



DIRECTIONAL POWER SENSOR
MODEL 4043E

OPERATION MANUAL

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.

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.

See page 8.

Caution Statements

The following equipment cautions appear in the text whenever the equipment is in danger of damage and are repeated here for emphasis.

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 HACERLO.

WARTUNG

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

ENTRETIEN

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 EFFETTUARE ALCUNA RIPARAZIONE A MENO CHE QUALIFICATI A FARLA.

About This Manual

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

4043E - Directional Power Sensors

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 4043E Directional Power Sensor.

Installation — Describes how to set up and prepare the 4043E Power Sensor for use.

Maintenance — This section provides the specifications for the 4043E Power Sensor as well as a model identification table.

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Purpose and Function

The Bird 4043E Directional Power Sensors are digital power sensors. The 4043E power sensors are typically used to measure forward and reflected average power on a 50 ohm RF transmission line with a maximum 500 watt forward and maximum 50 watt reflected power levels in a frequency band with an overall range of 118 to 940 MHz. See ["Model Identification" on page 27](#) for specific frequency ranges and model features. The 4043E sensor also provides a VSWR reading.

Figure 1 4043E Power Sensor

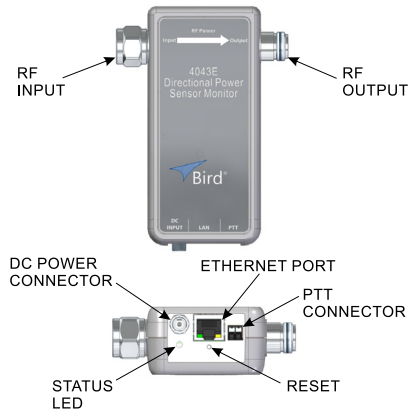


The 4043E Power Sensor uses Ethernet communications for sensor control and measurement data.

See ["Sensor Operation" on page 9](#).

The 4043E 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 PTT connector, and a status indicator. See [Figure 2](#).

Figure 2 Bird 4043E, Ethernet Communication Power Sensor

<i>Features</i>	
RF Input	N-Type (male) connector (shown), other connector types available, see "Model Identification" on page 27
RF Output	N-Type (female) connector (shown), other connector types available, see "Model Identification" on page 27
DC Power Connector	DC input connector.
Ethernet Port	RJ-45 connector used to interface with the Sensor's Web UI and provide the measurement interface.
PTT Connector	Push-To-Talk terminal is used to prevent spurious alarms during periods when the transmitter is not transmitting, see "Push-To-Talk (PTT)" on page 4.
Reset Button	<p>This reset button is a hole under the Ethernet jack.</p> <ul style="list-style-type: none"> 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 4043E settings are reset to the factory defaults.
Status LED	<p>Solid green: Power applied during boot-up. Blue flashing: Normal operation. Red: Reset button pressed and released.</p>

Ethernet Measurement Interface

The 4043E sensor displays measurement information on a Web UI. Using a web browser, enter the IP address for the 4043E to display the web page.

Table view displays the current Forward, Reflected, and VSWR measurements. See [Figure 3](#).

Figure 3 Web UI, Table View Measurement Display

Table View	Settings	Bird 4043E RF Power Sensor	Logout admin
Sensor Name: 4043E			
Forward	0.0 W		
Reflected	0.0 W		
VSWR	1.00		
Temperature	33.3 °C		
Uptime	0:00:09:31		

Ethernet IP Address

Each 4043E 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 20.

Password Protection

NOTE

Beginning with Application Version release 3.0.yyyymmdd.x the Web UI configuration settings are password protected.

The 4043E configuration settings are password protected. The sensor may not 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**.

To change the password or add additional users, see "[Manage Users](#)" on page [22](#).

Push-To-Talk (PTT)

Push-To-Talk (PTT) is used to prevent false alarms during periods when the transmitter is not transmitting. When enabled, PTT prevents spurious alarms during periods when the transmitter is not transmitting because 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.

NOTE

PTT input is a passive connection and requires a 5V TTL signal to operate.

The Bird 4043E Directional Power Sensors are designed to be used for continuous RF power monitoring. The 4043E can provide real-time RF forward and reflected power and VSWR measurements.

