Channel Power Sensor
Model 4042E
with I/O Expansion

Operation Manual

Instruction Book Part Number 920-4042E-PTT Rev. A

Safety Precautions

The following are general safety precautions that are not necessarily related to any specific part or procedure, and do not necessarily appear elsewhere in this publication. These precautions must be thoroughly understood and apply to all phases of operation and maintenance.

WARNING

Keep Away From Live Circuits
Operating Personnel must at all times observe general safety precautions. Do not replace components or make adjustments to the inside of the test equipment with the high voltage supply turned on. To avoid casualties, always remove power.

WARNING

Shock Hazard
Do not attempt to remove the RF transmission line while RF power is present.

WARNING

Do Not Service Or Adjust Alone
Under no circumstances should any person reach into an enclosure for the purpose of service or adjustment of equipment except in the presence of someone who is capable of rendering aid.

WARNING

Safety Earth Ground
An uninterruptible earth safety ground must be supplied from the main power source to test instruments. Grounding one conductor of a two conductor power cable is not sufficient protection. Serious injury or death can occur if this grounding is not properly supplied.

WARNING

Resuscitation
Personnel working with or near high voltages should be familiar with modern methods of resuscitation.

WARNING

Remove Power
Observe general safety precautions. Do not open the instrument with the power applied.

Safety Symbols

WARNING

Warnings call attention to a procedure, which if not correctly performed, could result in personal injury.

CAUTION

Cautions call attention to a procedure, which if not correctly performed, could result in damage to the instrument.

NOTE

Notes call attention to supplemental information.

Symbols Used on the Device

This symbol declares that the unit uses direct current for its main source of power.

This symbol declares that the marked terminals are functional earth and may be required for correct operation of the equipment. The 4042E-PTT includes PTT and I/O connectors with GND (ground) terminals. The GND terminals share a common ground within the sensor. The ground terminals must be used as indicated in the installation instructions for the PTT and I/O circuits to operate correctly.

Warning Statements

The following safety warnings appear in the text where there is danger to operating and maintenance personnel, and are repeated here for emphasis.

WARNING

Leaking RF energy is a potential health hazard. Never attempt to connect or disconnect equipment from the transmission line while RF power is being applied. Severe burns, electrical shock, or death can occur.

Refer to page 10.

Safety Statements

USAGE

ANY USE OF THIS INSTRUMENT IN A MANNER NOT SPECIFIED BY THE MANUFACTURER MAY IMPAIR THE INSTRUMENT'S SAFETY PROTECTION.

USO

EL USO DE ESTE INSTRUMENTO DE MANERA NO ESPECIFICADA POR EL FABRICANTE, PUEDE ANULAR LA PROTECCIÓN DE SEGURIDAD DEL INSTRUMENTO.

BENUTZUNG

WIRD DAS GERÄT AUF ANDERE WEISE VERWENDET ALS VOM HERSTELLER BESCHRIEBEN, KANN DIE GERÄTESICHERHEIT BEEINTRÄCHTIGT WERDEN.

UTILISATION

TOUTE UTILISATION DE CET INSTRUMENT QUI N'EST PAS EXPLICITEMENT PRÉVUE PAR LE FABRICANT PEUT ENDOMMAGER LE DISPOSITIF DE PROTECTION DE L'INSTRUMENT.

IMPIEGO

QUALORA QUESTO STRUMENTO VENISSE UTILIZZATO IN MODO DIVERSO DA COME SPECIFICATO DAL PRODUTTORE LA PROZIONE DI SICUREZZA POTREBBE VENIRNE COMPROMESSA.

SERVICE

SERVICING INSTRUCTIONS ARE FOR USE BY SERVICE - TRAINED PERSONNEL ONLY. TO AVOID DANGEROUS ELECTRIC SHOCK, DO NOT PERFORM ANY SERVICING UNLESS QUALIFIED TO DO SO.

SERVICIO

LAS INSTRUCCIONES DE SERVICIO SON PARA USO EXCLUSIVO DEL PERSONAL DE SERVICIO CAPACITADO. PARA EVITAR EL PELIGRO DE DESCARGAS ELÉCTRICAS, NO REALICE NINGÚN SERVICIO A MENOS QUE ESTÉ CAPACITADO PARA HACERIO.

WARTUNG

ANWEISUNGEN FÜR DIE WARTUNG DES GERÄTES GELTEN NUR FÜR GESCHULTES FACHPERSONAL. ZUR VERMEIDUNG GEFÄHRLICHE, ELEKTRISCHE SCHOCKS, SIND WARTUNGSARBEITEN AUSSCHLIEßLICH VON QUALIFIZIERTEM SERVICEPERSONAL DURCHZUFÜHREN.

ENTRENTIEN

L'EMPLOI DES INSTRUCTIONS D'ENTRETIEN DOIT ÊTRE RÉSERVÉ AU PERSONNEL FORMÉ AUX OPÉRATIONS D'ENTRETIEN. POUR PRÉVENIR UN CHOC ÉLECTRIQUE DANGEREUX, NE PAS EFFECTUER D'ENTRETIEN SI L'ON N'A PAS ÉTÉ QUALIFIÉ POUR CE FAIRE.

ASSISTENZA TECNICA

LE ISTRUZIONI RELATIVE ALL'ASSISTENZA SONO PREVISTE ESCLUSIVAMENTE PER IL PERSONALE OPPORTUNAMENTE ADDESTRATO. PER EVITARE PERICOLOSE SCOSSE ELETTRICHE NON EFFETTUARRE ALCUNA RIPARAZIONE A MENO CHE QUALIFICATI A FARLA.

About This Manual

This manual covers the operating and maintenance instructions for the following models:

Model 4042E with I/O Expansion Series - Channel Power Sensors
This sensor model is referred to as 4042E-PTT in this manual.

Model numbers supported by this manual have communication designation of 13. (i.e. 4042E-1-xxxx13-xxxx).
See "Model Identification" on page 40.

Changes to this Manual

We have made every effort to ensure this manual is accurate. If you discover any errors, or if you have suggestions for improving this manual, please send your comments to our Solon, Ohio factory. This manual may be periodically updated. When inquiring about updates to this manual refer to the part number and revision on the title page.

Chapter Layout

Introduction — Describes the features of the 4042E-PTT Channel Power Sensor.

Installation — Describes how to set up and prepare the 4042E-PTT Power Sensor for use.

Maintenance — This section provides the specifications for the 4042E-PTT Power Sensor as well as a model identification table.

Table of Contents

Chapter 1 Introduction

General Description

The Bird 4042E-PTT Series Channel Power Sensors are digital power sensors. The 4042E-PTT Series Channel power sensors are typically used to measure forward and reflected average power on a 50 ohm RF transmission line in a frequency band with an overall range of 100 to 1000 MHz. The maximum forward power measurement is 500 watts with reflected power max 10 dB below the forward Power levels, the 4042E-PTT sensor also provides VSWR readings. See "Model Identification" on page 40.

Figure 1 Bird 4042E-PTT Sensor

The 4042E-PTT Power Sensor uses Ethernet communications for sensor configuration and measurement data.

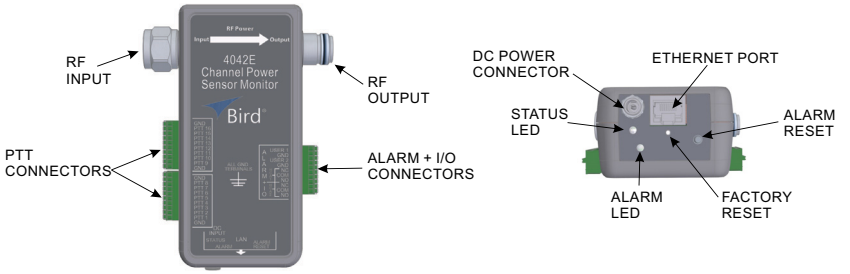
See "Sensor Operation" on page 14.

The 4042E-PTT Sensor is designed to transfer data over an Ethernet connection. The power sensor requires an external power supply.

Each sensor is equipped with RF input and output connectors, one RJ-45 connector for Ethernet communications, a status indicator, an alarm indicator, an alarm reset, and factory reset button.

The units also includes PTT connectors for up to 16 channels, along with two user sensor inputs and two hard contact alarm outputs. See Figure 2 on page 2.

