

Lynx™ DIN Rail Mounted I/O Modules

Note that each individual system and system parts may vary.

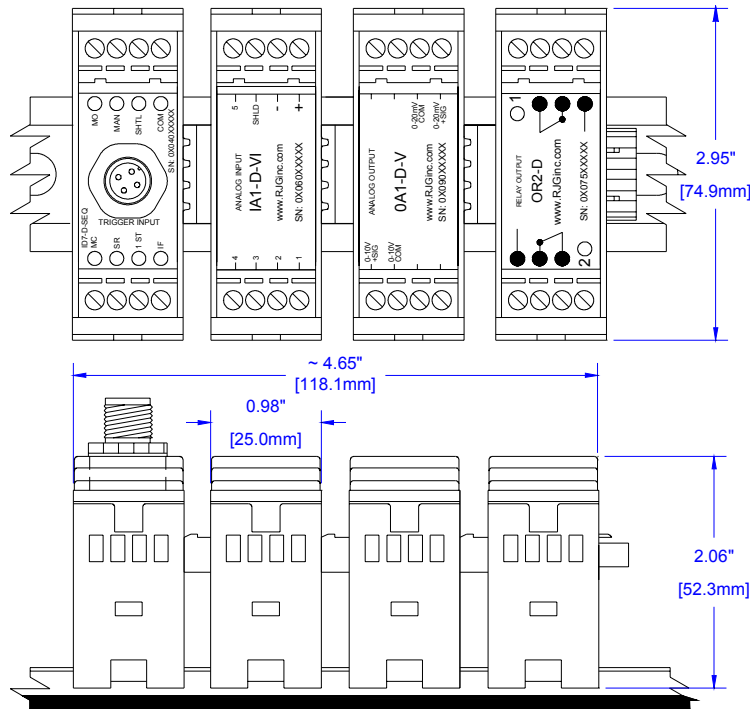


Figure 2: DIN rail mount modules



Take care to mount the DIN Rail Mount Modules inside the molding machine panel in a location shielded from any sources of EMI (Electro Magnetic Interference).

Part Number	Description	Type	Range	Current Draw
ID7-D-SEQ	7-Channel Sequence Input Module	Input	24VDC	45mA
IA1-D-VI	0-10V Analog Input Module	Input	0-10V, 4-20mA	95mA
OA1-D-V	0-10V Analog Output Module	Output	0-10V, 0-20mV	90mA
OR2-D	Dual Relay Output Module	Output	2 Dry Contacts	60mA
				Total=290mA

Table 2: DIN rail mount current draw



Lynx™ 7-Channel Sequence Input Module - ID7-D-SEQ

The ID7-D-SEQ is a DIN mountable Sequence Input Module that acts as an interface between machine operations and the eDART System™. With the Sequence Module, it is unnecessary to wire all of the machine signals. The eDART™ software takes what is easily available from the machine and derives the rest. This is important when implementing a network or installing on a portable basis because many times the signals are not readily available.



Always power down before working on any equipment.

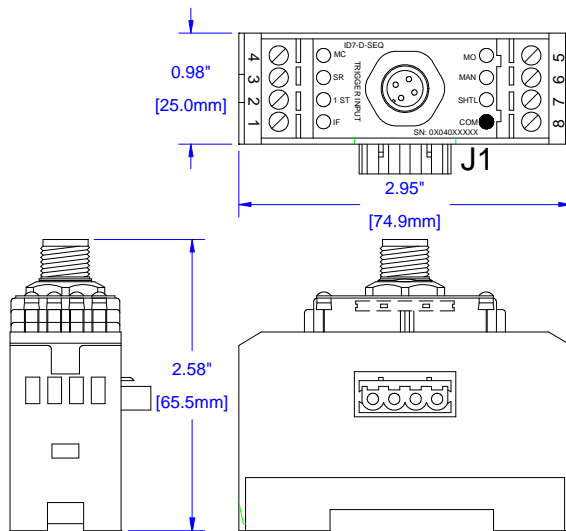


Figure 3: Lynx™ 7- Channel Sequence Input Module

The Sequence Module is designed for mounting on standard 35mm DIN rail often found in machine panels. Once mounted, connectors interface the unit with other Lynx™ DIN rail modules and with the eDART System™.



