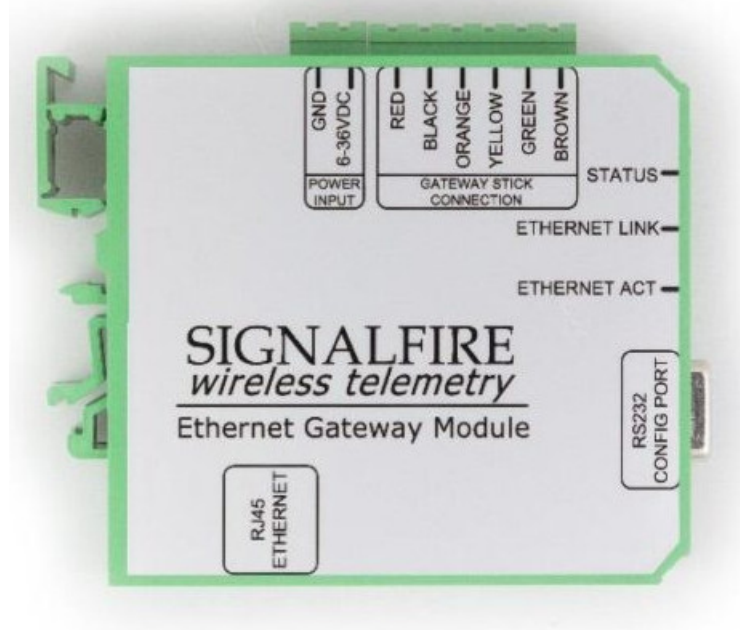




# SIGNAL FIRE ENET-DIN Ethernet Interface Module Owner's Manual

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The SignalFire Ethernet Gateway has the following features:

- Wide range DC power input. 6 to 36VDC
- Modbus TCP Connection (supports up to 16 connections)
- Remote access to the Gateway through the SignalFire Toolkit, including full remote configuration support
- DIN Rail mounted Ethernet module
- Status LEDs

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## Specifications

Network Interface	Ethernet 10/100 base TX with Auto Negation, and HP Auto MDIX. RJ45 Connector
Network Standards	TCP/IP, DHCP, Telnet, and HTTP
Supply	6-36VDC (screw terminals) (80mA at 12VDC)
Serial Port	DB9 serial port provides direct communication to Gateway using the SignalFire Toolkit
Modbus TCP Server	The Modbus TCP server supports 16 simultaneous server connections

## Connections and Components

The SignalFire Ethernet Interface module can be used with either a SignalFire GatewayStick or a SignalFire DIN mount Gateway.

### Ethernet Gateway Connections

The Ethernet Interface module provides screw terminals for connection to a SignalFire Gateway Stick or DIN mount Gateway. Connect the 6 wires to the Gateway following the labeled colors.

Wire Color	Connection
RED	Positive Power (6 to 36 VDC)
BLACK	Ground
GREEN	RS-485 to RSD module
BROWN	RS-485 to RSD module
ORANGE	RS-232 Debug/Programming TX
YELLOW	RS-232 Debug/Programming RX

Power must be provided by the Power Input screw terminals (6-36VDC).

### RS-232

The Ethernet module has an RS-232 port, similar to the DIN Gateway. This RS-232 port is not used to configure the Ethernet module, but to configure the attached Gateway (stick or DIN) when the user is at the location. When the Ethernet module is connected to the Gateway through the screw terminals on top, the Gateway's RS-232 port becomes disabled, and the Ethernet module RS-232 port should be used for configuration.

## Ethernet Interface Module Status LEDs

The Ethernet Interface Module has 3 green LEDs available for field diagnostics.

Status LED	Description
Slow Flash (3-second pause) Fast Flash (1-second pause) Solid On	The system is running at least one remote node is connected The system is running but no remote nodes have connected No communication with the Gateway Stick
Ethernet Link	Description
Solid On Off	Valid Ethernet Link detected No Ethernet link detected
Ethernet ACT	Description
Blink On	Blinks on to indicate Ethernet traffic

## Operation

The SignalFire Ethernet Interface Module provides a Modbus TCP server which allows all of the registered data contained in the Gateway to be accessed by any Modbus TCP client.

