Technical Brief
AN258 Rev A4

Remote Autonomous Zone Nodes (RAZN) IO Versions

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There are many different versions of the RAZN. This Application note shows a list of all different versions with different ***Input*** and ***Output*** (IO) features.

Overview

The Remote Autonomous Zone Note (**RAZN**) is setup in a plastic enclosure, with communication ports and DC power input on the front of it. IO Terminals are on the upper side of the RAZN enclosure. Most use one or two 12-pin IO terminals. If there is a radio modem inside the RAZN, the antenna connector is on the back side if you want a radio.

In the Remote Autonomous Zone Note (**RAZN**), there is a CPU board that connects to serial ports, data radios, and an upper IO board. The CPU board does the RTU functions, and Autonomous features.
The RV-N55 has Ethernet interface also. The part number is RV-N54 if the Ethernet is disabled on the device.
RV-**N55** Ethernet and RS-485 interfaces. RV-**N54** RS-485 interface. Either can also have Data Radios.

Things to use RAZN Products to do

- **Control DC powered lights**. Up to 30-40watts. The *SV* terminals are switched voltage outputs to power things.
- PLC SCADA, **trigger events** based on: Minute, Hour, Weekday, and Month.
- Meteorological Instrument Functions to **measure weather**.
- **Alarming conditions** like high temperature, can then be stored, displayed, texted, alerted to other remote devices, displays, lights, or Masters.
- **Control AC powered relays** if the low-voltage AC is within spec. Switched Voltage (SV) terminals are switched voltage outputs to power things.
- **Control AC powered things** A high-voltage external AC relay switch can be controlled by the Switched Voltage *SV* terminal or *RD* relay driver.
- **LED Power Driver**. A *SV* terminal or *RD* relay driver can power LED lights, blink them, or control them the way you want them to be run.

- Connect **Buttons** to the Switch Input pins(***BI***) to **detect switches** and report switch condition. The ***LI*** LED Optically Isolated Digital Input in great input for very noisy inputs.
- **Monitor 4-20mA Sensors.** The ***AI*** terminal can be read via SCADA commands, or trigger alerts to control outputs, or send messages.
- **Derived Digital Points** to utilize inputs (like buttons) to control output points like Switched Power outputs, Open Drain outputs, TTL outputs…
- **Smart Cities** can use RAZN to control things in the city they need to smartly manage, and it autonomously can keep things safe as desired.
- **Connect things to IoT cloud servers** or your private servers, the Ethernet or wireless connections can pass the status of switches and sensors to your servers.
- **Control Lights, Valves and Pumps**. Turn on and off irrigation devices.
- Use the RAZN's real-time-clock to **automatically control** lights, valves and pumps base on digital inputs, sensors, temperature, or a combination of them all.
- **Monitor water sensors**, and report their status and report emergency information.
- **Monitor analog sensors**: temperature, pressure, current, voltage,…
- Use discrete input devices like light switches, relays, contacts, push-buttons and proximity switches to **autonomously control things**.
- **MIMIC INs to OUTs.** The MIMIC mode in the RAZN is used so the main RAZN's inputs automatically get sent to other RAZNs to control their outputs, and the main RAZNs status LEDs show the state of the remote RAZN's outputs.
- **Send a text message** to another Data Radio modem when the RAZN periodically measures the operation of some inputs, and an alert is triggered.
- **Monitor Vibration and Angle,** to control outputs or send messages based on vibration or angle at certain times and other inputs.
- **Count Events.** Digital inputs monitor change rates, up-time, down-time, and numbers of changes, and use seconds, minutes, hours, or days to count, reset, or trigger alerts.

A Remote Zone Node for modern SCADA and Telemetry systems with general purpose control capability is in a compact, cost-effective package. Very flexible inputs and outputs, secure communications including MODBUS, and many other communication options. The RAZN can use wired networks (Ethernet, RS-485, RS-232, or USB) or wireless communication. Wireless options can be narrow UHF or VHF channels, or license-free ISM band channels.

Primary Features The RAZN was Created by RAVEON to be Reliable and Safe.

The RAZN has many unique features. The primary features are:

1) **Low power** consumption. The power supplies, receiver, and transmitter all have lower power consumption than legacy products.
2) **Secure.** Built-in AES encryption options allow users to add additional security to their communication systems.

3) **Broad RF Options.** Radio modems used within the RAZN enclosure are available from Raveon in VHF, 220MHz, UHF, 800MHz, 900MHz, and cellular bands. Use your private network or use the IoT.

4) **Ethernet and Serial.** Communications to this RTU can be done using TSP/IP Ethernet interfaces to a network or IoT, and an RS485 serial port is on the unit. An additional RS232 is an option on all RAZNs.

5) **Long Range Communications.** These radio RF options can cover 10s to 100+ square miles over, cities, golf courses, universities, harbors, mountains, and countries. Can work as a *Repeater* in the background.

6) **Autonomous Operation.** Act as an RTU, and/or run PLC Autonomous features. If the network fails, IoT is hacked, or cell tower crashes, the Autonomous RAZN will still do its job. More reliable than devices that require IoT.

7) **Failsafe Settings.** The default output pin settings are set to default parameters, and you can change them as you want to be used for power-up or communication failure.

8) **Real Time Clock.** This timer is used to setup Times to trigger Operations, and if Operation Alerts (TOAA), and action can take place, text message can take place, or a SCADA command can take place.

9) **Meshing SCADA**. A RAZN can be setup to forward messages to other RAZNs in the area that are wired to it, or use the internal long-range wireless modems to mesh the SADA message.

10) **Communications Safety**. The RAZN has many communication features (wired, wireless, Ethernet) and it monitors their communication in many ways so if communication fails, is slow, is not often enough, or whatever, the RAZN can do something you want, such as sending a message over a different communication interface, set some IO pints to defaults, flashing a light or siren, or sending a SCADA message to another RTU to do something.

11) **Restarting**. The RAZN can notify via communication interfaces that it restarted, and restarting values and IO pin states can be done in the way you want when the RAZN is restarted.

12) **Accelerometer**. Internal to the RAZN, an accelerometer can measure its X,Y, and Z angle of its location, and alerts or IO pin changes can be setup to take place based on angles, angle changes, and vibration levels.

13) **Easy to use**. Anyone can operate and install. It is designed to be easy to use with built-in high-tech features such as Ethernet, RF modems, RTC, and an Accelerometer that are reliable and working in the off-the-shelf versions. Many additional features are available by studying this manual and setting them up by configuring them.

14) **Low Cost.** Instead of having to buy many RTUs, multiple cables, an RF modem, and an Ethernet converter, one RAZN does this all by itself in this one product at great price. Modern technology created in this decade is better and lower cost than devices created years ago.

15) **Compatible Apps.** Industry standard SCADA applications and IoT servers can work with the RAZN using the SCADA protocols incorporated into it.

16) **Report by Exception.** Analog and digital inputs may be configured to report changes as they occur without being polled by the Controller (report by exception).

17) **I'm Still Alive.** The RAZN can be configured to automatically periodically report the product status to the Master controller.

18) **Hydrographic Survey.** Monitor physical features and determine bathymetry, 3D velocity profiles and depth of the body of water, lakes, rivers, and ponds. The measurement of physical characteristics of waters and marginal land.

19) **Programmable Logic Control.** And inputs can be setup to control any or all outputs. The logic has an outstanding variety of ways to choose, so inputs, buttons, sensors, switches, can logically control terminal outputs locally or remotely over long-range wireless.

20) **Safe On-Times.** All terminals can be setup with On-Time limitations for momentary outputs to safely ensure something is never turn on longer than it should be. Two different limitations can be setup, one for safety and one for the current On-Time goal.

21) **Isolated IO Terminals.** Some version have isolated IOs, with each single terminal port *Totally Isolated* from each of the other terminal ports.

RAZN Part Number Information.

