

## Input Link Connector Module

B7AC

### Water-resistant Module Accepts Sensors with M12 Connectors

- 10-point input block meets IP67 requirements for water resistance
- Many Omron photoelectric and proximity sensors and limit switches available with M12 connectors
- 19.2 ms typical transmission speed
- Compatible with other 10-point B7A I/O Link Modules
- Connect up to 3 B7AC blocks to a single DeviceNet interface module and extend wiring up to 50 m for 30 inputs



## Ordering Information

### ■ INPUT LINK CONNECTOR MODULE

Description	I/O configuration	I/O delay (typical)	Enclosure rating	Part number
B7A 10-point sealed input module	NPN compatible	19.2 ms	IP67	B7AC-T10A1
DeviceNet interface module connects up to 3 B7AC modules			IP66	DRT1-B7AC

### ■ CONNECTOR CORDSETS

#### For Input to B7A Block (Connector No. 0 to 9)

Description	Specification	Cable length	Part number
Connector plug assembly, screw-on style	5 to 6 mm dia. cable strands	---	XS2G-D4S1
	4 to 5 mm dia. cable strands	---	XS2G-D4S3
	3 to 4 mm dia. cable strands	---	XS2G-D4S5
Cable with connector and plug	4 conductor cable	1 m (3.28 ft)	XS2H-D421-C80-A
Extension cable with double-ended, molded M12 connectors, socket and plug	4 conductor cable	2 m (6.56 ft)	XS2W-D421-D81-A
		5 m (16.40 ft)	XS2W-D421-G81-A

#### For Transmission and Power Supply Line (Connector P)

Description	Specification	Cable length	Part number
Connector plug assembly, screw-on style	5 to 6 mm dia. cable strands	---	XS2C-D4S1
	4 to 5 mm dia. cable strands	---	XS2C-D4S3
	3 to 4 mm dia. cable strands	---	XS2C-D4S5
Cable with connector and plug	4 conductor cable	0.3 m (11.81 in)	XS2H-D421-A80-A
		1 m (3.28 ft)	XS2H-D421-C80-A
Extension cable with double-ended, molded M12 connectors, socket and plug	4 conductor cable	2 m (6.56 ft)	XS2F-D421-D80-A
		5 m (16.40 ft)	XS2F-D421-G80-A

## ■ CONNECTOR ACCESSORIES

Description	Material	Suitable connector		Part number
		Model	Mounting part	
Waterproof cover	Aluminum/white	XS2G/XS2H	M12 male thread	XS2Z-11
		XS2C/XS2F	M12 female thread (with mounting bracket)	XS2Z-12
Dust cover	Polyvinyl chloride/transparent	XS2G/XS2H	M12 male thread	XS2Z-13
	Polyvinyl chloride/red	XS2C/XS2F	M12 female thread (with mounting bracket)	XS2Z-14
			Contact block (female contact)	XS2Z-15

## Specifications

### ■ CHARACTERISTICS

#### General

Communication method	Unidirectional, time-division multiplex
Transmission distance	100 m max.
I/O delay	Typical: 19.2 ms; 31 ms max.
Minimum input time (See Note)	16 ms
Operating voltage range	24 VDC (21.6 to 26.4 VDC)
Insulation resistance	100 MΩ min. (500 V) between each terminal and external parts
Dielectric strength	1,000 VAC, 50/60 Hz for 1 min between each terminal and external parts
Noise immunity	Noise level: 1.5 kV; pulse width: 100 ns to 1 μs (on transmission line due to coupling)
Vibration resistance	10 to 55 Hz, 1.5-mm double amplitude
Shock resistance	300 m/s <sup>2</sup> (approx. 30G)
Ambient temperature	Operating: -10°C to 55°C (14°F to 131°F) with no icing Storage: -25°C to 65°C (-13°F to 149°F) with no icing
Ambient humidity	Operating: 35% to 85% with no condensation
Enclosure rating	IEC IP67
Weight	Approx. 420 g

- Note: 1. The minimum input time is required for the B7AC to read an input signal.  
2. For detailed specifications on DRT1-B7AC, refer to Omron's *DeviceNet Products*, catalog P10FAX1.

#### Enclosure Rating

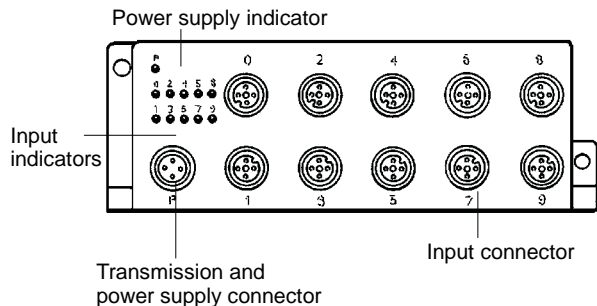
- Do not continuously impose external force on the joint of the contact block and cover, otherwise IP67 may not be maintained.
- IP67 does not ensure that the B7AC is perfectly watertight. Do not use the B7AC underwater.
- The case of the B7AC is made of plastic resin. Do not put heavy objects on it.