In addition, a TCP port is available to allow remote configuration/debugging of the Gateway using the SignalFire Toolkit. This provides the same functionality as being directly connected to the Gateway with a serial cable.

## Configuration

The Ethernet Interface Module is simple to use out of the box with little if any configuration necessary.

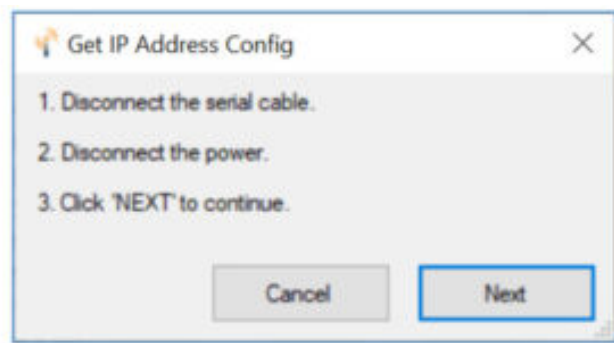
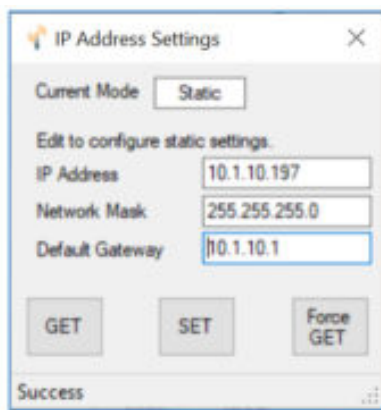
### Default settings:

IP Address:	192.168.1.100
Host Name:	SignalFireGW
Modbus TCP Port:	502
SignalFire Toolkit Port:	10002
Web Config Username:	admin
Web Config Password:	signal fire

### ToolKit Configuration

The Ethernet Interface Module's IP settings can be configured from the attached Gateway Stick or DIN-Gateway (the Gateway must have firmware version 8.23 or higher) through the ToolKit (must be version 2.2.21.00 or higher). Connect to the Gateway with the ToolKit while it's powered up and connected to the Ethernet Interface Module.

Under the "Tools" drop-down menu at the top of the Modbus Gateway window, select "Configure IP Address Settings". To read/recover the current IP address settings, click "GET" and follow the series of pop-ups exactly as prompted. The ToolKit will notify the user if the process was successful or not. Note that the process includes a manual power cycle of the system. "GET" will read the info from the Gateway if it can, otherwise it will prompt the user with instructions to get the information from the Ethernet module, while Force GET goes straight to the Ethernet module without checking the Gateway.

