

PRT-RDM2-DIN-485

Protege DIN Rail 2 Door Reader Expander

Installation Manual

Protege®

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Last Published: 11-Jun-20 11:08 AM

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Introduction

The Protege DIN Rail 2 Door Reader Expander extends the number of card reader inputs on the system by 2 or 4 when using multiple reader mode, the number of inputs by 8 (four inputs used for door monitoring and control and up to eight can be used for extended functionality) and the number of outputs by 8 (includes 2 relay lock control outputs).

Flexible module network architecture allows large numbers of modules to be connected to the RS-485 module network. Up to 250 modules can be connected to the Protege system in any combination to the network, over a distance of up to 900M (3000ft). Further span can be achieved with the use of a network repeater module.

The current features of the Reader Expander include:

- 4 Wiegand Reader mode for 2 Entry/Exit doors per Reader Expander
- 4 RS-485 Reader mode for 2 Entry/Exit doors per Reader Expander (485 models only)
- RS-485 reader port connections support configuration for OSDP protocol
- Secure encrypted RS-485 module communications
- 8 inputs
- 2 lock FORM C Relay outputs
- 6 open collector outputs (Reader Control outputs)
- Smart reader missing/tamper monitoring
- Offline functions including All Users, First 10 Users plus 150 Card Cache and No Users
- Online and remote upgradeable firmware
- Industry-standard DIN Rail mounting

Installation Requirements

This equipment is to be installed in accordance with:

- The product installation instructions
- UL 681 - Installation and Classification of Burglar and Holdup Systems
- UL 827 - Central-Station Alarm Services
- CAN/ULC-S301, Central and Monitoring Station Burglar Alarm Systems
- CAN/ULC-S302, Installation and Classification of Burglar Alarm Systems for Financial and Commercial Premises, Safes and Vaults
- CAN/ULC-S561, Installation and Services for Fire Signal Receiving Centres and Systems
- The National Electrical Code, ANSI/NFPA 70
- The Canadian Electrical Code, Part I, CSA C22.1
- AS/NZS 2201.1 Intruder alarm systems
- The Local Authority Having Jurisdiction (AHJ)

Grounding Requirements

An effectively grounded product is one that is intentionally connected to earth ground through a ground connection or connections of sufficiently low impedance and having sufficient current-carrying capacity to prevent elevated voltages which may result in undue hazard to connected equipment or to persons.

Grounding of the Protege system is done for three basic reasons:

1. Safety
2. Component protection
3. Noise reduction

Safety Grounding

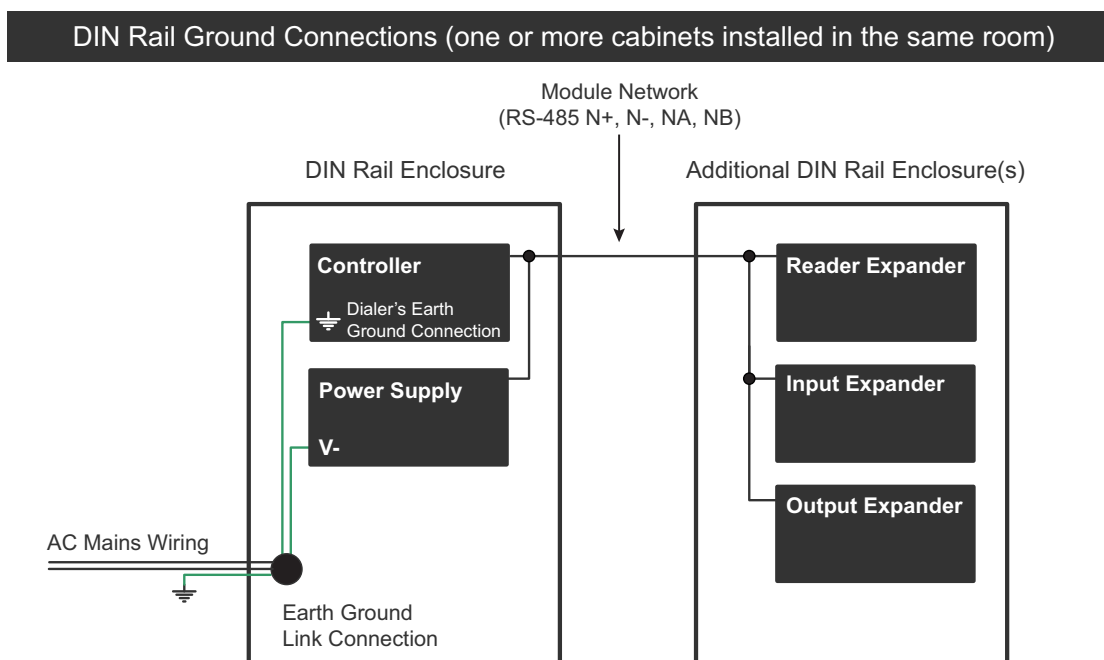
The object of safety grounding is to ensure that all metalwork is at the same ground (or earth) potential. Impedance between the Protege system and the building scheme ground must conform to the requirements of national and local industrial safety regulations or electrical codes. These will vary based on country, type of distribution system, and other factors. The integrity of all ground connections should be checked periodically.

General safety dictates that all metal parts are connected to earth with separate copper wire or wires of the appropriate gauge.

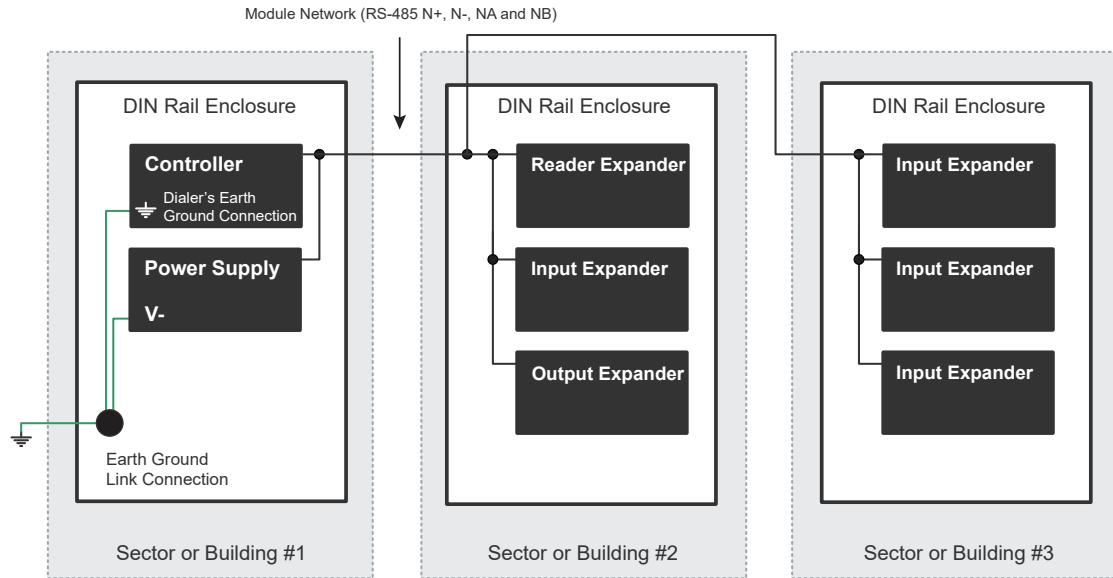
Earth Ground Connection

The DIN Rail enclosure and the DIN Rail modules must be grounded to a suitable single-point earth ground connection in the installation. A minimum 14AWG solid copper wire (or thicker, in accordance to local authorities) shall be used from the Protege system's earth connection points.

The DIN Rail enclosure includes an earth ground single-point link connection via the metallic enclosure. This single-point link is the Protege system's earth ground. All modules that have earth ground connections and that are installed in the same enclosure shall be connected to this single point. A single-point earth ground connection avoids the creation of ground loops in the system and provides a single reference point to earth ground.



DIN Rail Ground Connections (multiple cabinets in different rooms, sectors, or buildings)



Note that the DIN Rail enclosure earth terminal is connected to the power supply V- terminal.

There must be only **one** single earth grounding point per system.

Mounting

Protege DIN Rail modules are designed to mount on standard DIN Rail either in dedicated DIN cabinets or on generic DIN Rail mounting strip.

When installing a DIN Rail module, ensure that there is adequate clearance around all sides of the device and that air flow to the vents of the unit is not restricted. It is recommended that you install the module in a location that will facilitate easy access for wiring. It is also recommended that the module is installed in an electrical room, communication equipment room, closet or in an accessible area of the ceiling.

