

JNIOR Series 4

A Network I/O Resource
Utilizing the JAVA™ Platform

JNIOR Series 4 with 4 Relay Output Expansion Module Version 5.0

NOTE: JNIOR JANOS 1.7 or greater required

INTEG Process Group, Inc.
2919 East Hardies Rd, First Floor
Gibsonia, PA 15044

PH (724) 933-9350
FAX (724) 443-3553

www.integpg.com

JNIORsales@integpg.com

Last updated on: January 23, 2019

TABLE OF CONTENTS

1	Overview	1
2	Viewing, Managing, Configuring and Controlling	2
2.1	Viewing	2
2.2	Relay Number Management	4
2.3	Relay Module Replacement	6
2.4	Configuring	9
2.5	Controlling	10
3	Specifications and Wiring	11

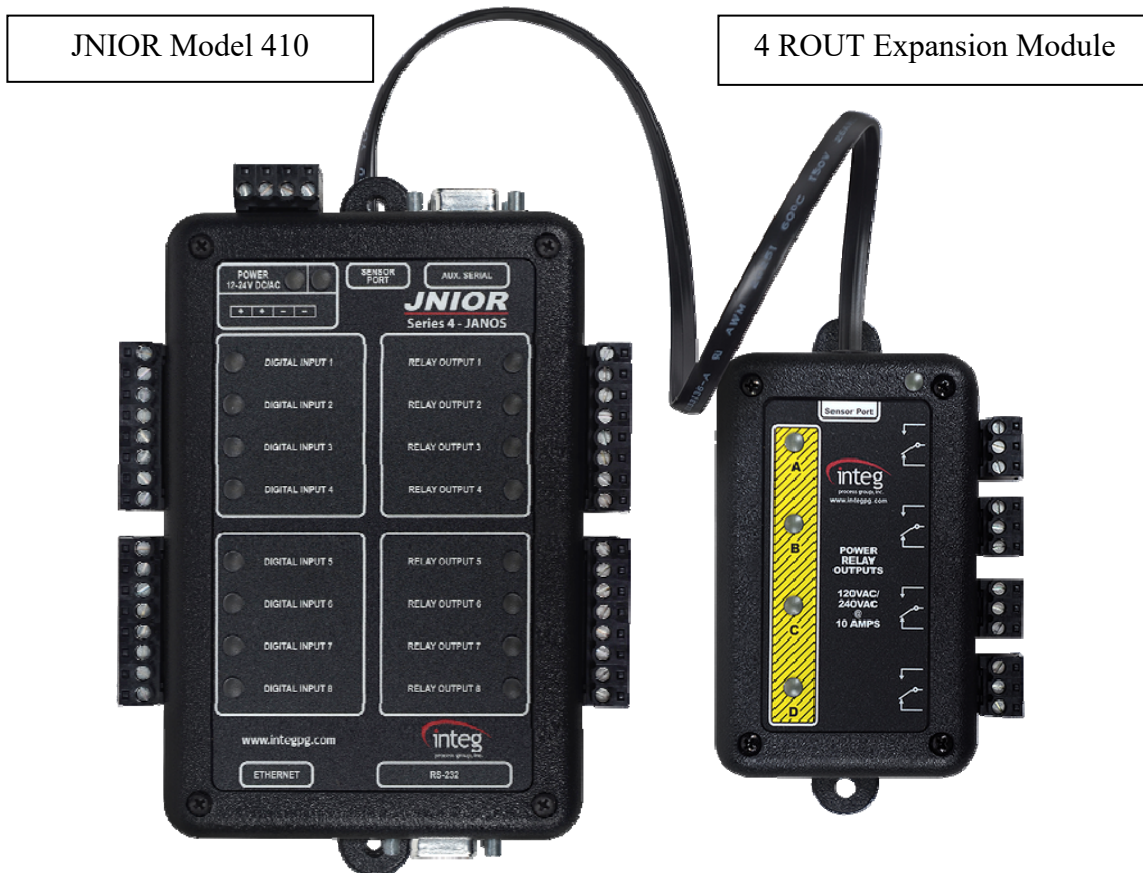
1 Overview

The JNIOR 4 Relay Output Expansion Module (4ROUT) provides an easy way to add more relays to the JNIOR. The 4ROUT adds four relays that can handle low or high-voltages (up to 240 VAC at 10 amps per relay) that integrate automatically with the JNIOR Series 4 – Models 410, 412, 414.