The digital signals are connected to the Sequence Module through the eight terminal connectors (see Figure 3). The signals themselves are connected to terminals 1-7 and the signal common for these is wired to terminal 8. These signals can be taken directly from the machine controller and can operate at 24VDC.

Connection	Function
Terminal 1	INJ Forward
Terminal 2	1st Stage
Terminal 3	Screw Run
Terminal 4	Mold Clamped
Terminal 5	Mold Opening
Terminal 6	Manual
Terminal 7	Shuttle Position
Terminal 8	Input Common

Table 3: Sequence Input Module Terminal Connections

Technical Specifications	
Power (supplied by eDART)	12VDC
Current Draw	45mA
Absolute Maximum Input Voltage	36VDC
Minimum Trigger on Voltage	18VDC

Table 4: Sequence Input Module Technical Specifications



The sequence module can be interfaced with a machine output card as shown in the figure below. See Table 4 for voltage ranges. The Sequence Module inputs these voltage signals using an opto-isolated circuit to ensure full isolation from the machine controller.

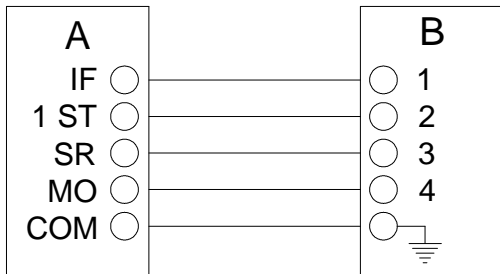


Figure 4: Input Module Interfacing with a machine output card

Wiring Machine Signals

In order to perform important computations necessary for successful injection molding processes, the eDART™ must have accurate sequence signals from the machine controller. These signals indicate to the eDART™ when important events occur during the machine cycle and they help synchronize signals from the hydraulic and mold pressure sensors to the actions of the machine for display in the software.



Always power down before working on any equipment.



Table 4 details these signals in order of importance to the software. If none of these signals is available, please contact your RJG, Inc. representative for alternatives or more information.

Machine Signal	Wire to	Should go ON when	Should go OFF when	Purpose
Screw Run	SR	Screw motor starts	Screw motor stops	Stroke direction, zero and material variation information (required for control)
Injection Forward	IF	Injection starts	Hold time ends	Searches for peaks, hold pressure, etc. (required for control)
Mold Clamped	MC	Mold clamped to pressure	Mold cracks	Accurate cycle time and integration limit (resets piezoelectric adapters and UMPI)
Mold Opening	MO	Mold begins to open	Mold stops opening	Pinched part detection (resets piezoelectric adapters and UMPI)
First Stage	1 ST	Start of injection (Velocity)	Switch to pressure (hold)	Creates internal injection forward, pack and in 2-Stage, "FILL"
Manual Mode	MAN	Machine is in manual mode (for setup)	Machine is in auto or semi-automatic mode	Prevents parts counts and data storage in manual mode.
Shuttle Position	SHTL	Should be on at start of cycle - position 2	Should be on at start of cycle - position 1	Detects mold position in 2-position shuttle molding
Mold Closing	Any	Mold begins to close	Mold touches or clamps up	Cycle time with mold opening (resets piezoelectric adapters and UMPI)
Mold Open	Any	Mold reaches open	Mold starts to close	Cycle time and integration limit (resets piezoelectric adapters and UMPI)
Second Stage	Any	Switch to pressure (hold)	End of hold (end injection)	Creates internal injection forward and pack

Table 5: Machine sequence timing details

Lynx™ 0-10V/4-20mA Input Module - IA1-D-VI

The IA1-D-VI is a DIN rail-mountable 0-10V/4-20mA Input Module designed to be used with the eDART System™. This module can be used to monitor outputs from load cells, output cards and sensors that output 0-10V or 4-20mA signals. These signals may represent injection pressure, screw position, temperatures or other molding parameters.