#### B7AC-T10A1 Input Module

Compatible inputs	Switches, two-wire sensors, three-wire NPN sensors
Input logic	Active low
Current consumption (See Note)	120 mA max. with all input terminals ON
Input voltage range	0 VDC to supply voltage
Input current range	-5.3 to -3.6 mA/point
ON/OFF threshold	No-contact input: ON voltage: 5.5 V max. OFF voltage: 7.5 V min. Contact input: ON discrimination resistance: 1 kΩ max. OFF discrimination resistance: 2.1 kΩ min.

Note: Consumption when all 10 points are ON. Excludes external sensor current for Input Module.

# Nomenclature



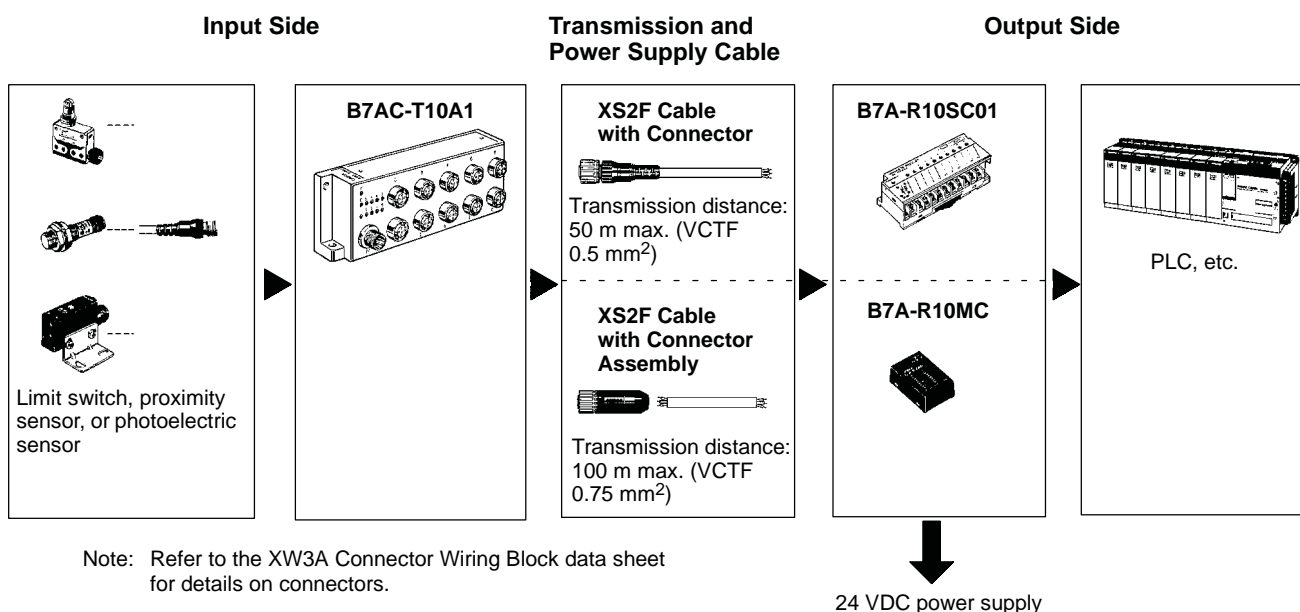
## Indicator Operation

Indicator		Function
POWER	G	Lit when power is supplied and the Terminal is operating.
	N	Not lit when power is not supplied.
Input	O	Lit when the input signals are ON.
	N	Not lit when the signals are OFF.