The expansion module is connected to the JNIOR via the supplied cable that is plugged in to the Sensor Port on each device. A JNIOR can have a total of 16 relay outputs so the JNIOR 410 can have two 4ROUTs, the JNIOR 412 one 4ROUT and the JNIOR 414 two 4ROUTs. The expansion modules are daisy-chained together.

The module can be connected to the JNIOR with power OFF or ON, but the JNIOR should still be rebooted after adding a module in case any application will use the module addressing. The 4ROUT expansion module will be automatically integrated into the various JNIOR communication methods (Web page, JNIOR Protocol and Modbus) for use by the various JNIOR applications.

Please see Section 3 of this manual for the wiring details.



2 Viewing, Managing, Configuring and Controlling

2.1 Viewing

The 4ROUT Expansion Module is viewed via the main JNOR web page. The JNOR web page allows the user to monitor, control and configure the JNOR internal and external I/O. The Expansion Modules are viewed and controlled on the External page.

Dynamic Configuration Pages (DCP) for the JNOR Series 4

The screenshot shows the JNOR web interface for device jr618080146. The 'Input/Output' tab is selected. On the left, there are two links: 'Internal' and 'External'. The 'External' link is highlighted with a red box, and a red arrow points to it with the text 'click on External to view expansion modules'. The main content area is divided into two columns: Digital Inputs and Relay Outputs. Each input/output is shown with a status indicator (OFF) and a 'Toggle' button. The status of all inputs and outputs is currently OFF. The page footer shows the date 'Wed, 23 Jan 2019 12:55:44 EST' and the version 'Dynamic Configuration Pages (DCP) v2.2'.

Input/Output	Status	Action
1 - Digital Input 1	OFF	
2 - Digital Input 2	OFF	
3 - Digital Input 3	OFF	
4 - Digital Input 4	OFF	
5 - Digital Input 5	OFF	
6 - Digital Input 6	OFF	
7 - Digital Input 7	OFF	
8 - Digital Input 8	OFF	
1 - Relay Output 1	OFF	Toggle
2 - Relay Output 2	OFF	Toggle
3 - Relay Output 3	OFF	Toggle
4 - Relay Output 4	OFF	Toggle
5 - Relay Output 5	OFF	Toggle
6 - Relay Output 6	OFF	Toggle
7 - Relay Output 7	OFF	Toggle
8 - Relay Output 8	OFF	Toggle

The 4ROUT will be displayed as shown below. The picture above and below are for a JNIOR 410 with 8 digital inputs and 8 relay outputs standard. The 4ROUT is automatically numbered relays 9 – 12 for the first 4ROUT expansion module in a 410. For a 412, it is numbered relays 13 -16 and for a 414 it is numbered relays 5 – 8.

jr618080146

410 (S/N 618080146) JANOS v1.7.1
[logout 'jnior'](#)

Input/Output

Configuration

Console

Folders

Registry

Syslog

Peers

About

Internal

External

Digital 4ROUT

F9110500000001FB

9-Relay Output A	OFF	Toggle	11-Relay Output C	OFF	Toggle
10-Relay Output B	OFF	Toggle	12-Relay Output D	OFF	Toggle

4ROUT connected to a JNIOR 410

Wed, 23 Jan 2019 12:55:57 EST

Dynamic Configuration Pages (DCP) v2.2

jr618080146

410 (S/N 618080146) JANOS v1.7.1
[logout 'jnior'](#)

Input/Output

Configuration

Console

Folders

Registry

Syslog

Peers

About

Internal

External

Digital 4ROUT

F9110500000001FB

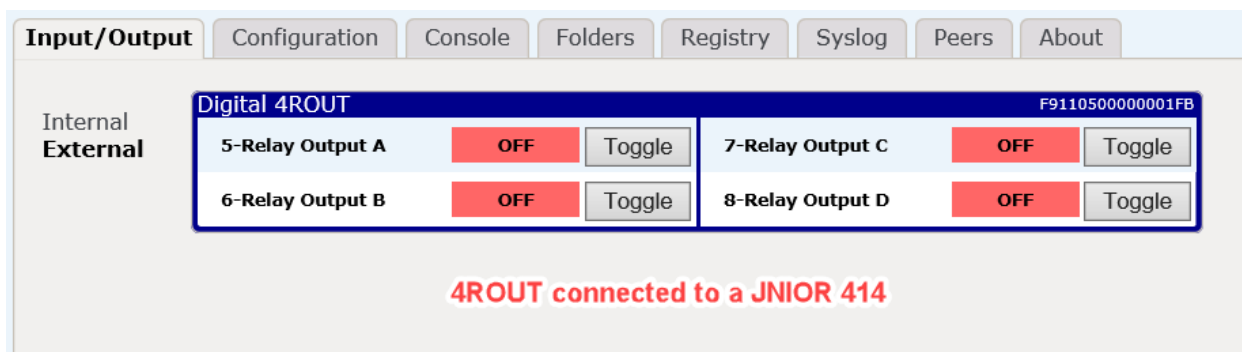
9-Relay Output A	OFF	Toggle	11-Relay Output C	OFF	Toggle
10-Relay Output B	OFF	Toggle	12-Relay Output D	OFF	Toggle