Part numbering: RV-N55-DV-MBB

D is Device version, **V** variation of this version,
M is 5, 6, 8 Modem code for RV-M50, RV-M6, RV-M8,
BB is RF band code. VA, VB, UA,UB,UC, UD,…

RV-N55- has all RAZN hardware features, including: Ethernet, Battery, RS-485, and Accelerometer.
RV-N54- is same as N55 but also has no Ethernet interface,

List of IO Terminal Functions, and Function Codes, used in RAZN versions

The Function Code is shown in all IO terminals. Most RAZNs have General Purpose IO (GPIO) versions. IO terminals can have the IO function enables by specifying the GPIO Code for the IO number (IO#).

Function Code	Description of this Function	Notes and comments about this code.	GPIO Codes
ADS	Analog Delta-Sigma Differential ADC	This can read analog voltage on two-pin delta inputs. High resolution, can read large or very small volts.	**E** Voltage
AI	Analog Input	This can read analog voltage inputs, or also read 4-20mA current input.	**E** Voltage **F** 4-20mA
BI	Button Input	Input pin to monitor a switch or button. Pull-up resistor on BI, and BI connected to GND=1. Not shorted to GND=0.	**S** Switch Input
DI	Digital Input	Digital data input. Voltage can be very high. Levels and thresholds are shown in the data sheet.	**A**
DA	Digital Action Input to Led	Digital input pin driving an LED through a resistor, LED connected to ground.	**A** Dig. Input
DO	Digital Output	Digital data output. Voltage levels are shown in the data RAZN's sheet.	**B**
DSD	Dual-pin Solenoid Driver	Power in on ***VP*** and ***VPG*** are used to switch Solenoids. Power is isolated	**H** 2-Pin S.D.
FIO	Flexible Inputs & Outputs	IO terminals that can be digital input or digital output configured as you want.	**A** Dig. Input **B** Dig. Ouput
FIOP	Flexible Inputs & Outputs with Pull-Up resistors.	IO terminals that can be digital input or digital. output configured as you want. The pull-up resistor can be turned on or off.	**A** Dig. Input **B** Dig. Output
IADC	Current Output.	Output current out this pin, to drive a	**G** Icc out

		sensor or resistor.	
IAI	Isolated Analog Input.	Voltage Input or 4-20mA current Input. Isolated DC, ground, and reference voltage to the ADC.	**E** Voltage **F** 4-20mA
LI	Optically Isolated Digital Input to Led	Digital input pin driving an LED through a resistor, that is totally isolated from the ground and the DC input power.	**A** Dig. Input
NF	Dual ON and OFF inputs	Inputs for two button to be used on the same IO#. One is the ON button, and the other input is the OFF button.	**N** Dual Input
OIDO	Optically Isolated Digital Output	Traditional digital output pin, that is totally isolated from the ground and the DC input power.	**B** Dig. Output
OIDI	Optically Isolated Digital Input	Traditional digital input pin, that is totally isolated from the ground and the DC input power.	**A** Dig. Input
RD	Relay Driver	Open Drain MODSFET output driver. Ground driver, high current, to drive relays, lights, valves, or many other devises to turn on/off.	**C** MOSFET
SD	3-Pin Isolated Solenoid Driver	3-Pin Isolated Solenoid Driver with internal Current Monitoring sensor. DC input on ***VP*** and ground power input on ***VPG***.	
SV	Switched Voltage Output	AC or DC input on ***VP*** and ***VPG***. The ***SV*** is switched voltage output.	**D** Switch Volts
SVA	Switched Voltage Output	AC or DC input on ***VP*** and ***VPG***. The ***SV*** is isolated switched voltage output with Current Monitoring.	**D** Switch Volts
VI	Voltage Input	This can read analog voltage input. Can read large or small volts.	**E** Voltage
VO	Voltage Output	This can send analog voltage out.	**V** Volts
VP	Diverted Voltage Power.	This DC or AC voltage on this pin, is set out to the ***SV*** switched voltage output terminal pins.	
IGND	Isolated Ground Connection.	This ground is isolated and used by some other isolated IO terminal features.	
GND	Ground Connection.	This ground is the same ground that the RAZN uses for its DC input and RF data radios, and serial data.	
VDD	Voltage Power Output from V power input.	Diverted Voltage Power Output from DC product power Input to the RAZN. Your system can share the DC input power. RAZN can turn it On or OFF if	

		you want.	
EVI	External Voltage input	AC or DC power into. The Ground of this voltage is connected to VPG terminal pin.	
VPG	Ground of Diverted Voltage, floating	Ground connection for inputting power for switched Voltage SV outputs. Not connected to the RAZN product ground.	

List of RAZN Versions and Descriptions of their IO Terminals.

N55 or N54 is used….

In all device part numbers, RV-N55- is the main part number with all interfaces. Ethernet TCP/IP and RS-485.
RV-N54- is the version with the same IO terminals (as the RV-N55-) and RV-N54- versions have no Ethernet.

RV-N55-3 AUTOMATED PERIPHERAL CONTROLER

Aautomated peripheral for controlling things in remote areas with a compact, cost-effective, package. The IOs of the version are described here:

RV-N55-3C 8:SV, 8: BI,

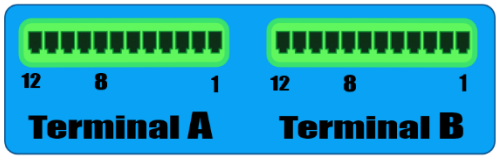
Terminal Port A (Switched Voltage Outputs, Analog inputs, Digital inputs)

Pin #	1	2	3	4	5	6	7	8	9	10	11	12
Function	***SV***	***SV***	***SV***	***SV***	***SV***	***SV***	***SV***	***SV***	***VPG***	***VPG***	***VPG***	***EVI***
IO#	0	1	2	3	4	5	6	7				

VPG ground isolated with all SV outputs, EVI is the Electronic Voltage Input (AC or DC)

Terminal Port B (Isolated Analog and Digital Inputs, Digital output, Digital input)

Pin #	1	2	3	4	5	6	7	8	9	10	11	12
Function	***BI***	***BI***	***BI***	***BI***	***BI***	***BI***	***BI***	***BI***	***GND***	***GND***	***GND***	*NP*
IO#	8	9	10	11	12	13	14	15				



Terminal A

Pin	Description	Pin	Description
1	***SV*** Voltage Output #4, from VP in.	7	***SV*** Voltage Output #5, from ***EVI*** in.
2	***SV*** Voltage Output #4, from VP in.	8	***SV*** Voltage Output #6, from ***EVI*** in.
3	***SV*** Voltage Output #4, from VP in.	9	***VPG*** Voltage Ground for In and Out SV volts
4	***SV*** Voltage Output #4, from VP in.	10	***VPG*** Voltage Ground for In and Out SV volts
5	***SV*** Voltage Output #4, from VP in.	11	***VPG*** Voltage Ground for In and Out SV volts
6	***SV*** Voltage Output #4, from VP in.	12	***EVI*** Voltage Input for SV outs. (AC or DC)

On Port A, the GND pin is connected to this Product power DC Ground. AI and LI terminals use the product ground, not Isolated.

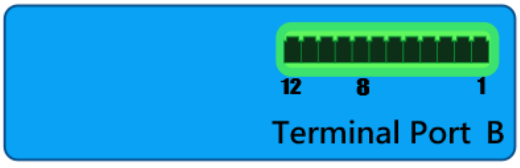
Terminal B

Pin	Description	Pin	Description
1	***BI*** Button Input for switches, sensors, or digital inputs, with pull-up resistor. IO# 8	7	***BI*** Button Input for switches, sensors, or digital inputs, with pull-up resistor. IO# 14
2	***BI*** Button Input for switches, sensors, or digital inputs, with pull-up resistor. IO# 9	8	***BI*** Button Input for switches, sensors, or digital inputs, with pull-up resistor. IO# 15
3	***BI*** Button Input for switches, sensors, or digital inputs, with pull-up resistor. IO# 10	9	***GND*** Ground for BI inputs. This Product's ground is this GND also.
4	***BI*** Button Input for switches, sensors, or digital inputs, with pull-up resistor. IO# 11	10	***GND*** Ground for BI inputs. This Product's ground is this GND also.
5	***BI*** Button Input for switches, sensors, or digital inputs, with pull-up resistor. IO# 12	11	***GND*** Ground for BI inputs. This Product's ground is this GND also.
6	***BI*** Button Input for switches, sensors, or digital inputs, with pull-up resistor. IO# 13	12	No Place NP

RV-N55-3B 8: BI, 8 Inputs to Monitor or Control other Things.