Ethernet Connection

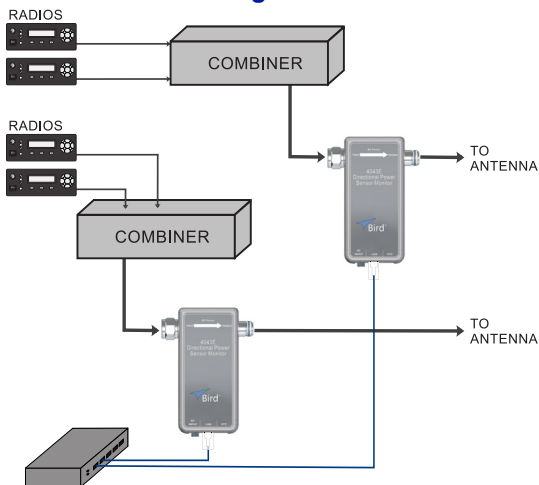
The Ethernet connector is used to connect the 4043E to a PC or a network router/switch. Measurement data is transported over the Ethernet connection so the data can be viewed in a web browser. The configuration depicted in [Figure 4](#) is an example of one possible installation.

Since the 4043E 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 4043E. 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 4043E. See ["Direct PC Ethernet Connection" on page 6](#).

LAN Connection — The 4043E 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 4043E 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 6](#).

Figure 4 4043E 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 4043E power sensor.
2. Connect your laptop's network port to the LAN connector on the 4043E using a standard Ethernet cable.
3. Ensure that your laptop's IP address is compatible with the default address of the 4043E. 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 the 4043E'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 5](#).
8. Enter User Name and Password. See [Figure 5](#) for default login information.

Figure 5 Login Screen

Table View Settings Bird 4043E RF Power Sensor Login

Login

Default Username: admin → Username *

Default Password: Sensor Serial Number → Password *

Submit

Click to Login

9. Connect sensor to RF delivery system. See ["RF Connections" on page 8](#).
10. If PTT will be used, see ["PTT Connections" on page 8](#).
11. See ["Sensor Operation" on page 9](#) 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 4043E 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 4043E power sensor.

2. Change sensor's IP Address.


- a. Connect your laptop's network port to the LAN connector on the 4043E using a standard Ethernet cable.
- b. Ensure that your laptop's IP address is compatible with the default address of the 4043E. 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 the 4043E'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 5 on page 6](#).
- f. Enter User Name and Password.
- g. Click the  menu in the top right of the display and select Network Settings. See [Figure 6](#).
- 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 4043E.

Figure 6 IP Address Configuration

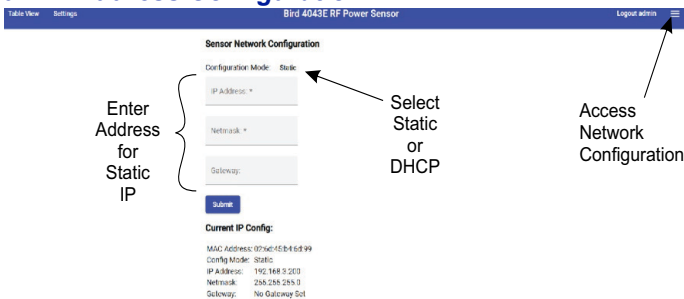


Table View Settings Bird 4043E RF Power Sensor Logout admin

Sensor Network Configuration

Configuration Mode: Static

IP Address: *

Netmask: *

Gateway:

Submit

Current IP Config:

MAC Address: 0784c103b4b0d999

Config Mode: Static

IP Address: 192.168.3.200

Netmask: 255.255.255.0

Gateway: No Gateway Set

Enter Address for Static IP

Select Static or DHCP

Access Network Configuration

3. Connect a standard Ethernet cable to the LAN connector on the 4043E 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 4043E.
5. Enter the sensor's newly assigned IP address in the web browser's address box.

6. If required, Login again with User Name and Password. See [Figure 5 on page 6](#) for default login information.
7. Connect sensor to RF delivery system. See ["RF Connections" on page 8](#).
8. If PTT will be used, see ["PTT Connections" on page 8](#).
9. See ["Sensor Operation" on page 9](#) for descriptions of the sensor's User Interface.

RF Connections

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 4043E RF input.
3. Connect 4043E's RF output connector to the antenna cable.
4. Repeat step [1](#) through [3](#) for any additional 4043E power sensors.

