Chapter 8

# Troubleshooting and Problem Solving

# 8 Troubleshooting

## 8.1. DataReader Troubleshooting

1. Power LED is red: reader malfunction. Replace reader
2. Power LED is off: verify power connection
3. Reader does not respond to host.
   - 3.1 Verify power LED blinks at power on. LED should then remain steady green.
   - 3.2 Verify cable connections are according to diagram
   - 3.3 Verify reader address is correctly transmitted by host
   - 3.4. Verify terminator present at end of the RS485 chain
4. Reader does not read seal
   - 4.1 Verify seal is within reader communication range
   - 4.2 Verify antenna connections
   - 4.3 Verify SD LED lights up for a short time upon receiving host command (Host request transmitted by reader)
   - 4.4 Verify RD LED lights up for a short time (reader received data from seal)

## 8.2. Evaluation System Troubleshooting

1. When inserting Reader ID and ADD to the list using the evaluation software the reply: "com port time out" is received.

   Possible reasons:
   a. The Reader is not powered.
   b. The RS-232 converter is not connected to the PC.
   c. The RS-232 converter is not powered.
   d. The PC port definitions are incorrect.

2. "Command Fail" is repeated under Verify & Set option

   Possible reasons:
   a. The Reader is not powered.
   b. The RS-232 converter is not connected to the PC
   c. The RS-232 converter is not powered.
   d. The Reader Address = 0 when connected via RS-485 and more than one Reader is connected

3. Repeated "No Seals" failure when using the Verify command

   Possible reasons:

   a. Incompatible parameters between the Seal and the Reader. The parameters are: ADI, Department, Org ID.
   b. Low power transmission.
   c. Antenna disconnected.
   d. Seals are located too far away.
   e. Number of windows defined greater than 255.

4. Repeated "Seal Does Not Respond" reply using the Add Verify command.

   Possible reasons:

   a. Incompatible parameters between the Seal and the Reader. The parameters are: ADI, Department, Org ID.
   b. Low power transmission.
   c. Antenna disconnected.
   d. Seals are located too far away.
   e. Number of windows defined greater than 255.

5. General All Commands failure - check that ADI, Department, and ORG ID parameters in the Seal and the Reader are compatible.

6. Seal does not respond to Tamper command.

   Possible reasons:

   a. Seal is not in Tamper mode.
   b. Open the Seal and re-run the Tamper command. Repeat several times. If Seal still does not respond, follow procedure detailed in section 5.

7. Seal does not respond to Hard Wakeup command:

   Possible reasons:
   a. The Seal is not in Deep Sleep mode.

8. Set or Reset failure in Reset Status command: Check that the required bit can be changed.

9. Parameter cannot be changed in the Write Parameters command:.

   Possible reasons:
   a. The Parameter is not in the Parameter Change list.
   b. The number of bytes is not compatible with the parameter size.

Chapter 9

# Technical Specifications

# 9 Technical Specifications

## 9.1. 24v Outdoor DataReader

| 24v Outdoor DataReader | IG-RS-46D-916 | IG-RS-46D-433 | IG-RS-46D-318 | IG-RS-46D-315 |
|---|---|---|---|---|
| ***Physical Characteristics*** | | | | |
| Dimensions (mm) | 195X165X95 not including antenna | | | |
| Weight (gr) | 1000 | | | |
| Power Requirements - External (volts) | 24 Vdc nominal (10 to 35) | | | |
| Power Consumption(watts) | 1.7W@Tx, 1.1W@Rx | | | |
| | | | | |
| ***Performance Characteristics*** | | | | |
| Interface | RS-485 optically isolated | | | |
| Operating Frequency (MHz) | 916.5 | 433.92 | 318 | 315 |
| Read Range (m) | 30 @ open space | | | |
| | | | | |
| ***Environmental Conditions*** | | | | |
| Operating Temperature ($^{O}$C) | -40 - +70 | | | |
| Storage Temperature ($^{O}$C) | -40 - +70 | | | |
| Humidity (%) | 90 non condensing | | | |
| Mechanical Vibration | As per MIL-810D & SAE J1455 | | | |
| Mechanical Shock | As per MIL-810D & SAE J1455 | | | |
| | | | | |
| ***Standards*** | | | | |
| Designed according to | FCC part 15.249<br>UL1950 | EN300220<br>EN301489<br>EN60950 | UL1950 | UL1950 |

