, double solenoid three postion valves, all with either locking or non-locking manual overrides.

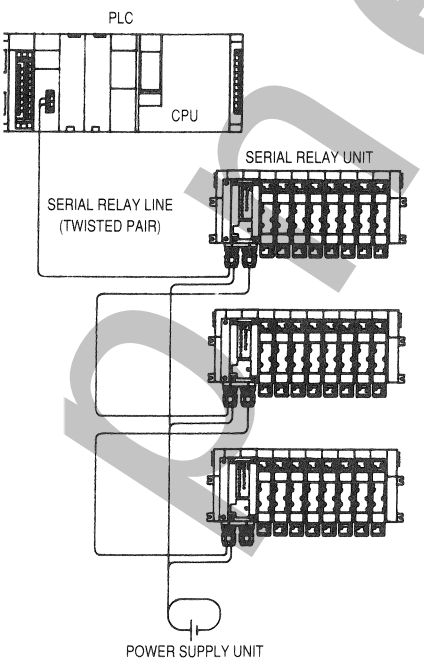


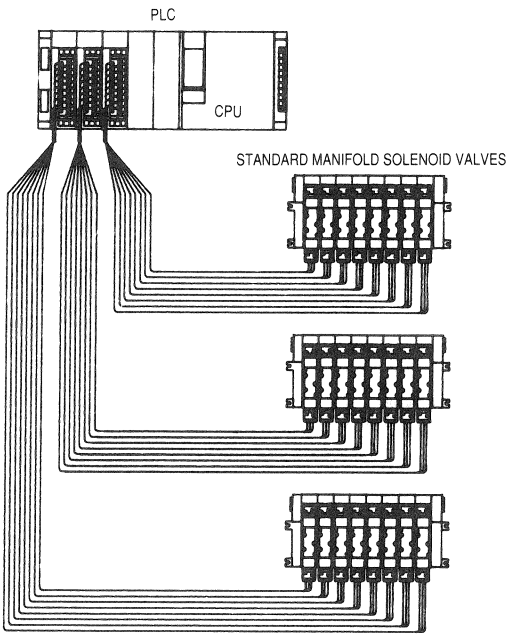
WHAT IS THE SERIAL RELAY SYSTEM?

The Serial Relay System provides a direct connection from the PC's remote I/O (Input/Output) Main Station to the manifold solenoid valves' remote I/O Substation. This is accomplished with one twisted pair cable which remotely controls the entire process.

The serial interface utilizes serial communications and manifold mounted, plug-in type solenoid valves to eliminate the mass amount of wiring associated with conventional valve systems. It is possible to control up to 32 manifolds and 512 solenoid valves through one twisted pair cable.

SERIAL VS. CONVENTIONAL





SPECIFICATIONS

Items	Valve Specifications and Model		
	Single Solenoid	Double Solenoid	Double Solenoid 3-position
	HW240-4E1-L	HW240-4E2-L	HW243-4E2-L
Media	Air		
Operating methods	Indirect Operation		
Number of position	2-position		3-position
Number of ports	5-port		
Valve function	—		Closed center (standard) Exhaust center (optional)
Flow - C_V	0.88		0.83
Piping port - NPT	P, A, B:1/4 R:1/8		
Lubrication	None required		
Operating pressure psig(kgf/cm²)	25 – 100 (1.7 – 7)		
Operating temp. °F (°C) (atmosphere or media)	41 – 122 (5 – 50)		
Mounting direction	Any		
Cycle speeds	5 cycles per second		
Minimum time to energize	—	0.05 sec.	—
Weight - oz. (gf)	5.6 (160)	8.1 (230)	9.2 (260)

SOLENOID SPECIFICATIONS

Item	Voltage
	24VDC
Operating method	Flywheel diode incorporated for surge suppression
Voltage range - V (% of rated voltage)	21.6 – 26.4 (24 ± 10%)
Leak rate - mA (maximum allowed)	4
Temperature rise °F (°C)	77° (25°) (Add 10% of rated voltage at ambient temp. of 122° (50°)
Insulation	B type
Insulation resistance - MΩ	Minimum 100
LED indicator (option) color	Red
Surge suppression	Flywheel diode (standard)

Note: Serial Relay System accommodates solenoid valve specifications of 24VDC with LED indicator only.

