TransPort™ WR31

Analog and Digital Input/Output Interface

User Guide

TransPort WR31 Analog and Digital Input/Output Interface User Guide

90001489

Revision	Date	Description
A	December 2015	Initial release.
B	January 2016	• Added correct spacing in the following CLI commands: 　▪ ss460140>gpio dio -d0 ON 　▪ ss460140>gpio diopullup -d1 off • Updated copyright year.

Product documentation

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Contents

TransPort WR31 input/output interface

The TransPort WR31 input/output (I/O) connections are a general purpose I/O interface. The main features of the I/O interface include:

- 1 analog input
- 2 digital input/output (software-selectable)

I/O connector pin assignments

The TransPort WR31 has a 5-pin I/O connector. The I/O connector, pin assignments, and signals for each pin are shown in the following image and table.
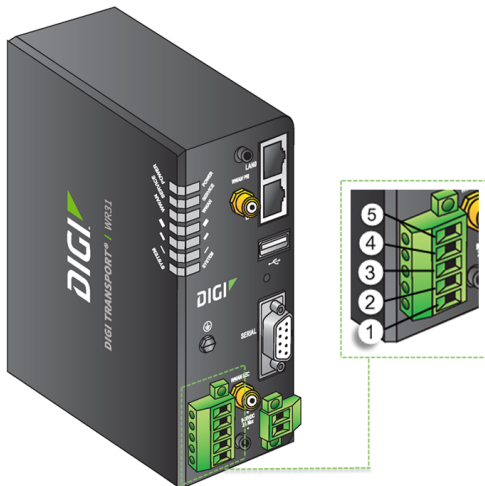

Pin number	Assignment	Signal
5	AIN0	Analog input 0 (zero)
4	AGND	Analog return
3	DIO0	Digital I/O 0 (zero)
2	GND	Digital return
1	DIO1	Digital I/O 1 (one)

Wiring the I/O connectors

A 5-pin terminal female connector is included for wiring.

The following image shows how to secure the wires using the screw-down clamps. The connector is attached to the TransPort WR31 with the screw flanges. We recommend using the wire size 16-26 AWG for the 5-pin terminal.
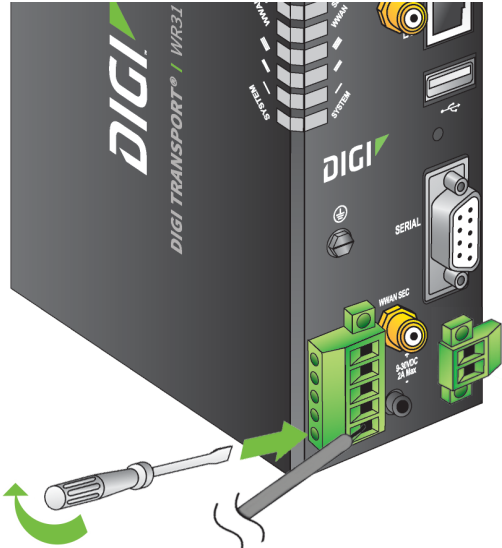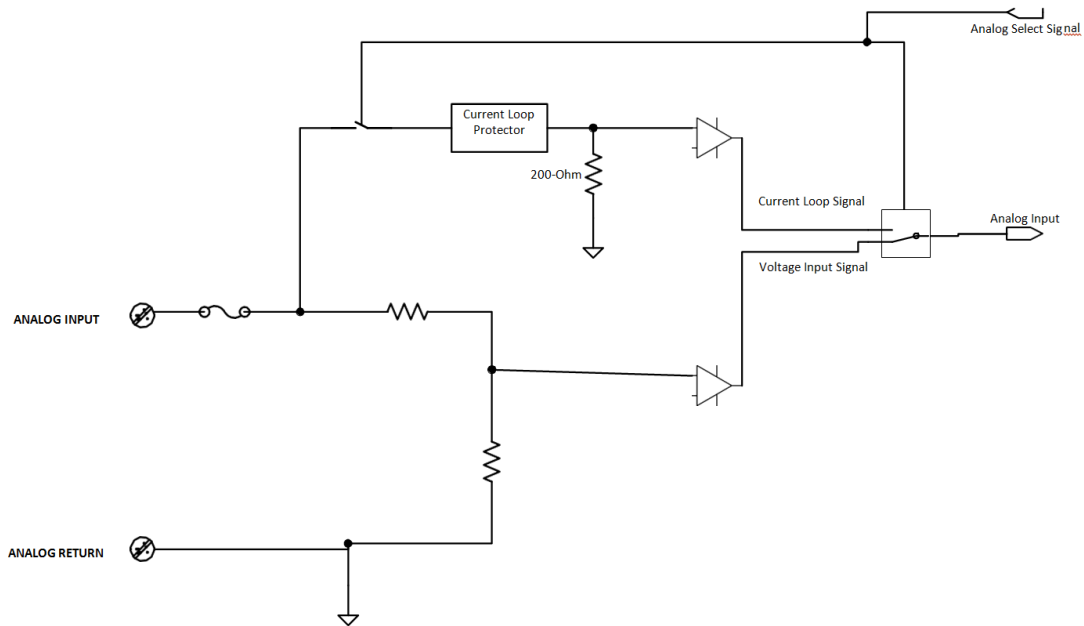