Digital 4ROUT

ED111090708120FB

13-Relay Output A	OFF	Toggle	15-Relay Output C	OFF	Toggle
14-Relay Output B	OFF	Toggle	16-Relay Output D	OFF	Toggle

Two 4ROUT connected to a JNIOR 410



2.2 Relay Number Management

Each expansion module for the JNOR has a unique serial number that ends in two characters that identify the ‘type’ of module. All relay expansion modules end in FB.

The first 4ROUT module has _1 appended to its serial number. The second 4ROUT has _2 appended to its serial number. This is how the JNOR operating system knows to apply relay numbers 9 – 12 to the first module and relays 13 – 16 to the second module.

The screenshot shows the 'Configuration' tab in the JNOR interface. The left sidebar has 'Modules' highlighted. The main area is titled 'Sensor Port - External Modules' and contains a table with the following data:

Module	Serial No.	ID	Status	Assignment
► Digital 4ROUT	0500000001	F9110500000001FB	connected	ROUT 9-12
► Digital 4ROUT	1090708120	ED111090708120FB	connected	ROUT 13-16

Below the table is the text: 'Click Assignment column to change relay group' and a 'rescan' link. Red arrows point from the 'ID' column to the text 'Unique ID ending in FB' and 'Matches label on side of 4ROUT'. Another red arrow points from the 'Assignment' column to the text 'relay numbers assigned'.

Mouseover and use F1 for context sensitive help.

Alternatively, you can go to the Console tab (or a Telnet or Command Line session) and use the **extern** command to display the modules connected to the JNOR.

The screenshot shows the 'Console' tab in the JNOR interface. The 'End Session' button is highlighted. The console output is as follows:

```

Welcome to the JNOR Model 410 (S/N 618080146) running JANOS v1.7.1
Copyright (c) 2012-2018 INTEG Process Group, Inc., Gibsonia PA USA.
Local time: Wed Jan 23 14:19:29 EST 2019    Process ID: 10
System up time: 3 Hours 20:17.880

jr618080146 login: jnior
jr618080146 password: *****

jr618080146 /> extern
  TypeFB_1 = F9110500000001FB  present
  TypeFB_2 = ED111090708120FB  present

jr618080146 /> |
  
```

Red arrows point from the 'extern' command to the text 'type extern'. Another red arrow points from the 'TypeFB_1' output to the text 'unique ID'. A third red arrow points from the 'TypeFB_1' and 'TypeFB_2' outputs to the text 'and the two modules will be listed'. A fourth red arrow points from the 'TypeFB_1' output to the text '_1 is relays 9-12'. A fifth red arrow points from the 'TypeFB_2' output to the text '_2 is relays 13-16'.

2.3 Relay Module Replacement

Should you ever have to replace a module, since each expansion module for the JNIOIR has a unique serial number, the JNIOIR will actually remember the order number it assigned to that module. For example, _1 will always be relays 9 – 12 for the original unique ID number for that module, _2 will always be relays 13 – 16 for its unique ID number. This is done so that if you have two modules and the first module fails, you want the second module to always remain the second module and use relay numbers 13 – 16.

Below is a series of screen pictures that show you what the modules look like on the Configuration tab – Modules web page in the JNIOIR main web page. The screen pictures show one module missing and how to replace it with a new module.

NOTE: If you only have one expansion module, you would just click on the ‘rescan’ link to remove the old one and THEN plug in the new one so it is assigned as the first module (_1) and relay numbers 9 – 12.