Always power down before working on any equipment.

The Input Module is designed to be mounted on standard 35mm DIN rail, often found in machine panels. Once mounted, the J1 and J2 connectors allow the unit to be interfaced with other Lynx™ DIN rail modules and the eDART System™. Each machine panel installation of one or more DIN rail modules requires either a ID7-D-SEQ or a DIN/LX-D to terminate the DIN rail module chain. Contact your RJG, Inc. representative for details or more information.

The Input Module interfaces the voltage source to be monitored using two terminals (see Figure 5 and Table 6). For current mode setup, see Figure 7.

The eDART™ software configures the Input Module information, and requires user input for initial setup.

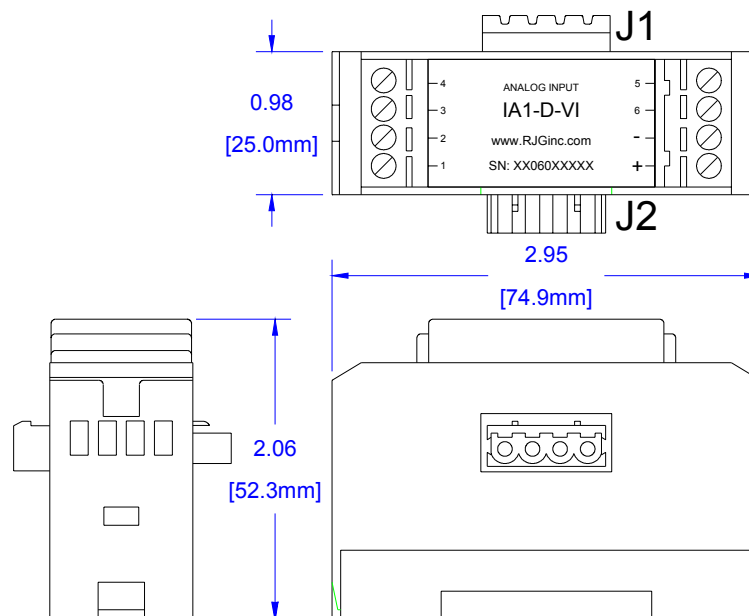


Figure 5: Lynx IA1-D-VI Input Module dimensions

Technical Specifications	
Power (supplied by eDART)	12VDC
Current Draw	95mA
Input Impedance	10 MOhms
Voltage Accuracy	0.1%
Current Accuracy	0.1%
Current Sensing Resistance	470 Ohms

Table 6: Analog Input Module technical specifications



Always power down before working on any equipment.

Connection	Function	Wire Color
Terminal 1	N/A	-
Terminal 2	N/A	-
Terminal 3	Jumper 1	-
Terminal 4	Jumper 1	-
Terminal 5	Jumper 2	-
Terminal 6	Jumper 2	-
Terminal 7	OV	Black
Terminal 8	0-10V	Red
J1, J2	Communications	-

Table 7: Analog Input Module terminal connections

IA1-D-VI Installation Instructions

The input module can be interfaced with a machine output card, as shown in Figure 6. Tie the shield wire on the machine to the cable shield.

You can configure an input module to take in a 4-20mA signal by installing the two small wire jumpers shown in Figure 7 into terminals 3-4 and 5-6. The Input Module will sense the jumpers and scale the output accordingly.

Always power down before working on any equipment.