Hardware specifications and configuration

The following section provides the specifications and configurations of the TransPort WR31 I/O Interface.

Digital I/O schematic
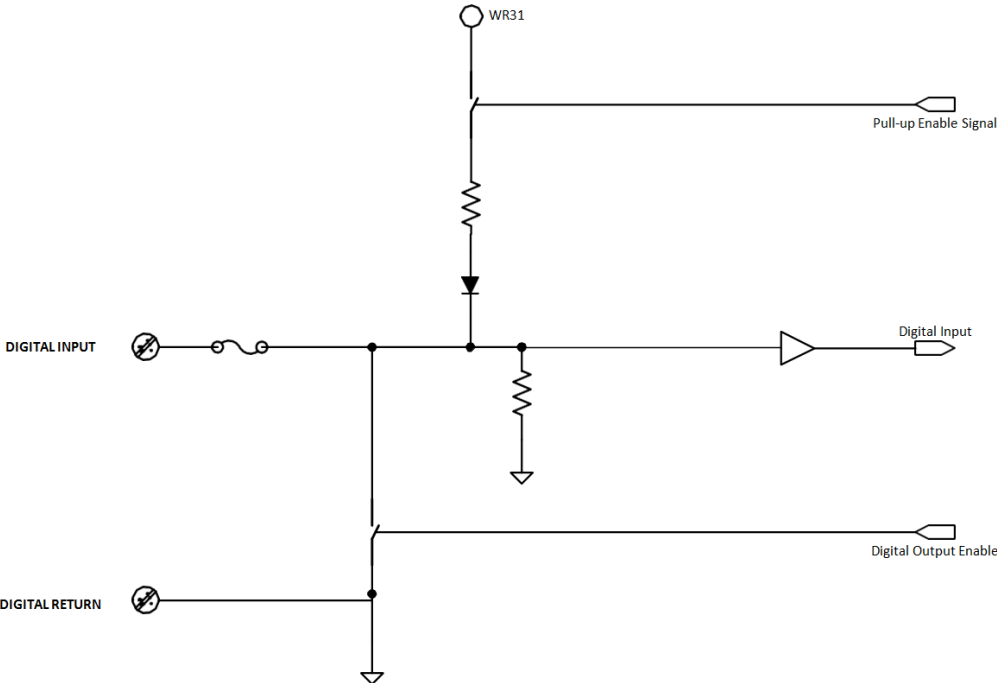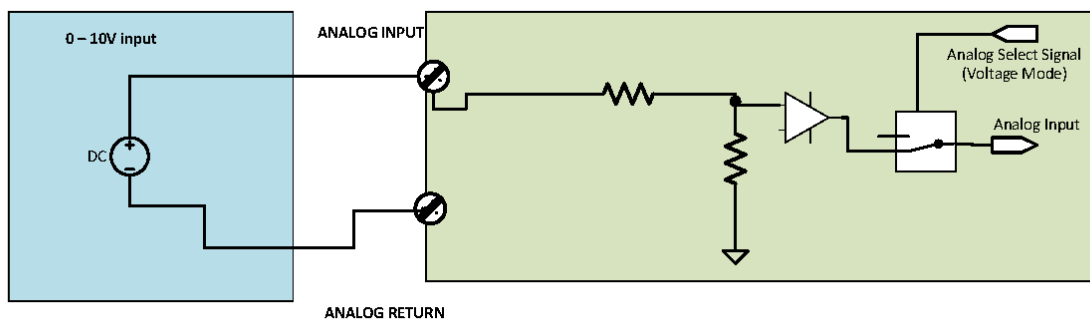
Analog input schematic

Analog input

The analog input port has the following two modes of operation:

- Voltage monitor: The TransPort WR31 is configured to monitor a voltage input from 0V to +10V.