Terminal Port B (Isolated Analog and Digital Inputs, Digital output, Digital input)

Pin #	1	2	3	4	5	6	7	8	9	10	11	12
Function	***BI***	***BI***	***BI***	***BI***	***BI***	***BI***	***BI***	***BI***	***GND***	***GND***	***GND***	*NP*
IO#	8	9	10	11	12	13	14	15				



Terminal B

RV-N55-3A 8:SV 8 switched voltage outputs to drive relays, valves, lights, ….

Terminal Port A (Switched Voltage Outputs, Analog inputs, Digital inputs)

Pin #	1	2	3	4	5	6	7	8	9	10	11	12
Function	***SV***	***SV***	***SV***	***SV***	***SV***	***SV***	***SV***	***SV***	***VPG***	***VPG***	***VPG***	***EVI***
IO#	0	1	2	3	4	5	6	7				

VPG ground isolated with all SV outputs, EVI is the Electronic Voltage Input (AC or DC)

Terminal A

List of Similar Versions to the ***RV-N55-3C***: With no IO terminal B, and buttons/switches "on the enclosure".

RV-N55-3H *has these 8 BI inputs with buttons on the top of the enclosure.*

RV-N55-3M *has these 8 BI inputs with 4: 3-Position switches on the top of the enclosure.*

RV-N55-3P *has these 8 BI inputs with 4: pairs of ON and OFF buttons on top the enclosure.*

RV-N55-4 Terminal Blocks

RV-N55-4 has two 12-pin terminal interfaces for its 16 IO pins. Here is a diagram of all IOs.

RV-N55-4C 2: AI, 2: LI, 4:SV (Very Isolated IOs) Two 12 Pin Terminals

Terminal Port A (2 Solenoid Drivers, 2 analog sensors, 2 digital inputs)

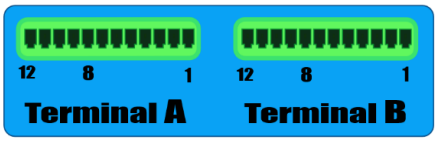
Pin #	1	2	3	4	5	6	7	8	9	10	11	12
Function	***GND***	***AI***	***AI***			***DSD A***	***DSD B***	***DSD A***	***DSD B***	***VPG***	***VPG***	***EVI***
IO#		**0**	**1**			**4**	**5**	**6**	**7**			

GND shared with IO numbers 0,1,2,3 and the RAZN. VPG ground isolated with all SDSD outputs 4,6

Terminal Port B (Isolated Analog and Isolated Digital Inputs)

Pin #	1	2	3	4	5	6	7	8	9	10	11	12
Function	***IGND***	***OIDI***	***OIDO***	***OIDO***	***IGND***	***LI***	***IGND***	***LI***	***IGND***	***IAI***	***IGND***	***IAI***
IO#		12	13	14	8	8	9	9	10	10	11	11

IGND shared with IO numbers 12, 13,14. VPG ground isolated with all SV outputs 4,5,6,7



Terminal A

Pin	*Description*	*Pin*	*Description*
1	***GND*** Ground for AI and LI, and this Product's ground is this GND also.	7	***DSD B*** Solenoid Driver B(#5) Positive for OFF pule.
2	***AI*** Analog Input #0, from GND	8	***DSD A*** Solenoid Driver A(#6)P in. Positive for ON pule.
3	***AI*** Analog Input #1, from GND	9	***DSD B*** Solenoid Driver B(#7) Positive for OFF pule.
4	***DA*** Digital Input #2, from GND	10	***VPG*** Voltage Ground for In and Out SD volts
5	***DA*** Digital Input #3, from GND	11	***VPG*** Voltage Ground for In and Out SD volts
6	***DSD A*** Solenoid Driver A(#4)P in. Positive for ON pule.	12	***EVI*** Voltage Input for SD outs. (AC or DC)

On Port A, the GND pin is connected to this Product power DC Ground. AI and LI terminals use the product ground, not Isolated.

Terminal B

Pin	*Description*	*Pin*	*Description*
1	***IGND*** Isolated Ground for OID pins 12-14	7	***IGND*** Isolated Ground for LI #9 Pin 7&8 are the inputs for isolated digital input IO#9
2	***OIDI*** Digital Input IO#12	8	***LI*** Digital LI Input IO#9 Polarity does not matter.
3	***OIDO*** Digital output IO#13	9	***IGND*** Isolated analog in IAI IO#10, (Volts / 4-2mA) Pin 9&10 are the inputs for isolated digital input IO#10.
4	***OIDO*** Digital output IO#14	10	***IAI*** Isolated Voltage Ground for IAI IO#10 Polarity does not matter.
5	***IGND*** Isolated Ground for LI IO#8	11	***IGND*** Isolated analog in IAI IO#11, (Volts / 4-2mA)
6	***LI*** Digital LI Input #8	12	***IAI*** Isolated Voltage Ground for IAI IO#11

On Port B, all the OIOD and LI inputs use the isolated IGND on Terminal B pin 1.

The **IO#** (Input / Output Number) is the SCADA command interface number. The RAZN has up to 16 IOs, numbers 0 through 15. In SCADA and MODBUS commands, these IO# are used to specify the terminal to read or control. All IO# information is also in registers to read or set using MODBUS messages or commands in the Command mode.

The **-4B** and **-4D** version use the same hardware IO terminals and have different functions and features turned on, in two different ways in the software. The IOs of the **-4B** or **-4D** version are described here:

RV-N55-4A 2: AI, 4:SV (Isolated IOs) One 12 Pin Terminal A

Terminal Port A (2 Solenoid Drivers, 2 analog sensors, 2 digital inputs)

Pin #	1	2	3	4	5	6	7	8	9	10	11	12
Function	*GND*	*AI*	*AI*			*DSD A*	*DSD B*	*DSD A*	*DSD B*	*VPG*	*VPG*	*EVI*
IO#		0	1			4	5	6	7			

GND shared with IO numbers 0,1,2,3 and the RAZN. VPG ground isolated with all SDSD outputs 4,6

-4A Same IO as **RV-N55-4D** except only one terminal (Terminal A) for lower cost than **-4D**.

RV-N55-5 Terminal Blocks

RV-N55-5C 2: AI, 2: LI, 4:SV (Very Isolated IOs) Two 12 Pin Terminals

Terminal Port A (4 Solenoid Drivers)

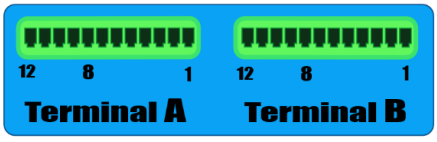
Pin #	1	2	3	4	5	6	7	8	9	10	11	12
Function	*NC*	*DSD A*	*DSD B*	*DSD A*	*DSD B*	*DSD A*	*DSD B*	*DSD A*	*DSD B*	*VPG*	*VPG*	*EVI*
IO#		0	1	2	3	4	5	6	7			

GND shared with IO numbers 0,1,2,3 and the RAZN. VPG ground isolated with all SDSD outputs 4,6

Terminal Port B (Isolated Analog and Isolated Digital Inputs)

Pin #	1	2	3	4	5	6	7	8	9	10	11	12
Function	*IGND*	*OIDI*	*OIDO*	*OIDO*	*IGND*	*LI*	*IGND*	*LI*	*IGND*	*IAI*	*IGND*	*IAI*
IO#		12	13	14	8	8	9	9	10	10	11	11

IGND Pin1 and Pin11 are shared with IO numbers 11, 12, 13,14. IO8 and IO 9 are fully isolated.