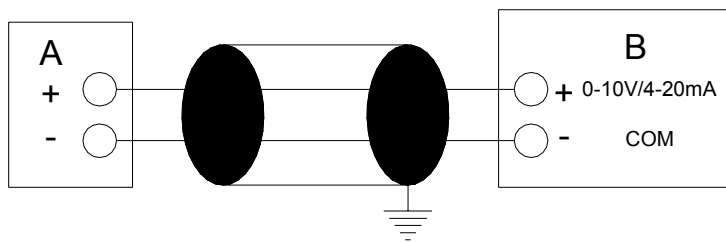


Figure 6: Analog Input Module to machine output card wiring

A	Machine Analog Output Card
B	IA1-D-VI Analog Input Module

Table 8: Figure Labels

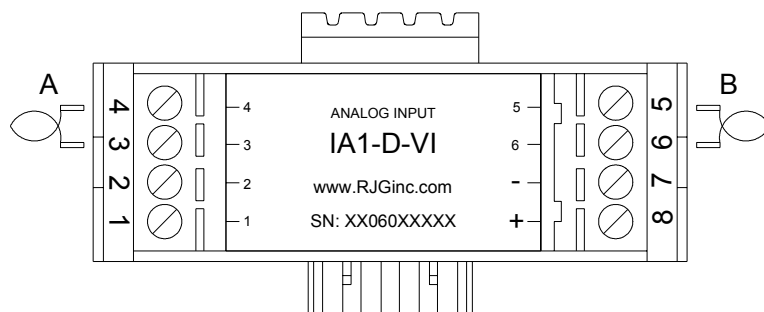


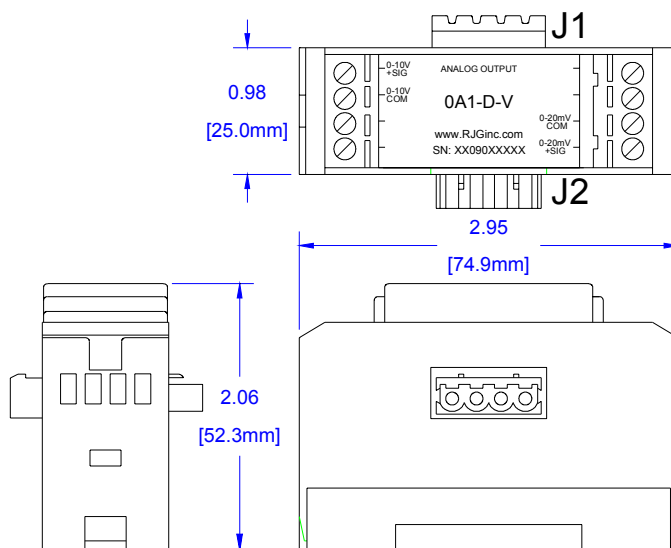
Figure 7: Wire jumpers (A & B) installed on Input Module

Lynx™ 0-10V-20mV Output Module OA1-D-V

The OA1-D-V is a DIN rail mountable 0-10V/0-20mV Output Module designed to used with the eDART System™. This module can be used to output an analog signal representing injection pressure, screw position, or other molding parameters.

The Output Module is designed to be mounted on standard 35mm DIN rail often found in machine panels. Once mounted, the J1 and J2 connectors allow the unit to be interfaced with other Lynx DIN rail modules and the eDART System™. Each machine panel installation of one or more DIN rail modules requires either a ID7-D-SEQ or a DIN/LX-D to terminate the DIN rail module chain. Contact RJG for details.

The Output Module interfaces to the machine using four terminals (see the figure and table below).





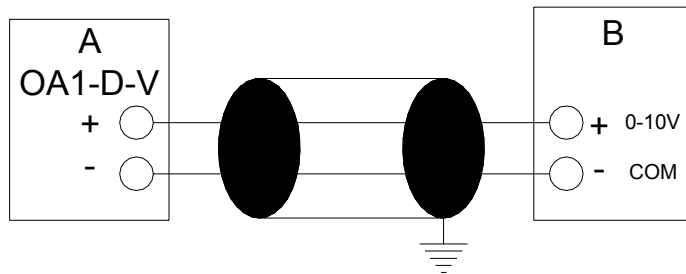
All configuring for the Output Module is accomplished within the eDART™ software which will require user input for initial setup.