NOTE: If you have two modules and want to renumber them as to which relays they use, unplug both modules, click on **rescan and then plug in one module at a time starting with the one you want used for relays 9-12 and then plug in the second module.**

The screenshot shows the 'Configuration' tab selected in the top navigation bar. On the left sidebar, 'Modules' is highlighted. The main content area is titled 'Sensor Port - External Modules' and contains a table with the following data:

Module	Serial No.	ID	Status	Assignment
▶ Digital 4ROUT	0500000001	F9110500000001FB	not found	ROUT 9-12
▶ Digital 4ROUT	1090708120	ED111090708120FB	connected	ROUT 13-16

Below the table, there is a link that says 'Click Assignment column to change relay group' and a 'rescan' link. A red arrow points to the 'not found' status of the first module, with the text 'missing module is shown in light grey'.

Input/Output **Configuration** Console Folders Registry Syslog Peers About

Display
Labels
Inputs
Counters
Outputs
Metering
Serial I/O
Applications
Mail-Account
Mail-Profiles
Events
Network
Security
Telnet
WebServer
FTP
Protocol
Modules

Sensor Port - External Modules

Module	Serial No.	ID	Status	Assignment
► Digital 4ROUT	1090708120	ED111090708120FB	connected	ROUT 13-16

Click Assignment column to change relay group

NOTE: that the remaining module remains identified as relays 13-16

'clicking' on rescan will cause JUNIOR OS to remove non-existent modules

[rescan](#)

Input/Output **Configuration** Console Folders Registry Syslog Peers About

Display
Labels
Inputs
Counters
Outputs
Metering
Serial I/O
Applications
Mail-Account
Mail-Profiles
Events
Network
Security
Telnet
WebServer
FTP
Protocol
Modules

Sensor Port - External Modules

Module	Serial No.	ID	Status	Assignment
► Digital 4ROUT	1110826227	2C111110826227FB	connected	ROUT 9-12
► Digital 4ROUT	1090708120	ED111090708120FB	connected	ROUT 13-16

Click Assignment column to change relay group

the replacement module will become relays 9 - 12 when connected to the JUNIOR

[rescan](#)

Alternatively, you could do all the above functions through the Console tab in the JNIOR web page or a Telnet/command line session using the **extern** and **extern -r** commands as shown below.

The screenshot shows the JNIOR web interface with the 'Console' tab selected. The console output shows a login session for 'jnior' and the execution of the 'extern' and 'extern -r' commands. Red arrows and text annotations highlight the removal of an old module and the addition of a new one.

```

jr618080146 login: jnior
jr618080146 password: *****

jr618080146 /> extern
  TypeFB_1 = F9110500000001FB present
  TypeFB_2 = ED111090708120FB present

jr618080146 /> extern
  TypeFB_1 = F9110500000001FB not present
  TypeFB_2 = ED111090708120FB present

jr618080146 /> extern -r
  TypeFB_2 = ED111090708120FB present

jr618080146 /> extern
  TypeFB_2 = ED111090708120FB present
  TypeFB_1 = 2C111110826227FB present

jr618080146 /> |
  
```

Module 1 missing (points to 'not present' for TypeFB_1)

extern -r command removes old module (points to 'extern -r' command)

new module with a new unique ID becomes module_1 (points to '2C111110826227FB' for TypeFB_1)

Ins 15

2.4 Configuring

The 4 Relay Output Expansion Module is configured via the main JNIOR web page. Go to the Configuration tab and the Modules page as shown below.

Each change takes effect immediately.

Configuration Console Folders Registry Syslog Peers About

Sensor Port - External Modules **'click' on triangle to expand configuration for each module**

Module	Serial No.	ID	Status	Assignment
Digital 4ROUT	0500000001	F9110500000001FB	connected	ROUT 9-12

Click Assignment column to change relay group [rescan](#)

Digital 4ROUT - Configuration (ID F9110500000001FB)

Name	Description
<input checked="" type="checkbox"/> Relay A	Relay Output A
	On Text ON
	Off Text OFF
<input checked="" type="checkbox"/> Relay B	Relay Output B
	On Text ON
	Off Text OFF
<input checked="" type="checkbox"/> Relay C	Relay Output C
	On Text ON
	Off Text OFF
<input checked="" type="checkbox"/> Relay D	Relay Output D
	On Text ON
	Off Text OFF

Edit descriptions that are displayed on External web page

check boxes are used to add (checked) or remove relay (uncheck) from External web page