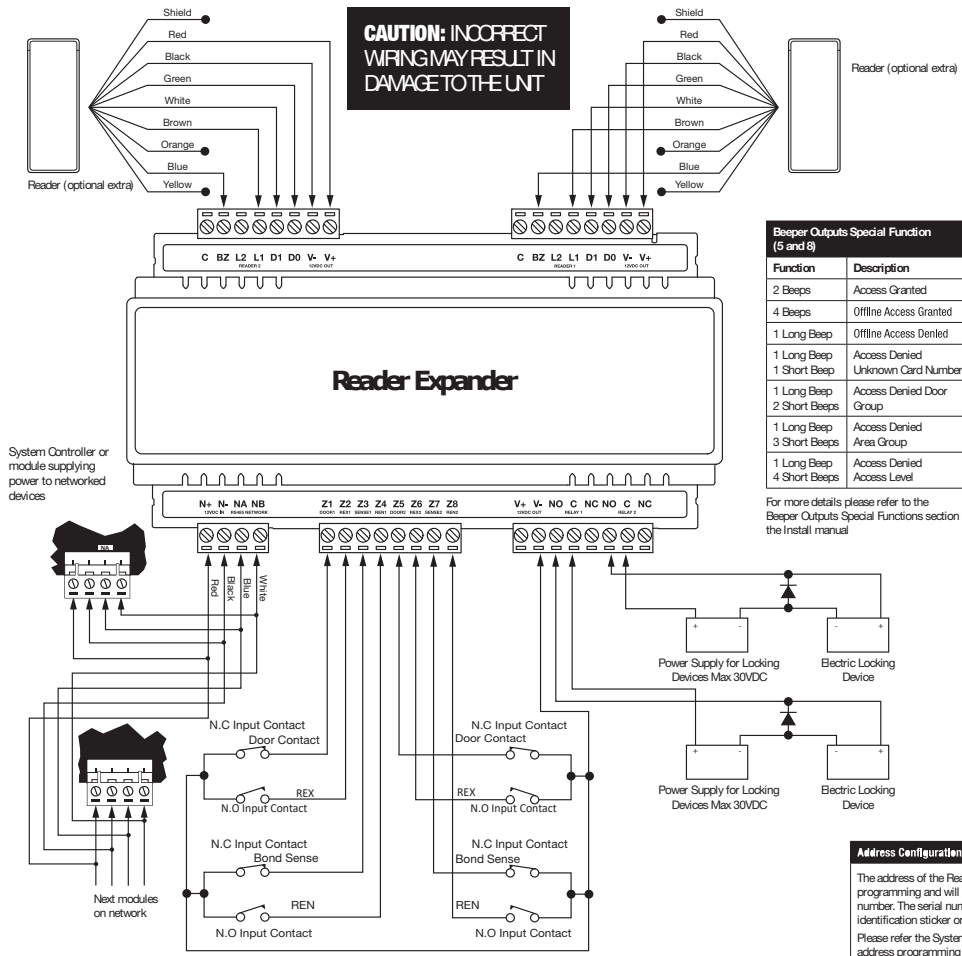
1. Position the DIN Rail module in the correct orientation, with the writing on the face the right way up.
2. Hook the mounting tabs (opposite the tab clip) under the edge of the DIN rail.
3. Push the DIN Rail module against the mount until the tab clips over the rail.

Removal

A Protege DIN Rail module can be removed from the DIN Rail mount using the following steps:

1. Insert a flat blade screwdriver into the hole in the module tab clip.
2. Lever the tab outwards and rotate the unit off the DIN Rail mount.

Wiring Diagram



Beeper Outputs Special Function (5 and 8)	
Function	Description
2 Beeps	Access Granted
4 Beeps	Offline Access Granted
1 Long Beep	Offline Access Denied
1 Long Beep 1 Short Beep	Access Denied Unknown Card Number
1 Long Beep 2 Short Beeps	Access Denied Door Group
1 Long Beep 3 Short Beeps	Access Denied Area Group
1 Long Beep 4 Short Beeps	Access Denied Access Level

For more details please refer to the Beeper Outputs Special Functions section in the Install manual

Address Configuration
The address of the Reader Expander is configured via programming and will require reference to the module serial number. The serial number can be found on the identification sticker on the side of the module. Please refer the System Controller Installation Manual for address programming details.

Typical Input Circuits

EOL Resistor Input Configuration		
Value 1	Value 2	Monitored Status
No Resistor	No Resistor	Open, Closed
1k	1k	Open, Closed, Tamper, Short
2k	6k8	Open, Closed, Tamper, Short
10k	10k	Open, Closed, Tamper, Short
2k	2k	Open, Closed, Tamper, Short
4k7	2k	Open, Closed, Tamper, Short
4k7	4k7	Open, Closed, Tamper, Short

Wiring
INPUT WIRING: maximum distance of 300m (1000ft) from the Reader Expander when using 22 AWG.
AUX WIRING: Min 22AWG Max 16AWG. (Depends on length and Current consumption). For wire/cable size, a maximum of 5% voltage drop at the terminals of the powered device has to be observed.
MODULE NETWORK WIRING: Recommended Belden 9842 or equivalent, (24AWG twisted pair with characteristic impedance of 120ohm or CAT5e / CAT6 are also supported for Data Transmission when using ground in the same cable. **Do not use extra wires to power devices.**) max 900m (3000ft).

LED		Description	
Power	Green	Correct module input voltage applied.	
	Off	Low or no module input voltage applied.	
Status	Slow Green flashing	Module successfully registered with controller.	
	Fast Green flashing	Module attempting registration with controller.	
	Single Red flash	Module communication activity.	
Fault	Slow Red flashing	Module is in boot mode awaiting firmware update.	
	Red	Module is in error state. Error code is displayed by flashing the Red Status indicator ON and OFF rapidly with a delay of 1.5 second between each display cycle.	
		Number of Flashes	Error Description
		1	Unknown Error Code
		2	Firmware Version
		3	Address Too High
		4	Address in Use
5		Controller Secured	
6	Serial Number Fault		
7	Locked Device		
For further details, please refer to the Error Code Display section in the Installation Manual.			
Reader 1/2	Short Green flash	Data received but format is incorrect.	
Relay 1/2	Long Green flash	Correctly formatted data received.	
	Red	Relay is closed.	
Input 1-8	Off	Relay is open.	
	Off	Input is not programmed.	
	Red	Input is in the OPEN state.	
	Green	Input is in the CLOSED state.	
Input 1-8	Red flashing	Input is in the TAMPERED state.	
	Green flashing	Input is in the SHORTED state.	

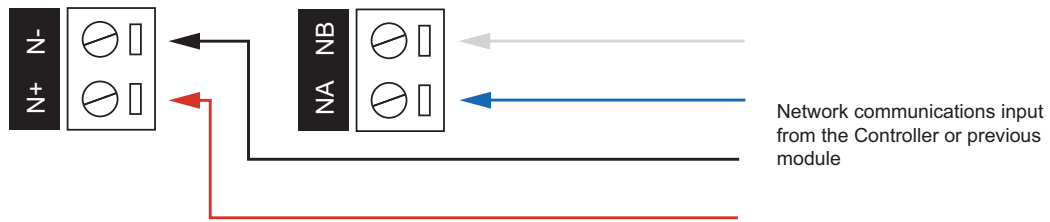
Outputs

Output Number	Description
RDxxx03	LED 1 (Green) Reader 1
RDxxx04	LED 2 (Red) Reader 1
RDxxx05	BEEPER Reader 1
RDxxx06	LED 1 (Green) Reader 2
RDxxx07	LED 2 (Red) Reader 2
RDxxx08	BEEPER Reader 2

Replace 'xxx' with the appropriate address of the Reader Expander that you are programming.
Example Open Collector Output Connection (LED)

DC Power & Encrypted Module Network

The Expander incorporates encrypted RS-485 communications technology, and both module and network power are supplied by the N+ and N- terminals.



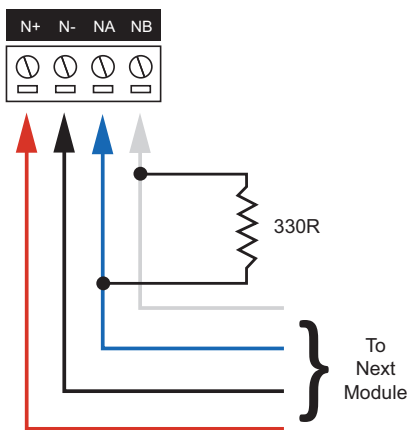
Connection of the communications and DC supply should be performed according to the diagram shown above. It is important that the N+ Network Communications Power be 12VDC supplied from an independent battery backed power supply unit capable of supplying the required voltage to all devices on the RS-485 network.