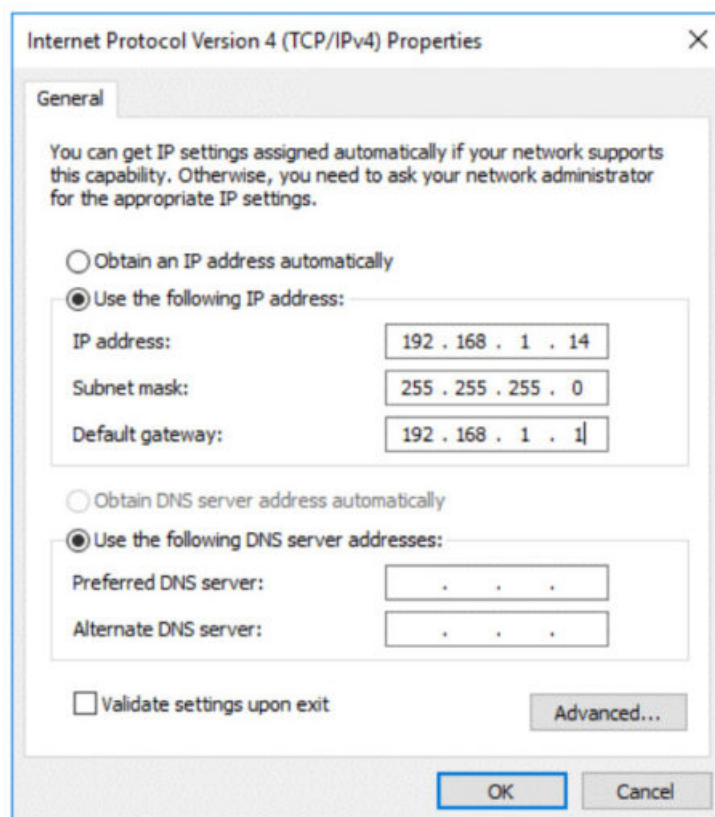


The IP address can be set directly from this menu as well. Change the “IP Address”, “Network Mask”, and “Default Gateway” fields as needed according to your network administrator and click “SET”. This will again bring up the same prompts, requiring a reboot of the system, and will set the mode to Static.

### Web Page Configuration

The Ethernet Interface Module can also manually be configured through its web page. This option is useful when the module alone needs to be configured before being installed in the field.

First, connect the Ethernet Interface Module directly to your PC with a Cat5 cable. Set the PC to an IP address on the same subnet as the default Ethernet Interface Module IP address.




*Example Windows TCP/IP Settings*

From a PC running on the same LAN, you can detect the IP address assigned to the Ethernet Gateway using the SignalFire Toolkit by opening the Gateway window and selecting Detect Ethernet Gateways from the Tools menu. Selecting a Gateway IP address and clicking Connect to Gateway will connect to the selected Gateway with the Toolkit. You can also launch the configuration webpage in your default browser from this screen.

To access the configuration webpage, enter the IP address of the Ethernet Interface Module (192.168.1.100 by default) in a web browser and log in with the Web Config username and password. (admin/signal fire by default)

# SignalFire Ethernet Gateway



Status

HTTP

Line

Modbus

Network

System

Tunnel

XML

## Device Status

Product Information

Product Type:	SignalFire Ethernet Gateway
Firmware Version:	5.4.0.0B2
Build Date:	Jan 28 2016 (14:41:14)
Serial Number:	07170907G7GV4Q
Uptime:	14 days 22:30:42
Permanent Config:	Saved
Region:	null

Network Settings

Interface:	eth0
Link:	Auto 10/100 Mbps Auto Half/Full (100 Mbps Full)
MAC Address:	00:80:a3:bf:68:9a
Hostname:	<None>
IP Address:	10.1.10.219/8
Default Gateway:	10.1.10.1
Domain:	<None>
Primary DNS:	<None>
Secondary DNS:	<None>
MTU:	1500
VIP Conduit:	null

Line Settings

Line 1:	RS485 Half-Duplex, 9600, None, 8, 1, None
Line 2:	RS232, 9600, None, 8, 1, None

Tunneling	Connect Mode	Accept Mode
Tunnel 1:	Disabled	Disabled
Tunnel 2:	Disabled	Waiting

[SignalFire Telemetry](#)

## Remote Toolkit Access

To access the gateway debug port remotely, open the SignalFire Toolkit and select the Gateway Stick from the main window. Check the TCP Connection box in the lower left, enter the IP address of the Ethernet Interface Module, and click Connect. After a connection is made to the IP address full access to the Gateway is available as if a direct serial connection was used. This includes full remote configuration capability.