WEIGHT

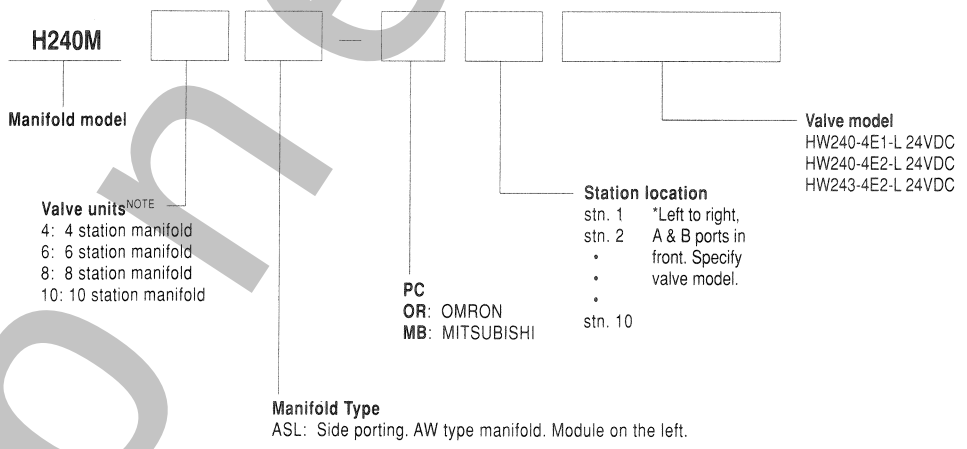
Oz. (gf)

Items	H240 Series
Serial Relay Block	18.3 (520)
Wiring Box	13.2 (375)
Manifold Base	14.1 (400)
Serial Relay Module	45.7 (1295)

SPECIFICATIONS AND PIPING PORT SIZES

Manifold	Specifications	Port Dimensions		Valves
240M□ASL	Plug-in type	P	1/4	HW240-4E1-L HW240-4E2-L HW243-4E2-L
		A, B		
		R		
		Pilot EXH	1/8	

ORDER CODE



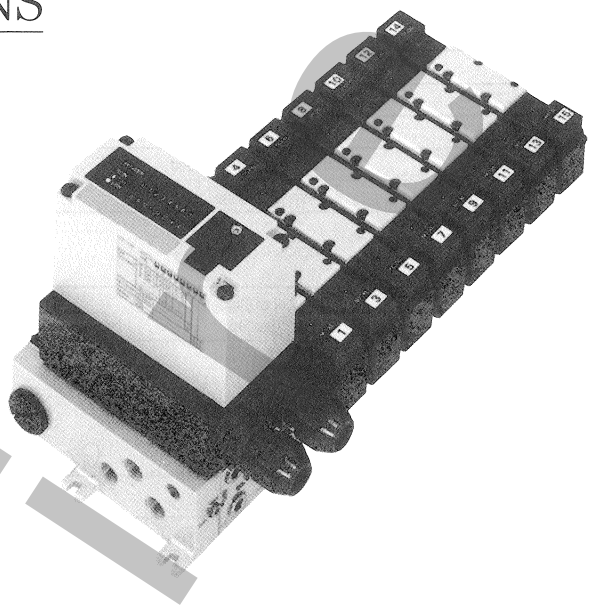
NOTE: Solenoid coils available up to 16.
All HW24□-4E2: 8 stations maximum.
All HW240-4E1: 16 stations maximum.

SERIAL RELAY SPECIFICATIONS

OMRON PC: SYSMAC C Series

Direct connection to OMRON Programmable Controller, SYSMAC C Series Local I/O Network and SYSBUS Wire System from Remote I/O Main Station Unit (wire type) with two-wires from SYSBUS Wiring System.

PC (Programmable Controller)	Remote I/O Main Station
C200H	C200H-RM201
C500, C1000H, C2000H CV500, CV1000	C500H-RM201