RF Alarm Settings and Thresholds can be set for each RF Power Sensor, see ["RF Measurement Alarm Settings" on page 11](#).

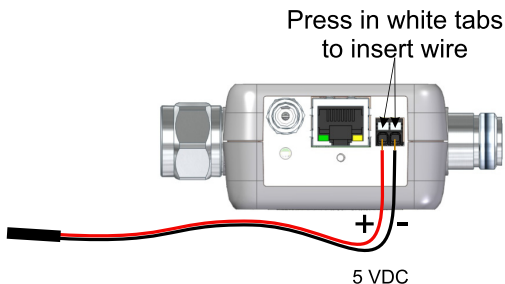
PTT Connections

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.

NOTE

PTT input is a passive connection and requires a 5V TTL signal to operate.

Figure 7 PTT Connections



The PTT settings in the User Interface must be enabled and set to correct logic to match the PTT connection. See ["PTT Settings" on page 13](#).

User Interface

Table View — Table View page displays the RF measurements made by the 4043E. See "[Table View](#)" on page 10.

NOTE

The following capabilities are password protected.

Settings Menu — The [Settings Menu](#) is used for the following capabilities:

- RF Measurement Alarm Settings
- PTT Settings
- Zero Sensor
- SNMP Configuration
- Forward Power Sample 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 8](#) displays the current RF Power Measurements.

- Sensor Name
- Forward RF Power
- Reflected RF Power
- VSWR

Also displayed: PTT state (if enabled), sensor temperature, and sensor uptime.

Figure 8 Web UI, Table View Measurement Display

Table View	Settings	Bird 4043E RF Power Sensor	Logout admin
Sensor Name: 4043E			
Forward 2.4 W			
Reflected 0.2 W			
VSWR 1.91			
PTT Idle			
Temperature 34.4 °C			
Uptime 0:02:50:02			

The table view information may also be accessed using SNMP software. [Table 1](#) displays the SNMP commands available for the Table View information.

Table 1 SNMP RF Power Commands

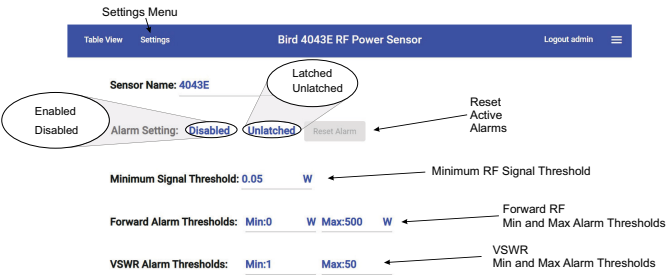
Name	OID	Access Level	Description
sensor4043EName	21581.1.6.300.1	read-write	Name assigned to sensor. The sensor name may be set using a maximum of 20 characters.
sensor4043EForwardPower	21581.1.6.300.14	read-only	Forward power. Return value is in tenths, a return of 40 is 4 Watts.
sensor4043EReflectedPower	21581.1.6.300.15	read-only	Reflected power. Return value is in tenths, a return of 4 is 0.4 Watts.
sensor4043EVSWR	21581.1.6.300.16	read-only	VSWR. Return value is in hundredths, a return of 110 is a VSWR of 1.1.
sensor4043EPTTState	21581.1.6.300.13	read-only	PTT state 1 = inactive 2 = active
sensor4043ETemperature	21581.1.6.300.30	read-only	Internal Sensor Temperature in Celsius. Return value is in tenths, a return of 475 is an internal temp of 47.5° C
sensor4043EUptime	21581.1.6.300.27	read-only	Time accumulated since power was applied or since the last reboot.

Settings Menu

RF Measurement Alarm Settings

The 4043E power sensor can be set to display an alarm, and send SNMP trap messages, for exceeding forward power and VSWR limits set by the user. Alarms are controlled on the settings page, a threshold can be set for minimum and maximum forward RF power in watts and minimum and maximum VSWR. See [Figure 9](#).

Figure 9 Alarm Settings



Alarm Setting — The alarm function may be enabled or disabled. When enabled, a measurement exceeding a threshold will display an alarm message in the Table View, see [Figure 10](#). When disabled, alarms are not displayed and no 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.