Modbus Gateway Stick

File

Options

Settings

Updates

Tools

Help

IP Addr-Port

10.1.10.219:10002

Connected to 10.1.10.219:10002

Open

Close

Cancel

☐ TCP Connection
 

Clear Saved IPs

Connect/Update

Product

GATEWAY(STICK)

Supply Voltage

8.256

Bootloader Version

2.00

Gateway Version

7.93

Gateway Version Date

04-Jul-2016

Radio Version

2.90

Radio Address

4482

Corporate ID

<Encrypted>

Radio Network

3

Radio Network Group

0

Radio Power (dBm)

5

Gateway Slave ID

247

RS485 Baud Rate

9600

RS485 UART Mode

8N1

Registers in Use

32 of 4700

Slave Entries in Use

2 of 240

Radio Packets/Minute

0

Remote Sensor Config

Unlocked

Settings

Radio Network

3

Set

Radio Network Group

0

Set

Node/Checker (Password) (case sensitive)

Set

Modbus Slaves Reporting

Double-click a Row to View Registers

☐ Auto Refresh
 

Refresh List

Slave ID	Node Type	Node Name	RSSI (dBm)	Register Quantity	Checkin Interval	TTL (min) Current/Max	Mainboard Firmware	Radio Firmware	Configure
1	Sent H8	Ticor	32	14	1 min	3/7	0.50	2.50 (sleeping)	<input type="checkbox"/>
100	Sent HART	VEGAFLEX31	34	18	35 min	152/152	0.50	2.50	<input type="checkbox"/>

Set Encryption Key

Help

☒ Enable Encryption
 

Set

Key: signafire

Set

Gateway RS485 Settings

Gateway Slave ID

247

Set

Baud Rate

9600

Set

UART Mode

8N1

Set

Gateway Slave ID Word/Byte Order

☒ High Word/High Byte (ABCD)
 ☐ High Word/Low Byte (BADC)
 ☐ Low Word/High Byte (CDAB)
 ☐ Low Word/Low Byte (DCBA)
 

Set

Remote Configuration

Session Ended

Start Configuration

Success

## Changing to a Static IP Address

To change the Ethernet Interface Module to use a different static IP address, click on the network button and then select the Configuration button. Enter your new static IP address, and click Submit. The Ethernet Interface Module must be rebooted for these changes to take effect.

The screenshot shows the SignalFire Ethernet Gateway web interface. On the left is a navigation menu with tabs: Status, HTTP, Line, Modbus, Network (selected), System, Tunnel, and XML. The main content area is titled 'Network 1 (eth0) Interface Configuration'. At the top of this area, there are buttons for 'Network 1', 'Interface', 'Link', 'Status', and 'Configuration'. The configuration form includes fields for BOOTP Client (radio buttons for On/Off), DHCP Client (radio buttons for On/Off), IP Address (text field with '10.1.10.212/24' and a help icon), Default Gateway (text field with '10.1.10.1'), Hostname, Domain, DHCP Client ID (radio buttons for Text/Binary), Primary DNS, Secondary DNS, and MTU (text field with '1500'). To the right of the form is a 'Logout' link and a block of explanatory text about the configuration process, including a note that BOOTP/DHCP will auto-discover and eclipse other configuration items, and a list of valid IP address formats (192.168.1.1, 192.168.1.1/24, 192.168.1.1 255.255.255.0).

BOOTP Client:	<input type="radio"/> On <input checked="" type="radio"/> Off
DHCP Client:	<input type="radio"/> On <input checked="" type="radio"/> Off
IP Address:	10.1.10.212/24
Default Gateway:	10.1.10.1
Hostname:	
Domain:	
DHCP Client ID:	<input type="radio"/> Text <input type="radio"/> Binary
Primary DNS:	<None>
Secondary DNS:	<None>
MTU:	1500

## Changing to a DHCP Address

To change the Ethernet Interface Module to use a DHCP IP address, simply turn on the DHCP Client on the screen above. Note that a DHCP server must be running on the network. The Ethernet interface module must be rebooted for these changes to take effect.

## Changing the SignalFire Toolkit Port

To change the SignalFire Toolkit port, first, select the Tunnel tab. Click on Tunnel 2 then Accept Mode. Change the Local Port field and click Submit.