GENERAL SPECIFICATIONS

Items		Specifications	
Voltage		24VDC	
Allowed Voltage Change		20.4 – 26.4VDC	
Power Consumption		Module 5W each solenoid 1.5W	
Insulation Resistance		Minimum 10MΩ between outer terminal and case (at 500VDC)	
Voltage Resistance		1000VAC between outer terminal and case (50/60Hz per min.)	
Noise Resistance		Common Mode 1000Vp-p	Pulse width 100ns, 1μs Start up pulse 1ns
		Normal Mode 300Vp-p	Pulse width 100ns, 1μs Start up pulse 1nss
Vibration Resistance	Resistance Non-operating	Smaller of the two 10Hz–150Hz 0.03 in. (0.75mm) vibration distance or acceleration of 10G	
	Incorrect Operation	Smaller of the two 10Hz–150Hz 0.02 in. (0.50mm) vibration distance or acceleration of 7G	
Shock Resistance		Peak acceleration 30G	3 directions
Operating Ambient Temperature °F (°C)		32 – 131 (0 – 55) [Max. 8 points ON] 32 – 122 (0 – 50) [All points ON]	
Operating Ambient Humidity		35 – 85% RH (no condensation)	
Operating Atmosphere		Void of corrosive gas	
Holding Ambient Temperature °F (°C)		-4 – 149 (-20 – 65)	
Protective Feature		IP53 (dust free, condensation free)	

COMMUNICATION RELAY SPECIFICATIONS

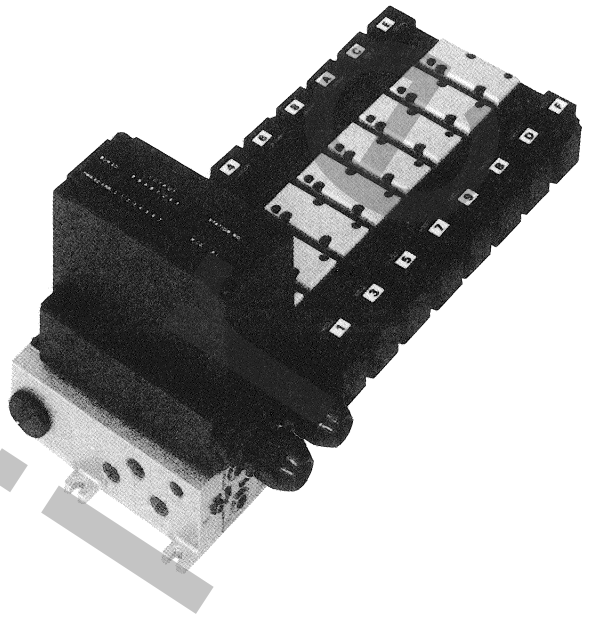
Items	Specifications
Methods	2 wire cable (BELDEN 9271 or equivalent)
Interface	RS-485
Communication Relay Speed	187.5KBPS
Transmission Distance	650 ft. (200M) [entire length]
Diagnostic Function	Relay error check (BCC + inverse 2 continuous relay check) CPU abnormality check
Number of Output per Station	Maximum 16 output with solenoid valve per station (Up to a maximum of 32 stations)

WEIGHT Oz. (gf)

Items	H240 Series
Serial Relay Block	18.3 (520)
Wiring Box	13.2 (375)
Manifold Base	14.1 (400)
Serial Relay Module (Entire Weight)	45.7 (1295)

IITSUBISHI PC: MELSEC–A Series

irect connection to Mitsubishi Sequencer, MELSEC–A eries base network and MELSECNET/MINI-S3 Data nk System. Twisted pair wire is used as with various ITSUBISHI Remote I/O Units. Eliminates costly wiring, onnects from Sequencer CPU to manifold valves cated in remote area, and enables a powerful base etwork system.



Sequencer	Master Station
MELSEC–A Series	AJ71PT32-S3
A2C	Direct connect to A2C CPU (P21/R21)

ENERAL SPECIFICATIONS

Item	Specifications
Voltage	For unit: 24VDC ±10%, 3W
Operating Temperature °F (°C)	32 – 131 (0 – 55)
Operating Humidity	10 – 90% RH (no condensation)
Operating Atmosphere	Void of corrosive gas and minimum dust
Vibration Resistance	5G (based on JIS C0911)
Shock Resistance	10G (based on JIS C0912)
Voltage Resistance	1500VAC 1 min. (between Outer terminal and earth)
Allowed Noise Level	1000Vpp (Start up 1nS, pulse width 1μS)
Insulation Resistance	Minimum 10MΩ
Protective Feature	IP53 (dust free, condensation free)