NOTE

Alarm messages may remain on the display even if the alarm setting is unlatched under the following circumstances:

When PTT is enabled, if an alarm is active when PTT transitions from active to idle.

When PTT is disabled, if an alarm is active when the transmitter is deactivated.

Figure 10 Alarm Display

Sensor Name: 4043E	
Forward	2.3 W Max Alarm
Reflected	0.2 W
VSWR	1.91 Max Alarm
PTT Active	

NOTE

Minimum Signal Threshold is disabled when PTT is enabled.

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.

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 2 SNMP Alarm Settings Commands

Name	OID	Access Level	Description
sensorAlarmEnable	21581.1.6.300.17	read-write	1 = Set alarms to disabled. 2 = Set alarms to enabled.
sensorAlarmMode	21581.1.6.300.18	read-write	1 = Set alarms to latched. 2 = Set alarms to unlatched.
sensorResetAlarms	21581.1.6.300.19	read-write	2 = Set to reset all active alarms. Get always returns 0.
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.
sensor4043EMinPowerLimit	21581.1.6.300.8	read-write	Sets minimum power threshold for the sensor. Power below this value will result in an alarm. Threshold in tenths, an entry of 40 would be 4 Watts.
sensor4043EMaxPowerLimit	21581.1.6.300.10	read-write	Set maximum power threshold for the sensor. Power above this value will result in an alarm. Threshold in tenths, an entry of 40 would be 4 Watts.
sensor4043EMinVSWRLimit	21581.1.6.300.4	read-write	Set minimum VSWR threshold for the sensor. VSWR below this value will result in an alarm. Threshold in hundredths, an entry of 110 is a VSWR of 1.1.
sensor4043EMaxVSWRLimit	21581.1.6.300.6	read-write	Set maximum VSWR threshold for the sensor. VSWR above this value will result in an alarm. Threshold in hundredths, an entry of 110 is a VSWR of 1.1.
sensor4043EMinPowerAlarm	21581.1.6.300.9	read-only	Indicates whether alarm has occurred for power below limit. 1 - inactive (no alarm) 2 - active (alarm)
sensor4043EMaxPowerAlarm	21581.1.6.300.11	read-only	Indicates whether alarm has occurred for power above limit. 1 - inactive (no alarm) 2 - active (alarm)

Name	OID	Access Level	Description
sensor4043EMinVSWRArm	21581.1.6.300.5	read-only	Indicates whether alarm has occurred for VSWR below limit. 1- inactive (no alarm) 2 - active (alarm)
sensor4043EMaxVSWRArm	21581.1.6.300.7	read-only	Indicates whether alarm has occurred for VSWR above limit. 1- inactive (no alarm) 2 - active (alarm)

PTT Settings

When enabled, PTT prevents spurious alarms during periods when the transmitter is not transmitting because alarm functions will only be possible when the transmit button is engaged.

PTT is controlled on the settings page, PTT may be set to normally open or normally closed logic, or disabled, see [Figure 11](#).

The PTT terminals on the 4043E must be connected to the transmitter in the correct logic state for PTT to operate correctly.

Figure 11 PTT Options

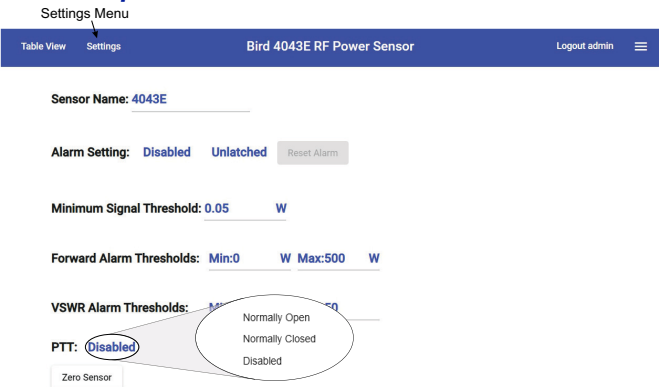


Table 3 SNMP PTT Commands

Name	OID	Access Level	Description
sensor4043EPTTType	21581.1.6.300.12	read-write	PTT type: 1 = Disabled 2 = Normally-Open 3 = Normally-Closed

Zero Sensor

Zero Sensor is used if the 4043E sensor's readings are not zero when the RF transmitter connected to the sensor is off.