Warning:

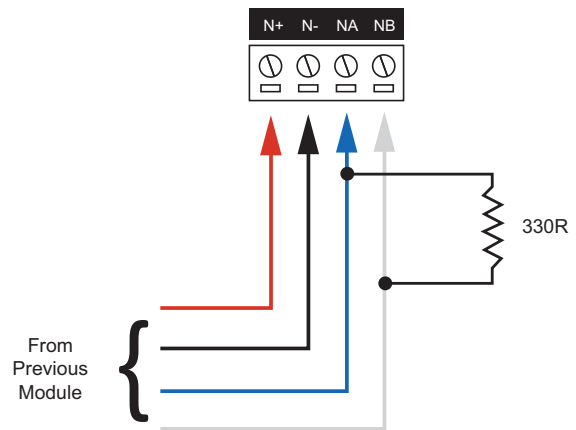
- The 12V N+ and N- Communication input must be supplied from only ONE point. Connections from more than one 12V supply may cause failure or damage to the unit or the device supplying network power.
- The 330 Ohm EOL (End of Line) resistor provided in the accessory bag **MUST** be inserted between the NA and NB terminals of the FIRST and LAST modules on the RS-485 network. These are the modules physically located at the ends of the RS-485 network cabling.

End of Line Resistors:

First Module on RS-485 Network



Last Module on RS-485 Network



Door Access Control

The Reader Expander provides access control functionality onboard without the requirement for additional hardware. The Reader Expander allows the connection of two Wiegand devices to control two doors (entry or exit only), or it can be configured in multiplex mode to allow four Wiegand devices controlling two doors, giving the flexibility of entry and exit readers. Alternatively, the two reader ports can be independently configured to connect RS-485-based readers.

The recommended cable types for RS-485 are:

- Belden 9842 or equivalent
- 24 AWG twisted pair with characteristic impedance of 120ohm

The recommended cable types for Wiegand are:

- 22 AWG alpha 5196, 5198, 18 AWG alpha 5386, 5388

Important:

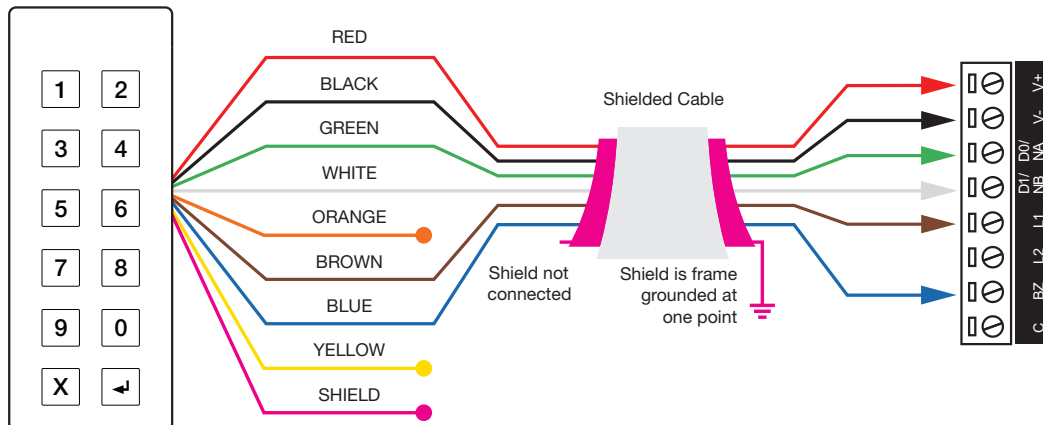
- The card reader must be connected to the module port using a shielded cable.
- Do not connect the shield to an AUX-, 0V or V- connection on the module.
- Do not join the shield and black wires at the reading device.
- Do not connect the shield to any shield used for isolated communication.
- The shield connection must only be connected at one end of the cable in the metallic enclosure (frame grounded).

Always refer to the card reader manufacturer for detailed installation guidelines.

Wiegand Reader Connection

The Reader Expander allows the connection of 2 magnetic clock and data reading devices or 4 Wiegand reading devices and the ability to control 2 doors (entry or exit only) or 1 door (entry and exit). The following diagrams show the connection of standard Wiegand Reader with the Reader Expander controlling an access door and entry/exit door.

The beeper output on the Reader Expander provides diagnostic information to the end user and installer when access is denied or the unit is operating offline. Refer to the Special Beeper Operation table for more details (see page 20).

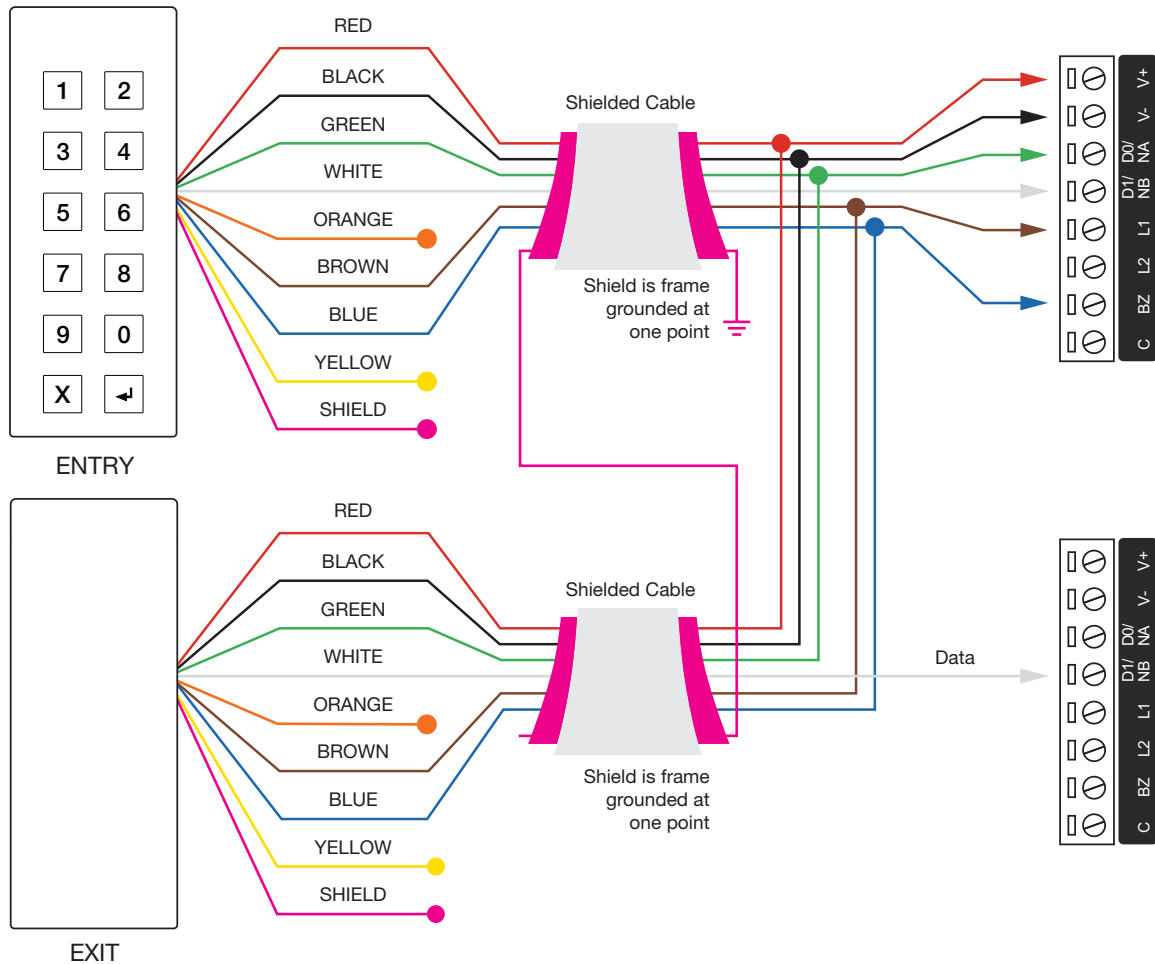


Multiple Wiegand Reader Connection

Multiple reader mode allows the connection of 4 Wiegand reading devices controlling two doors each with entry/exit readers.

In multiple reader mode, the secondary reader has all connections wired to the same port as the primary card reader with the DATA 1 connection wired to the opposite reader connection DATA 1 input.

The reader that is multiplexed in to the alternate reader port will operate as the exit reader and the normal reader connection shall be programmed to operate as the Entry Reader.



RS-485 Reader Locations

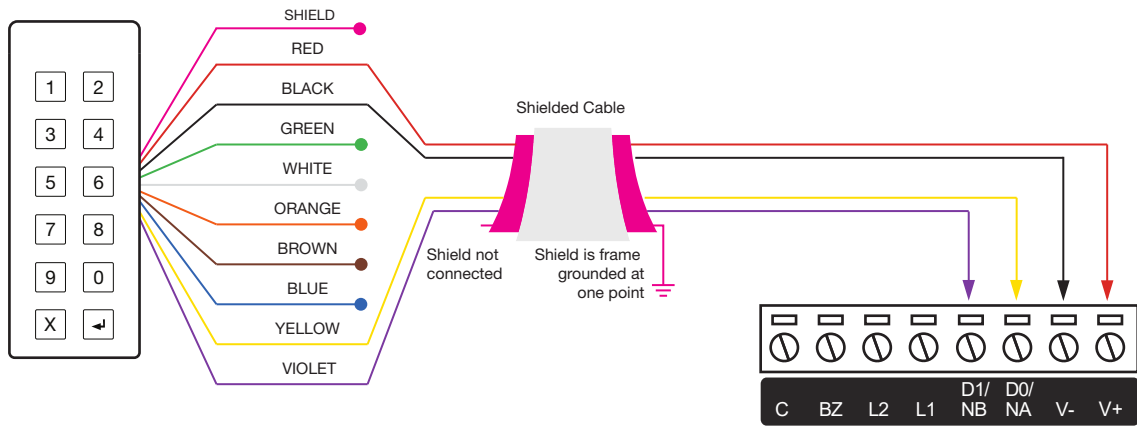
As two RS-485 readers can be connected to the same RS-485 reader port, the configuration of the **green** and **orange** wires is used to uniquely identify the reader and determine which is the entry reader, and which is the exit reader.