### 9.2. 12v Outdoor DataReader

| 12v Outdoor DataReader | IG-RS-46D-916/12 | IG-RS-46D-433/12 | IG-RS-46D-318/12 | IG-RS-46D-315/12 |
|---|---|---|---|---|
| ***Physical Characteristics*** | | | | |
| Power Requirements - External (volts) | 12 Vdc nominal (10 to 35) | | | |
| Power Consumption (watts) | 1.7W@Tx, 1.1W@Rx | | | |

*** All other specifications are as in section 9.1.**

### 9.3. 48v Outdoor DataReader

| 12v Outdoor DataReader | IG-RS-46D-916/48 | IG-RS-46D-433/48 | IG-RS-46D-318/48 | IG-RS-46D-315/48 |
|---|---|---|---|---|
| ***Physical Characteristics*** | | | | |
| Power Requirements - External (volts) | 48 Vdc nominal (20 to 70) | | | |
| Power Consumption (watts) | 1.7W@Tx, 1.1W@Rx | | | |

*** All other specifications are as in section 9.1.**

### 9.4. 24v Indoor DataReader

| DataReader | IG-RS-46-315 | IG-RS-46-318 | IG-RS-46-433 | IG-RS-46-916 |
|---|---|---|---|---|
| ***Physical Characteristics*** | | | | |
| Dimensions (mm) | 195X165X95 not including antenna | | | |
| Weight (gr) | 1000 | | | |
| Power Requirements - External (volts) | 24 Vdc nominal (10 to 35) | | | |
| Power Consumption(watts) | 1.7W@Tx, 1.1W@Rx | | | |
| | | | | |
| ***Performance Characteristics*** | | | | |
| Interface | RS-485 optically isolated | | | |
| Operating Frequency (MHz) | 315 | 318 | 433.92 | 916.5 |
| Read Range (m) | 30 @ open space | | | |
| | | | | |
| ***Environmental Conditions*** | | | | |
| Operating Temperature ($^{O}$C) | 0 - +70 | | | |
| Storage Temperature ($^{O}$C) | -20 - +70 | | | |
| | | | | |
| ***Standards*** | | | | |
| Designed according to | UL1950 | UL1950 | EN300220<br>EN301489<br>EN60950 | FCC part 15.249<br>UL1950 |

### 9.5. 12v Indoor DataReader

| 12v Outdoor DataReader | IG-RS-46-315/12 | IG-RS-46-318/12 | IG-RS-46-433/12 | IG-RS-46-916/12 |
|---|---|---|---|---|
| ***Physical Characteristics*** | | | | |
| Power Requirements - External (volts) | 12 Vdc nominal (10 to 35) | | | |
| Power Consumption(watts) | 1.7W@Tx, 1.1W@Rx | | | |

*** All other specifications are as in section 9.4.**

### 9.6. 48v Indoor DataReader 8

| 48v Outdoor DataReader | IG-RS-46-315/48 | IG-RS-46-318/48 | IG-RS-46-433/48 | IG-RS-46-916/48 |
|---|---|---|---|---|
| ***Physical Characteristics*** | | | | |
| Power Requirements - External (volts) | 48 Vdc nominal (20 to 70) | | | |
| Power Consumption(watts) | 1.7W@Tx, 1.1W@Rx | | | |

