

Hardware Manual – V0001

Seitz Model: GEN4-RFID

ISO18000-3M3 Reader



SEITZ
& ASSOCIATES, INC.
ELECTRONIC DESIGN

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Notes

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The use of this product in environments or conditions not specified shall not be supported.

The reader and its associated antennas are not designed for usage in any medical application.

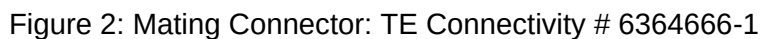
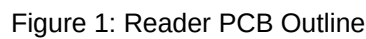
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1 - Safety / Warnings

- Before removing or inserting the reader into an edge connector, be sure that the power is not applied. Do not rely on any LED indicator states. Power may still be present even with no LED indication.
- Observe all applicable safety regulations.
- Reader installation shall be in alignment with national and local electrical codes.
- All reader repairs shall be performed only by Seitz & Associates, Inc. Attempts to repair shall invalidate any warranty and shall remove any liability from Seitz & Associates, Inc. due to any subsequent damages.
- Installation, QC and operation shall only be done by qualified parties.
- Seitz & Associates, Inc. shall not be liable for inaccuracies in any supplied documentation.
- Connection of the reader or other Seitz & Associates, Inc. component to non-authorized (not approved) devices may cause harm or injury. In such cases Seitz & Associates shall not be liable.
- Seitz & Associates, Inc. shall not be held liable for incorrect configuration settings.
- Please observe that some parts of the device may heat severely.
- Handle the device with care. Shocks may break internal circuit boards.

3 – Installation and Mounting

The latch levers must be fully engaged after insertion of the reader into the 62 pin socket.



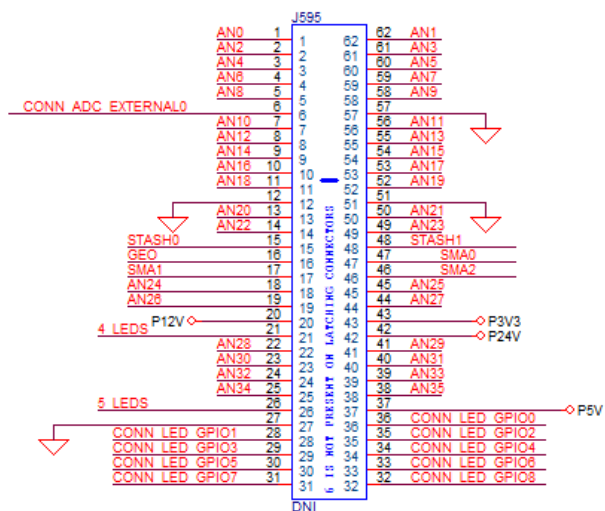
4 – Connections and Controls

The image below shows the connections and control elements discussed in this document.



The reader shall mate with a 62 pin edge connector with 0.1" pitch contacts (TE Connectivity # 6364666-1). PCB thickness is .062" 91.6 mm ±.006" (0.15 mm). The reader shall only interface to Seitz & Associates, Inc. approved PCB designs.

Figure 3: Reader Pinout



5- Electrical Interfaces

5.1 - Antenna connections

All antenna connections are made via the 62 pin edge connector (J595).

The following pins on J595 are directly addressable antenna connections:

Table 1: Antenna connections

Pin Number	Description	Pin Number	Description	Pin Number	Description
J595.1	AN0	J595.9	AN14	J595.22	AN28
J595.62	AN1	J595.54	AN15	J595.41	AN29
J595.2	AN2	J595.10	AN16	J595.23	AN30
J595.61	AN3	J595.53	AN17	J595.40	AN31
J595.3	AN4	J595.11	AN18	J595.24	AN32
J595.60	AN5	J595.53	AN19	J595.39	AN33
J595.4	AN6	J595.13	AN20	J595.25	AN34
J595.59	AN7	J595.50	AN21	J595.38	AN35
J595.5	AN8	J595.14	AN22	J595.15	Stash 0
J595.58	AN9	J595.49	AN23	J595.48	Stash 1
J595.7	AN10	J595.18	AN24	J595.16	Geo
J595.56	AN11	J595.45	AN25	J595.47	SMA0
J595.8	AN12	J595.19	AN26	J595.17	SMA1
J595.55	AN13	J595.44	AN27	J595.46	SMA2

In all cases, the common return path is on pins: J595.12, J595.27, J595.51 and J595.57.