Note: G: Green indicator lit; O: Orange indicator lit; N: Not lit

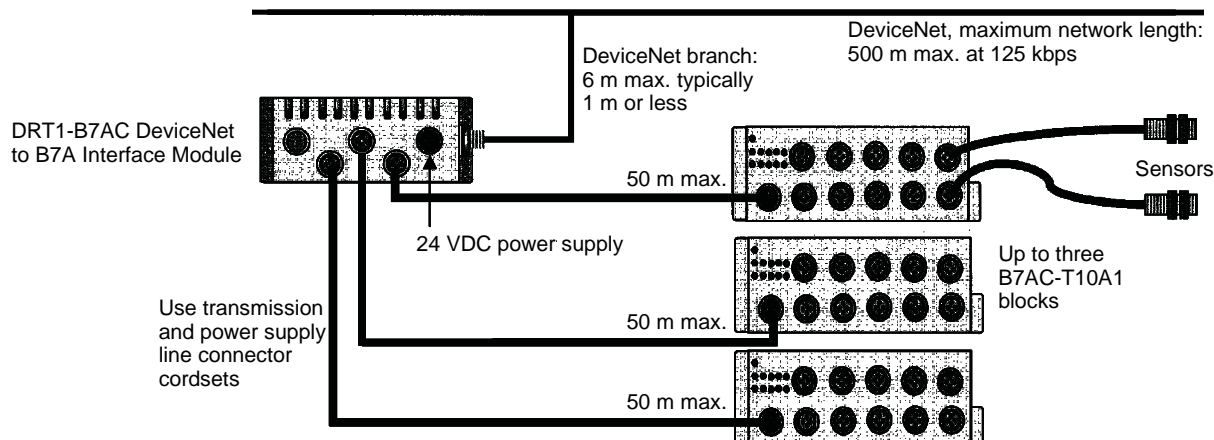
# Operation

## SYSTEM CONFIGURATION



## CONSOLIDATING B7A INPUT FOR DEVICENET COMMUNICATION

The B7AC-T10A1 modules offer a 50 m maximum branch line to the DeviceNet interface, allowing up to 10 inputs each to connect with an M12 connector to the DRT1-B7AC Interface Module. Use up to three B7AC-T10A1 modules with each DRT1-B7AC interface module. The DeviceNet branch from the DRT1-B7AC to the main DeviceNet trunk line can be up to 6 m long.



**CONNECTING INPUT DEVICES**

Input Devices	Direct connection		Joint connection	Pre-wired	
Limit switch	WL□-□K13 D4E-□□10N D4CC-30□□ (See Note)	XS2W-D42□-□81-A	WL□-□-DK1EJ□ D4C-□0□□-DK1EJ□ (See Note)	Refer to the following conditions required for connectable input devices.	XS2G
Proximity sensor	E2E-X1R5□1-M1-N E2E-X2M□1-M1-N E2E-X2□1-M1-N E2E-X5M□1-M1-N E2E-X5□1-M1-N E2E-X10M□1-M1-N E2E-X10□1-M1-N E2E-X18M□1-M1-N		---		
Photoelectric sensor	E3S-AT16 E3S-AT66 E3S-AD16 E3S-AD17 E3S-AD66 E3S-AD67 E3S-AR16 E3S-AR66 E3F2-7□4-M1C, M1S, P1 E3F2-DS10□4-M1C, M1S, P1 E3F2-R2R□4-M1C, M1S, P1		E3S-CT16 E3S-CR16 E3S-CD16 E3S-CD17 E3S-CT66 E3S-CR66 E3S-CD66 E3S-CD67 E3G-R17 E3G-L77		

Note: Normally open connection is possible with the limit switches listed in the above table.

**INPUT DEVICE CONNECTION CONDITIONS**

**Two-wire DC Sensor**

Residual voltage: 5 V max.  
 Leakage current: 1.5 mA max.  
 Lower limit of control output: 3 mA max.

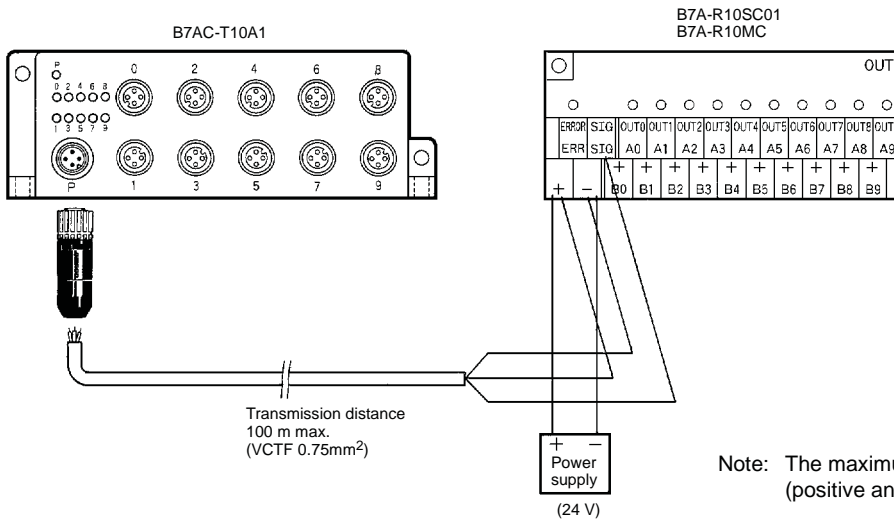
**Three-wire NPN Sensor**

Residual voltage: 5 V max.