Figure 2 Bird 4042E-PTT Series Channel Power Sensor



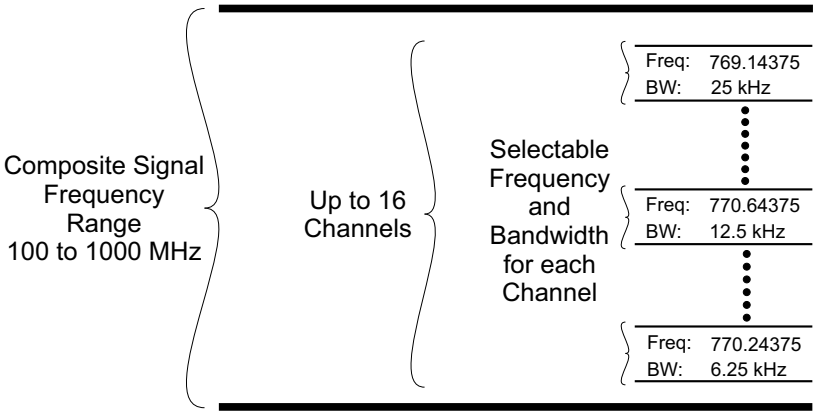
Features	
RF Input	N-Type (male) connector (shown), other connector types available, see "Model Identification" on page 40.
RF Output	N-Type (female) connector (shown), other connector types available, see "Model Identification" on page 40.
PTT Connectors	Push-To-Talk terminals are used to prevent spurious alarms during periods when the transmitter is not transmitting. There are 16 PTT terminals, see "Push-To-Talk (PTT)" on page 5.
Alarm + I/O Connector	These connectors are divided into two groups. **User Inputs:** The two user inputs may be used to connect sensors/contacts of the customer's choice to the sensor for automated monitoring, these may be normally open or normally closed connections. **HCA Outputs:** The two hard contact alarm (HCA) outputs may be used to connect indicators, audible alarms, facility alarm panels or other devices of the customer's choice. See "User Alarm I/O" on page 6 for detailed information about both these connectors.
DC Power Connector	DC input connector for the included 15 VDC power supply.
Ethernet Port	RJ-45 connector used to interface with the Sensor's Web UI and provide the measurement interface.
Alarm Reset	The alarm reset pushbutton can be used to reset latched alarms.
Factory Reset	This factory reset button is recessed in a hole under the Ethernet jack. See "Factory Reset" on page 36. • When short pressed (less than 5 seconds), the button will cause the IP address to be reset to the default of 192.168.3.200. • When long pressed (more than 5 seconds), all of the 4042E-PTT settings are reset to the factory defaults.
Alarm LED	Red flashing: An alarm is active.
Status LED	Solid green: Power applied during boot-up. Blue flashing: Normal operation. Red: Reset button pressed and released.

Channel Sensor Operation

The 4042E-PTT Channel Sensor is a unique sensor that is able to measure the forward power, reflected power and VSWR of a SINGLE CHANNEL in the presence of multiple channels at the output of a frequency combiner (see Figure 5 on page 7).

The sensor can also measure the forward power, reflected power and the VSWR of the aggregate signal by scanning up to 16 individual channels and summing their power, see Figure 3.

Figure 3 Channel Sensor Configuration



Once connected to an RF Transmission line, the sensor may be programmed to measure power and VSWR for up to 16 frequencies or channels.

The bandwidth of each channel is selectable and may be set to one of the following values:

- 6.25 kHz
- 12.5 kHz
- 25 kHz

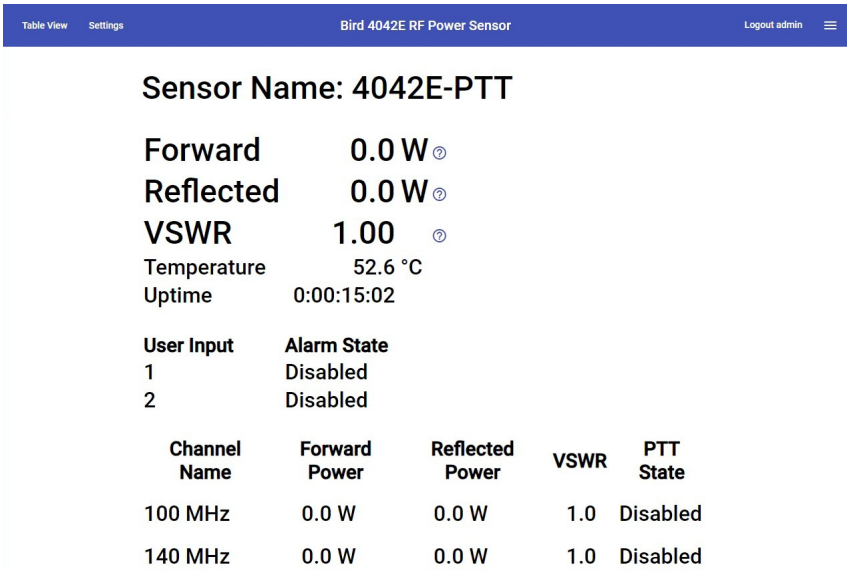
The sensor can be set up to provide low power and VSWR alarms for all 16 channels monitored by the 4042E-PTT Sensor. See "Alarm Settings" on page 6.

Ethernet Measurement Interface

The 4042E-PTT sensor displays measurement information on a Web UI. Using a web browser, enter the Ethernet IP Address for the 4042E-PTT to display the web page.

Table View displays the aggregate Forward, Reflected, and VSWR measurements and the same measurements for each configured channel. The status of two user inputs, sensor uptime and temperature are also displayed in table view. See Figure 4.

Figure 4 Web UI, Table View Measurement Display



Ethernet IP Address

Each 4042E-PTT leaves the factory with the same default IP Address.

Default IP Address: **192.168.3.200**

To change the IP address, see "IP Address Configuration" on page 31.

Password Protection

NOTE

The Web UI configuration settings are password protected.

The 4042E-PTT configuration settings are password protected. The sensor cannot be configured without entering a password. The Web UI provides a user management menu, several users with individual passwords may be added.

Default username is **admin.**

Default admin password is the **Sensor's Serial Number.**

NOTE

The Sensor's serial number is the default password, the password should be changed during installation to ensure only authorized personnel have access to the sensor's configuration settings.

To change the password or add additional users, see "Manage Users" on page 33.

A factory reset can be used to return the sensor to the original factory settings, including the password.

Push-To-Talk (PTT)

Push-To-Talk (PTT) is used to prevent false alarms during periods when the transmitter is not transmitting. PTT disables alarm detection when the transmitter is off. Alarm functions will only be possible when the transmit button is engaged.

PTT may be set to normally open or normally closed logic. The PTT terminals must be in the correct logic state for PTT to operate correctly.

There are 16 PTT terminals on the on the sensor, one for each of the available channels. The terminals are all connected the same, selection of normally open (NO) or normally closed (NC) logic is selected via software. The sensor supplies 3.3 VDC to operate the PTT circuit.

User Alarm I/O

User inputs

There are two user defined inputs which can be connected to sensors or contacts of the customer's choice. The user inputs are 2-wire circuits (User terminal + GND terminal), selection of normally open or normally closed logic is selected via software. The sensor supplies 3.3 VDC to operate the User Input circuit.

An alarm condition will be generated by the sensor when user input circuit is tripped. See "Alarm Settings" on page 6.

Hard Contact Alarm (HCA) Outputs

There are two HCA outputs which can be connected to indicators, audible alarms, facility alarm panels or other devices of the customer's choice.

The HCA outputs are 2-wire circuits (NC or NO + COM terminal), the circuit is either normally open (NO) or normally closed (NC). The connected circuit logic must match the terminals selected on the 4042E-PTT sensor. These are passive connections, no power is supplied by the sensor for these circuits.

The sensor can be configured to trip one or both of the HCA circuits when an alarm condition exists. See "Alarm Settings" on page 6.

Alarm Settings

The User Interface allows the user to configure alarms for Forward Power levels, reflected power levels, VSWR, and the two user input connectors.

When enabling an alarm, there are four options to choose from. Each option determines how the alarm will be reported. Table 1 shows each alarm setting option in the left column, the remaining columns indicate where the alarm will be reported for each selection.

Table 1 Alarm Configuration Options

Alarm Setting	SNMP Messages	HCA1 Output	HCA2 Output	Interface Display
Report	✓			✓
HCA1	✓	✓		✓
HCA2	✓		✓	✓
All	✓	✓	✓	✓
Disabled				

Chapter 2 Power Sensor Installation

The Bird 4042E-PTT Series Channel Power Sensors are designed to be used for continuous power monitoring in multiple Land Mobile Radio (LMR) systems. The 4042E-PTT can provide real-time RF forward and reflected power and VSWR measurements.

Ethernet Connection

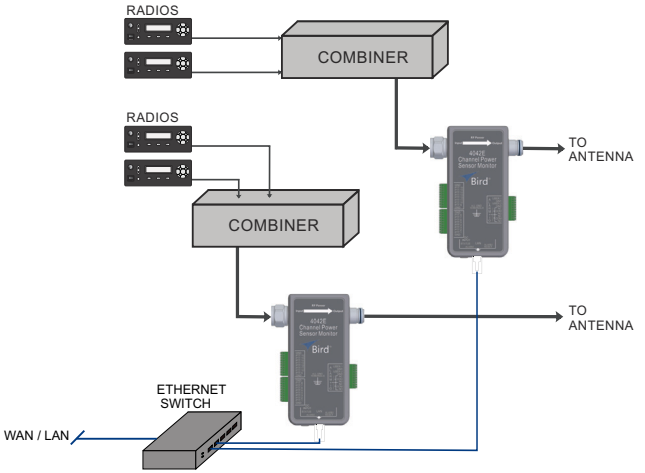
The Ethernet connector is used to connect the 4042E-PTT to a PC or a network router/switch. Measurement data is transported over the Ethernet connection so the data can be viewed in a web browser. The configuration depicted in Figure 5 is an example of one possible installation.

Since the 4042E-PTT is shipped with a static IP address, before more than one unit can be added to a LAN, the IP address must be changed to a unique static IP address or set to DHCP.

Direct PC Connection — A direct PC connection is a connection between a PC and a single 4042E-PTT. This connection can be used to view the sensor's measurement data, however, if the sensor will be used with a LAN connection, this type of connection must be used to change the IP address of the 4042E-PTT. See "Direct PC Ethernet Connection" on page 8.