- Current-loop monitor (default mode): The TransPort WR31 is configured to monitor a current-loop input from 4mA to 20mA. The minimum input voltage is 2.0V.

The following figure shows the voltage monitor (analog input, 0-10V input) mode schematic.

The following figure shows the current-loop monitor (analog input, 4-20mA) mode schematic.
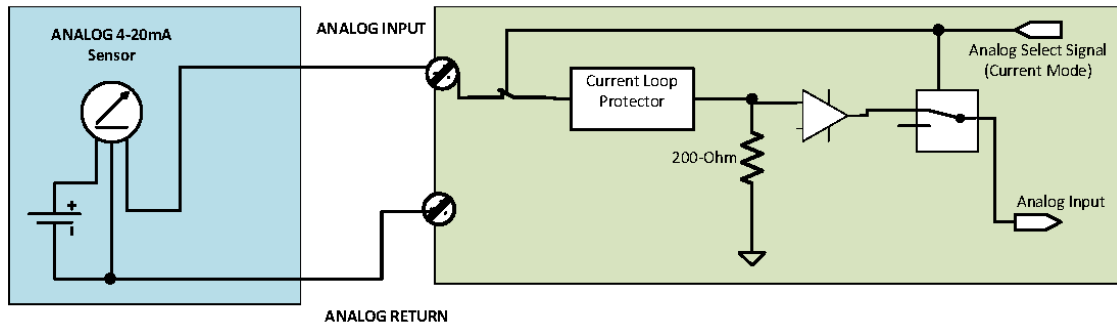

Digital input

The digital input port has the following two modes of operation:

- Internal power mode (default mode): The digital input port uses an internal pull-up to indicate state in the absence of an external supply. You can also use this for switching low-voltage contacts.
- External power mode: The battery symbol indicates that an external power source is in use (see the external power mode schematic). The maximum voltage that can be supplied is 30VDC.