Terminal A

Pin	*Description*	*Pin*	*Description*
1	*NC* Nothing to connect here.	7	*DSD B* Solenoid Driver B(#5) Positive for OFF pule.
2	*DSD A* Solenoid Driver A(#6)P in. Positive for ON pule.	8	*DSD A* Solenoid Driver A(#6)P in. Positive for ON pule.

3	***DSD B*** Solenoid Driver B(#7) Positive for OFF pule.	9	***DSD B*** Solenoid Driver B(#7) Positive for OFF pule.
4	***DSD A*** Solenoid Driver A(#6)P in. Positive for ON pule.	10	***VPG*** Voltage Ground for In and Out SD volts
5	***DSD B*** Solenoid Driver B(#7) Positive for OFF pule.	11	***VPG*** Voltage Ground for In and Out SD volts
6	***DSD A*** Solenoid Driver A(#4)P in. Positive for ON pule.	12	***EVI*** Voltage Input for DsD outs. (DC)

On Port A, the GND pin is connected to this Product power DC Ground. AI and LI terminals use the product ground, not Isolated.

Terminal B

Pin	***Description***	***Pin***	***Description***
1	***IGND*** Isolated Ground for OID pins 12-14	7	***IGND*** Isolated Ground for LI #9 Pin 7&8 are the inputs for isolated digital input IO#9
2	***OIDI*** Digital Input IO#12	8	***LI*** Digital LI Input IO#9 Polarity does not matter.
3	***OIDO*** Digital output IO#13	9	***IGND*** Isolated analog in IAI IO#10, (Volts / 4-2mA) Pin 9&10 are the inputs for isolated digital input IO#10.
4	***OIDO*** Digital output IO#14	10	***IAI*** Isolated Voltage Ground for IAI IO#10 Polarity does not matter.
5	***IGND*** Isolated Ground for LI IO#8	11	***IGND*** Isolated analog in IAI IO#11, (Volts / 4-2mA)
6	***LI*** Digital LI Input #8	12	***IAI*** Isolated Voltage Ground for IAI IO#11

On Port B, all the OIOD and LI inputs use the isolated IGND on Terminal B pin 1.

The **IO#** (Input / Output Number) is the SCADA command interface number. The RAZN has up to 16 IOs, numbers 0 through 15. In SCADA and MODBUS commands, these IO# are used to specify the terminal to read or control. All IO# information is also in registers to read or set using MODBUS messages or commands in the Command mode.

The **-5A** and **-5D** version use the same hardware IO terminals and have different functions and features turned on, in two different ways in the software. The IOs of the **-5A** or **-5D** version are described here:

RV-N55-5a 2: AI, 4:SV (Isolated IOs) One 12 Pin Terminal

Terminal Port A (4 Solenoid Drivers)

Pin #	1	2	3	4	5	6	7	8	9	10	11	12
Function	***NC***	***DSD A***	***DSD B***	***DSD A***	***DSD B***	***DSD A***	***DSD B***	***DSD A***	***DSD B***	***VPG***	***VPG***	***EVI***
IO#		0	1	2	3	**4**	**5**	**6**	**7**			

GND shared with IO numbers 0,1,2,3 and the RAZN. VPG ground isolated with all SDSD outputs 4,6

-5A Same IO as **RV-N55-4D** except only one terminal (Terminal A) for lower cost than **-4D**.

RV-N55-7 Analog Inputs and General Purpose IO pins.

The **-7C** SCADA IO with ultra-high resolution ADC inputs. 23bit ADC converter used. 2 ADS inputs. 8 digital IOs. 1 RD relay driver output. Measure volts, mV, or current, or 4-20mA sensors.

RV-N55-7C 2 Terminals, SCADA IOs High Resolution Analog and Digital

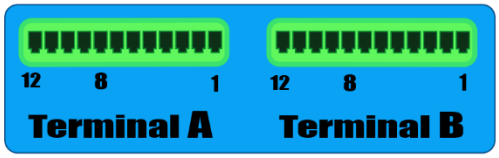
Terminal Port A (Digital IO are Flexible IOs configurable: Inputs or Outputs)

Pin #	1	2	3	4	5	6	7	8	9	10	11	12
Function	NC	*VIO*	*GND*	*FIO*	*FIO*	*FIO*	*FIO*	*FIO*	*FIO*	*FIO*	*FIO*	*GND*
IO#				8	9	10	11	12	13	14	15	

GND shared with IO numbers 0,1,2,3 and the RAZN. VPG ground isolated with all SV outputs 4,5,6,7

Terminal Port B (Isolated Analog Inputs Voltage or 4-20mA current and one Relay Driver)

Pin #	1	2	3	4	5	6	7	8	9	10	11	12
Function	*AVDD*	*AVSS*	*VCC*	*GND*	*IADC*	*IADC*	*ADS+*	*ADS-*	*ADS+*	*ADS-*	*GND*	*RD*
IO#					1	2	3	3	4	4		7



Terminal A 8 Digital IO pins. (In or Out)

Pin	*Description*	*Pin*	*Description*
1	No Connect. Actual diode driven input to power VIO from external voltage input in custom version.	7	*FIO* Flexible IO. Setup as digital Input or Output.
2	*VIO* DC Digital Voltage Power Output.	8	*FIO* Flexible IO. Setup as digital Input or Output.
3	*GND* Ground for the FIOs, and this Product's ground is this GND also.	9	*FIO* Flexible IO. Setup as digital Input or Output.
4	*VCC* Flexible IO. Setup as digital Input or Output.	10	*FIO* Flexible IO. Setup as digital Input or Output. volts
5	*FIO* Flexible IO. Setup as digital Input or	11	*FIO* Flexible IO. Setup as digital Input or

	Output.		Output.
6	***FIO*** Flexible IO. Setup as digital Input or Output.	12	***GND*** Ground for the FIOs, and this Product's ground is this GND also.

Terminal B Hi-Resolution Analog Inputs and Relay Driver.

Pin	Description	Pin	Description
1	***AVDD*** ADC voltage output for the ADC voltage use, positive	7	***ADS+*** Differential Voltage Sensor input. Positive+
2	***AVSS*** ADC voltage output for the ADC voltage use, negative.	8	***ADS -*** Differential Voltage Sensor input. Negative-
3	***VCC*** DC Voltage output, from the DC voltage input to the RAZN for your use. OK to use to drive a relay ***RD.***	9	***ADS +*** Differential Voltage Sensor input. Positive+
4	***GND*** This is Product's ground. VCC and GND is where the product's DC power voltage connects to. Use for ***IADC*** out.	10	***ADS -*** Differential Voltage Sensor input. Negative-
5	***IADC*** Output current, out on this pin	11	***GND*** This is Product's ground.
6	***IADC*** Output current, out on this pin	12	***RD*** MOSFET Relay Driver output. Connect a relay or device, to connect their Ground. To GND.

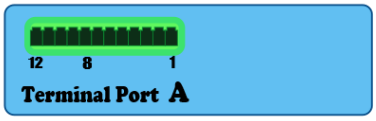
The **-7C** SCADA IO with ultra-high resolution ADC inputs. 23bit ADC converter used. 2 ADS inputs. 8 digital inputs. 1 RD relay driver. The analog is configurable to measure voltage or current with adjustable gain and filters. Super high resolution and the ADC chip used here was promoted as: Best In the World.