Connection	Function	Wire Color
Terminal 1	N/A	-
Terminal 2	N/A	-
Terminal 3	0-10V COM	Black
Terminal 4	0-10V +SIG	Red
Terminal 5	N/A	-
Terminal 6	N/A	-
Terminal 7	0-20mV COM	Black
Terminal 8	0-20mV +SIG	Red
J1, J2	Communications	-

Technical Specifications	
Power (supplied by eDART™)	12VDC
Current Draw	90mA
0-10V Output Resistance	175KOhms
0-20V _m V Output Resistance	348Ohms
Voltage Output Accuracy	.5%

OA1-D-V Installation Instructions

The Output Module can be interfaced with a machine input card as shown in the figure below. Tie the shield wire on the machine to the cable shield.



A	OA1-D-VI Analog Output Module
B	Machine Analog Input Card

Table 9: Figure Labels



Always power down before working on any equipment.

Lynx™ Dual Relay Output Module - OR2-D

The OR2-D is a DIN rail mountable dual contact closure output module designed to be used with the eDART System™. The Output Module's two dry contact outputs can be configured to implement part containment or transfer a molding machine.

The Output Module is designed to be mounted on standard 35mm DIN rail often found in machine panels. Once mounted, the J1 and J2 connectors allow the unit to be interfaced with other Lynx™ DIN rail modules and the eDART System™. Each machine panel installation of one or more DIN rail modules requires either an ID7-D-SEQ or a DIN/LX-D to terminate the DIN rail module chain.

Each of the new outputs in the OR2-D has a normally open and normally closed set of contacts and an indicator light to show when the output is energized. See Figure 8 and Table 10 for more information.

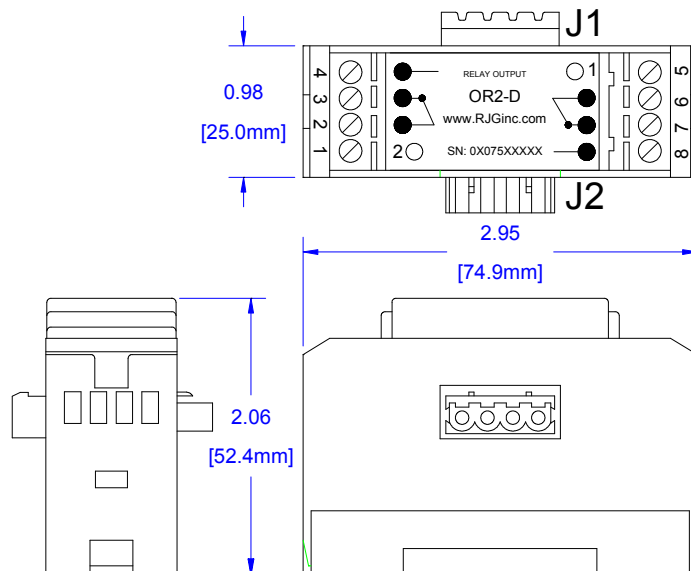


Figure 8: Lynx™ Dual Relay Output Module



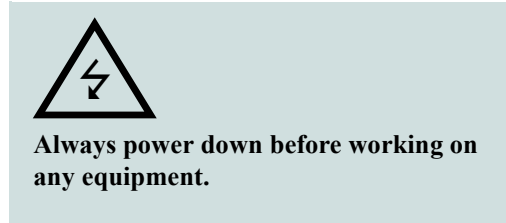
Always disconnect the power before working on this or any electrical equipment.



When using an RJG cavity pressure transfer control input, it is important to ensure the backup setpoints for time, position or pressure on the machine are used. In the event the cavity pressure transfer control input is not seen by the machine controller, the backup setpoints will prevent damaging the tool. Care should also be taken when interfacing to part containment equipment to ensure adequate safety backups are in place.