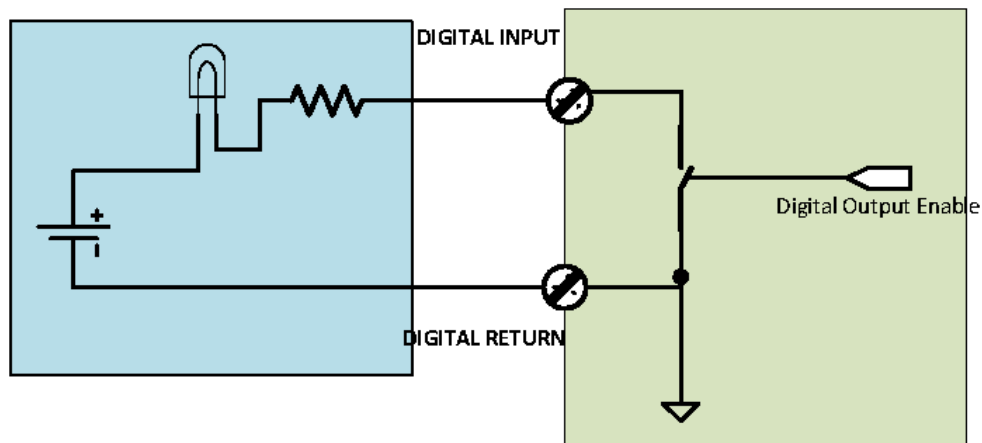The following figure shows the internal power mode schematic.
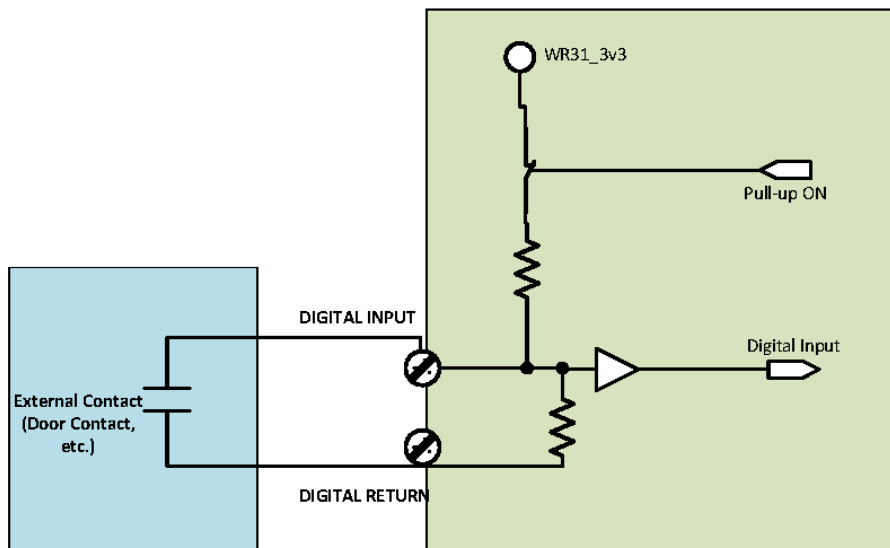
The following figure shows the external power mode schematic.
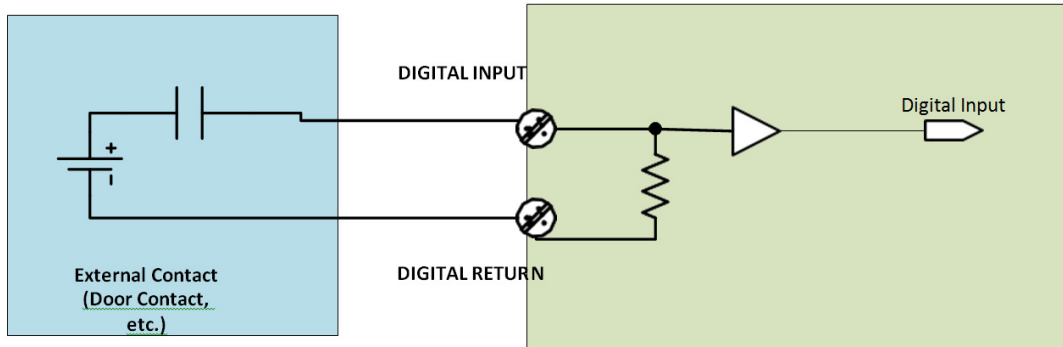
Digital output

The digital-out configuration is a transistor drain to the user. The maximum collector current is 200mA and must be user-limited.

The following image shows a schematic of the typical digital-out application.

Configure the I/O interface

To configure the TransPort WR31 I/O interface, use the command line interface (CLI) commands. You can build these commands into Python or Basic scripts to automate functionality, or use them manually in the CLI.

The **GPIO** command is the main command for the TransPort WR31 I/O interface. The following table summarizes GPIO use.

Command	Description
gpio ain [current | voltage]	Analog input control
gpio dio [{-D0-1 on | off}]	Digital input/output control
gpio diopullup [{-D0-1 on | off}]	Digital input/output pullup control

The following shows CLI dialog examples of the analog input commands. User input is **bold** and device response is `plain text`.

```
ss460140>gpio ain current
A0: voltage=0.7420 V
OK

ss460140>gpio ain voltage
A0: current=1.7051 mA
OK
```

The following shows CLI dialog examples of the digital input commands. User input is **bold** and device response is `plain text`.

```
ss460140>gpio dio
D0: DOUT=ON, DIN=HIGH (Inactive)
D1: DOUT=ON, DIN=HIGH (Inactive)
OK

ss460140>gpio dio -d0 ON
D0: DOUT=ON, DIN=HIGH (Inactive)
ON

ss460140>gpio diopullup -d1 off
D0: Pullup=ON
D1: Pullup=OFF
OK
```

Additional information

For more information and Python code examples for using the TransPort WR31 analog and digital I/O interface, visit https://github.com/digidotcom/transport_examples.