LAN Connection — The 4042E-PTT may be connected to a router or switch so it can provide measurement information through a LAN. A LAN connection can provide the ability to monitor several 4042E-PTT sensors from a single PC. Additionally, SNMP management software can be used to aggregate multiple sensors and monitor their outputs. See "LAN Connection" on page 9.

Figure 5 4042E-PTT Connection Diagram



Direct PC Ethernet Connection

This connection can be used to view measurement information, manage the sensor's behavior, and change the default IP address.

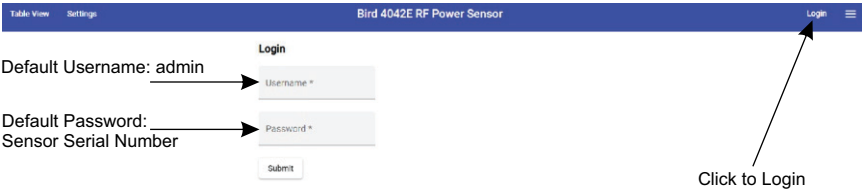
1. Connect a power cable to 4042E-PTT power sensor.
2. Connect your laptop's network port to the LAN connector on the 4042E-PTT using a standard Ethernet cable.
3. Ensure that your laptop's IP address is compatible with the default address of the 4042E-PTT. This may require changes be made to the Ethernet adapter address on your laptop.
   Set laptop's IP address to "192.168.3.1" and a subnet mask of "255.255.255.0".
4. Launch your web browser on the laptop.
5. In your web browser's address box, type-in the 4042E-PTT's IP address: 192.168.3.200 and press the ENTER key.
6. The web page interface to the unit should appear in your laptop's browser window.
7. Click Login in the top right of the display. See Figure 6.

NOTE

The Sensor's serial number is the default password, the password should be changed during installation to ensure only authorized personnel have access to the sensor's configuration settings.

8. Enter User Name and Password. See Figure 6 for default login information.

Figure 6 Login Screen



9. Connect sensor to RF delivery system. See "RF Connections" on page 10.
10. If PTT will be used, see "PTT Connections" on page 11.
11. See "Sensor Operation" on page 14 for descriptions of the sensor's User Interface.

LAN Connection

A LAN connection is used to allow multiple sensors to be deployed then monitored via a single PC or SNMP management software.

The 4042E-PTT sensor's IP address should be set to a unique static IP address or set to DHCP so the IP address can be assigned when the sensor is connected to the network.

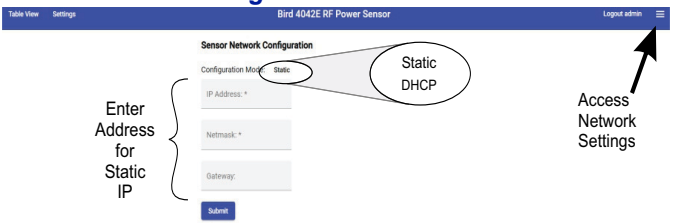
1. Connect a power cable to 4042E-PTT power sensor.
2. Change the sensor's IP Address.
   a. Connect your laptop's network port to the LAN connector on the 4042E-PTT using a standard Ethernet cable.
   b. Ensure that your laptop's IP address is compatible with the default address of the 4042E-PTT. This may require changes be made to the Ethernet adapter address on your laptop.
   Set laptop's IP address to "192.168.3.1" and a subnet mask of "255.255.255.0".
   c. Launch your web browser on the laptop.
   d. In your web browser's address box, type-in the 4042E-PTT's IP address: 192.168.3.200 and press the ENTER key.
   The web page interface to the unit should appear in your laptop's browser window.
   e. Click Login in the top right of the display. See Figure 6 on page 8.

NOTE

The Sensor's serial number is the default password, the password should be changed during installation to ensure only authorized personnel have access to the sensor's configuration settings.

   f. Enter User Name and Password.
   g. Click MENU in the top right of the display. See Figure 7.
   h. Select Static or DHCP.
      - If Static is selected, enter a unique IP address, Netmask, Gateway, then go to next step.
      - If DHCP is selected, go to next step.
   i. Click Submit.
   j. Disconnect Ethernet cable from the 4042E-PTT.

Figure 7 IP Address Configuration



3. Connect a standard Ethernet cable to the LAN connector on the 4042E-PTT and an open connector on a network switch or router.
4. Launch your web browser on a PC connected to the same network as the 4042E-PTT.
5. Enter the sensor's newly assigned IP address in the web browsers address box.

NOTE

The Sensor's serial number is the default password, the password should be changed during installation to ensure only authorized personnel have access to the sensor's configuration settings.

6. If required, log in again with User Name and Password. See Figure 6 on page 8 for default login information.
7. Connect sensor to RF delivery system. See "RF Connections" on page 10.
8. If PTT will be used, see "PTT Connections" on page 11.
9. If user inputs/outputs will be used, see "Alarm I/O Connections" on page 12.
10. See "Sensor Operation" on page 14 for descriptions of the sensor's User Interface.

RF Connections

WARNING

RF coaxial cables must be properly grounded.

WARNING

Leaking RF energy is a potential health hazard. Never attempt to connect or disconnect equipment from the transmission line while RF power is being applied. Severe burns, electrical shock, or death can occur.

1. Disable RF power for transmission lines to be disconnected.
2. Connect combiner's RF output cable to the 4042E-PTT RF input.
3. Connect 4042E-PTT's RF output connector to the antenna cable.
4. Repeat step 1 through 3 for any additional 4042E-PTT power sensors.

RF Channels, Alarm Settings and Thresholds are configured using the "Settings Menu" on page 17.

PTT Connections

PTT connections are two wire connections from a transmitter (Radio) to the 4042E-PTT sensor. 20 to 28 AWG wire pairs should be used for the PTT connection. The power sensor provides 3.3 VDC at the PTT terminals for operation of each PTT circuit.

Each PTT circuit may be set to normally open or normally closed logic. The PTT terminals must be in the correct logic state for PTT to operate correctly.

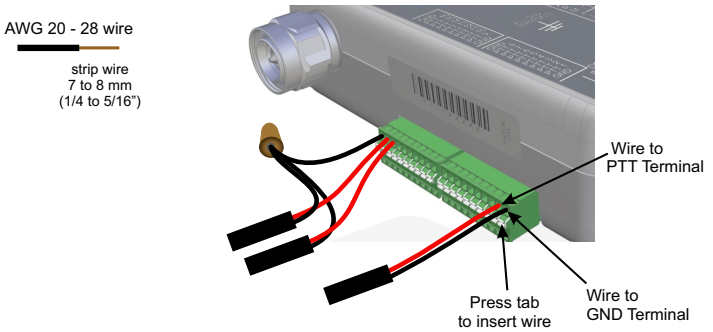
1. Using 20 to 28 AWG wire, strip 7-8 mm of the insulation off the end of each wire.
2. Press the tab below a PTT terminal socket and insert the stripped wire.

NOTE

There are 16 PTT terminals but only four GND terminals. The GND terminals share a common ground within the sensor. Several ground wires may need to be combined with a pigtail to use a single ground terminal. Alternately, a separate terminal block may be used to combine multiple ground wires.

3. Press the tab below a GND terminal socket and insert the stripped wire.
4. Configure the PTT settings when configuring the channel for the radio.
5. Repeat step 1 through step 4 for all radios supported by the 4042E-PTT sensor.

Figure 8 PTT Connections



The PTT settings in the User Interface must be enabled and set to correct logic to match the PTT connection. See "Channel Configuration" on page 22.

Alarm I/O Connections

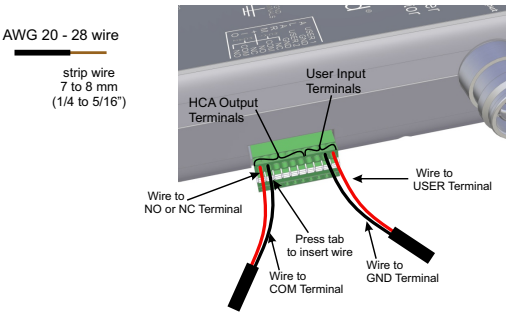
Alarm I/O connections are two wire connections. 20 to 28 AWG wire pairs should be used for the Alarm I/O connection.

User Input terminals — The power sensor provides 3.3 VDC at terminals for operation of each user input circuits. Each user input circuit may be set to normally open or normally closed logic. The user input terminals must be in the correct logic state for alarming to operate correctly. The settings in the User Interface must be enabled and set to correct logic to match the user input connection. See "User Input Configuration" on page 21.

HCA Terminals — HCA terminals are passive, meaning the sensor does not provide a voltage to these terminals. The maximum voltage 110 V DC or 125 V AC and maximum current 1 A (DC or AC). The terminals must be connected to NO or NC terminals to match the logic of the output circuit.

1. Using 20 to 28 AWG wire, strip 7-8 mm of the insulation off the end of each wire.
2. Press the tab below an active terminal socket and insert the stripped wire.
3. Press the tab below a GND/COM terminal socket and insert the stripped wire.
4. Configure the User Input settings in the sensor's user interface. HCA outputs do not require configuration.
5. Repeat step 1 through step 4 for all Alarm I/O connectors.