RV-N55-7A 8 Flexible digital Inputs and Outputs

Terminal Port A (Digital IO are Flexible IOs configurable: Inputs or Outputs)

Pin #	1	2	3	4	5	6	7	8	9	10	11	12
Function	NC	***VIO***	***GND***	***FIO***	***FIO***	***FIO***	***FIO***	***FIO***	***FIO***	***FIO***	***FIO***	***GND***
IO#				8	9	10	11	12	13	14	15	

GND shared with IO numbers 0,1,2,3 and the RAZN. VPG ground isolated with all SV outputs 4,5,6,7

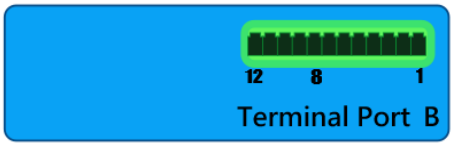


RV-N55-7B 2: ADS, 2: IADC, 1:RD Precisions ADCs SCADA IOs

Measure volts, mV, or current, or 4-20mA sensors. A relay driver output.

Terminal Port B (Isolated Analog and Digital Inputs, Digital output, Digital input)

Pin #	1	2	3	4	5	6	7	8	9	10	11	12
Function	***AVDD***	***AVSS***	***VCC***	***GND***	***IADC***	***IADC***	***ADS+***	***ADS-***	***ADS+***	***ADS-***	***GND***	***RD***
IO#					1	2	3	3	4	4		7



RV-N55-9 Isolated IOs and Terminal Blocks

The **-9C** and **-9D** version use the same hardware IO terminals and have different functions and features turned on, in two different ways in the software. **-9C** can be converted to **-9D** and **-9D** can be converted back to **-9C** model. The **-9C** with **4 Switched Voltage Output** or **-9D** version with **2 Solenoid Drivers**:

RV-N55-9C 2: AI, 2: LI, 4:SV (Very Isolated IOs) Two Terminals A and B

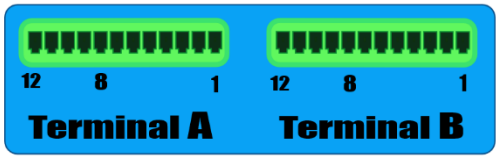
Terminal Port A (Switched Voltage Outputs, Analog inputs, Digital inputs)

Pin #	1	2	3	4	5	6	7	8	9	10	11	12
Function	***GND***	***AI***	***AI***	***DA***	***DA***	***SV***	***SV***	***SV***	***SV***	***VPG***	***VPG***	***EVI***
IO#		0	1	2	3	4	5	6	7			

GND shared with IO numbers 0,1,2,3 and the RAZN. VPG ground isolated with all SV outputs 4,5,6,7

Terminal Port B (Isolated Analog and Digital Inputs, Digital output, Digital input)

Pin #	1	2	3	4	5	6	7	8	9	10	11	12
Function	***IGND***	***OIDI***	***OIDO***	***OIDO***	***LI B***	***LI A***	***LI B***	***LI A***	***IGND***	***IAI***	***IGND***	***IAI***
IO#		12	13	14	8	8	9	9	10	10	11	11



Terminal A

Pin	***Description***	***Pin***	***Description***
1	***GND*** Ground for AI and LI, and this Product's ground is this GND also.	7	***SV*** Voltage Output #5, from ***EVI*** in.
2	***AI*** Analog Input #0, from GND	8	***SV*** Voltage Output #6, from ***EVI*** in.
3	***AI*** Analog Input #1, from GND	9	***SV*** Voltage Output #7, from ***EVI*** in.
4	***DA*** Digital Input #2, from GND	10	***VPG*** Voltage Ground for In and Out SV volts
5	***DA*** Digital Input #3, from GND	11	***VPG*** Voltage Ground for In and Out SV volts
6	***SV*** Voltage Output #4, from VP in.	12	***EVI*** Voltage Input for SV outs. (AC or DC)

On Port A, the GND pin is connected to this Product power DC Ground. AI and LI terminals use the product ground, not Isolated.

Terminal B

Pin	Description	Pin	Description
1	***IGND*** Isolated Ground for OID pins 12-14	7	***LI B*** Isolated Ground for LI #9
2	***OIDI*** Digital Input #12	8	***LI A*** Digital LI Input #9 Voltage = 1, No input voltage = 0. Polarity does not matter. LI #9
3	***OIDO*** Digital output #13	9	***IGND*** Isolated analog in Ground IAI #10,
4	***OIDO*** Digital output #14	10	***IAI*** Isolated Voltage for IAI #10
5	***LI B*** Isolated Ground for LI #8	11	***IGND*** Isolated analog in Ground IAI #11,
6	***LI A*** Digital LI Input #8 Voltage = 1, No input voltage = 0. Polarity does not matter. LI #8	12	***IAI*** Isolated Voltage Ground for IAI #11

On Port B, all the OIOD and LI inputs use the isolated IGND on Terminal B pin 1.

RV-N55-9A 2:AI, 4:SV 2:DA (Isolated SV and Solenoid driving) One Terminal

Terminal Port A (Switched Voltage Outputs)

Pin #	1	2	3	4	5	6	7	8	9	10	11	12
Function	***GND***	***AI***	***AI***	***DA***	***DA***	***SV***	***SV***	***SV***	***SV***	***VPG***	***VPG***	***EVI***
IO#		0	1	2	3	4	5	6	7			

GND shared with IO numbers 0,1,2,3 and the RAZN. VPG ground isolated with all SV outputs 4,5,6,7

-9A same IO as **RV-N55-9C** except only one terminal (Terminal A) for lower cost than **-9C or -9D**.

RV-N55-9D 2: AI, 2: LI, 4:SV (Very Isolated IOs) Two 12 Pin Terminals

Terminal Port A (Switched Voltage Outputs to drive Solenoids)

Pin #	1	2	3	4	5	6	7	8	9	10	11	12
Function	***GND***	***AI***	***AI***	***LI***	***LI***	***SD1***	***SD2***	***SD1***	***SD2***	***VPG***	***VPG***	***EVI***
IO#		0	1	2	3	4		6				

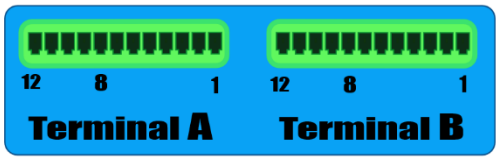
GND shared with IO numbers 0,1,2,3 and the RAZN. VPG ground isolated with all SV outputs 4,5,6,7

Terminal Port B (Analog and Digital Inputs)

Pin #	1	2	3	4	5	6	7	8	9	10	11	12

Function	IGND	OIDO	OIDO	OIDI	IGND	LI	IGND	LI	IGND	IAI	IGND	IAI
IO#		12	13	14	8	8	9	9	10	10	11	11

IGND Pin 1 is Isolated and shared with IO numbers 12, 13, 14.
Digital inputs LI 8, LI 9, and Analog inputs IAI 10, IAI 11, are all isolated by themselves.



Terminal A

Pin	Description	Pin	Description
1	GND Ground for AI and LI, and this Product's ground is this GND also.	7	SD2 Solenoid Driver B(#4) OFF pule.
2	AI Analog Input #0, from GND	8	SD1 Solenoid Driver A(#6) ON pule.
3	AI Analog Input #1, from GND	9	SD2 Solenoid Driver B(#6) OFF pulse.
4	DA Digital Input #2, from GND	10	VPG Voltage Ground for In and Out SD volts
5	DA Digital Input #3, from GND	11	VPG Voltage Ground for In and Out SD volts
6	SD1 Solenoid Driver A(#4)P in. ON pule.	12	EVI Voltage Input for SD outs. (AC or DC)

On Port A, the GND pin is connected to this Product power DC Ground. AI and DA terminals use the product GND, not Isolated.