Location	Configuration
Entry	Green and orange wires not connected.
Exit	Green and orange wires connected together.

RS-485 Reader Connection (Entry Only)

Applies to RS-485 models only.

The following diagram shows the connection of a single RS-485 Reader connected in entry only mode.

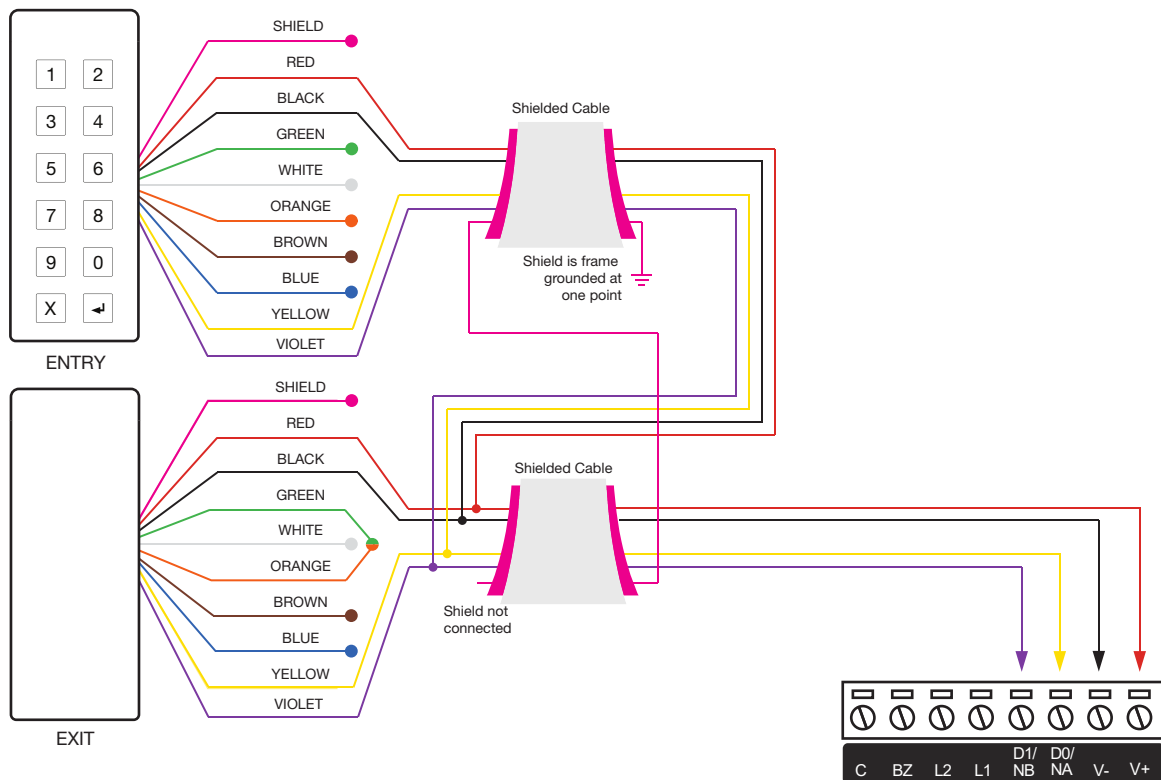


When the green and orange wires are not connected together, the reader defaults to an entry reader.

RS-485 Reader Connection (Entry/Exit)

Applies to RS-485 models only.

The following diagram shows the connection of two RS-485 Readers connected to provide an entry/exit configuration.



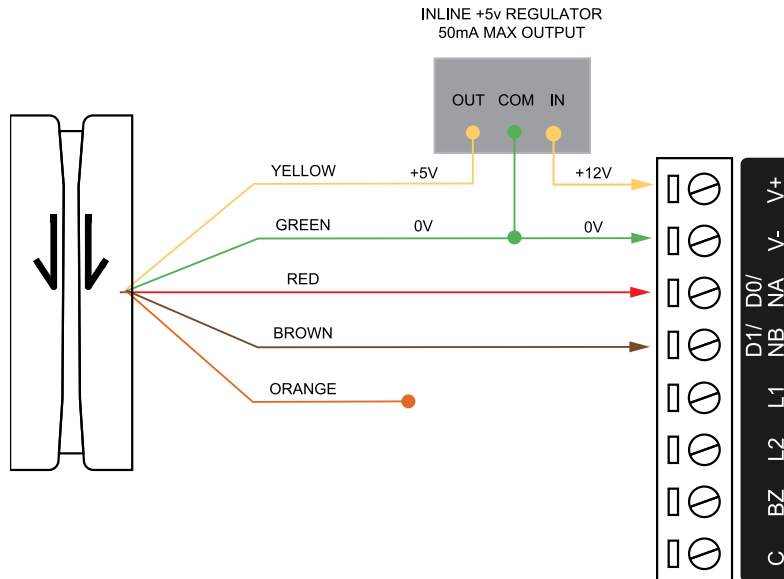
The exit reader has the **green** and **orange** wires connected together.

A 330 Ohm EOL (End of Line) resistor MAY be required to be inserted between the NA and NB terminals of the reader and a second 330 Ohm EOL resistor must then be inserted between the source NA and NB terminals at the other end of the wiring.

Magnetic Reader Connection

The Reader Expander allows the connection of standard magnetic track 2 format cards and provision is made in the software for a large number of formats. Formats include BIN number for ATM access control and first 4, 5 and 6 card numbers.

Magnetic Card Reader Interface:

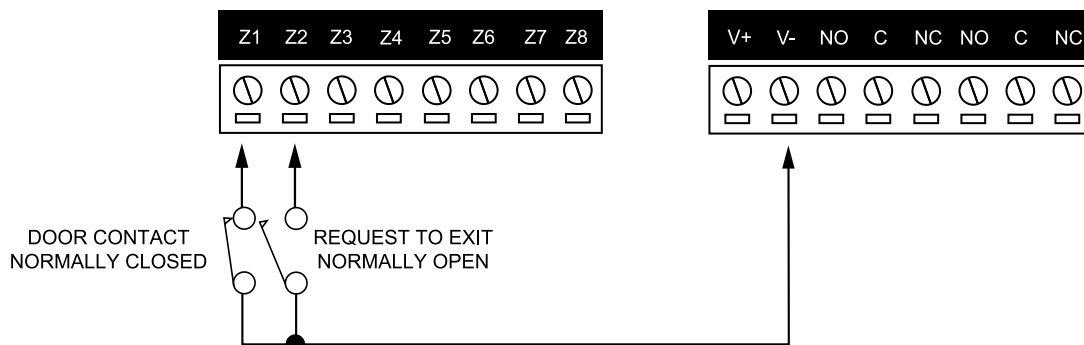


Magnetic card readers are typically operated by 5 volts. Before connecting the magnetic card reader to the Reader Expander, ensure that the supply voltage is correct and if required insert the inline 5 Volt regulator as shown in the diagram above.

Door Contact Connection

The module allows the connection of up to 4 contacts for monitoring and controlling access control doors. Each input can be used for either the door function that is automatically assigned or as a normal input on the system. The following example shows the connection of a normally closed door position monitoring contact to monitor the open, closed, forced and alarm conditions of the door.

Standard Door Contact Inputs:

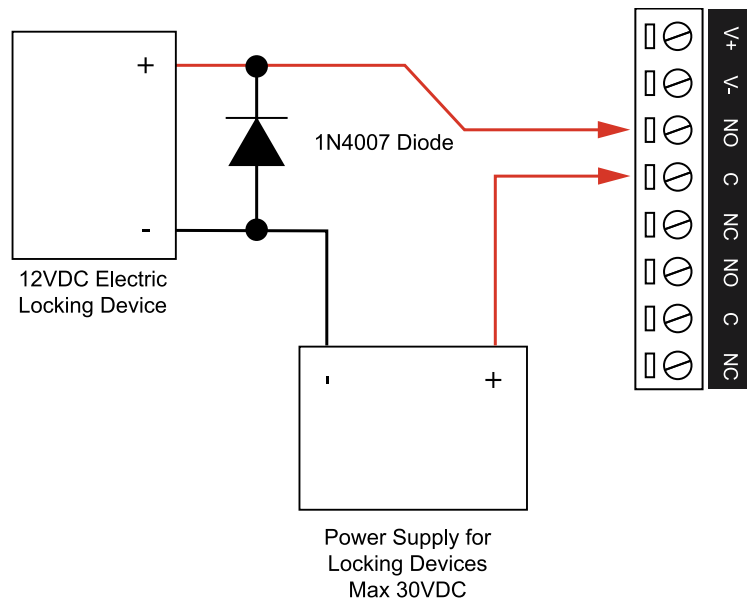


When connected the REX input can be programmed to operate regardless of the door contact state. The REX input can also be programmed to recycle the door alarm time to prevent nuisance alarms when the door is held open to permit longer entry.