Figure 9 PTT Connections

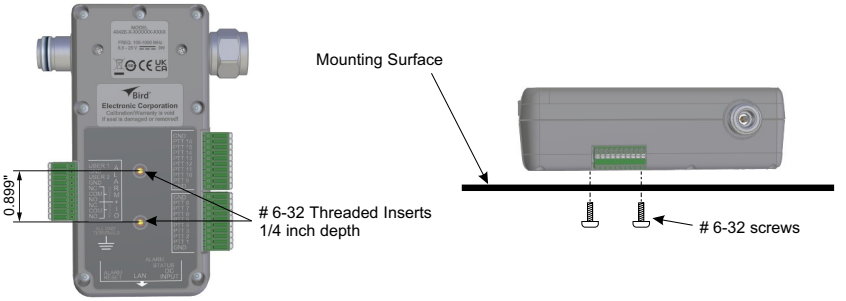


Mounting

The 4042E-PTT power sensor has two threaded inserts on the back of the sensor for mounting. The sensor may be mounted in any orientation, using two # 6-32 screws.

The threaded inserts have a 1/4 inch depth, so the screws should only be long enough to pass through the mounting surface and have no more than 1/4 inch of the threads enter the sensor.

Figure 10 Mounting



User Interface

Table View — Table View page displays the RF measurements made by the 4042E-PTT. See "Table View" on page 15.

NOTE

The following capabilities are password protected.

Settings Menu — The Settings Menu is used for the following capabilities:

- Aggregate Signal Alarm Configuration
- User Input Configuration
- Channel Configuration
- SNMP Configuration

Configuration Menu — The Configuration Menu is used for the following capabilities:

- IP Address Configuration
- NTP Settings
- Update Sensor Firmware
- Manage Users
- Change Password

Table View

Table View shown in Figure 11 displays the current RF Power Measurements.

- Sensor Name
- Forward RF Power (Aggregate Forward Power of all channels)
- Reflected RF Power (Aggregate Reflected Power of all channels)
- VSWR (Aggregate VSWR)
- User Input (1 and 2) Alarm State
- Each Configured Channel displays the following:
    - Forward Power
    - Reflected Power
    - VSWR
    - PTT State

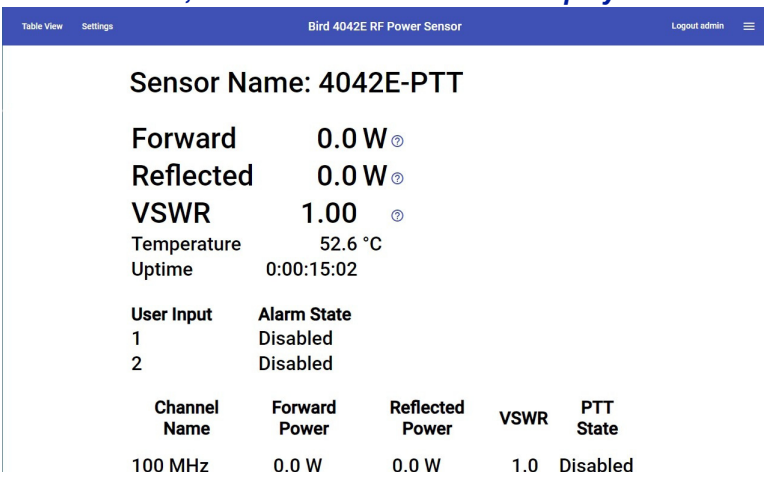
Also displayed are sensor temperature and sensor uptime.

Aggregate Forward Power — Aggregate forward power is defined as the total sum of the forward power on all actively transmitting channels. A channel is transmitting when PTT is enabled and active, or PTT is disabled and the forward power of the channel exceeds the minimum forward power threshold.

Aggregate Reflected Power — Aggregate reflected power is defined as the total sum of the reflected power on all actively transmitting channels. A channel is transmitting when PTT is enabled and active, or PTT is disabled and the forward power of the channel exceeds the minimum forward power threshold.

Aggregate VSWR — Aggregate VSWR is calculated based on the aggregate forward power and aggregate reflected power.

Figure 11 Web UI, Table View Measurement Display



The information on the Table View may also be accessed using SNMP management software. Table 2 displays the SNMP commands available for the aggregate Table View information.

Table 2 SNMP Aggregate RF Power Commands

Name	OID	Access Level	Description
sensor4042EName	21581.1.7.300.1	read-write	Name assigned to sensor. The sensor name may be set using a maximum of 20 characters.
sensor4042EForwardPower	21581.1.7.300.14	read-only	Aggregate forward power across all channels.
sensor4042EReflectedPower	21581.1.7.300.15	read-only	Aggregate reflected power across all channels.
sensor4042EVSWR	21581.1.7.300.16	read-only	Aggregate VSWR across all channels.
userInputAlarmState	21581.1.7.340.1.4	read-only	Current state of this user input entry. 1 = inactive 2 = active
sensor4042ETemperature	21581.1.7.300.30	read-only	Internal Sensor Temperature in Celsius.
sensor4042EUpTime	21581.1.7.300.27	read-only	Time accumulated since power was applied or since the last reboot.

The channel information in the Table View may also be accessed using SNMP management software. Table 3 displays the SNMP commands available for each of the digital channels programmed into the 4042E-PTT.

Table 3 SNMP Channel RF Power Commands

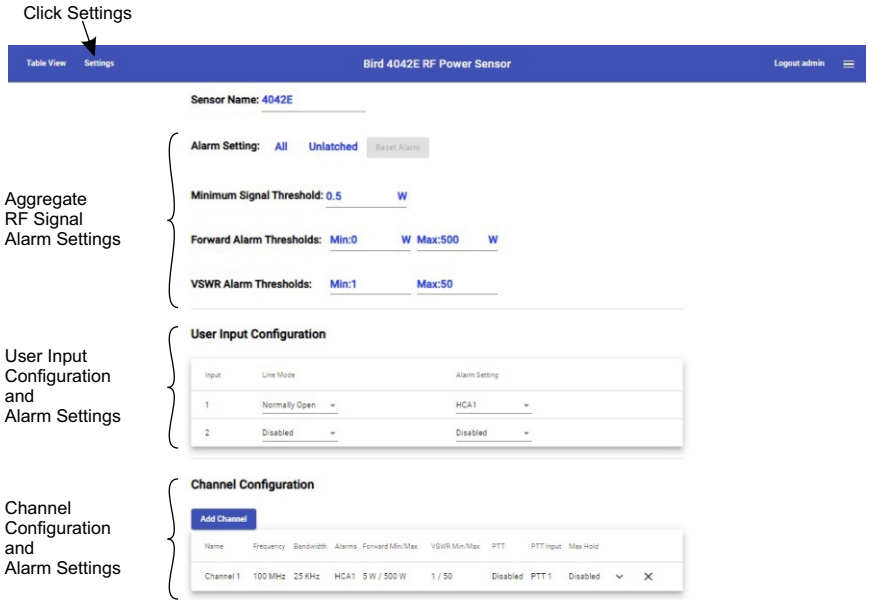
Name	OID	Access Level	Description
digitalChannelName	21581.1.7.320.1.2	read-create	Name assigned to channel. Channel name may be set using a maximum of 20 characters.
digitalChannelForwardPower	21581.1.7.320.1.19	read-only	Channel Forward power.
digitalChannelReflectedPower	21581.1.7.320.1.20	read-only	Channel Reflected power.
digitalChannelVSWR	21581.1.7.320.1.21	read-only	Channel VSWR.
digitalChannelPTTState	21581.1.7.320.1.18	read-only	PTT state 1 = inactive 2 = active

Settings Menu

The Settings Menu is used to configure the 4042E-PTT power sensor. The sensor can be setup to display alarms and send SNMP trap messages, for exceeding forward power, VSWR, and User I/O limits set by the user.

Alarms are controlled on the settings page, see Figure 12. There are Aggregate Signal Alarm Configuration, User Input Configuration, and Channel Configuration.

Figure 12 4042E-PTT Alarm Settings



Aggregate Signal Alarm Configuration

Figure 13 on page 18 shows the aggregate signal alarm settings

Alarm Setting — The alarm function may be enabled or disabled.
When enabled, a measurement exceeding the specified thresholds will display an alarm message in the Table View, SNMP messages will be generated, and HCA outputs will toggle if the option was selected, see Figure 14 on page 18.
When disabled, alarms are not displayed and no SNMP traps will be generated.

The Alarm Setting is enabled when one of the following options is selected:

All — When selected, SNMP traps will be generated and HCA1/HCA2 will toggle to indicate an alarm.

HCA2 — When selected, SNMP traps will be generated and HCA2 will toggle to indicate an alarm.

HCA1 — When selected, SNMP traps will be generated and HCA1 will toggle to indicate an alarm.

Report — When selected, SNMP traps will be generated.

Latching — The alarms can be set to latched or unlatched.
When set to latched, alarm messages remain on the display until the Reset Alarm button is clicked on the settings page.
When set to unlatched, alarm messages are only displayed while the threshold is exceeded.