Terminal B

Pin	Description	Pin	Description
1	IGND Isolated Ground for OID pins 12-14	7	IGND Isolated Ground for LI #9
2	OIDI Digital Input #12	8	LI Digital LI Input #9
3	OIDO Digital output #13	9	IGND Isolated analog in IAI #10, (Volts / 4-2mA)
4	OIDO Digital output #14	10	IAI Isolated Voltage Ground for IAI #10
5	IGND Isolated Ground for LI #8	11	IGND Isolated analog in IAI #11, (Volts / 4-2mA)
6	LI Digital LI Input #8	12	IAI Isolated Voltage Ground for IAI #11

On Port B, all the OIOD and LI inputs use the isolated IGND on Terminal B pin 1.

Input Output Terminal IO Pin Function Descriptions

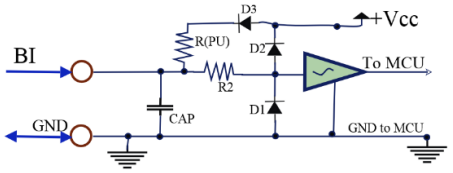
All these Terminal IO pin functions are working on Prototypes in our lab. For more details, see the user manual or our web page: https://www.raveon.com/scada-terminals/

Each product version of the RAZN has a variety of different inputs and output terminal block function pins with a myriad of different features available. All these IOs were build onto various prototype boards to make sure they work and software works with them.

Here is a list of the IO terminals already available on various RAZN terminal blocks, and if you need some other IO feature, contact Raveon and we will be glad to create new IO functions. If an IO pin has a "Configuration Variable", the letter is the code for the **IOPIN** command to configure various IO features. All pins are heavily protected against noise and ESD and can be configured using commands in Command mode, or a program to program the RAZN.

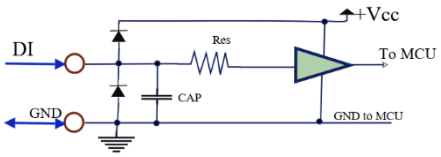
1.1.1. BI Button Input.

IOPIN: S is the character to use to specify this type of GPIO
Input with pull-up resistor. Switch is active (ON) when is when input is connected to ground.
Pull-up resistor R(PU): 2.4k
Input impedance: 2.4k
Max input voltage: 3.3V
On Threshold: >2.8V and Open source input.
Off Threshold: <o.5V Connect BM to GND
Current draw to short input to ground. 1mA.



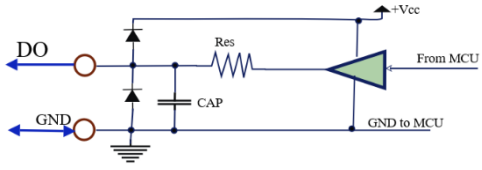
1.1.2. DI Digital Input.

IOPIN: A is the character to use to specify this type of GPIO
Max DC input Voltage: Vcc 3.3V std. 5V option.
"ON" DC input voltage Range (0.8 × Vcc) to Vcc
"OFF" DC input voltage Range 0V – (0.12 × Vcc)
Input Current: ±2uA
CAP: 220pF Res: 1K Diodes for ESD protection.



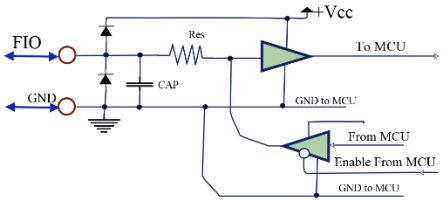
1.1.3. DO Digital Output.

IOPIN: B is the character to use to specify this type of GPIO
Output "ON" voltage output: (0.9 × Vcc) to Vcc
Output "OFF" voltage output: 0V – 0.1V
Output impedance: 1000 ohm – 1200 ohm
Output current: 3mA max. The Res is 1K on normal ***DO***.
CAP: 220pF Res: 1K Diodes for extra ESD protection.
VCC Voltage: Vcc 3.3V std. 5V option.



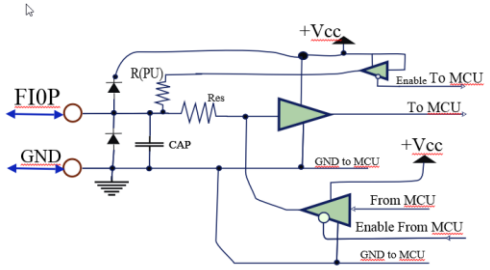
1.1.4. FIO Flexible Digital Input / Ouput.

IOPIN: A(In) **B**(Out) is the character used to specify the IO mode.
User configurable TTL digital IO pins configurable as **In or Out.**
Max DC input Voltage: Vcc



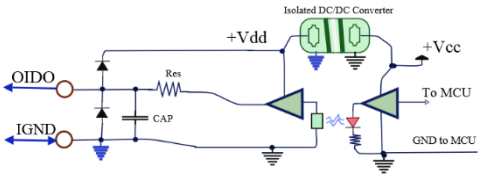
"ON" DC input voltage Range: (0.8 × Vcc) to Vcc
"OFF" DC input voltage Range: 0V – (0.12 × Vcc)
Input Current: <2uA
CAP: 220pF Res: 1K Diodes for ESD protection.
Default IO mode from factory: **A** (digital Input).

1.1.1. ***FIOP Flexible Digital Input / Output with Pullup option.***



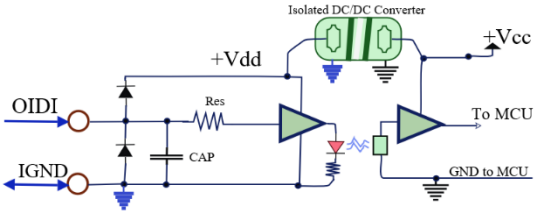
IOPIN: A(In) **B**(Out) is the character used to specify the IO mode.
User configurable TTL digital IO pins configurable as **In or Out.**
Max DC input Voltage: Vcc
"ON" DC input voltage Range: (0.8 × Vcc) to Vcc
"OFF" DC input voltage Range: 0V – (0.12 × Vcc)
Input Current: <2uA
CAP: 220pF Res: 1K Diodes for ESD protection.
Default IO mode from factory: **A** (digital Input).
100K pull up resistor R(PU) can be enabled by CPU.

1.1.2. ***OIDO Optically Isolated Digital Output.***



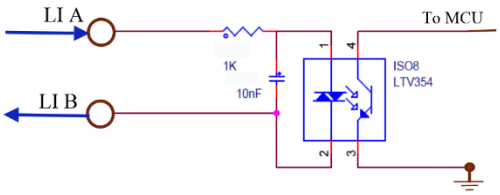
IOPIN: B is the character to use to specify this type of GPIO
Output "ON" voltage output: Vdd.
Output "OFF" voltage output:
Output impedance: 1-100 ohms
Maximum voltage driven into output: 3.3V std. 5V, 9V opt.
Max output current: 50mA (Per Pin) 150mA (total)
CAP: 220pF

1.1.3. ***OIDI Optically Isolated Digital Input.***



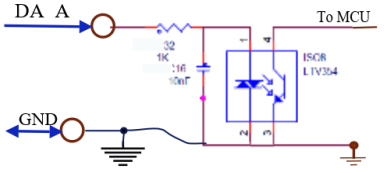
IOPIN: A is the character to use to specify this type of GPIO
Max DC input Voltage: Vdd+.1
"ON" DC input voltage Range: (0.9 × Vdd) to Vdd
"OFF" DC input voltage Range: 0 to (0.2 × Vdd)
Input Current: < 10uA
CAP: 220pF Res: 1K Diodes for ESD protection.