Door Lock Connection

The Reader Expander provides two lock output relays that can be used to switch electric locks.

Door Lock Outputs:



When using a door with an entry and exit reader, the LOCK output should be connected to LOCK1, and enable the swap lock option for the second reader input to allow the reader LEDs to display the correct status.

The 1N4007 diode shown in the above diagram is supplied with the Reader Expander and **MUST** be installed at the electric strike terminals.

Inputs

The Reader Expander can monitor the state of up to 8 inputs. These inputs can be connected to a variety of EOL monitored or dry contact devices such as magnetic switches, PIR motion detectors and temperature thermostats. Devices connected to the inputs can be installed to a maximum distance of 300m (1000ft) from the module when using 22 AWG wire. Each input may be individually configured for normally opened and normally closed configurations with or without EOL resistors for tamper and short condition monitoring.

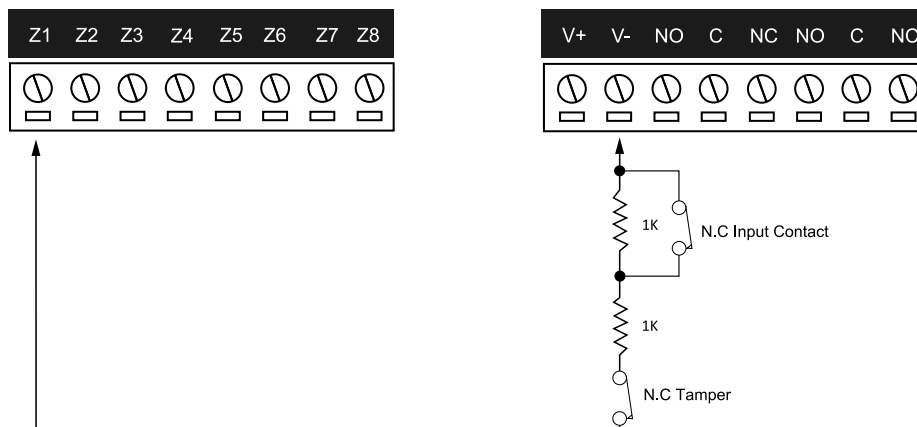


- Magnetic contacts shall be listed to UL 634 to comply with UL installation standards and ULC/ORD-C634 to comply with ULC installation standards.
- Motion detectors and temperature sensors shall be listed to UL 639 to comply with UL installation standards and ULC-S306 to comply with ULC installation standards.
- The Reader Expander has been evaluated for UL 294 and CAN/ULC-S319 standalone access control.

When using an input with the EOL resistor configuration, the controller generates an alarm condition when the state of an input changes between open and closed and generates a tamper alarm condition when a wire fault (short circuit) or a cut wire (tampered) in the line occurs.

When using the EOL resistor configuration, the EOL resistor option must be enabled in the input programming so that the tamper and short states can be monitored (for details, refer to the Inputs section in the Protege Programming Reference Manual).

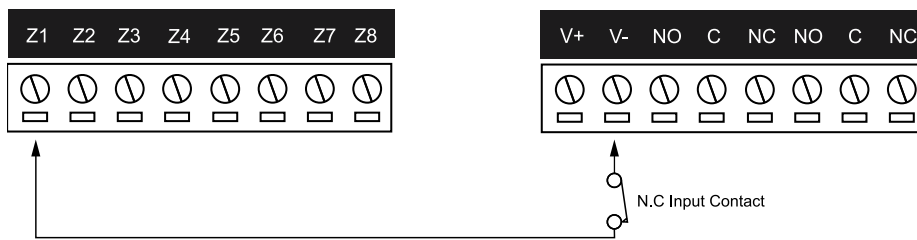
EOL Resistor Input Configuration:



Each input can use a different input configuration. To program a large number of inputs with a certain configuration, use the multiple selection feature within the Protege software.

When using the No Resistor configuration, the Controller only monitors the opened and closed state of the connected input device generating the (OPEN) Alarm and (CLOSED) Sealed conditions.

No EOL Resistor Input Configuration:



As there are no common/ground connections available on the input terminal block, the diagrams shown above all utilize the V- connection of the Lock outputs terminal block to serve as the ground connection.

Trouble Inputs

Each Reader Expander can monitor up to 16 trouble inputs used to report trouble conditions such as module communications problems.

Trouble inputs are used to monitor the module status and in most cases are not physically connected to an external input.

The following table details the trouble inputs that are configured in the system and the trouble type and group that they activate.

Input Number	Description	Type	Group
RDxxx:01-05	Reserved	None	None
RDxxx:06	Door 1 Forced	Forced Door	Access
RDxxx:07	Door 2 Forced	Forced Door	Access
RDxxx:08	Door 1 Left Open	Left Open	Access
RDxxx:09	Door 2 Left Open	Left Open	Access
RDxxx:10-11	Reserved	None	None
RDxxx:12	Reader 1 Tamper	System Tamper	System
RDxxx:13	Reader 2 Tamper	System Tamper	System
RDxxx:14	Door 1 Lockout	Attempts	Access
RDxxx:15	Door 2 Lockout	Attempts	Access
RDxxx:16	Module Offline	Module Offline	System

Replace 'xxx' with the appropriate address of the module that you are programming.

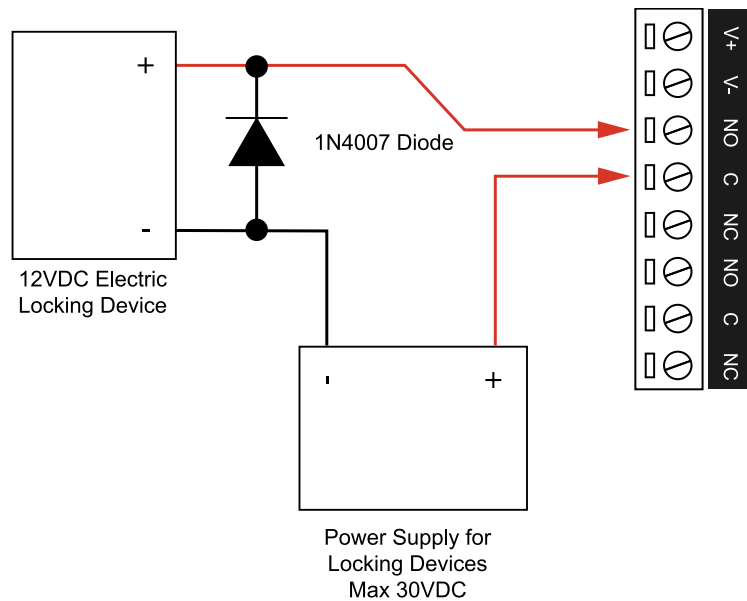
Outputs

The Reader Expander has 8 Programmable Outputs. These outputs are used to activate bell sirens, lighting circuits, door locks, relay accessory products and other automation points.

Lock Outputs (1 and 2)

Relays are provided on Outputs 1 and 2. These are used for the Lock 1 (Output 1 RD001:01) and Lock 2 (Output 2 RD001:02) functions and are used to control electric door strikes and other lock control devices. The lock relay will switch a maximum current of 7A resistive.

Lock Output 1/2 Connection (Output 1 Shown):



Standard Outputs (3 To 8)

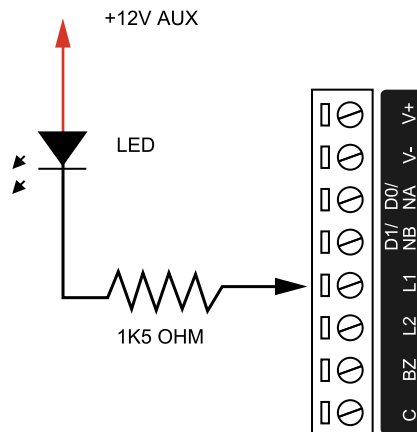
The Outputs 3, 4, 5, 6, 7 and 8 on the Reader Expander are open collector outputs and switch to a ground connection.

The Outputs have a default pre-programmed function as detailed in the following table and are used to control the indicator and audible outputs on the attached reading device. These functions may be disabled by programming the appropriate setting in the Reader Expander configuration.