The Zero Sensor option merely applies a negative offset to the power reading based on the value the sensor displays when RF is off.

Figure 12 Zero Sensor Option

The screenshot shows the 'Settings Menu' for the 'Bird 4043E RF Power Sensor'. The interface includes a top navigation bar with 'Table View', 'Settings', and 'Logout admin'. The main settings area includes fields for 'Sensor Name: 4043E', 'Alarm Setting: Disabled Unlatched' (with a 'Reset Alarm' button), 'Minimum Signal Threshold: 0.05 W', 'Forward Alarm Thresholds: Min:0 W Max:500 W', 'VSWR Alarm Thresholds: Min:1 Max:50', and 'PTT: Disabled'. At the bottom, the 'Zero Sensor' option is shown as a toggle switch, currently in the 'off' position. An annotation points to this toggle with the text: 'Zero Sensor * RF power to the 4043E must be OFF'.

Table 4 SNMP Zero Sensor Command

Name	OID	Access Level	Description
sensorZero	21581.1.6.300.22	read-write	2 = Set to reapply zero correction. Get always returns 0.

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 4043E supports SNMP GET and SET commands, and can be configured to send SNMP Trap messages. All of the 4043E'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 4043E SNMP Configuration includes Read, Write, and Trap community strings. The SNMP Agent community strings must match the 4043E community strings to successfully perform gets and sets. See "[Community Strings](#)" on [page 18](#).

GET

The SNMP GET operation is used by the SNMP manager applications to retrieve one or more values from the 4043E.

The SNMP GET operation is used to query the scalar variables in a MIB. Each variable is identified by its OID. The 4043E 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 4043E.

Perform an SNMP SET operation by providing the host name of the 4043E, one or more OIDs along with its instance, and the new value. The 4043E 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 13 on page 16](#). 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 13 SNMP Configuration

Table View Settings **Bird 4043E RF Power Sensor**

Delay Before Message May Be Sent If Still Active →

SNMP Configuration: **Enabled** (radio button selected)

Traps: **Enabled** (radio button selected)

SNMP Sets: **Enabled** (radio button selected)

Alarm Delay: **3** milliseconds

IP Address of SNMP Manager →

SNMP Manager Address(es):

Read Community String: * **public**

Write Community String: * **public**

Trap Community String: * **public**

Read, Write, and Trap community strings must match SNMP manager agent's community strings

Table 5 SNMP Trap Commands

Name	OID	Access Level	Description
sensorTrapsEnable	21581.1.6.300.21	read-write	Enable/disable all traps. 1 = Disabled 2 = Enabled
sensorAlarmDelay	21581.1.6.300.20	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 4043E 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 4043E User Interface, enable Traps, and enter the SNMP Manager's IP address. See [Figure 13](#).

A trap message will be sent to designated host computers whenever the sensor detects an alarm condition. See [Table 6 on page 17](#).

Table 6 SNMP Trap Message Definitions

Name	OID	Message	Description
MinVSWRAlarmTrap	21581.1.6.0.1	sensor4043EName, sensor4043EMinVSWRLimit, sensor4043EMinVSWRAlarm, sensor4043EVSWR	Alarm that occurs when the VSWR is below the minimum VSWR threshold.
MaxVSWRAlarmTrap	21581.1.6.0.2	sensor4043EName, sensor4043EMaxVSWRLimit, sensor4043EMaxVSWRAlarm, sensor4043EVSWR	Alarm that occurs when the maximum VSWR threshold has been exceeded.
MinFwdPowerAlarm Trap	21581.1.6.0.3	sensor4043EName, sensor4043EMinPowerLimit, sensor4043EMinPowerAlarm, sensor4043EForwardPower	Alarm that occurs when the forward power is below the minimum power threshold.
MaxFwdPowerAlarm Trap	21581.1.6.0.4	sensor4043EName, sensor4043EMaxPowerLimit, sensor4043EMaxPowerAlarm, sensor4043EForwardPower	Alarm that occurs when the maximum forward power threshold has been exceeded.
PttTrap	21581.1.6.0.5	sensor4043EName, sensor4043EPTTType, sensor4043EPTTState, sensor4043EForwardPower, sensor4043EReflectedPower, sensor4043EVSWR	Trap sent when PTT state changes.