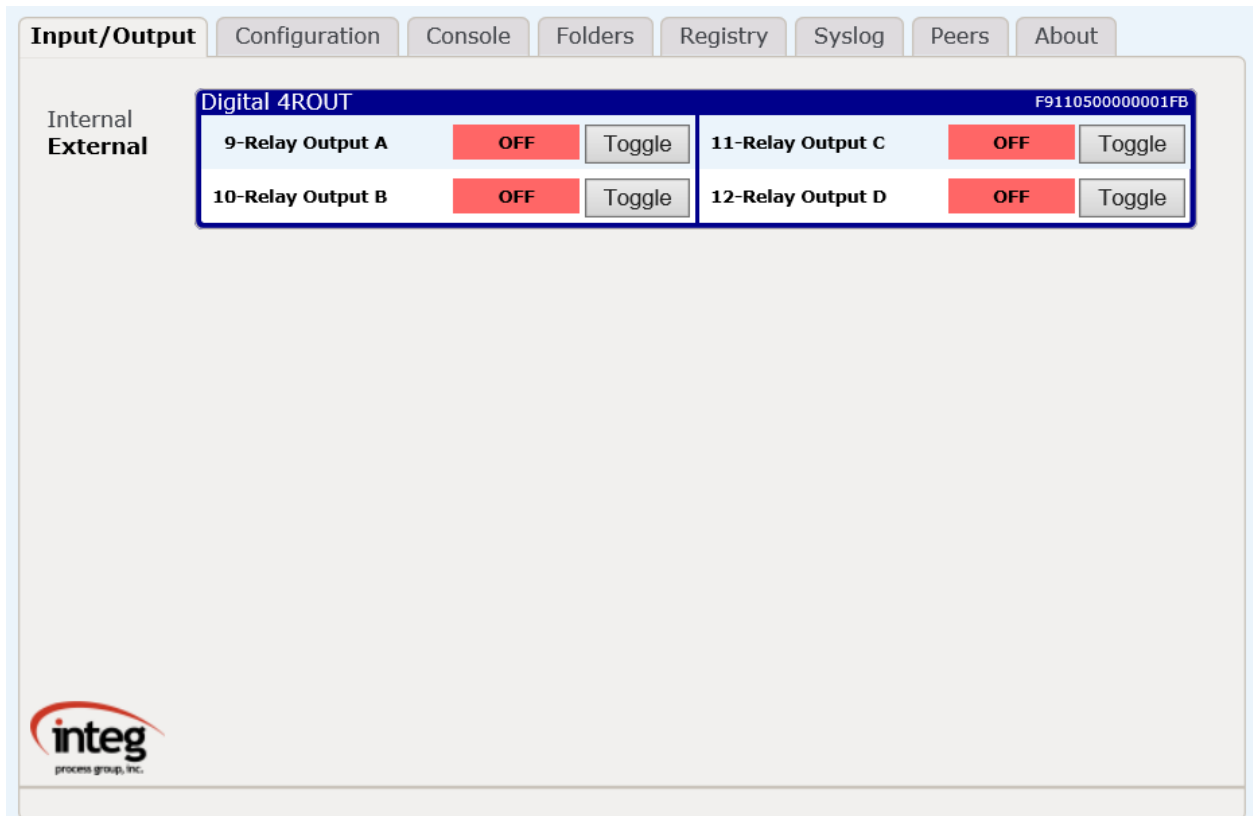
integ
process group, inc.

Mouseover and use F1 for context sensitive help.

2.5 Controlling

The relay outputs can be controlled from the JNIOR web page on the External page. You can change the output status from OFF to ON or ON to OFF by clicking on the Toggle button.

If you want to **pulse** an “expansion” relay output for a preset duration, you would need to do it via another device or application controlling the JNIOR.



3 Specifications and Wiring

The 4 Relay Output Expansion Module (EXP-200-005) specifications are as follows:

General

- No power required – draws power from the JNIO
- Dimensions: 4.25 x 2.63 x 1.27 in (108 x 67 x 32 mm)
- Weight: 4 ounces (115 grams)