Output Number	Description
RDxxx:03	LED 1 (Green) Reader 1
RDxxx:04	LED 2 (Red) Reader 1
RDxxx:05	BEEPER Reader 1
RDxxx:06	LED 1 (Green) Reader 2
RDxxx:07	LED 2 (Red) Reader 2
RDxxx:08	BEEPER Reader 2

Replace 'xxx' with the appropriate address of the module that you are programming.

Example Open Collector Output Connection (LED):



Warning: Outputs 3 to 8 can switch to a maximum capacity of 50mA each. Exceeding this amount will damage the output.

Beeper Outputs (5 and 8)

The beeper outputs 5 and 8 on the Reader Expander provide special diagnostic information when a card is presented. The following table shows the beeper modes of operation.

Function	Description
2 Beeps	Access Granted. The lock will activate and allow access to the door at which the card has been presented.
4 Beeps	Offline Access Granted. This is generated ONLY if the module is operating offline and the mode of offline operation allows access.
1 Long Beep	Offline Access Denied. This is generated ONLY if the module is operating offline and the mode of offline operation prevents this card from being allowed access.
1 Long Beep 1 Short Beep	Access Denied Card Number Not Known. The card number is not known in the system. The card that has been presented to the reader could not be matched to a valid user in the system.
1 Long Beep 2 Short Beeps	Access Denied Door Group. The user is denied access because they do not have access to the door. This error will also be generated if the door group is not set or the door group schedule is not valid.
1 Long Beep 3 Short Beeps	Access Denied Area Group. The user is denied access because they do not have access to the area that is being controlled by the door. If the area that the door is associated with is armed, and the user does not have this area in their area disarm group, they will be denied access. This also depends on the area group settings for the door.
1 Long Beep 4 Short Beeps	Access Denied Access Level. The user is denied access because they do not have a valid access level or the access level they are assigned is currently outside the programmed schedule.

Address Configuration

The module address is configured via programming and will require entry of the module serial number. The serial number can be found on the identification sticker on the product.

Refer to the Protege System Controller installation manual for address programming details.

LED Indicators

Protege DIN Rail modules feature comprehensive diagnostic indicators that can aid the installer in diagnosing faults and conditions. In some cases an indicator may have multiple meanings depending on the status indicator display at the time.

Status Indicator

The status indicator displays the module status.

State	Description
Fast Flash (green)	Module attempting registration with controller
Slow Flash (green)	Module successfully registered with controller
Flashing (red)	Module communications activity

When the fault and status indicators are flashing alternately, the module is in identification mode, enabling the installer to easily identify the module in question. Upon either a module update or the identification time period expiring, the module will return to normal operation.

Fault Indicator

The fault indicator is lit any time the module is operating in non-standard mode. If the fault indicator is flashing, the module requires a firmware update or is in firmware update mode. When the fault indicator is on, the Status indicator will flash an error code.

State	Description
Continuous slow flash (red)	Module is in boot mode awaiting firmware update
Constantly on (red)	Module is in error state and will flash an error code with the status indicator

Power Indicator

The Power indicator is lit whenever the correct module input voltage is applied across the N+ and N- terminals.

State	Description
Constantly on (green)	Correct module input voltage applied
Constantly off	Incorrect module input voltage applied

Relay Indicators

The Relay indicators show the status of the lock output relay.

State	Description
Constantly on (red)	Relay output is ON
Constantly off	Relay output is OFF

Reader 1/Reader 2 Indicators

The Reader 1 and Reader 2 indicators display the status of the data being received by the onboard readers.

State	Description
Short Flash (red)	A short FLASH (<250 Milliseconds) on the Reader 1/Reader 2 indicators will show that data was received but was not in the correct format.
Long Flash (red)	A long FLASH (>1 Second) indicates that the unit has read the data and the format was correct.

Input Indicators

Whenever an input on the module is programmed with an input type and area, the input status will be displayed on the front panel indicator corresponding to the physical input number. This allows for easy test verification of inputs without the need to view the inputs from the keypad or the Protege software.

State	Description
Constantly off	Input is not programmed
Constantly on (red)	Input is in an OPEN state
Constantly on (green)	Input is in a CLOSED state
Continuous flash (red)	Input is in a TAMPER state
Continuous flash (green)	Input is in a SHORT state

Error Code Indication

When the module attempts to register or communicate with the system controller a registration error can be generated indicating that it was not successful.

Error Code Display

The following table is only valid if the FAULT indicator is **CONSTANTLY ON** and the STATUS indicator is **FLASHING RED**.

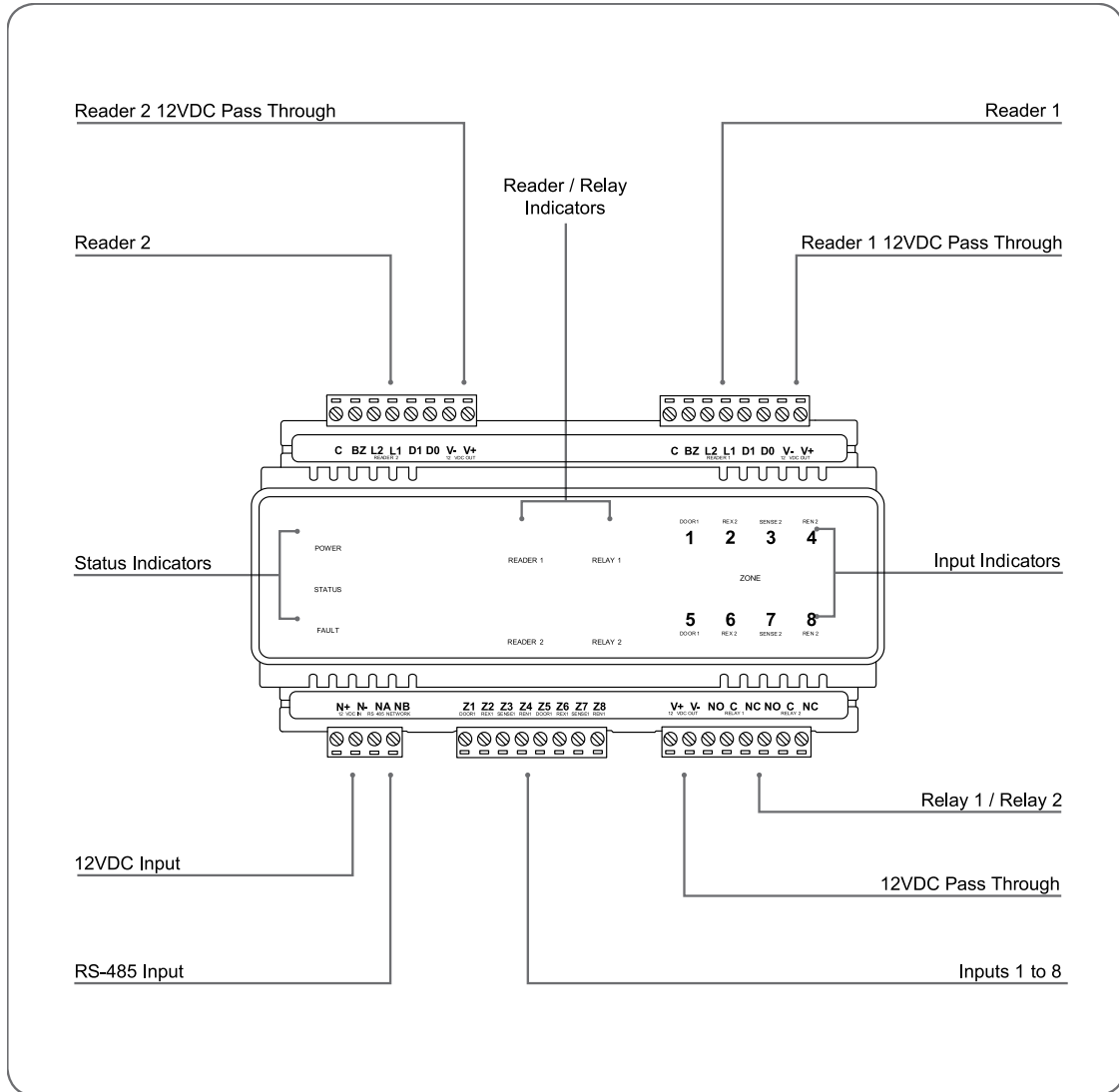
If the fault indicator is **FLASHING** the module requires a firmware update or is currently in firmware update mode.

The status indicator will **FLASH RED** with the error code number. The error code number is shown with a 250ms **ON** and **OFF** period (duty cycle) with a delay of 1.5 seconds between each display cycle.