The maximum VSWR for any connected antenna shall not exceed 1.5

The Q of any connected antenna shall be in the range of 10-30

The actual decoded address for a given “spot” is defined in the readers AE configuration table.

5.2 - Edge Connector GPIO Pins

There are 9 GPIO pins on the edge connector that can be defined individually as inputs or outputs.

Table 2: GPIO Pin connections

Pin Number	Description
J595.36	GPIO_0
J595.28	GPIO_1
J595.35	GPIO_2
J595.29	GPIO_3
J595.34	GPIO_4
J595.30	GPIO_5
J595.33	GPIO_6
J595.31	GPIO_7
J595.32	GPIO_8

In all cases, the common return path is on pins: J595.12, J595.27, J595.51 and J595.57.

At power-up the GPIO pins are set as inputs.

Optionally a PIC processor on board may drive the GPIO pins to facilitate use of serial LED chains. The PIC processor, at startup is held in reset.

The GPIO pin drive limits are 20 mA at 5 volts.

5.3 - Felt LEDs

To assist with felt alignment, there are provisions for driving a total of 9 LEDs.

Pin 26 of J595 can drive up to 5 LEDs and Pin 21 of J595 can drive up to 4 LEDs.

In all cases, the common return path is on pins: J595.12, J595.27, J595.51 and J595.57.

The current limits on each of the Felt LED pins is 30 mA (24v max).

The ON/OFF state of the felt alignment LEDs is controlled via a TCP command sent directly to an individual reader.

5.4 - Power Supply Connections

The supply voltages of + 24 VDC, +12 VDC, 5.2 VDC, plus common shall be connected to J206. J206 mates to a Molex Micro-Fit 3.0 Plug Housing, Dual Row, 4 Circuits, UL 94V-0, With Panel Mount Ears Connector. The Seitz & Associates, Inc. GPIO Power supply board series may be used as a source of power for the reader via a custom 4 conductor cable and connector assembly.

Table 3: Pin-outs for supply voltages on J206

Connector	Name	Description
J206.1	V _{IN} +24V	Supply voltage + 24 VDC
J206.2	V _{IN} +12V	Supply voltage + 12 VDC
J206.3	GND	Common – supply voltage
J206.4	V _{IN} +5.2V	Supply voltage + 5.2 VDC

Figure 4: J206 Connector on the reader

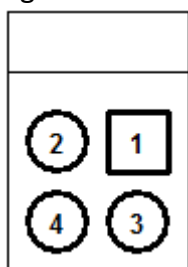


Table 4: Alternate power connections for supply voltages on J595

Connector	Name	Description
J595.42	V _{IN} +24V	Supply voltage + 24 VDC
J595.20	V _{IN} +12V	Supply voltage + 12 VDC
J595.57 J595.51 J595.12 J595.27	GND	Common – supply voltage
J595.37	V _{IN} +5.2 V	Supply voltage + 5.2 VDC

Note: Applying incorrect voltages and polarities may cause permanent damage. Only Seitz & Associates, Inc. power supply boards and cable assemblies shall be used to power the reader.

5.5 - Ethernet (100 Base-T)

The Reader has a 10 / 100 Base-T network RJ45 port. This port is used to communicate with a host PC. The host PC shall issue commands to the reader in order for it to perform a tag inventory. This port is also used for configuration, code loading and diagnostic activities.

It is recommended to use shielded CAT 5 or CAT 6 cables for this interface.

Each reader in a table network shall require a unique IP address. The default IP address is shown below.

Table 5: Factory Default Ethernet Settings

Network	Address
IP Address	192.168.12.10
Subnet-Mask	255.255.255.0
Port	55001

A readers IP address maybe set via the edge mounted “Rotary DIP Switch” (S210).

Table 6: IP Address Settings with S210

S210	
Setting	IP Address
0	192.168.12.10 *
1	192.168.12.10
2	192.168.12.11
3	192.168.12.12
4	192.168.12.13
5	192.168.12.14
6	192.168.12.15
7	192.168.12.16
8	192.168.12.17
9	192.168.12.18
A	192.168.12.19
B	192.168.12.20
C	192.168.12.21
D	192.168.12.22
E	192.168.12.8
F	192.168.12.210

* This setting will use the ip address as set via the ip address command detailed in the Seitz & Associates, Inc. communication specification.

6 – Status Indication

Table 7 shows the LED functionality.