1.1.4. ***LI LED Optically Isolated Digital Input.***



IOPIN: A is the character to use to specify this type of GPIO
2 inputs in ***LI*** A and B are digital input that will light up an internal LED optically isolated from the microcontroller unit (MCU) that monitors these inputs.
Input Impedance: 1000 ohms
Max input Voltage (A to B): 48V
"ON" DC input voltage Range: >1.5V
"OFF" DC input voltage Range <0.8V
Input Current: (Vin-1.0)/1000

1.1.1. ***DA Digital Action LED Input Driver.***

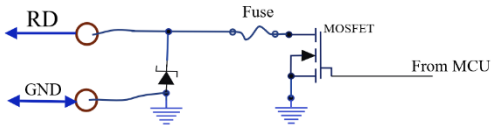


IOPIN: A is the character to use to specify this type of GPIO
input in ***DA*** A is digital input that will light up an internal LED to optically isolate the ***D***s from the microcontroller unit (MCU) that monitors these inputs. The Ground GBD is shared with this DA input.
Max input Voltage (A to B): 48V

"ON" DC input voltage Range: >1.5V
"OFF" DC input voltage Range <0.8V
Input Current: (Vin-1.0)/1000

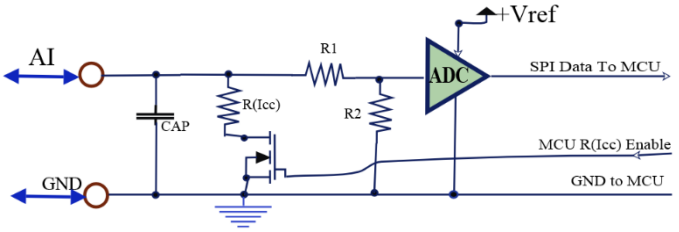
1.1.2. RD Relay Driver. Open Drain MODSFET Output

IOPIN: C is the character to use to specify this type of GPIO
Max DC input Voltage: 30
On Current: 10A Max, 2A continuous.
Fail Safe: Configurable relay state for power on and no data connection.
Impedance to ground when on: <50mΩ.
Drain current when off: <2uA
Output capacitance: <200pF



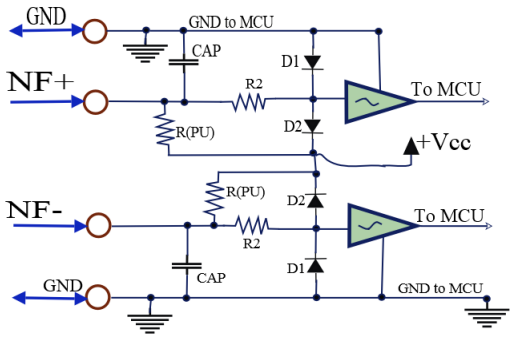
1.1.3. AI Analog Input. Voltage Input or 4-20mA current Input

IOPIN: E (Volt) or **F** (Current) is the character to use to specify this type of GPIO
Input Configuration: **E**: AIV (Voltage read) **F**: AIC (Current Read)
E: Input impedance: 10K-15K
F: Input Impedance: 120 ohm
A to D resolution: 12 bit
Input Measurement Accuracy: 2%.
Input Sampling Time: 50mS - 2S configurable.
Smoothing: Selectable averaging: 1-8 samples.
Maximum Input voltage: 5V R1 can be changed.
Temperature stability: < ±30 PPM/ºC



1.1.4. NF Dual ON and OFF inputs

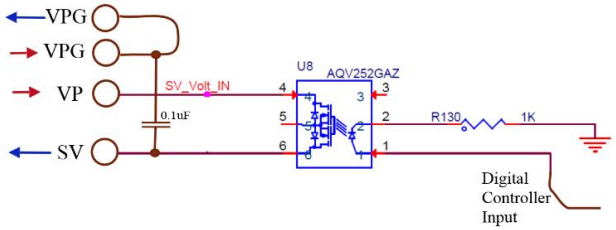
IOPIN: N is the character to use to specify this type Dual Button ON / OFF input. When on is shorted to ground connection by a button or digital input.
Pull-up resistor R(PU): 2.4k
Input impedance: 2.4k
Max input voltage: 50V DC or AC
Current draw to short input to ground. <1mA.
NF+ to GND is an ON event. NF- to GND is an OFF event



1.1.5. SV Switched Voltage Output Ac or DC input voltage switched on to this output.

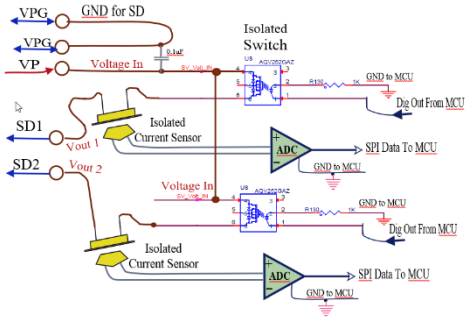
IOPIN: D is the character to use to specify this type of GPIO
AC or DC diverted input on ***VP*** and ***VPG***. ***SV*** is switched voltage out, and the output device shares the power source ground connection ***VPG***.

Max DC input:	48V
Max AC input:	50VAC
Switch impedances when on:	30 mΩ - 50mΩ
Off state leakage current:	<2uA
Max Continuous load current:	2.5A (AC) 4.5A (DC)
Max peak load current:	5.5A
Isolation voltage:	1500Vrms



1.1.6. SD 3-Pin Isolated Solenoid Driver with internal Current Monitoring.

IOPIN: J is the character to use to specify this Three (3) Pin Solenoid Driver pair of terminals. DC input on ***VP*** and ground power input on ***VPG***. ***SD1*** is the ON solenoid driver. ***SD2*** is the OFF solenoid driver. The switched voltage output drives ***SD1*** and ***SD2*** as appropriate to turn the solenoid On or OFF. The pin 3 on the solenoid for the Ground uses ***VPG***. So connect it to ***VPG*** so its other two connections are used for On and Off.

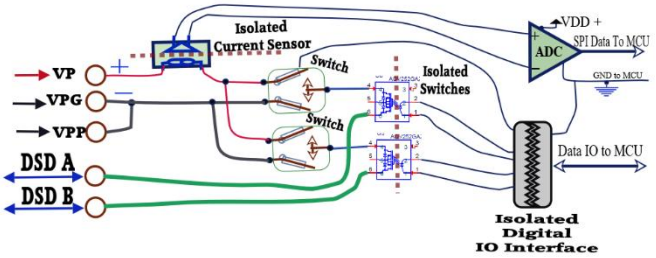


Max Current to Monitor:	5A.
Max DC input:	48V
Max AC input:	50VAC
Switch impedances when on:	30 mΩ - 50mΩ
Off state leakage current:	<2uA
Max Continuous load current:	2.5A (AC) 4.5A (DC)
Max peak load current:	5.5A
Isolation voltage:	1500Vrms

1.1.7. DSD Double acting, Dual-pin Solenoid Driver Isolated from the product.

IOPIN: H is the character to use to specify this type of GPIO. Power in on ***VP*** and ***VPG*** are used to switch Solenoids connected to ***DSD A*** and ***DSD B***. Connect to ***DSD A*** for positive turn-on pulsed signals.
Connect solenoid to ***DSD B*** for the negative pin.

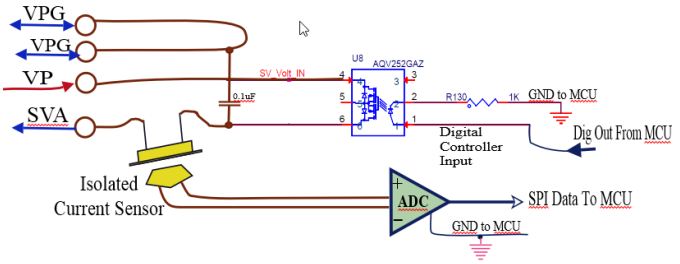
Max DC input:	48V
Max AC input:	50VAC
Switch impedances when on:	30 mΩ - 50mΩ
Off state leakage current:	<2uA
Max Continuous load current:	2.5A (AC) 4.5A (DC)
Max peak load current:	5.5A
Isolation voltage:	1500Vrms



1.1.8. SVA Switched Voltage Output Ac or DC with Isolated Current Monitoring.

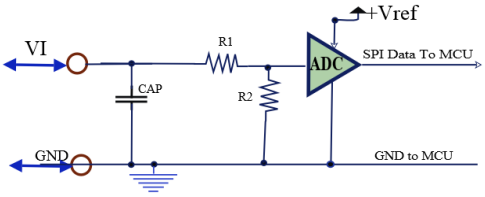
IOPIN: D is the character to use to specify this type of GPIO AC or DC diverted input on ***VP*** and ***VPG***. ***SVA*** is switched voltage out, and the output device shares the power source ground ***VPG***.