Flash	Error Description
1	Unknown Error Code The error code returned by the system controller could not be understood by the module.
2	Firmware Version The firmware version on the module is not compatible with the system controller. To clear this error, update the module using the module update application.
3	Address Too High The module address is above the maximum number available on the system controller. To clear this error change the address to one within the range set on the system controller, restart the module by disconnecting the power.
4	Address In Use The Address is already in use by another module. To clear this error set the address to one that is not currently occupied. Use the view network status command to list the attached devices, or the network update command to refresh the registered device list.
5	Controller Secured Registration Not Allowed Controller is not accepting any module registrations. To allow module registrations use the network secure command to change the secure setting to not secured.
6	Serial Number Fault The serial number in the device is not valid. Return the unit to the distributor for replacement.
7	Locked Device The module or system controller is a locked device and cannot communicate on the network. Return the unit to the distributor for replacement.

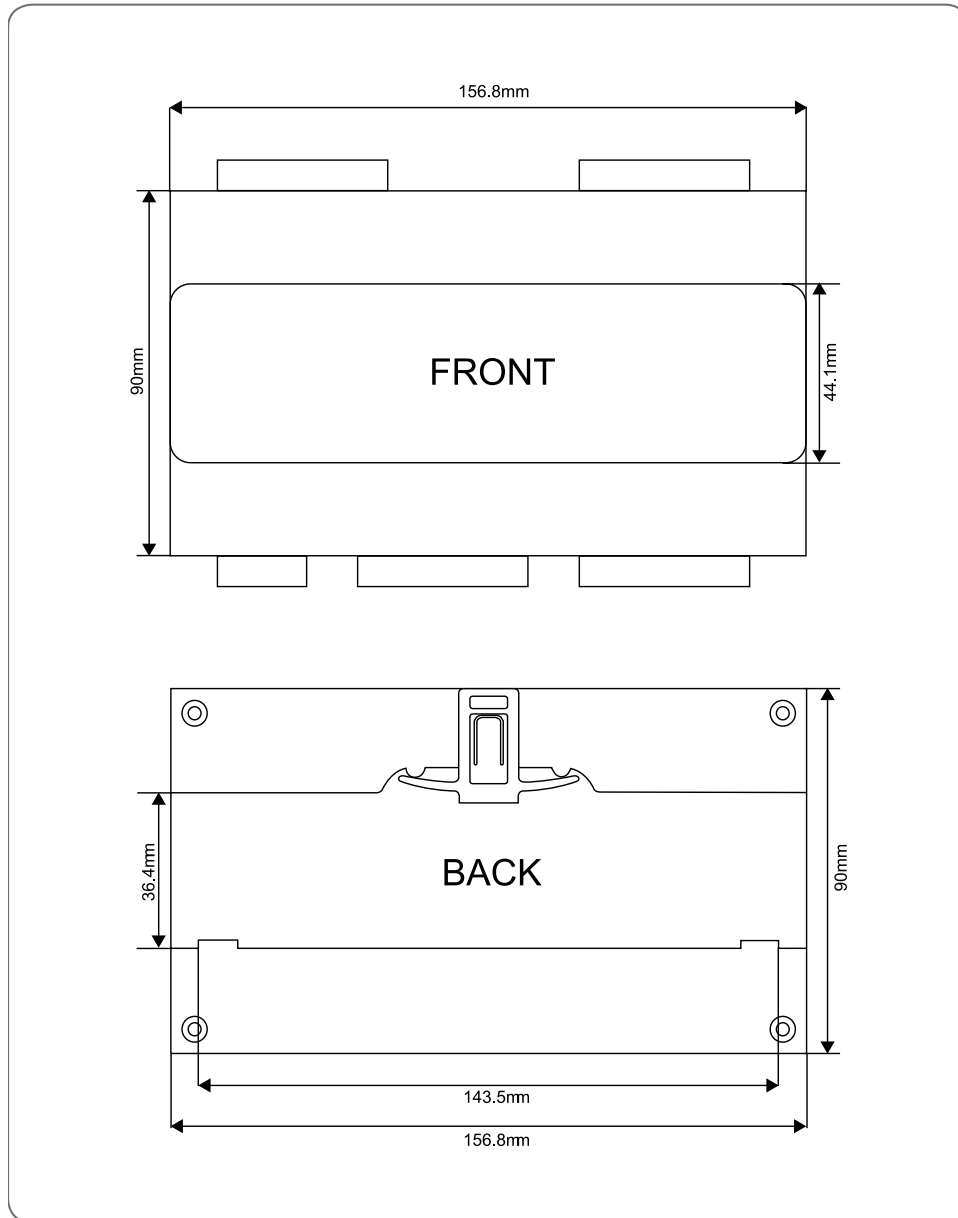
Mechanical Diagram

The diagram shown below outlines the essential details needed to help ensure the correct installation of the Reader Expander.



Mechanical Layout

The layout shown below outlines the essential details needed to help ensure the correct installation of the Reader Expander.



Technical Specifications

The following specifications are important and vital to the correct operation of this product. Failure to adhere to the specifications will result in any warranty or guarantee that was provided becoming null and void.

Ordering Information	
PRT-RDM2-DIN-485	Protege DIN Rail 2 Door Reader Expander
Power Supply	
DC Input Voltage	11-14VDC
DC Output Voltage (DC IN Pass Through)	10.83-14.0VDC 0.7A (Typical) Electronic Shutdown at 1.1A Reader 1&2 10.45-13.85VDC Pass Through share 0.7A (Typical) Electronic Shutdown at 1.1A
Operating Current	80mA (Typical)
Total Combined Current*	1.56A (Max)
Low Voltage Cutout	8.7VDC
Low Voltage Restore	10.5VDC
Communication	
RS-485	Module network
Offline Operation	
Offline Access Modes	All Users, First 10 Users plus 150 Card Cache, No Users
Readers	
Reader Configurations	2 reader ports that can be independently configured for either Wiegand (up to 1024 bits configurable) or RS-485, allowing connection of up to 4 readers providing entry/exit control for two doors **
	RS-485 reader port connections support configuration for OSDP protocol
Outputs	
Lock Outputs	2 Form C Relay Outputs - 7A N.O/N.C. at 30 VAC/DC resistive/inductive
Outputs	6 (50mA Max) Open Collector
Inputs	
Inputs	8 High Security Monitored Inputs (10ms to 1hr Input Speed Programmable)
Trouble Inputs	16
Dimensions	
Dimensions (L x W x H)	156.8 x 90 x 60mm (6.17 x 3.54 x 2.36")
Weight	426g (15.03oz)
Operating Conditions	
Operating Temperature	UL/ULC 0° to 49°C (32° to 120°F) : EU EN -10° to 55°C (14° to 131°F)
Storage Temperature	-10° to 85° C (14° to 185° F)
Humidity	0%-93% non-condensing, indoor use only (relative humidity)

Mean Time Between Failures (MTBF)	622,997 hours (calculated using RFD 2000 (UTE C 80-810) Standard)
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* The Total Combined Current refers to the current that will be drawn from the external power supply to supply the expander and any devices connected to its outputs. The Auxiliary outputs are directly connected via thermal resettable fuses to the N+ N- input terminals, and the maximum current is governed by the trip level of these fuses.

** Each reader port supports either Wiegand or RS-485 reader operation, but not both at the same time. If combining reader technologies, they must be connected on separate ports.

The ICT implementation of OSDP conforms to a subset of the OSDP functionality. For specifications and reader configuration, refer to AN-254 Configuring OSDP Readers, available from the Integrated Control Technology website.

It is important that the unit is installed in a dry cool location that is not affected by humidity. Do not locate the unit in air conditioning or a boiler room that can exceed the temperature or humidity specifications.

Integrated Control Technology continually strives to increase the performance of its products. As a result these specifications may change without notice. We recommend consulting our website (www.ict.co) for the latest documentation and product information.

New Zealand and Australia

General Product Statement

The RCM compliance label indicates that the supplier of the device asserts that it complies with all applicable standards.



European Standards

CE Statement

Conforms where applicable to European Union (EU) Low Voltage Directive (LVD) 2014/35/EU, Electromagnetic Compatibility (EMC) Directive 2014/30/EU, Radio Equipment Directive (RED) 2014/53/EU and RoHS Recast (RoHS2) Directive: 2011/65/EU + Amendment Directive (EU) 2015/863.

This equipment complies with the rules, of the Official Journal of the European Union, for governing the Self Declaration of the CE Marking for the European Union as specified in the above directive(s).



Information on Disposal for Users of Waste Electrical & Electronic Equipment

This symbol on the product(s) and / or accompanying documents means that used electrical and electronic products should not be mixed with general household waste. For proper treatment, recovery and recycling, please take this product(s) to designated collection points where it will be accepted free of charge.

Alternatively, in some countries you may be able to return your products to your local retailer upon purchase of an equivalent new product.

Disposing of this product correctly will help save valuable resources and prevent any potential negative effects on human health and the environment, which could otherwise arise from inappropriate waste handling.

Please contact your local authority for further details of your nearest designated collection point.

Penalties may be applicable for incorrect disposal of this waste, in accordance with your national legislation.

For business users in the European Union

If you wish to discard electrical and electronic equipment, please contact your dealer or supplier for further information.

Information on Disposal in other Countries outside the European Union

This symbol is only valid in the European Union. If you wish to discard this product please contact your local authorities or dealer and ask for the correct method of disposal.

