# User Guide

## Ethernet Expansion Card

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# Contact Information

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|---|---|
| Web: | http://www.usr.com/contact |

Consult our website for up-to-date product descriptions, documentation, application notes, firmware upgrades, and troubleshooting tips: http://www.usr.com/support/3500

# Document History

| Version | Date | Updates |
|---|---|---|
| 001 | Jan, 14 2014 | Creation |
| | | |

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# 1. Overview

The Ethernet expansion card broadens the functionality of a standard USR3500 Cellular Modem to now include Ethernet machine to machine applications, allowing a wider reach into potential applications and solutions.

## 1.1. Parts and Interfaces

The following figure shows the top and bottom views of the expansion card, and identifies its different parts and connectors.

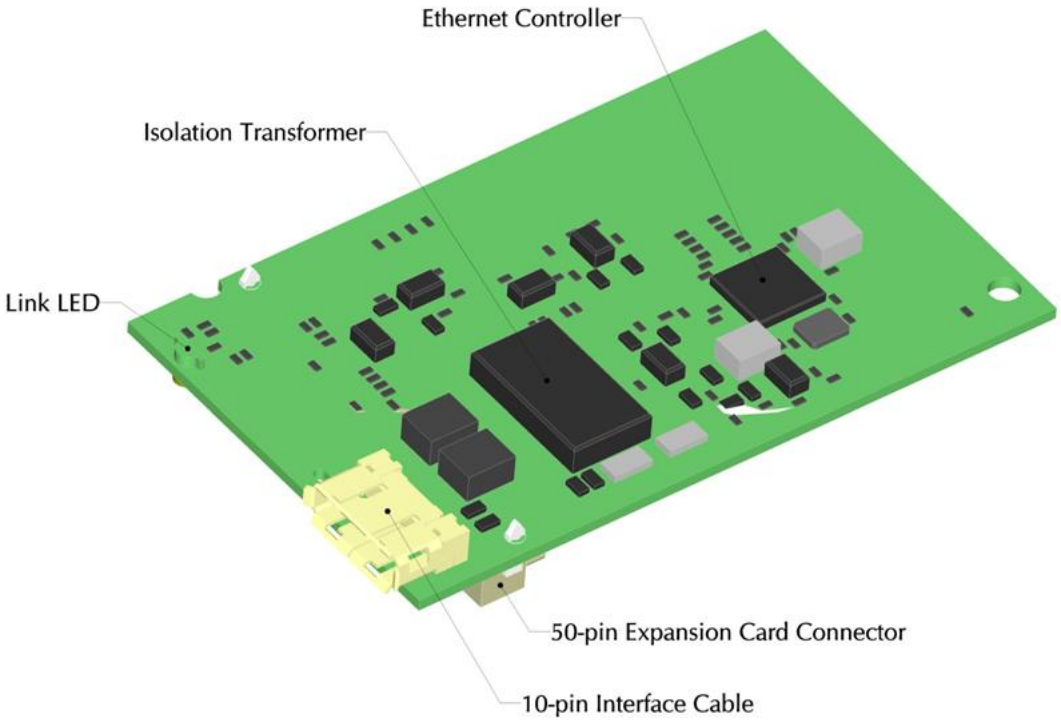