Relay Outputs

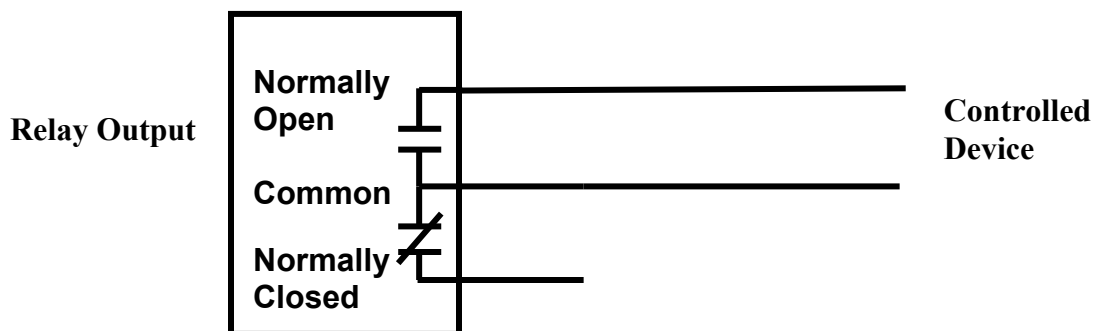
- Quantity: 4
- Type: SPST, Form C – 1 Normally Open Contact, 1 Normally Closed Contact
- Range: up to 240 volts AC
- Contact Ratings: 10 Amps
- Pulse Resolution: 1 millisecond pulse increments

Sensor Port

- Up to 2 expansion modules can be daisy-chained
- Each module comes with a cable for connecting to the Sensor Port. However, the Expansion Modules can be located up to 50 ft. from the JNIO. A wiring diagram for the connector cable follows in this manual.

Wiring

Care should be used when wiring signals to the 4 Relay Output Expansion Module. Industry standard power and grounding methods should be followed.



Sensor Port Cable

The JNIOR Expansion Modules come with a standard length cable. However, the Expansion Modules can be located up to 50 feet from the JNIOR. In these instances, the user must make a custom cable to connect the expansion module with the JNIOR. The pin out for the cable that connects the Sensor Port on the JNIOR with the Expansion Module is the **same on both ends**. The connector is a standard RJ-12 connector on both ends.

Note:

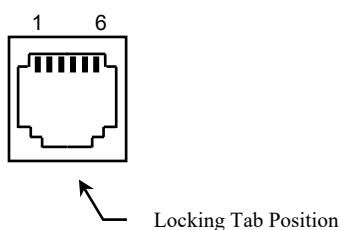
An RJ12 connector is the same size as an RJ11 connector except all 6 pins have copper pads to connect all 6 wires to the port.

*Please make sure that you orient the pins properly for each side of the cable. **The cable will be twisted (or the one RJ12 connector will be upside down from the other) so that when you hold both ends of the cable side by side, the pin numbers will match.** Please contact INTEG Process Group with any questions.*

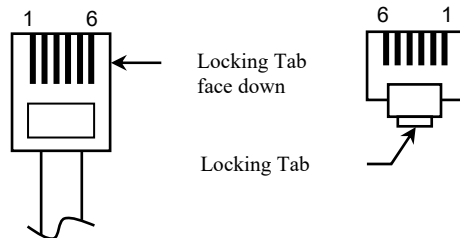
Sensor Port Pin-Outs – Use a 6 conductor wire and connect each colored wire to the same pin number on each connector.

<u>Pin</u>	<u>Description</u>
1	Voltage (5V Vcc)
2	GND
3	1-WIO (1-Wire Data)
4	GND (1-Wire Return)
5	NC (No Connection internally to the Expansion Module)
6	Unregulated DC

Reference the following diagrams to determine the proper pin numbers of the connectors:



RJ12 Modular



RJ12 Modular

Summary

Thank you for purchasing the **JNIOR**. Hopefully this manual made the getting-to-know process of your new **JNIOR** very quick and easy. The **JNIOR** has many more wonderful tools and features available, and are explained in detail in the supplied documents on our website.

Copyright	Copyright © 2019 INTEG Process Group, Inc. All rights reserved.
Notice	Every effort was made to make this manual as accurate and useful as practical at the time of the writing of this manual. However, all information is subject to change.
Trademarks	Trademarks are the property of their respective holders.
Use Restrictions	This User's Manual and the software contained in the JNIOR are copyrighted by INTEG Process Group, Inc. and may not be copied or reproduced without prior consent from INTEG Process Group, Inc. INTEG Process Group, Inc. is not responsible for any errors or omissions that may be contained in this manual.

Please do not hesitate to contact our **JNIOR** team at **INTEG Process Group, Inc.** We can be reached via phone, fax or e-mail as follows:

INTEG Process Group, Inc.
2919 E. Hardies Road
1st Floor
Gibsonia, PA 15044

www.integpg.com

JNIORsales@integpg.com

PH (724) 933-9350 extension 20
FAX (724) 443-3553