EN50131 Standards

This component meets the requirements and conditions for full compliance with EN50131 series of standards for equipment classification.

EN 50131-1:2006+A2:2017, EN 50131-3:2009, EN 50131-6:2008+A1:2014, EN 50131-10:2014, EN 50136-1:2012, EN 50136-2:2013, EN 60839-11-1:2013

Security Grade 4

Environmental Class II

Equipment Class: Fixed

Readers Environmental Class: IVA, IK07

SP1 (PSTN – voice protocol)

SP2 (PSTN – digital protocol),

SP6 (LAN – Ethernet) and DP1 (LAN – Ethernet + PSTN)

Tests EMC (operational) according to EN 55032:2015

Radiated disturbance EN 55032:2015

Power frequency Magnetic field immunity tests (EN 61000-4-8)

EN50131

In order to comply with EN 50131-1 the following points should be noted:

- Ensure for Grade 3 or 4 compliant systems, the minimum PIN length is set for 6 digits.
- To comply with EN 50131-1 Engineer access must first be authorized by a user, therefore Installer codes will only be accepted when the system is unset. If additional restriction is required then Engineer access may be time limited to the first 30 seconds after the system is unset.
- Reporting delay –Violation off the entry path during the entry delay countdown will trigger a warning alarm. The warning alarm should not cause a main alarm signal and is not reported at this time. It can be signaled locally, visually and or by internal siren type. If the area is not disarmed within 30 seconds, the entry delay has expired or another instant input is violated, the main alarm will be triggered and reported.
- To comply with EN 50131-1 neither Internals Only on Part Set Input Alarm nor Internals Only on Part Set Tamper Alarm should be selected.
- To comply with EN 50131-1 Single Button Setting should not be selected.
- To comply with EN 50131-1 only one battery can be connected and monitored per system. If more capacity is required a single larger battery must be used.

Anti Masking

To comply with EN 50131-1 Grade 3 or 4 for Anti Masking, detectors with a separate or independent mask signal should be used and the mask output should be connected to another input.

I.e. Use 2 inputs per detector. One input for alarm/tamper and one input for masking.

To comply with EN 50131-1:

- Do not fit more than 10 unpowered detectors per input,
- Do not fit more than one non-latching powered detector per input,
- Do not mix unpowered detectors and non-latching powered detectors on an input.

To comply with EN 50131-1 the Entry Timer should not be programmed to more than 45 seconds.

To comply with EN 50131-1 the Bell Cut-Off Time should be programmed between 02 and 15 minutes.

EN 50131-1 requires that detector activation LEDs shall only be enabled during Walk Test. This is most conveniently achieved by using detectors with a Remote LED Disable input.

To comply with EN 50131-1, EN 60839-11 Security Grade 4 and AS/NZS2201.1 class 4&5 Vibration Detection for PreTamper Alarm, protection is provided by a DSC SS-102 Shockgard Seismic vibration sensor mounted within the system enclosure. Alarm output is provided by a pair of non-latching, N.C. (normally closed), relay contacts, opening for a minimum of 1 second on detection of an alarm connected in series with the 24Hr tamper input (TP) on the PSU (or any other system input designated/programmed as a 24Hr Tamper Alarm).

This relay is normally energized to give fail-safe operation in the event of a power loss. Indication of detection is provided by a LED situated on the front cover. The vibration sensor is fully protected from tampering by a N.C. micro switch operated by removal of the cover.

Enclosure EN-DIN-24 has been tested and certified to EN50131.

By design, the enclosures for all Integrated Control Technology products, EN-DIN-11 , EN-DIN-12 , EN-DIN-24-ATTACK and EN-DIN-31 , comply with the EN 50131 standards. Tamper protection against removal of the cover as well as removal from mounting is provided by tamper switch.

Warning: Enclosures supplied by 3rd parties may not be EN50131-compliant, and should not be claimed as such.

UL and ULC Installation Requirements

Only UL / ULC listed compatible products are intended to be connected to a UL / ULC listed control system.

UL/ULC Installation Cabinet Options

Electronic Access Control System Installations

Cabinet Model	UL/ULC Installation Listings
EN-DIN-12	UL294, UL1076, ULC-ORD-CI076-86, CAN/ULC-S319
EN-DIN-31	
EN-DIN-24	
EN-DIN-24-ATTACK	



All cabinet installations of this type must be located **inside the Protected Area**.

Not to be mounted on the exterior of a vault, safe or stockroom.

All cabinet internal covers and lids/doors must be connected to the cabinet's main ground point for electrical safety and static discharge protection.

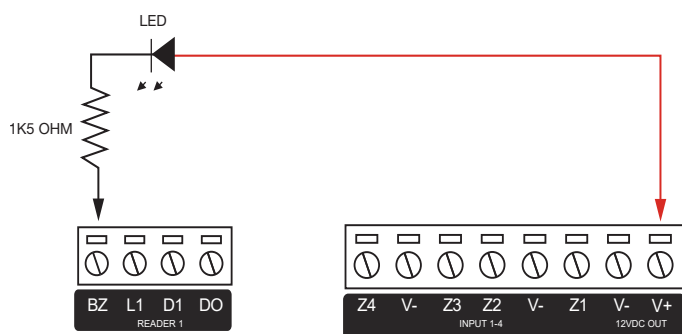
CAN/ULC-S319

- The Protege Controller and Reader Expander module are intended to be mounted within the enclosure (refer to UL/ULC Installation Cabinet Options), installed inside the protected premise, and are CAN/ULC-S319 Listed for Class I applications only
- Exit devices and wiring must be installed within the protected area
- For the Protege Controller and Reader Expander module, all RS-485 and reader terminal connections must be made using shielded grounded cable
- All readers must be connected with shielded, grounded cable
- A bell or visual indicator used as an arming acknowledgment signal must be listed to a ULC security, signaling or fire standard. If intended to be mounted outside, it must be rated for outdoor use
- Fail secure locking mechanisms shall only be installed where allowed by the local authority having jurisdiction (AHJ) and shall not impair the operation of panic hardware and emergency egress.
- If fire resistance is required for door assembly, portal locking device(s) must be evaluated to ULC-S533 and CAN/ULC-S104
- Must be installed with CAN/ULC-S319 listed portal locking device(s) for ULC installations
- If a flexible cord is used to connect to line voltage, strain relief must be provided for the cord inside the enclosure or at the knockout
- The Power Supply is not intended to be mounted on the exterior of vault, safe, or stockroom

UL294

- The Protege Controller and Reader Expander module are intended to be mounted within the enclosure (refer to UL/ULC Installation Cabinet Options), installed inside the protected premise, and are UL 294 Listed for Attack Class I applications only

- Exit devices and wiring must be installed within the protected area.
- For the Protege Controller and Reader Expander module, all RS485 and reader terminal connections must be made using shielded grounded cable.
- All readers must be connected with shielded, grounded cable.
- A bell or visual indicator used as an arming acknowledgment signal must be listed to a UL security, signaling or fire standard. If intended to be mounted outside, it must be rated for outdoor use.
- Fail secure locking mechanism shall only be installed where allowed by the local authority having jurisdiction (AHJ) and shall not impair the operation of panic hardware and emergency egress.
- If fire resistance is required for door assembly, portal locking device(s) must be evaluated to UL10B or UL10C.
- Must be installed with UL 1034 listed electronic locks for UL installations.
- AC power on shall be indicated by an external panel mount LED (Lumex SSI-LXH312GD-150) and fitted into a dedicated 4mm hole in the cabinet to provide external visibility. This shall be wired between 12V and a PGM output that is programmed to follow the AC trouble input as shown below:



- If a flexible cord is used to connect to line voltage, strain relief must be provided for the cord inside the enclosure or at the knockout.
- The Power Supply is not intended to be mounted on the exterior of vault, safe, or stockroom.

Performance Levels

	Destructive Attack	Line Security	Endurance	Standby Power
PRT-RDM2-DIN-485	Level I	Level I	Level IV	Level I

FCC Compliance Statements

FCC Rules and Regulations CFR 47, Part 15, Class A

This equipment complies with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules.

Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

NOTE: THE GRANTEE IS NOT RESPONSIBLE FOR ANY CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

Industry Canada Statement

ICES-003

This is a Class A digital device that meets all requirements of the Canadian Interference Causing Equipment Regulations.

CAN ICES-3 (A)/NMB-3 (A)

Disclaimer and Warranty

Disclaimer: Whilst every effort has been made to ensure accuracy in the representation of this product, neither Integrated Control Technology Ltd nor its employees shall be liable under any circumstances to any party in respect of decisions or actions they may make as a result of using this information. In accordance with the ICT policy of enhanced development, design and specifications are subject to change without notice.

For warranty information, see our [Standard Product Warranty](#).

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Designers & manufacturers of integrated electronic access control, security and automation products.

Designed & manufactured by Integrated Control Technology Ltd.

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