Figure 13 Aggregate Signal Alarm Settings

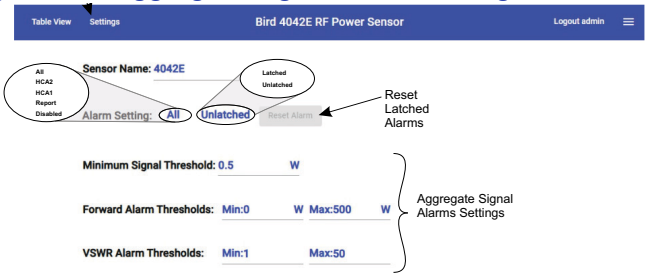


Figure 14 Alarm Display

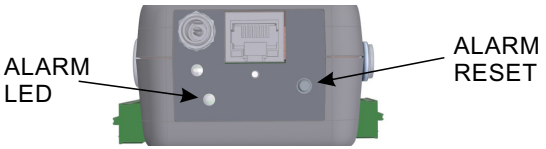
NOTE

Alarm messages remain on the display if the alarm was active when PTT transitions from active to idle even if the alarm setting is unlatched. The Alarm Reset can be used to clear these alarms.

Alarm Reset — Latched alarms or alarms retained during PTT transitions may be reset in two ways.

- Web UI Alarm Reset button on the settings page, see Figure 13. When the button is clicked the alarms are reset, if the cause of the alarm is no longer active.
- Alarm Reset pushbutton on the sensor's bottom panel, see Figure 15. When the button is pressed the alarms are reset, if the cause of the alarm is no longer active.

Figure 15 Alarm Reset Pushbutton



NOTE

Minimum Signal Threshold is enabled when PTT on any channel is disabled. The minimum signal threshold is enabled when there is at least one channel that has PTT Mode set to disabled, or when there are no channels configured.

Minimum Signal Threshold — Forward power must exceed this setting for alarm conditions to be evaluated when the Push-to-Talk (PTT) feature is disabled. Adjust this threshold to ensure background noise or weak signals do not trigger an alarm condition. This feature is enabled when any configured channel has PTT Mode disabled, or when there are no channels configured. See "Channel Configuration" on page 22.

Forward RF/VSWR Thresholds — Thresholds for Forward RF alarms and VSWR alarms. Thresholds may be set to generate alarms for minimum and maximum values.

Table 4 SNMP Aggregate Signal Alarm Settings Commands

Name	OID	Access Level	Description
sensorAlarmEnable16PTT	21581.1.7.300.22	read-write	1 = Set alarms to disabled 2 = Set alarms to report alarm to SNMP/WebUI. 3 = Set alarms to report alarm to SNMP/WebUI and activate HCA1. 4 = Set alarms to report alarm to SNMP/WebUI and activate HCA2. 5 = Set alarms to report alarm to SNMP/WebUI and activate HCA1 and HCA2.
sensorAlarmMode	21581.1.7.300.18	read-write	1 = Set alarms to latched 2 = Set alarms to unlatched
sensorResetAlarms	21581.1.7.300.19	read-write	2 = Set to reset all active alarms. Get always returns 0.

Name	OID	Access Level	Description
sensorMinSignalThreshold	21581.1.6.300.33	read-write	Sets minimum signal threshold for the sensor. Signals below this threshold will not trigger an alarm. Threshold in hundredths, an entry of 5 would be 0.05 Watts.
sensor4042EMinPowerLimit	21581.1.7.300.8	read-write	Sets minimum power threshold for the sensor. Power below this value will result in an alarm. Power is the aggregate power measurement for all channels.
sensor4042EMaxPowerLimit	21581.1.7.300.10	read-write	Set maximum power threshold for the sensor. Power above this value will result in an alarm. Power is the aggregate power measurement for all channels.
sensor4042EMinVSWRLimit	21581.1.7.300.4	read-write	Set minimum VSWR threshold for the sensor. VSWR below this value will result in an alarm. VSWR is computed using aggregate power measurements for all channels.
sensor4042EMaxVSWRLimit	21581.1.7.300.6	read-write	Set maximum VSWR threshold for the sensor. VSWR above this value will result in an alarm. VSWR is computed using aggregate power measurements for all channels.
sensor4042EMinPowerAlarm	21581.1.7.300.9	read-only	Indicates whether alarm has occurred for power below limit. 1- inactive (no alarm) 2 - active (alarm) Power is the aggregate power measurement for all channels.
sensor4042EMaxPowerAlarm	21581.1.7.300.11	read-only	Indicates whether alarm has occurred for power above limit. 1- inactive (no alarm) 2 - active (alarm) Power is the aggregate power measurement for all channels.
sensor4042EMinVSWRAlarm	21581.1.7.300.5	read-only	Indicates whether alarm has occurred for VSWR below limit. 1- inactive (no alarm) 2 - active (alarm) VSWR is computed using aggregate power measurements for all channels.
sensor4042EMaxVSWRAlarm	21581.1.7.300.7	read-only	Indicates whether alarm has occurred for VSWR above limit. 1- inactive (no alarm) 2 - active (alarm) VSWR is computed using aggregate power measurements for all channels.

User Input Configuration

There are two User Inputs that may be monitored for alarms by the 4042E-PTT sensor. If user inputs are connected they must be configured to generate alarms.

When Alarm Setting is set to disabled, alarms are not displayed and no SNMP traps will be generated.

The Alarm Setting is enabled when one of the following options is selected:

All — When selected, SNMP traps will be generated and HCA1/HCA2 will toggle to indicate an alarm.

HCA2 — When selected, SNMP traps will be generated and HCA2 will toggle to indicate an alarm.

HCA1 — When selected, SNMP traps will be generated and HCA1 will toggle to indicate an alarm.

Report — When selected, SNMP traps will be generated.

When Alarm Setting is enabled, if the user input toggles, an alarm will be displayed in Table View, SNMP messages will be generated, and HCA outputs will toggle if the option was selected, see Figure 16.

Figure 16 User Input Alarm Settings

Table 5 SNMP User Input Alarm Settings Commands

Name	OID	Access Level	Description
userInputIndex	**21581.1.7.340.1.1**	**accessible-for-notify**	**Unique index for this user input entry.**
userInputMode	**21581.1.7.340.1.2**	**read-write**	**1 = Disabled 2 = Normally-Open 3 = Normally-Closed**
userInputAlarmEnable	**21581.1.7.340.1.3**	**read-write**	**1 = Set alarms to disabled 2 = Set alarms to report alarm to SNMP/ WebUI. 3 = Set alarms to report alarm to SNMP/WebUI and activate HCA1. 4 = Set alarms to report alarm to SNMP/WebUI and activate HCA2. 5 = Set alarms to report alarm to SNMP/WebUI and activate HCA1 and HCA2.**

Channel Configuration

NOTE

Ensure only one channel is assigned to each frequency. Entering duplicate frequencies will result in inaccurate calculation of aggregate forward, reflected & return loss values.

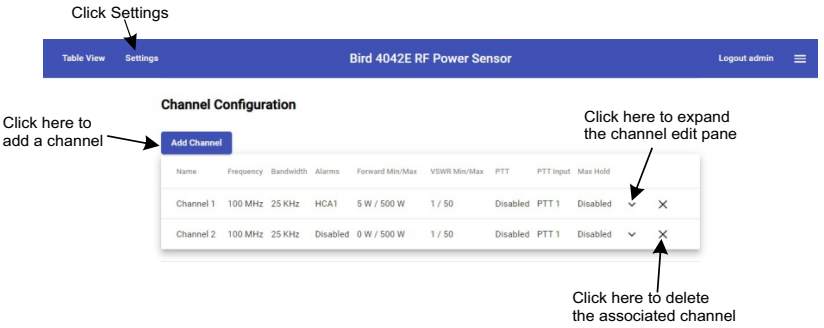
The 4042E-PTT sensor is capable of scanning up to 16 individual channels. Each channel must be configured.

To add a channel, click the **Add Channel** button. See Figure 17.

To configure a channel, click the **down arrow** to the right of the displayed channel information.

To delete a channel, click the **X** to the right of the displayed channel information.

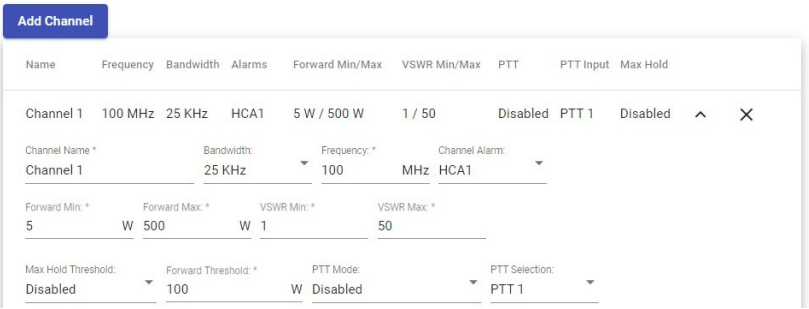
Figure 17 Channel Configuration



Channel Edit Panel

The Channel Edit Panel (Figure 18) is used to enter the settings for each channel you wish to monitor. Click the down arrow as shown in Figure 17, to display the Channel Edit Panel.