**Contact Switch**

Leakage current: 1.5 mA max.

**POWER SUPPLY**

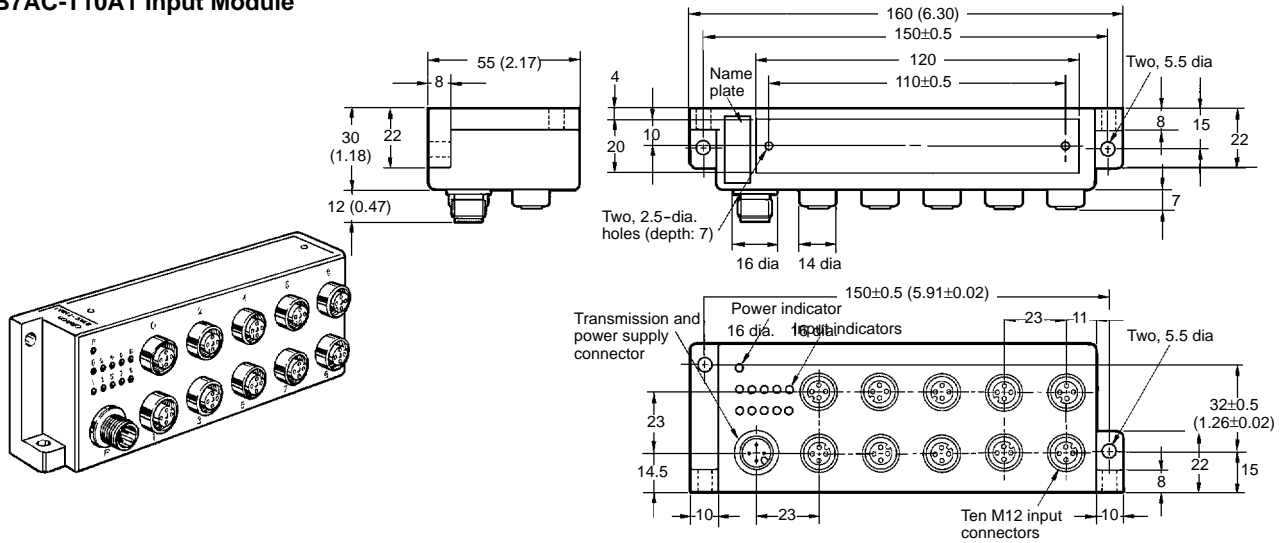


Note: The maximum current flow of the power lines (positive and negative lines) is 1.2 A max.