Table 7: LED Functionality

Abbreviation	Description
D331	"Read In progress" - Turns on when a read command is in progress - Turns off when a read is not in progress
D332	"Power Good" - Turns on when all power supplies are within range. - Turns off when any power supply is out of voltage range. This condition will also halt the processor.

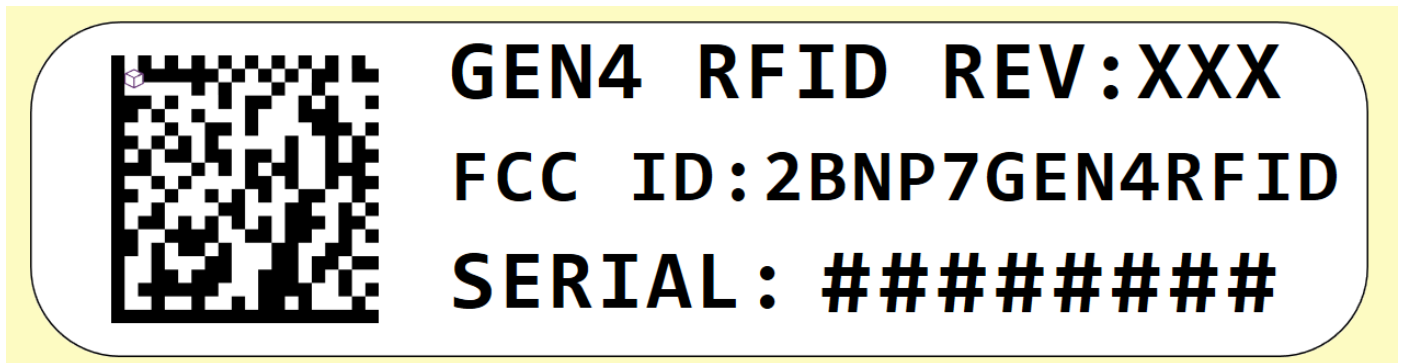
7- Radio Approvals

7.1 – FCC - United States

Product name:	GEN4-RFID
FCC ID:	2BNP7GEN4RFID
Notice for USA	This device complies with Part 15 of the FCC Rules Operation is subject to the following two conditions. (1) this device shall not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Any changes or modifications to this equipment not approved by Seitz & Associates, Inc. may void FCC authorization. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense. FCC RF Radiation Exposure Statement Caution: To maintain compliance with the FCC's RF exposure guidelines, place the product at least 20cm from nearby persons.

7.2-Label Information Reader Model **GEN4-RFID**

The following information must be posted on the outside surface of the reader.



7.3 USA (FCC) approved antennas

This device (**GEN4-RFID**), FCC ID: 2BNP7GEN4RFID has been approved to operate with the antenna listed below with maximum permissible gain and required antenna impedance. Antenna types not included in this list are not authorized.

The following antennas are approved by FCC according FCC Part 15 for use with this reader:

BJ/Carn RevC00 - Utilizing RF outputs: A0,A1,A2,A3,A4,A5,A6 (Microstrip 5 Turn 1.2" dia.) and A26,A27 (Microstrip 3.5 Turn 2.5" dia.)

8 Technical Data

Table 8

Mechanical Data

- **Dimensions (W x H x D)** 82.28 x 71.58 x 19 mm³
3.239 x 2.818 x .748 inch³
- **Weight** .04kg
1.4 oz

Electrical Data

- **Supply Voltage** 24 VDC (+/-10%)
12VDC (+/-10%)
5.2 VDC(+/-10%)
- **Power Consumption** Reader 3 watts, pass through for LEDs 7 watts
- **Operating Frequency** 13.56 MHz
- **Transmit Power** 1.25 W
- **Modulation** 15%
- **Antenna Connection** 62 Pin Edge Connector
- **Diagnostic Options** antenna impedance monitoring
internal temperature monitoring
internal current monitoring
- **Interfaces** - Ethernet (TCP/IP)
- GPIO pins(via edge connector pins)
- **Supported Transponders**
 - ISO18000-3 MODE 3
- **Optical Indicators** 2 LEDs for Operating Status

Ambient

- **Temperature Range**
 - Operating -20°C to +55°C (-4°F to +131°F)
 - Storage -25°C to +85°C (-13°F to +185°F)
- **Humidity** 5% - 80%, no condensation

Applicable Standards

- **RF Approval**
 - USA FCC 47 CFR Part 15