SNMP Sets

SNMP Sets must be enabled in the UI under SNMP Configuration, see [Figure 13 on page 16](#). 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

The alarm delay can be used to eliminate transient alarms by delaying SNMP trap messages and Web UI alarm indications. If during the delay, the threshold condition is no longer valid, a trap message will not be generated, and no indication will appear on the Web UI.

If SNMP trap messages are disabled, when an alarm threshold condition is met, an alarm message will be displayed on the Web UI only.

If SNMP trap messages are enabled, when an alarm threshold condition is met, a message will be sent to the SNMP manager, and an alarm message will be displayed on the Web UI.

The alarm delay can be set using the UI or SNMP. The maximum delay is 10000 milliseconds (10 seconds). See [Table 5 on page 16](#).

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 they 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 4043E allows setting the following community strings: **Read, Write, Traps.**

Forward Power Sample Configuration

The Forward Power Sample is a capability to provide a max hold sample of an RF signal exceeding a specified threshold. This sample must be requested via SNMP, the value is not available in the 4043E’s table view. See [Table 7](#) for SNMP commands.

The sample function may be enabled or disabled. When enabled, a forward power measurement exceeding the threshold will cause the sensor to save the maximum power (forward and reflected) and maximum VSWR measured while the threshold is exceeded, see [Figure 14](#). When disabled, max values are not saved.

Figure 14 Forward Power Sample Configuration

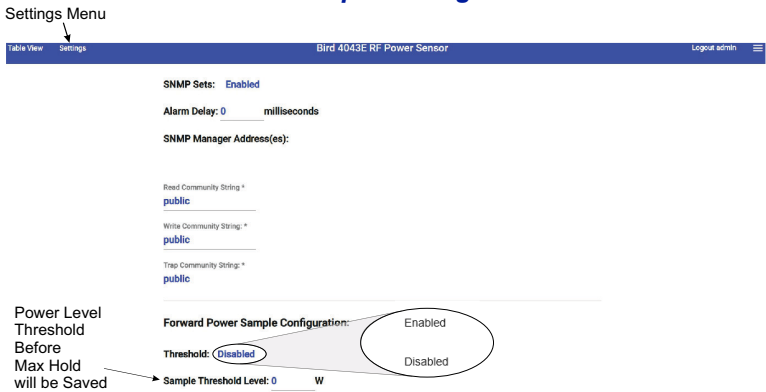


Table 7 SNMP Forward Power Sample Max Hold commands

Name	OID	Access Level	Description
sensor4043EMaxHoldThreshold Enable	21581.1.6.300.29	read-write	Enable/disable max hold threshold.
sensor4043EForwardMaxHold Threshold	21581.1.6.300.28	read-write	Max hold threshold in tenths, an entry of 40 would be 4 Watts.
sensor4043ELastForwardPower	21581.1.6.300.23	read-only	Max Hold Forward power. Return value is in tenths, a return of 40 is 4 Watts.
sensor4043ELastReflectedPower	21581.1.6.300.24	read-only	Max Hold Reflected power. Return value is in tenths, a return of 4 is 0.4 Watts.
sensor4043ELastVSWR	21581.1.6.300.25	read-only	Max Hold VSWR. Return value is in hundredths, a return of 110 is a VSWR of 1.1.
sensor4043ELastHoldTime	21581.1.6.300.26	read-only	Time the latest max hold values were recorded. Network Time Protocol (NTP) should be configured for this value to be meaningful. See "NTP Settings" on page 20 .

Configuration Menu

IP Address Configuration

IP Address should be changed if the 4043E sensor will be used on a LAN, especially if more than one sensor is deployed. Each 4043E on a network must have a unique IP address.

The 4043E 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 netmask must be entered into the fields on the Sensor Network Configuration Screen.

Figure 15 IP Address Configuration Screen

Table View Settings Bird 4043E RF Power Sensor Logout admin

Sensor Network Configuration

Configuration Mode: **Static**

IP Address: *

Netmask: *

Gateway:

Submit

Current IP Config:

MAC Address: 02:5d:45:b4:6d:99

Config Mode: Static

Enter Address for Static IP

Static DHCP

Access Network Configuration

NTP Settings

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

The 4043E sensor may be configured to use a specific NTP server by entering the NTP Server's URL on the NTP Configuration screen and clicking **Submit**.