Figure 18 Channel Edit Panel



- Channel Name: If desired, rename the channel using a name that will indicate relevant system information. Maximum of 20 characters.
- Bandwidth: Select the bandwidth of the selected channel. Options are 6.25, 12.5 and 25 kHz.
- Frequency: Enter the frequency in MHz of the channel to monitor. Minimum of 100 MHz and maximum of 1000 MHz.
- Channel Alarm: If alarm monitoring of the selected channel is desired, select an option (report, HCA1, HCA2, all) to enable channel alarm. Disabled is the default selection, meaning alarms are not monitored for the selected channel. This alarm does not effect the aggregate power alarms shown in "Aggregate Signal Alarm Configuration" on page 18.
  - Forward Min Alarm Setting: Lower limit forward measured power must reach to cause alarm condition.
    The Forward Alarm threshold is a three digit number that can range from 000 to 999 Watts.
  - Forward Max Alarm Setting: Upper limit forward measured power must reach to cause alarm condition.
  - VSWR Min Alarm Setting: Lower limit VSWR measurement must reach to cause alarm condition.
    VSWR Alarm threshold may be set from 1.00 (no Alarm) to 9.99.
  - VSWR Max Setting: Upper limit VSWR measurement must reach to cause alarm condition.
- Max Hold Threshold: This option allows forward power sensor reading above a set threshold to be saved on the channels readings.
- Forward Threshold: This value sets the threshold for max hold.
- PTT Mode: Push to Talk, default is Disabled. Enabled options are Normally Open and Normally Closed logic.

- PTT Selection: This option is used to select the PTT terminal used with the selected channel.

Table 6 SNMP Digital Channel Settings Commands

Name	OID	Access Level	Description
digitalChannelAdd	21581.1.7.321	read-write	Add a channel to the Channel Table
digitalChannelIndex	21581.1.7.320.1.1	accessible-for-notify	Unique index for channel.
digitalChannelRemove	21581.1.7.320.1.26	read-create	Remove a channel from the channel table.
digitalChannelName	21581.1.7.320.1.2	read-create	Name assigned to channel. maximum of 20 characters.
digitalChannelBandwidthSelect	21581.1.7.320.1.15	read-create	Bandwidth of channel. 1 = 25 KHz BW 2 = 12.5 KHz BW 3 = 6.25 KHz BW
digitalChannelFrequencyHz	21581.1.7.320.1.14	read-create	Center frequency of channel in Hz. Range 100000000 to 1000000000
digitalChannelMinPowerLimit	21581.1.7.320.1.10	read-create	Minimum power for the channel. Power below this value will result in an alarm.
digitalChannelMaxPowerLimit	21581.1.7.320.1.12	read-create	Maximum power for the channel. Power above this value will result in an alarm.
digitalChannelMinVSWRLimit	21581.1.7.320.1.6	read-create	Minimum VSWR for the channel. VSWR below this value will result in an alarm.
digitalChannelMaxVSWRLimit	21581.1.7.320.1.8	read-create	Maximum VSWR for the channel. VSWR above this value will result in an alarm.
digitalChannelMaxHoldEnable	21581.1.7.320.1.4	read-create	Enable/disable channel max threshold. 1 = Disabled 2 = Enabled
digitalChannelMaxHoldThreshold	21581.1.7.320.1.5	read-create	Maxhold threshold for this channel. Power above this value will be stored for future use.
digitalChannelPTTType	21581.1.7.320.1.16	read-create	PTT type: 1 = Disabled 2 = Normally-Open 3 = Normally-Closed
digitalChannelPTTIndex	21581.1.7.320.1.17	read-create	Index of PTT input for sensor.

Name	OID	Access Level	Description
digitalChannelAlarmEnable16PTT	21581.1.7.320.1.27	read-create	1 = Set alarms to disabled 2 = Set alarms to report alarm to SNMP/ WebUI. 3 = Set alarms to report alarm to SNMP/WebUI and activate HCA1. 4 = Set alarms to report alarm to SNMP/WebUI and activate HCA2. 5 = Set alarms to report alarm to SNMP/WebUI and activate HCA1 and HCA2.

Table 7 SNMP Digital Channel RF Power/VSWR GET commands

Name	OID	Access Level	Description
digitalChannelMinPowerAlarm	21581.1.7.320.1.11	read-only	Indicates whether alarm has occurred for power below limit. 1 = Inactive 2= Active
digitalChannelMaxPowerAlarm	21581.1.7.320.1.13	read-only	Indicates whether alarm has occurred for power above limit. 1 = Inactive 2= Active
digitalChannelMinVSWRAlarm	21581.1.7.320.1.7	read-only	Indicates whether alarm has occurred for VSWR below limit. 1 = Inactive 2= Active
digitalChannelMaxVSWRAlarm	21581.1.7.320.1.9	read-only	Indicates whether alarm has occurred for VSWR above limit. 1 = Inactive 2= Active

Table 8 SNMP Digital Channel Sample Max Hold GET commands

Name	OID	Access Level	Description
digitalChannelForwardMaxHold	21581.1.7.320.1.22	read-only	Forward Power Max Hold
digitalChannelReflectedMaxHold	21581.1.7.320.1.23	read-only	Reflected Power Max Hold
digitalChannelVSWRMaxHold	21581.1.7.320.1.24	read-only	VSWR Max Hold
digitalChannelMaxHoldTime	21581.1.7.320.1.25	read-only	Max Hold Time

Table 9 SNMP Digital Channel PTT GET commands

Name	OID	Access Level	Description
digitalChannelPTTState	21581.1.7.320.1.18	read-only	PTT state.

SNMP Configuration

The Simple Network Management Protocol (SNMP) feature is designed to provide reliable Internet notification of an alarm occurrence. SNMP is an Internet standard protocol for managing devices on IP networks.

SNMP network management software is required to implement SNMP. It is the customer's responsibility to ensure the destination computer is running suitable SNMP management software.

Bird provides MIB files for use with the customer's SNMP management software. These MIB files allow the trap messages to be properly decoded. The MIB files can be downloaded from the product page on the Bird website at; "www.birdrf.com".

The 4042E-PTT supports SNMP GET and SET commands, and can be configured to send SNMP Trap messages. All of the 4042E-PTT's SNMP commands can be found in the MIB file.

GET and SET Commands

The SNMP manager can issue a GET request to read settings and power measurements, and the SNMP manager can issue a SET request to change settings.

The 4042E-PTT SNMP Configuration includes community Read, Write, and Trap community strings. The SNMP Agent community strings must match the 4042E-PTT community strings to successfully perform gets and sets. See Figure 19 on page 28.

GET

The SNMP GET operation is used by the SNMP manager applications to retrieve one or more values from the 4042E-PTT.

The SNMP GET operation is used to query the scalar variables in a MIB. Each variable is identified by its OID. The 4042E-PTT will respond with a return value or with an error.

SET

The SNMP SET operation is used by the SNMP manager to modify settings in the 4042E-PTT.

Perform an SNMP SET operation by providing the host name of the 4042E-PTT, one or more OIDs along with its instance, and the new value. The 4042E-PTT processes the request and assigns the new value to the MIB variable. If an error occurs, the new value is not assigned.

SNMP Sets must be enabled in the UI under SNMP Configuration, see Figure 19 on page 28. If SNMP Sets are disabled, an SNMP set operation will return a "Commit failed" error, the SNMP agent will not be able to send any SET commands, and no settings can be changed from the SNMP Manager.

Figure 19 SNMP Configuration

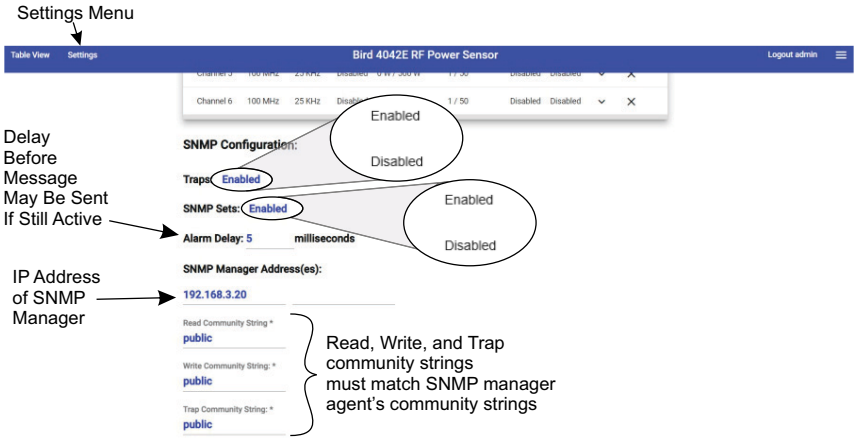


Table 10 SNMP Configuration Commands

Name	OID	Access Level	Description
sensorTrapsEnable	21581.1.7.300.21	read-write	Enable/disable all traps. 1 = Disabled 2 = Enabled
sensorAlarmDelay	21581.1.7.300.20	read-write	Alarm delay set in milliseconds.
snmpTargetIP	21581.1.7.330.1.2	read-write	IP address for one trap receiver target, in standard format (###.###.###.###).
snmpTargetIPIndex	21581.1.7.330.1.1	read-only	Unique index for IP target entry.

SNMP Traps

NOTE

Traps may be enabled and disabled using the UI or SNMP.

Traps are messages sent to the SNMP manager by the 4042E-PTT when events occur.

NOTE

Do not enter duplicate SNMP IP addresses. Duplicate IP addresses entered into SNMP Manager Address fields will cause duplicates of SNMP messages sent to an SNMP server.

To enable SNMP Trap functionality, connect to the 4042E-PTT User Interface, enable Traps, and enter the SNMP Manager's IP address. See Figure 19. Up to 5 SNMP IP addresses may be added. IP addresses may be set on the UI or via the SNMP manager.

A trap message will be sent to the designated host computers whenever the sensor detects an alarm condition. See Table 11 on page 29.