*Figure 1. Expansion card – Top Side*

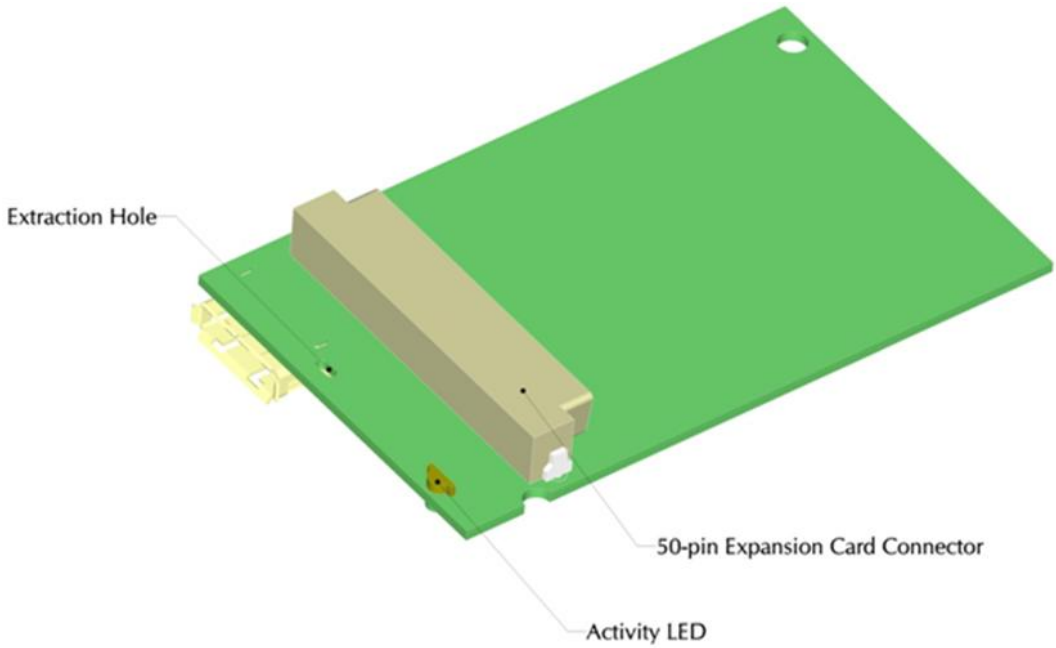



*Figure 2. Expansion card – Bottom Side*

## 1.2. External Connection

The expansion card has a 10-pin socket, which is used as the external interface for the RJ-45 Ethernet cable.

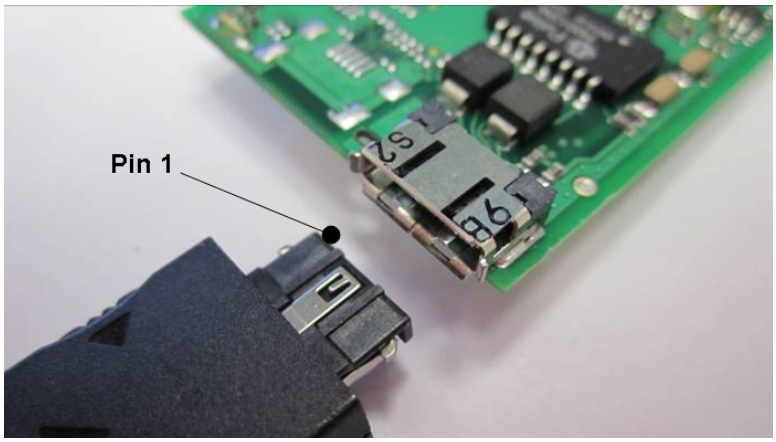



*Figure 3. 10-pin Interface Socket*

# 2. Features and Services

This section enumerates the features and services available on the Ethernet expansion card.

**Table 1. Basic Features**

| Features | Description |
|---|---|
| LAN | • IEEE 802.3 Compatible<br>• Integrated MAC and 10 BASE-T PHY<br>• Receiver and collision squelch circuit<br>• Supports one 10BASE-T port<br>• Supports Full and Half-Duplex modes<br>• Shielded RJ-45 |

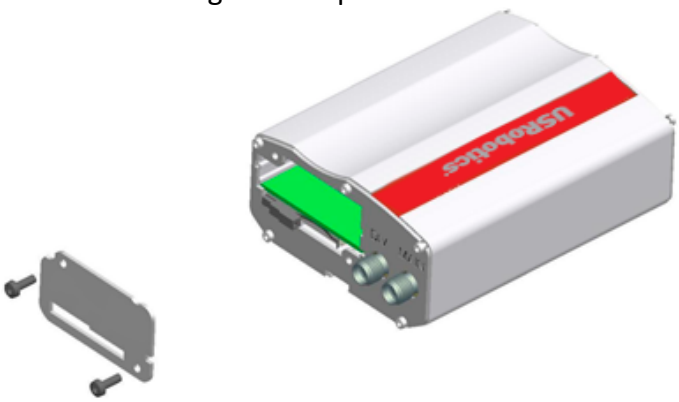
# 3. Using the Ethernet Expansion Card

## 3.1. Installation

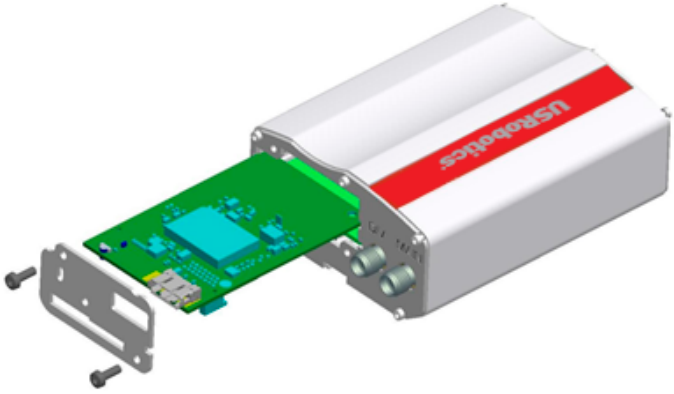
To install the expansion card, follow the procedures listed below.