Figure 16 NTP Configuration

Table View Settings Bird 4043E RF Power Sensor Logout admin

NTP Configuration

NTP Address/URL: *

Submit Clear

Current NTP Server Config:

NTP Server Address/URL: time2.google.com


Enter IP Address for NTP Server

Access NTP Configuration

Update Sensor Firmware

The 4043E sensor's functionality is enabled by firmware installed on the sensor. This firmware can be updated by accessing the firmware update utility on the 4043E sensor's User Interface webpage. Firmware updates are designed to load completely 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 4043E's UI webpage 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 "Update Successful" dialog box is displayed, then click the **Refresh** button.

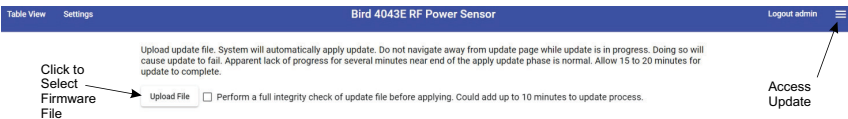
NOTE

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. Should this occur, simply re-start the update process.

NOTE

The 4043E will reboot during the firmware update, the IP address must be the same following the reboot to ensure the Web UI will be accessible following the firmware update.
If network Configuration Mode is set Static, the IP address will be the same following reboot.
If network Configuration Mode is set to DHCP, the DHCP server should be configured to always assign the same IP address to the 4043E.

Figure 17 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.

Figure 18 *Manage Users*



Add User

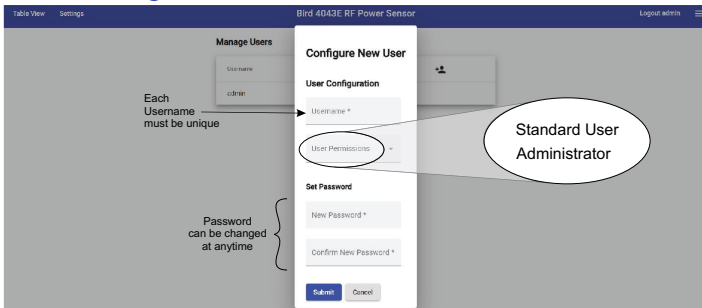
To add a user, click . Enter a user name. Each username must be unique.

User Permissions are Standard User or Administrator.

Administrator privileges have no restrictions, and may change any 4043E 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.

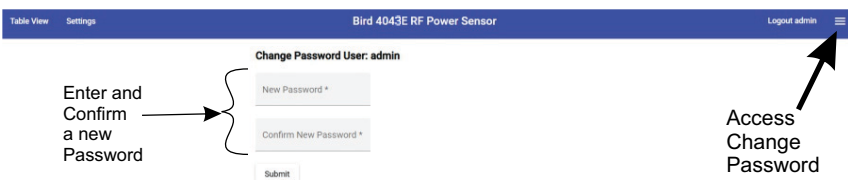
Figure 19 *Adding User*



Change Password

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

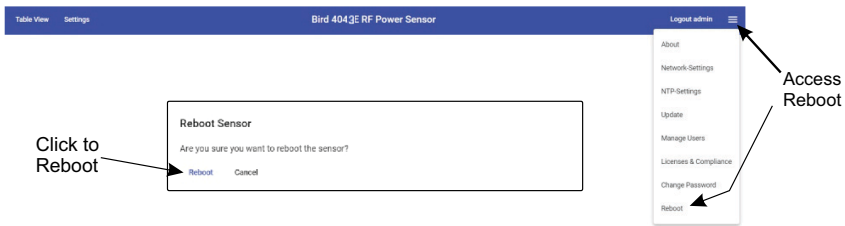
Figure 20 *Change Password*



Reboot

The 4043E 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 21 Reboot Sensor



About Screen

The About screen displays information about the 4043E sensor, including model number, serial number, calibration date, and software versions.