*** All other specifications are as in section 9.4.**

### 9.8. DataSeal

| DataSeal | IG-RS-40-916 | IG-RS-40-433 | IG-RS-40-318 | IG-RS-40-315 |
|---|---|---|---|---|
| ***Physical Characteristics*** | | | | |
| Dimensions (mm) | 49X37X85 | | | |
| Weight (gr) | 100 | | | |
| Housing | Plastic reinforced with fiberglass | | | |
| Power Requirements (volts) | 3.6 internal battery | | | |
| User Memory (Bytes) | 2048 | | | |
| Events Memory (events) | 10 | | | |
| ***Performance Characteristics*** | | | | |
| Interface | Mounting Cradle P.N. IG-DH-40 | | | |
| Operating Frequency (MHz) | 916.5 | 433.92 | 318 | 315 |
| Read Range (m) | 30 @ open space | | | |
| Operating Frequency (kHz) | 125 | | | |
| Read Range (cm) | 50 | | | |
| ***Environmental Conditions*** | | | | |
| Operating Temperature ($^{O}$C) | -40 - +70 | | | |
| Storage Temperature ($^{O}$C) | -40 - +70 | | | |
| Humidity (%) | 90 non condensing | | | |
| Mechanical Vibration | As per MIL-810D & SAE J1455 | | | |
| Mechanical Shock | As per MIL-810D & SAE J1455 | | | |
| ***Standards*** | | | | |
| Designed according to | FCC part 15.249 | EN300220<br>EN301489 | | |
| ***Antenna Characteristics*** | | | | |
| Beam Divergence | Omni-directional on non-metal wall.<br>Hemisphere on metal wall. | | | |
| Polarization | Vertical | | | |

### 9.9. Magnetic DataSeal

| Magnetic DataSeal | IG-RS-40M-916 | IG-RS-40M-433 | IG-RS-40M-318 | IG-RS-40M-315 |
|---|---|---|---|---|
| ***Physical Characteristics*** | | | | |
| Dimensions (mm) | 49X37X65 | | | |
| Weight (gr) | 100 | | | |
| Housing | Plastic reinforced with fiberglass | | | |
| Power Requirements (volts) | 3.6 internal battery | | | |
| User Memory (Bytes) | 2048 | | | |
| Events Memory (events) | 10 | | | |
| ***Performance Characteristics*** | | | | |
| Operating Frequency (MHz) | 916.5 | 433.92 | 318 | 315 |
| Read Range (m) | 30 @ open space | | | |
| Operating Frequency (kHz) | 125 | | | |
| Read Range (cm) | 50 | | | |
| ***Environmental Conditions*** | | | | |
| Operating Temperature ($^{o}$C) | -40 - +70 | | | |
| Storage Temperature ($^{o}$C) | -40 - +70 | | | |
| Humidity (%) | 90 non condensing | | | |
| Mechanical Vibration | As per MIL-810D & SAE J1455 | | | |
| Mechanical Shock | As per MIL-810D & SAE J1455 | | | |
| ***Standards*** | | | | |
| Designed according to | FCC part 15.249 | EN300220<br>EN301489 | | |
| ***Antenna Characteristics*** | | | | |
| Beam Divergence | Omni-directional on non-metal wall.<br>Hemisphere on metal wall. | | | |
| Polarization | Vertical | | | |

## 9.10 FCC approved products:

| Product | P/N | FCC ID |
|---|---|---|
| DataReader | IG-RS-46D-916 | OB6-IGRS46D916 |
| DataSeal | IG-RS-40-916 | OB6-IGRS40916 |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
-Reorient or relocate the receiving antenna.
-Increase the separation between the equipment and receiver.
-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications to this equipment not expressly approved by Hi-G-Tek Ltd. could void the user's authority to operate the equipment.

WARNING: It is the responsibility of the installer to ensure that when using the outdoor antenna kits in the United States (or where FCC rules apply), only those antennas certified with the product are used. The use of any antenna other than those certified with the product is expressly forbidden in accordance with FCC rules CFR47 part 15.204.

Chapter 10

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