**Caution:** *Remove the power from the USR3500 when installing the expansion card.*

1. Unscrew the original backplate.



2. Align the expansion card on the guide rail inside the USR3500. Slide the board until the 50-pin connector mates with the USR3500.



3. Replace the original backplate with the new expansion backplate and screw it in place.

4. Connect the interface cable to the expansion card.

## 3.2. Enable the expansion card

To enable the expansion card, perform the following steps.

1. Connect a serial cable between the USR3500 and the PC COM port.
2. Connect the RJ45 Ethernet cable between the expansion card and an Ethernet network with a DHCP server.
3. Apply power to the USR3500.
4. Open a communication software (for example, HyperTerminal); if the COM port isn't configured yet, configure it as follows:
   - Bits per second: 115200
   - Data bits: 8
   - Parity: None
   - Stop bits: 1
   - Flow control: None
5. Ensure the Courier M2M application is active by entering the command AT+WOPEN=1 to start the application
6. Enter the command, AT$ENABLEETHERNET=1
7. Enter the command AT+CFUN=1 to restart the USR3500.
8. Refer to the USR3500 Application Guide for further configuration details.

## 3.3. Operational Status

The operational status is indicated by the green and yellow LEDs located at the front end of the expansion card.
The following table describes the operational status.

**Table 2. Operational Status**

| LED Description | LED Status | Status |
|---|---|---|
| Link LED (Green) | ON | The Ethernet is in sync with the LAN/router. |
| | OFF | The Ethernet is not in sync with the LAN/router; or the Courier M2M application is not running. |
| Activity LED (Yellow) | ON – Blinking | The Ethernet is linked to the network. |
| | OFF | The Ethernet is not in sync with the LAN/router; or the Courier M2M application is not running. |

# 4. Troubleshooting

This section describes the possible problems that might be encountered when using the expansion card and their corresponding solutions.

## 4.1. No Communications

If the expansion card does not enable or communicate its status, refer to the table below for possible causes and their corresponding solutions.

**Table 3. No Link or Activity Status**

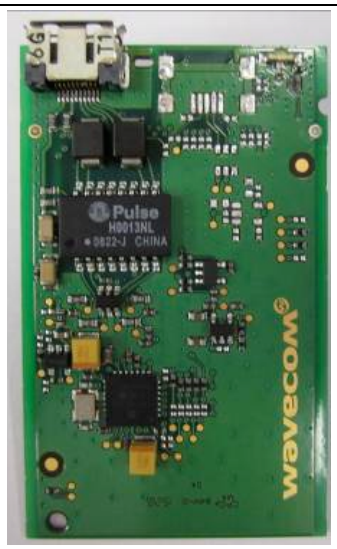
| Ask | Action |
|---|---|
| Is the USR3500 powered correctly? | Make sure that the external power supply is connected to the USR3500 and provides a voltage within the range of 4.75V to 32V. |
| Is the expansion card powered properly? | Make sure that the expansion card is properly plugged in to the USR3500. |
| Is the RJ45 Ethernet cable properly connected at both sides? | Check the RJ45 Ethernet cable connection. |
| Is the expansion card properly enabled? | Use the the command AT$ENABLETHERNET? to verify.<br><br>Refer to the USR3500 Application Guide for further details. |
| | |
| | |

# 5. Appendix A: Packaging

## 5.1. Contents

The Ethernet expansion card package contains the following:

- Expansion Card
- Backplate and Spring Contacts
- RJ45 Interface Cable

| | |
|---|---|
|  |  |
| **Expansion Card** | **Backplate and Spring Contacts** |
|  | |
| **RJ45 Interface Cable** | |

## 5.2. Production Stickers

Production and MAC address stickers are located at the back of the expansion card, and contains the following information:

- Product Name (IESM Ethernet)
- AirLink logo
- Marketing Name (FXTE02)
- Barcode
- 17-digit Serial Number
- MAC Address