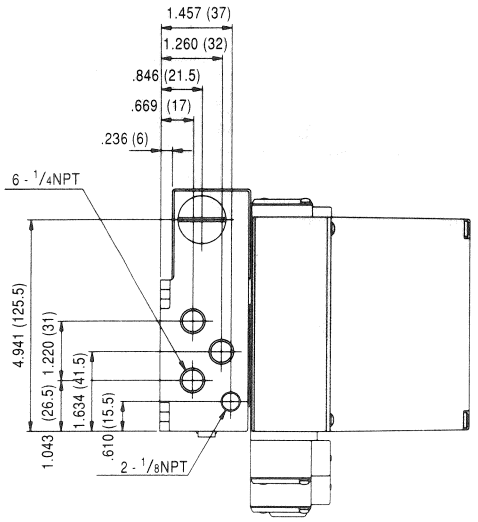
OMMUNICATION RELAY SPECIFICATIONS

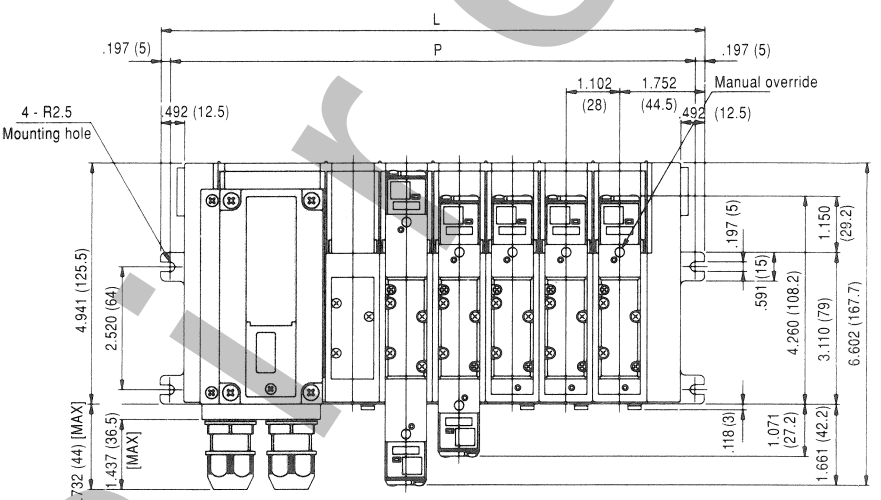
Item	Specifications
Number of Output per Station	Maximum 16 output with solenoid valve
Number of Link Sub-station	Maximum 64 sub-stations per master station
Number of Link I/O	Maximum 512 per master station
Communication Relay Speed	1.5MBPS
I/O Refresh Time	3.6 - 18mS (AJ71PT32-S3) 5 20mS (A2C CPU)
Max. Transmission Distance	325 ft. (100m) 162 ft. (50m)*
Recommended Cable	Twisted pair cable with shield

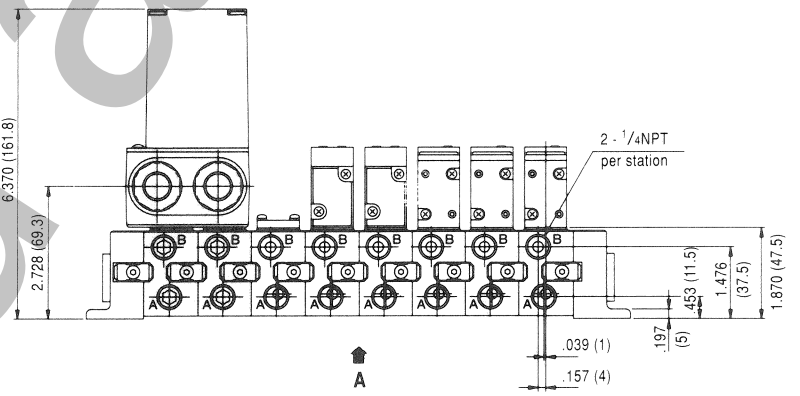
ximum transmission distance depends upon the twisted pair cable size. Smaller than 24AWG (0.2mm^2) – 20AWG (0.5mm^2): 162 ft. (50m); Larger than 20AWG (0.5mm^2): 325 ft. (100m).

EIGHT Oz. (gf)

Items	H240 Series
Serial Relay Block	16.9 (480)
Wiring Box	13.2 (375)
Manifold Base	14.1 (400)
Serial Relay Module (Entire Weight)	44.3 (1255)







UNIT DIMENSIONS
inches (mm)

Stations	P	L
4	8.622 (219)	9.016 (229)
8	13.031 (331)	13.425 (341)
10	15.236 (387)	15.630 (397)

Bottom port (view from A)