**Do not change any of the other tunnel settings.**





Status

HTTP

Line

Modbus


Network

System

Tunnel

XML

SignalFire Ethernet Gateway



WIRELESS TELEMETRY

Statistics

Configuration

Authentication

Logout

The HTTP Server can be configured with many different authentication directives. The authentication is hierarchical in that any URI can be given an authentication directive in order to override a parent URI authentication directive.

The URI must begin with / to refer to the filesystem.

The different AuthType values offer various levels of security. From the least to most secure:

**None**  
no authentication necessary

**Basic**  
encodes passwords using Base64

**Digest**  
encodes passwords using MD5

**SSL**  
page can only be accessed over SSL (no password)

**SSL/Basic**  
page can only be accessed over SSL (encodes passwords using Base64)

**SSL/Digest**  
page can only be accessed over SSL (encodes passwords using MD5)

When changing the parameters of Digest or SSL/Digest authentication, it is often best to close and reopen the browser to ensure that the it does not attempt to use cached authentication information.

Note that SSL by itself does not require a password but all data transferred to and from the HTTP Server is encrypted.

There is no real reason to create an authentication directive using None unless you want to override a parent directive that uses some other AuthType.

Multiple users can be configured within a single authentication directive.

URI:

/

Realm:

AuthType:

☐ None
☐ Basic
☒ Digest
☐ SSL
☐ SSL/Basic
☐ SSL/Digest

Username:

admin

Password:

Submit

Current Configuration

URI:	/ [Delete]
Realm:	config
AuthType:	Digest
Users:	admin [Delete]

SignalFire Telemetry

## Modbus Tab

This will show the Modbus TCP statistics. Selecting the Configuration option will allow an additional Modbus TCP server port to be defined. Note that Port 502 is always available for the Modbus TCP connection.

Statistics

Configuration

Modbus Configuration

TCP Server State:	<input checked="" type="radio"/> On <input type="radio"/> Off
Additional TCP Server Port:	<None>
Response Timeout:	<div>3000</div> <div>milliseconds</div>
RSS Trace Input	<input type="radio"/> On <input checked="" type="radio"/> Off

The default response timeout is 3000mS (3 seconds). This timeout is the time the Ethernet Interface The module allows for the Gateway to respond to any Modbus requests. 3 seconds is chosen to allow time for any transparent (over-the-air) Modbus requests to remote nodes.



It is also important to consider this timeout when setting up any Modbus-TCP clients. If the ModbusTCP clients are polling rapidly with a short timeout it is possible for the Ethernet Interface Module to become backed up with Modbus requests and become non-responsive. Additional care must be taken when multiple Modbus-TCP clients are connected to the Ethernet Interface at the same time to avoid this same issue.

### XML Tab

This tab can be used to download/upload custom configurations. Contact SignalFire for more information.

### System Tab

The Ethernet Gateway may be rebooted (after a settings change for example) from this tab.



**CAUTION:** Do not restore factory defaults! This will cause all default settings to be lost and a new XML configuration file must be loaded. Contact SignalFire with any questions.

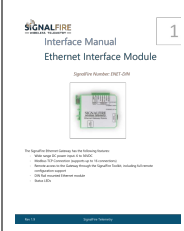
### IP Address Recovery

If the IP address is lost or forgotten, it can be recovered through the ToolKit.

1. Close the ToolKit, and unplug the serial cable from the RS-232 port
2. Power cycle the Ethernet module and Gateway and wait 10 seconds
3. Plug the serial cable back into the Ethernet module's RS-232 port
4. Open the ToolKit, pick the correct COM port, and click Auto-Detect Device
5. Under the Tools menu, select "Show Ethernet Gateway IP Address"

Note that if the IP address settings are changed the system must be powered down for at least 15 seconds and then powered back up for the Gateway to read the new IP address settings.

## Documents / Resources

	<p><a href="#">SIGNAL FIRE ENET-DIN Ethernet Interface Module</a> [pdf] Owner's Manual ENET-DIN, Ethernet Interface Module</p>
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