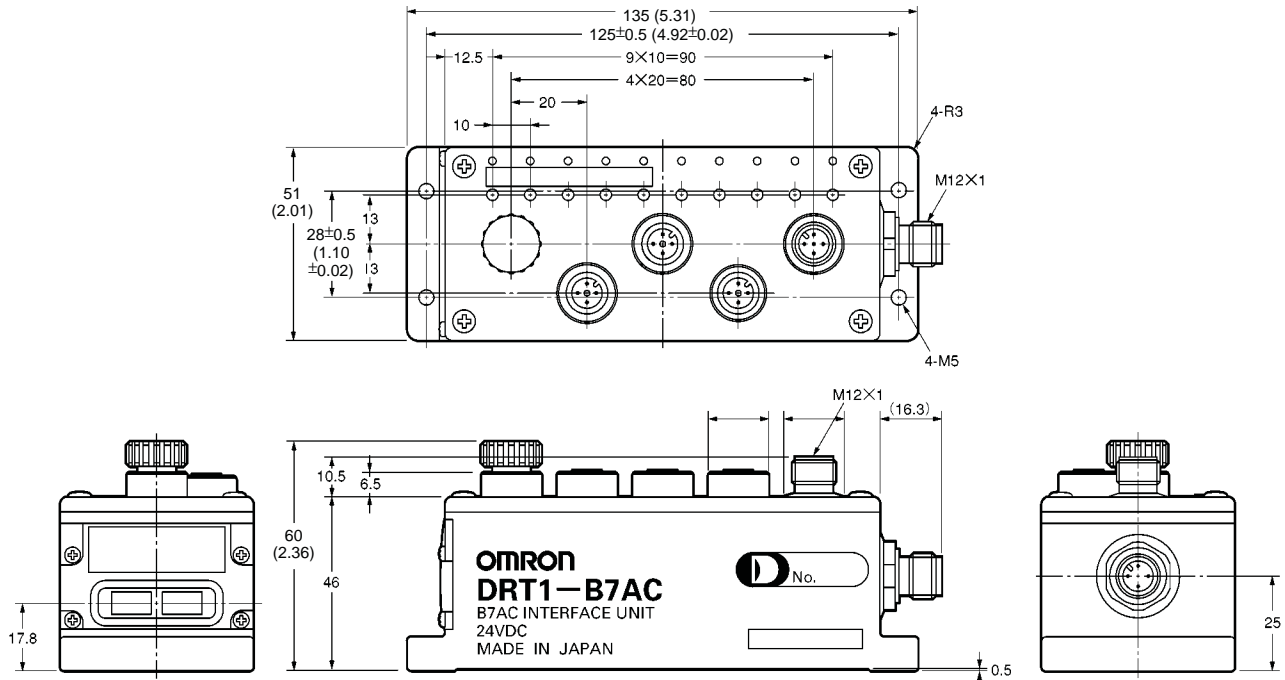
# Dimensions

Unit: mm (inch)

## B7AC-T10A1 Input Module



## DRT1-B7AC DeviceNet Interface Module

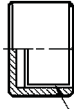


## Waterproof Covers

### XS2Z-11



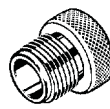
XS2Z-11



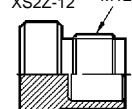
Transmission and power supply connector

M12

### XS2Z-12



XS2Z-12 M12

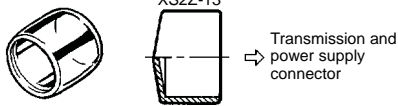


Input connector

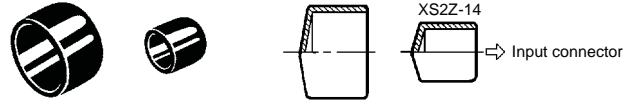
Note: The B7AC maintains IP67 with the XS2Z-11 and XS2Z-12 Waterproof Covers. Be sure to connect the XS2Z-11 and XS2Z-12 Waterproof Covers to the connectors by hand and tighten the Waterproof Covers securely with a force of 4 to 5 kgf • cm (0.39 to 0.49 N • m).

**Dust Covers**

**XS2Z-13**



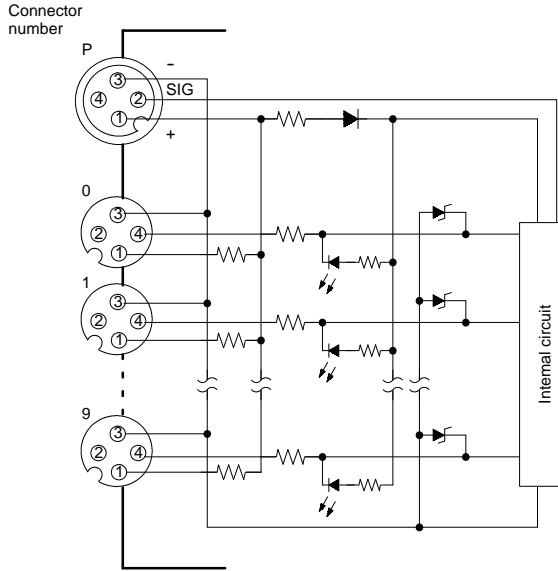
**XS2Z-14/XS2Z-15**



Note: The XS2Z-13, XS2Z-14, and XS2Z-15 Dust Covers are used for dust prevention. The B7AC cannot maintain IP67 with them. Press them securely to the connector joints.

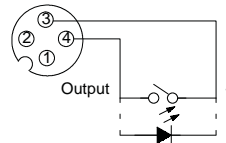
# Installation

## INTERNAL CIRCUIT



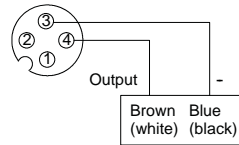
### Connector No. 0 to 9 (Input)

#### With Contact Switch



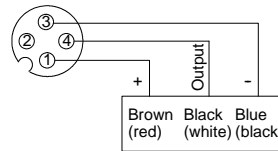
Note: The permissible current leakage is 1.5 mA max.

#### With Two-wire DC Sensor



Note: The contact arrangement of the two-wire DC sensor does not conform to NECA 4202.

#### With Three-wire NPN Sensor



Note: The contact arrangement of the three-wire NPN sensor corresponds to the normally open output contact of the three-wire DC sensor of NECA 4202.

**NOTE: DIMENSIONS SHOWN ARE IN MILLIMETERS. To convert millimeters to inches divide by 25.4.**



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