Max Current to Monitor:	5A.
Max DC input:	48V
Max AC input:	50VAC
Switch impedances when on:	30 mΩ - 50mΩ
Off state leakage current:	<2uA
Max Continuous load current: (DC)	2.5A (AC) 4.5A
Max peak load current:	5.5A
Isolation voltage:	1500Vrms



1.1.9. VI Voltage Input.

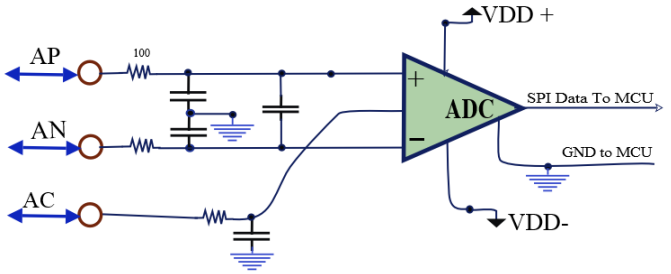
IOPIN: E (Volt) is the character to use to specify this type of GPIO
Input Configuration:
Input impedance: 10K-15K
A to D resolution:
Input Accuracy:
Input Sampling Time:



Smoothing: Selectable averaging: 1-8 samples.
Input impedance:
Temperature stability: better than ±30 PPM/ºC
User Connection:

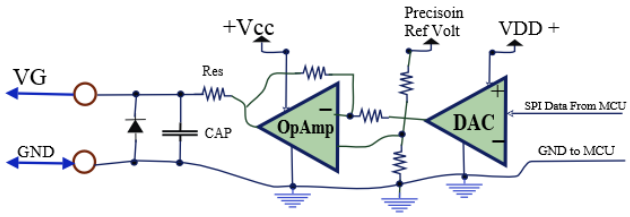
1.1.10. ADS Analog Delta-Sigma Differential ADC

IOPIN: E (Volt) is the character to use to specify this type of GPIO
24-bit, Precision Differential Delta-Sigma(ΔΣ) Analog-to-Digital Converter (ADC).
AP is Positive differential input
AN is Lower differential input
AC is mid-input Common voltage
Input Range Options: ±1V, ±5V, ±10V ±20V.
Input noise: < 0.01uV.
Input Impedance: < 1mΩ
Usable Temperature: –40°C to +120°
ADC model: TI SBAS790C



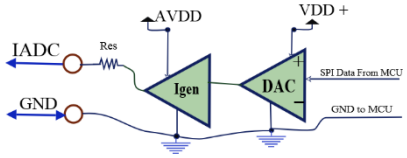
1.1.11. VO Voltage output.

Voltage output, ground connection to product ground.
VO Output: 0-5V standard.
Voltage Precision: 16 bit DAC, <1.1%
Noise Output: <0.050V.
Output impedance: <22 ohms.
Usable Temperature: –40°C to +120°
Thermal Stability: < 2% error -30C to +80C



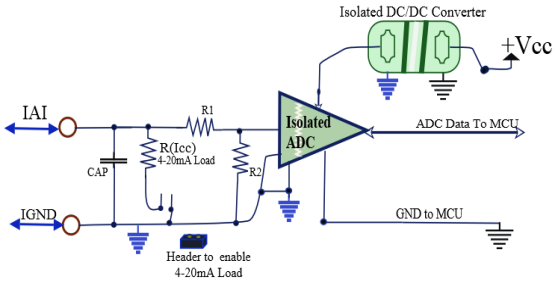
1.1.12. IADC Current Output.

IOPIN: G The RAZN will output current out this pin, to drive a sensor or resistor. The level of output current is configurable, and the **ADS** or **AI** terminals can be used to measure the voltage on the thing connected to this **IADC** current output terminal.
Max Current:
Output Impedance:



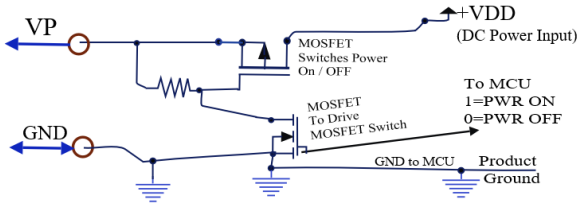
1.1.13. IAI Isolated Analog Input. Voltage Input or 4-20mA current Input

IOPIN: E (Volt) or **F** (Current) is the character to use to specify this type of IO.
A Header jumper turns on the **F** (4-20mA mode).
Input Configuration: **E**: (Voltage read) **F**: (Current Read)
E: Input impedance: 10K-15K
F: 4-20mA Input Impedance: 120 ohm
A to D resolution: 12 bit
Input Measurement Accuracy: 2%.
Input Sampling Time: 50mS - 2S configurable.
Smoothing: Selectable averaging: 1-8 samples.
Maximum Input voltage: 5V R1 can be changed.
Max isolated differential voltage to GND: 100V TBVD.
Temperature stability: < ±30 PPM/ºC



1.1.1. VP Diverted Voltage Power Output from DC product power Input.

Input power for switched Voltage SV outputs.
Switch: MOSFET P
Voltage out: VDD same as DC input powering product.
GND: Same ground as products ground. Not isolated.



1.1.2. IGND Product Isolated Ground Connection.

The ground connection to the RAZN product's digital input or output interface that is isolated from the ground and RF ground.

1.1.3. GND Product Ground Connection.

The ground connection to the RAZN product's primary ground and RF ground.

1.1.4. VDD Voltage Power Output from V power of the RAZN.

Power output can be turned on or off to come out of this pin and the DC power is from the DC power supply that is powering the RAZN.
Maximum output current:
Output voltage:

1.1.1. EVI External Voltage input.

AC or DC power can be put into this terminal. The Ground of this voltage must be connected to the VPG ground terminal pin.

1.1.1. VPG Ground of Diverted Voltage, floating.

Ground connection for inputting diverted power for switched Voltage SV outputs. Not connected to the RAZN product ground. Shared with SV power input ground and the AC or DC power input to an SV interface.

Communication Methods to and from a RAZN

Ethernet Connect an Ethernet Cable or Wi-Fi adaptor to the RAZN's 10/100mbps Ethernet connector. This is a *Terminal Server* with 1-3 TCP/IP ports for 1-3 simultaneous client connections.

RS-485 Serial Connect an RS-485 serial cable to a RAZN or dozens of RAZNs that share this differential serial communications port connection.

Narrow Band RF The RAZN can have Raveon's RV-M6, or RV-M8 data radio modem installed inside for ultra long range RF data 1-50 miles in VHF or UHF RF bands.

LoRa RF The RAZN can have Raveon's RV-M50 LoRa data radio modem installed inside for long range license-free RF data 1-10 miles.

RS-232 Serial Connect an RS232 serial cable to a RAZN. This is an optional feature on all versions of the RV-N55 RAZN.

Wi-Fi The Ethernet connection can connect to a Wi-Fi modem to use Wi-Fi.

Raveon is always interested in adding features and options our customers need, and we are willing to adding any "linearizing software" for the thermocouple. And if you would like some additional Thermistor sensor to factor temperatures to your thermocouple, please contact Raveon customer support.

Or if you'd like the RAZN to wirelessly mimic the voltage from the thermocouple over a long distance, please contact Raveon customer support because this high accuracy 24bit ADC can wirelessly send voltage information to wherever you want it.

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