Table 11 SNMP Trap Message Definitions

Name	OID	Message	Description
minAggregateVswrAlarmTrap	21581.1.7.0.1	sensorName, minVSWRLimit, MinVSWRAlarmState, VSWR	Alarm that occurs when the aggregate VSWR is below the minimum VSWR setting.
maxAggregateVswrAlarmTrap	.21581.1.7.0.2	sensorName, maxVSWRLimit, MaxVSWRAlarmState, VSWR	Alarm that occurs when the aggregate VSWR is above the maximum VSWR setting.
minAggregateFwdPowerAlarmTrap	21581.1.7.0.3	sensorName, minFwdPowerLimit, MinFWDPowerAlarmState, FWDPower	Alarm that occurs when the aggregate Forward Power is below the minimum power setting.
maxAggregateFwdPowerAlarmTrap	21581.1.7.0.4	sensorName, maxFwdPowerLimit, MaxFWDPowerAlarmState, FWDPower	Alarm that occurs when the aggregate Forward Power is above the maximum power setting.
minChannelVswrAlarmTrap	21581.1.7.0.5	sensorName, digitalChannelIndex, digitalChannelName, digitalChannelminVSWRLimit, digitalChannelMinVSWRAlarmState, VSWR	Alarm that occurs when the VSWR is below the minimum VSWR set for a channel.
maxChannelVswrAlarmTrap	21581.1.7.0.6	sensorName, digitalChannelIndex, digitalChannelName, digitalChannelmaxVSWRLimit, digitalChannelMaxVSWRAlarmState, VSWR	Alarm that occurs when the maximum VSWR set for a channel has been exceeded.
minChannelFwdPowerAlarmTrap	21581.1.7.0.7	sensorName, digitalChannelIndex, digitalChannelName, digitalChannelminFwdPowerLimit, digitalChannelMinFWDPowerAlarmState, FWDPower	Alarm that occurs when the forward power is below the minimum power set for a channel.
maxChannelFwdPowerAlarmTrap	21581.1.7.0.8	sensorName, digitalChannelIndex, digitalChannelName, digitalChannelmaxFwdPowerLimit, digitalChannelMaxFWDPowerAlarmState, FWDPower	Alarm that occurs when the maximum forward power set for a channel has been exceeded.

Name	OID	Message	Description
pttTrap	21581.1.7.0.9	sensorName, digitalChannelIndex, digitalChannelName, digitalChannelPTTIndex, digitalChannelPTTType, digitalChannelPTTState, digitalChannelFWDPower, digitalChannelRFLPower, digitalChannelVSWR	Trap sent when PTT changes.
userInput1AlarmTrap	21581.1.7.0.11	sensorName, userInputIndex, userInputMode, userInputAlarmEnable, userInputAlarmState	Trap sent when user input 1 alarm becomes active.
userInput2AlarmTrap	21581.1.7.0.12	sensorName, userInputIndex, userInputMode, userInputAlarmEnable, userInputAlarmState	Trap sent when user input 2 alarm becomes active.

SNMP Sets

SNMP Sets must be enabled in the UI under SNMP Configuration, see Figure 19 on page 28. If SNMP Sets are disabled, the SNMP agent will not be able to send any SET commands, and no settings can be changed from the SNMP Manager.

NOTE

When SNMP Sets are disabled in the Web UI, performing an SNMP set operation will return a "Commit failed" error.

Alarm Delay

If SNMP trap messages are enabled, when a trap condition threshold is met a message will be sent to the SNMP manager.

The alarm delay can be used to eliminate transient alarms by delaying the trap message. If during the delay, the threshold condition is no longer valid, a trap message will not be generated.

The alarm delay can be set using the UI or SNMP. The maximum delay is 10000 milliseconds (10 seconds). See Table 10 on page 28.

Community Strings

The SNMP community strings are like a user ID or password that allows access to the sensor's data and configuration. The community strings default to public, meaning the are open and may be accessed by any SNMP client.

To protect the sensor's data and configuration, the community strings may be changed so only a client with matching strings may access the sensor's data and configuration. The community strings can only be changed using the UI.

The 4042E-PTT allows settings for the following community strings: **Read**, **Write**, **Traps**.

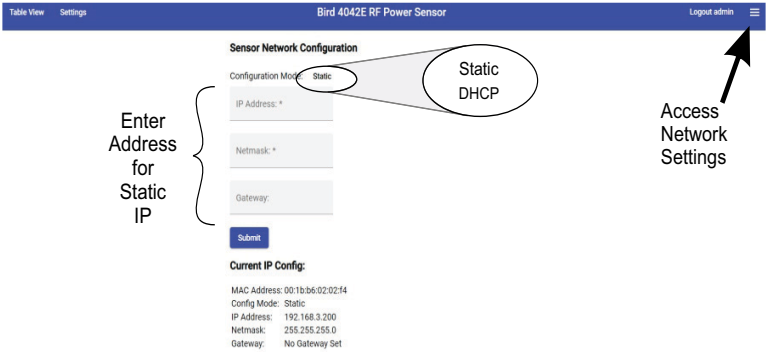
Configuration Menu

IP Address Configuration

The sensor's IP Address should be changed if the 4042E-PTT sensor will be used on a LAN, especially if more than one sensor is deployed. Each device on a network must have a unique IP address.

The 4042E-PTT sensor may be set to use a Static IP address or set to DHCP and assigned an IP address. If Static is chosen, a unique IP address and net mask must be entered into the fields on the Sensor Network Configuration Screen.

Figure 20 IP Address Configuration Screen

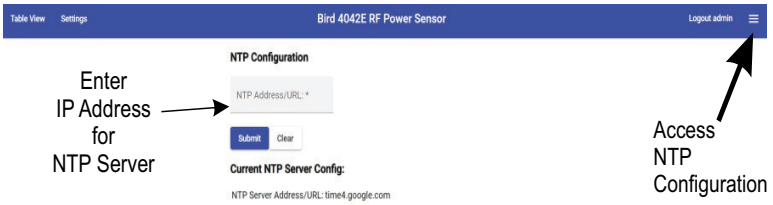


NTP Settings

The Network Time Protocol (NTP) is used by hundreds of millions of computers and devices to synchronize their clocks over the Internet.

The 4042E-PTT sensor may be configured to use a specific NTP server by entering the NTP server's URL on the NTP Configuration page and clicking **Submit**.

Figure 21 NTP Configuration



Update Sensor Firmware

The 4042E-PTT sensor's functionality is enabled by firmware installed on the sensor. This firmware can be updated by accessing the firmware update utility on the 4042E-PTT sensor's User Interface web page Firmware updates are designed to load remotely without user interaction at the installation site.

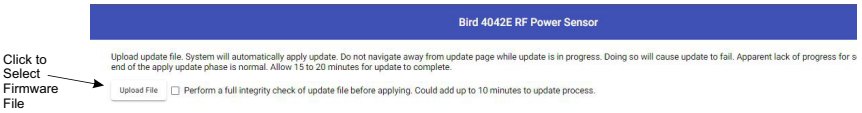
To update firmware:

1. Download the firmware from the product page on the Bird website at; "www.birdrf.com".
2. Click the  menu on the right side of the 4042E-PTT UI web page to access the firmware update utility.
3. Click the **Upload File** button on the firmware update utility and navigate to the downloaded file.
4. Click **Apply** button when the Apply Update? dialog is displayed.
5. Wait until "Firmware Update Complete" message displays and refresh the Browser.

NOTE

Firmware updates are designed to load completely without user interaction at the installation site. Connection speeds to remote sites may delay upload and application. In the event of failure, the sensor will maintain its' original firmware. Simply re-start the update process.

Figure 22 Firmware Update Utility



Manage Users

The Manage Users option is available to manage user passwords. Multiple usernames with passwords may be added. The default admin username cannot be changed but the password should be changed from the default.

NOTE

The Sensor's serial number is the default password, the password should be changed during installation to ensure only authorized personnel have access to the sensor's configuration settings.

Figure 23 Manage Users

Add User

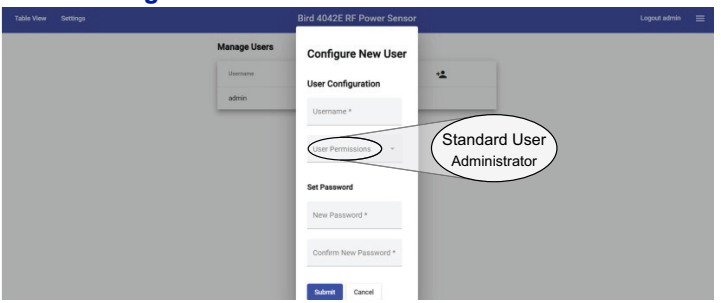
To add a user, click . Enter a user name. Each username must be unique.

User Permissions are Standard or Administrator.

Administrator privileges have no restrictions, and may change any 4042E settings.

Standard User privileges allow the user to only change RF settings such as enabling/disabling alarms, setting thresholds, and change their own password. Standard User privileges prevent the user from making any changes to user accounts, SNMP, the IP Address, NTP servers, or update firmware.

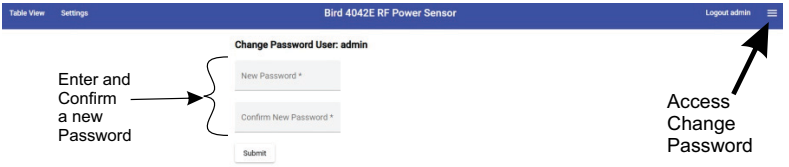
Figure 24 Adding User



Change Password

Users may use the change password option in the configuration menu to change the password for their account.