Connection	Function	Wire Color
Terminal 1	N/A	-
Terminal 2	N.C. CR2	-
Terminal 3	COM CR2	Black
Terminal 4	N.O. CR2	Brown
Terminal 5	N/A	-
Terminal 6	N.C. CR1	-
Terminal 7	COM CR1	Black
Terminal 8	N.O.CR1	Green
J1, J2	Communications	-

Table 10: Lynx™ Dual Relay Output Module terminal connections



Technical Specifications	
Power (supplied by eDART)	12 VDC
Current Draw	50mA
Contact Rating	1A 30V DC

Table 11: Lynx™ Dual Relay Output Module technical specifications

OR2-D Installation Instructions

Part Containment

The eDART™ software allows one or both of the OR2-D contacts (CR1 and CR2 respectively) to be set up for part containment. The user can define the contacts as a ‘Good Part’ output or a ‘Reject Part’ output, depending on the application.

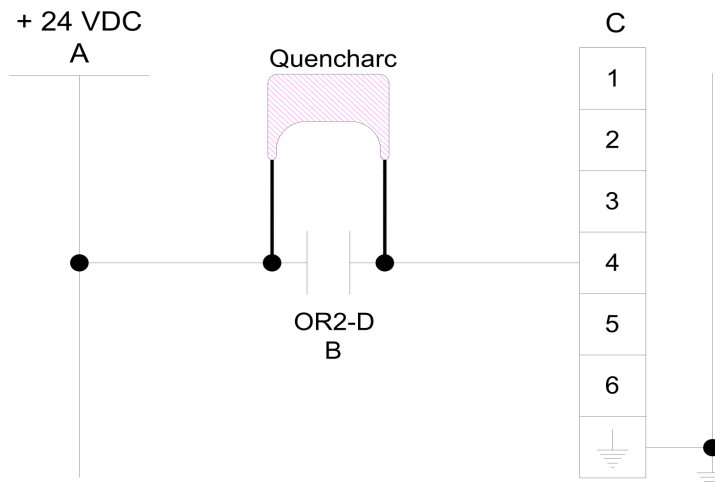
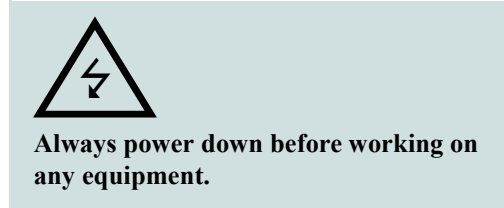


Figure 10: Lynx™ Dual Relay Output Module Robot Interface

A	Machine Source
B	Normally Open Contact
C	Robot Input Card

Table 12: Figure Labels

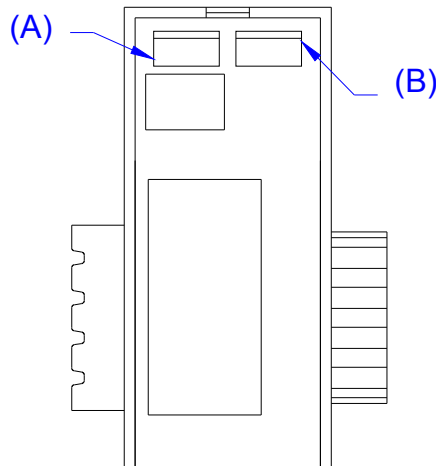
Machine Transfer

Transfer a molding machine by pressure, screw position or timer backup which will allow the implementation of RJG, Inc.’s Decoupled Molding process. In this configuration one side of the OR2-D contacts is defined as “Velocity to Pressure” in the application. Therefore, the OR2-D output will transfer the molding machine from the velocity stage to the pressure stage.

The OR2-D can be interfaced with a machine input card as shown in Figure 10.

Contact Fuses

Each set of relay contacts has a spare fuse. By removing the bottom of the module with a screw driver, the user can replace a blown relay fuse. Figure 12 shows the location of the relay and spare fuses*.



Always power down before working on any equipment.

Figure 12: Lynx™ Dual Relay Output Replaceable Fuse Location

A	Relay Fuse
B	Spare Fuse

Table 13: Figure Labels

* Wickmann part #3961200044