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

Figure 22 About Screen

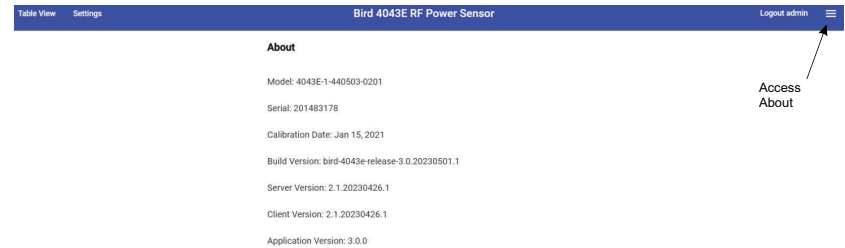


Table 8 SNMP Sensor Information

Name	OID	Access Level	Description
sensor4043EModel	21581.1.6.300.2	read-only	Model number of sensor.
sensor4043ESerialNumber	21581.1.6.300.3	read-only	Serial number of sensor.
sensor4043ECalDate	21581.1.6.300.31	read-only	Calibration date of sensor.
firmwareVersion	21581.1.6.522	read-only	Firmware Version running on 4043E. Equivalent to Build Version on the About screen.
sensor4043EApplicationVersion	21581.1.6.300.32	read-only	Sensor Measurement Application version.

Factory Reset

The 4043E includes a reset button which can be used for resetting the unit's IP address and other settings. The reset button is recessed in a hole on the bottom of the unit near the Ethernet jack, see [Figure 23](#).

Power must be applied to the 4043E to perform either of the following reset options.

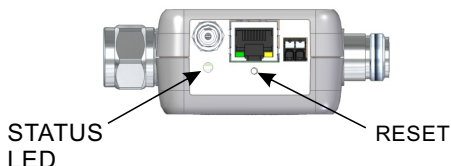
Reset IP Address

Press and release the button to reset the IP Address, the Status LED will briefly change to red. The IP address will 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 4043E settings will be reset to the factory defaults. The reset will take approximately 30 seconds to complete.

Figure 23 *Factory Reset*



Contact the Bird Service Center in the event the power sensor requires additional maintenance. See ["Customer Service" on page 25](#).

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 an 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>

CHAPTER 5

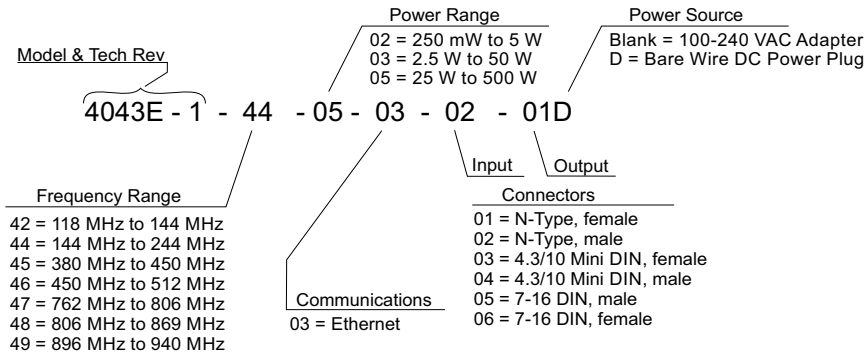
SPECIFICATIONS

Specification	Value
Measurement Type	True Average forward and reflected power and VSWR
Frequency Range (model dependent)	118 to 940 MHz See "Model Identification" on page 27 for frequency range of each model.
Forward Power Measurement Range	250 mW to 500 W See "Model Identification" on page 27 for power range of each model.
Reflected Power Measurement Range	25 mW to 50W See "Model Identification" on page 27 for power range of each model.
RF Connectors Input Output	Type-N (male), Type 4.3-10 (male) Type-N (female), Type 4.3-10 (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 Interface	Ethernet 10/100/1000BASE-T (auto-sensing) Version 2.0/IEEE 802.3
Ethernet Data Interface Connector	RJ-45
PTT	Push-to-talk input, TTL levels, <15mA Pin 1 = V+; NO or NC logic (software selectable)
Power Supply Power Requirements DC Power Jack	5.5-25VDC, 3W max., 0.08" (2mm) power jack
Operating Temperature Range	0° C to +50° C (32° F to 122° F)
Storage Temperature Range	-40° C to +80° C (-40° F to 176° F)
Humidity	95% 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 mm x 97 mm x 36 mm)
Operating Position	Any

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.