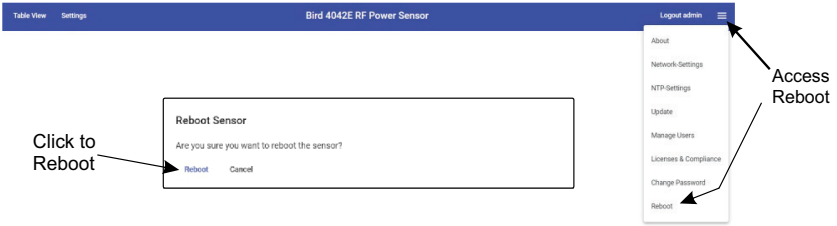
Figure 25 Change Password



Reboot

The 4042E-PTT User Interface includes an option to reboot the sensor. This allows the sensor to be rebooted from a remote location. This avoids the need to physically disconnect the sensor from its power source.

Figure 26 Reboot Sensor



About Screen

The about screen displays information about the 4042E-PTT sensor, including model number, serial number, calibration date, and software versions.

The information on the About screen may also be accessed using SNMP.

Figure 27 About Screen

Table 12 SNMP Sensor Information

Name	OID	Access Level	Description
sensor4042EModel	21581.1.7.300.2	read-only	Model number of sensor.
sensor4042ESerialNumber	21581.1.7.300.3	read-only	Serial number of sensor.
sensor4042ECalDate	21581.1.7.300.31	read-only	Calibration date of sensor.
firmwareVersion	21581.1.7.522	read-only	Firmware Version running on 4042E. Equivalent to Build Version on the About screen.
sensor4042EApplicationVersion	21581.1.7.300.32	read-only	Sensor Measurement Application version.

Factory Reset

The 4042E-PTT includes a factory reset button which can be used for reseting the unit's IP address and other settings. The factory reset button is recessed in a hole on the bottom of the unit near the Ethernet jack, see Figure 28.

Power must be applied to the 4042E-PTT to perform either of the following reset options.

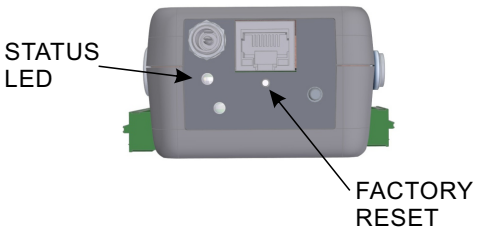
Reset IP Address

Press and release the button to reset the IP Address, the Status LED will briefly change to red. The IP address to be reset to the default of 192.168.3.200.

Reset All Settings

Press and hold the reset button for a minimum of 5 seconds, then release the button, the Status LED will flash red five times to indicate all settings are being reset. All of the 4042E-PTT settings will be reset to the factory defaults. The reset will take approximately 30 seconds to complete.

Figure 28 Factory Reset



Contact the Bird Service Center in the event the power sensor requires additional maintenance. See "Customer Service" on page 37.

Customer Service

Any maintenance or service procedure beyond the scope of those in this chapter should be referred to a qualified service center.

If the unit needs to be returned for any reason, request a Return Material Authorization (RMA) through the Bird Technologies website. All instruments returned must be shipped prepaid and to the attention of the RMA number.

Bird Service Center
30303 Aurora Road
Cleveland (Solon), Ohio 44139-2794
Fax: (440) 248-5426
E-mail: *bsc@birdrf.com*

For the location of the Sales Office nearest you, visit our Web site at:

http://www.birdrf.com

Specifications

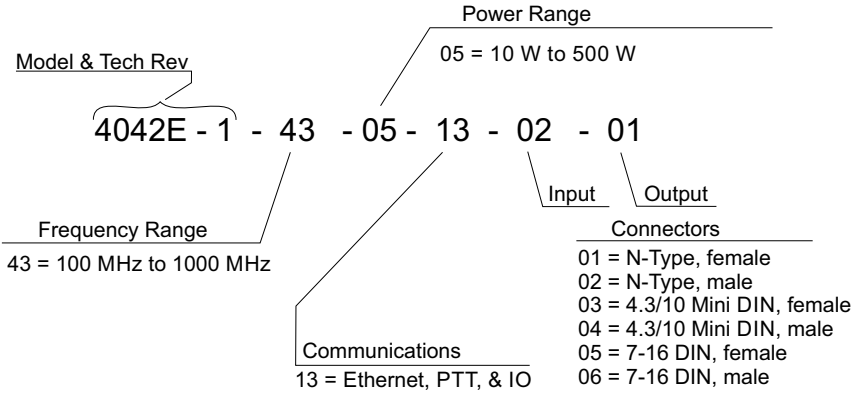
Specification	*Value*
Measurement Type	In-Line, Directional RF True Average Power by Channel, or aggregate Power (by scanning channels)
Channel Bandwidth	6.25, 12.5, 25 kHz selectable
Frequency Range	100 to 1000 MHz
Forward Power Measurement	10W to 500W Single Channel or Aggregate Forward Average Power
Reflected Power Measurement	1W to 50W Single Channel or Aggregate Reflected Average Power
RF Connectors	Type-N (male), Type 4.3-10 (male), 7-16 DIN (male), Type-N (female), Type 4.3-10 (female), 7-16 DIN (female)
Impedance	50 Ohms nominal
Insertion Loss (Max.)	0.2 dB
Insertion VSWR (Max.)	1.15
Peak/Average Ratio (Max.)	12 dB
Directivity	25 dB minimum
Measurement Accuracy	± 5% of reading
Data Interfaces	Ethernet 10/100/1000BASE-T (auto-sense) Version 2.0/IEEE 802.3
RS-485 Data Interface Connector	RJ-45
User I/O Push-to-Talk User Input Alarm Relay	 16 channels, 3.3V,10k internal pull-up, NO or NC logic (UI selectable) 2 channels, 3.3V, 10k internal pull-up, NO or NC logic (UI selectable) 2 Form-C hard-contact alarm relay switches, NO/NC/COM, 110 VDC/125 VAC, 1A Max. contact rating
User I/O Connectors Terminal block, push-in (3) 2.5mm pitch, 20-28AWG wire range	16 Push-to-talk (PTT), 2 User Inputs & Ground, 2 NO/NC alarm relay switches.
Power Supply Requirement 15V AC adapter included, 0.08” (2mm) power input	5.5-25 VDC, 3W max.

Specification	Value
Operating Temperature Range Sensor AC Adapter	 0° C to +50° C (32° F to 122° F) 0° C to +40° C (32° F to 104° F)
Storage Temperature Range Sensor AC Adapter	 -40° C to +80° C (-40° F to 176° F) -20° C to +80° C (-4° F to 176° F)
Humidity Sensor AC Adapter	 95% maximum (non-condensing) 80% maximum (non-condensing)
Altitude (Max.)	15,000 ft. (4600 m)
Weight (Approx.)	0.6 lb. (0.27 kg)
Dimensions, Nominal Without Connectors	5.4" L x 3.8" W x 1.4" H (137.0 mm x 97 mm x 36 mm)
Operating Position	Any
Pollution Degree	2

Model Identification

NOTE

The Model Identification guide is provided to allow existing model numbers to be understood. However, not all combinations may be available. Please contact Bird for more information on new model number requests.



Limited Warranty

All products manufactured by Seller are warranted to be free from defects in material and workmanship for a period of one (1) year, unless otherwise specified, from date of shipment and to conform to applicable specifications, drawings, blueprints and/or samples. Seller's sole obligation under these warranties shall be to issue credit, repair or replace any item or part thereof which is proved to be other than as warranted; no allowance shall be made for any labor charges of Buyer for replacement of parts, adjustment or repairs, or any other work, unless such charges are authorized in advance by Seller.

If Seller's products are claimed to be defective in material or workmanship or not to conform to specifications, drawings, blueprints and/or samples, Seller shall, upon prompt notice thereof, either examine the products where they are located or issue shipping instructions for return to Seller (transportation-charges prepaid by Buyer). In the event any of our products are proved to be other than as warranted, transportation costs (cheapest way) to and from Seller's plant, will be borne by Seller and reimbursement or credit will be made for amounts so expended by Buyer. Every such claim for breach of these warranties shall be deemed to be waived by Buyer unless made in writing within ten (10) days from the date of discovery of the defect.

The above warranties shall not extend to any products or parts thereof which have been subjected to any misuse or neglect, damaged by accident, rendered defective by reason of improper installation or by the performance of repairs or alterations outside of our plant, and shall not apply to any goods or parts thereof furnished by Buyer or acquired from others at Buyer's request and/or to Buyer's specifications. Routine (regularly required) calibration is not covered under this limited warranty. In addition, Seller's warranties do not extend to the failure of tubes, transistors, fuses and batteries, or to other equipment and parts manufactured by others except to the extent of the original manufacturer's warranty to Seller.

The obligations under the foregoing warranties are limited to the precise terms thereof. These warranties provide exclusive remedies, expressly in lieu of all other remedies including claims for special or consequential damages. SELLER NEITHER MAKES NOR ASSUMES ANY OTHER WARRANTY WHATSOEVER, WHETHER EXPRESS, STATUTORY, OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS, AND NO PERSON IS AUTHORIZED TO ASSUME FOR SELLER ANY OBLIGATION OR LIABILITY NOT STRICTLY IN ACCORDANCE WITH THE FOREGOING.