

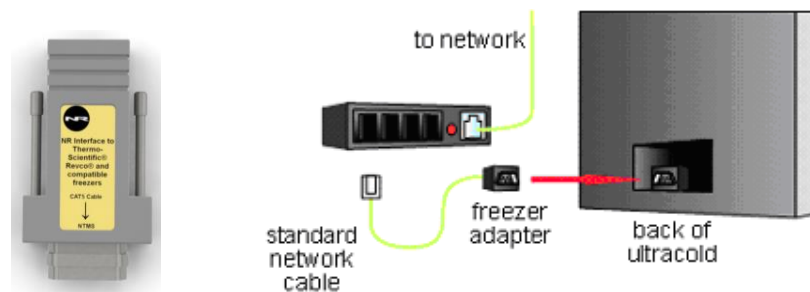


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Networked Robotics Direct-Connect to Thermo Fisher Scientific® Revco® Ultra Low Temperature Freezers (#30004)

This product is used as part of Networked Robotics' Tempurity™ System for the remote data collection, storage, and monitoring of scientific data through computer networks. The Tempurity System is used in FDA-regulated environments including pharmaceutical, medical, and food industries. This product is a connector that allows Networked Robotics' NTMS network hardware to obtain data directly from the serial port of Thermo Fisher Scientific Revco and compatible brands of ultra-low temperature freezers. Data is obtained by digital communications between the NTMS and the freezer.



Use of this method has several potential advantages over data collection methods used by other monitoring systems:

- 1) The temperatures collected by the Tempurity System will be the same as those shown on the front panel of the freezer.
- 2) There are no external sensors mounted in the freezer.

Compatibility

This product may be used with Revco-brand freezers with ULT model numbers that contain -5, -7, or -9 are supported by this interface. This includes all chest and upright ultra-low temperature freezers

The Thermo Fisher TSU-series line of ultra-low temperature freezers is not supported by this product number.

If you have a Revco ULT model containing “-3” or a TSU-series freezer, you can monitor temperatures using the Networked Robotics TPL3U digital temperature probe (Product #30012), or Dry Contact Probe (Product #30008). *Each NTMS unit can take input from up to four different*

devices. You can monitor freezers with any combination of methods (direct-connects, probes, voltage, alarm contacts) simultaneously if needed. Each of the 4 ports of an NTMS can collect data via any Networked Robotics method.

Packing List

This package includes the basic hardware you will need to connect the Revco compatible freezer to the NTMS.

- (1) Networked Robotics Revco-compatible adapter with 9-pin male-male adapter
- (1) RJ-45 coupler for extensions
- (1) CAT5 cable

Installation

There are three major steps in the installation of this hardware

- 1) Physical installation
- 2) Configuration of the Networked Robotics NTMS hardware to which the freezer is attached
- 3) Manual testing of data collection via the network

Each of these steps should be performed successfully before attempting to configure and monitor real-time freezer data via the Tempurity System. Detailed information on configuring data collection in Tempurity is available in the Tempurity Systems User's Guide (Networked Robotics document number "Tempurity-04-0006.5)" on the Networked Robotics web site.

1. Physical Installation

The serial interface connection can be found on the back of the freezer. On newer Thermo-Revco units the serial connector is at the middle of the back of the freezer and the freezer's connector is female, so you will need to use the included 9-pin male-male adapter. On older units the serial port is near the bottom and is male. Before you plug it in you will need to remove the male-male adapter that was shipped with the unit.

On some Revco freezers, there is an option to use either RS-485 or RS-232 as the method of data communication. Consult your freezer's manual and make sure that the unit is set for RS-232 data communication.


1. Use a Cat5 cable to connect the adapter to the NTMS measurement port as shown (labeled "standard network cable") in the diagram above.
2. Then plug the 9-pin-end of the adapter into the serial port of the Revco-compatible freezer, (however the exact method will depend on the model of your ultracold*.
3. Revco Front Panel Setup - When collecting temperatures via this interface, no freezer front panel setup steps are necessary to ensure that the ultracold sends data appropriately. Just plug the interface in at the back of the unit as described above.


Extensions

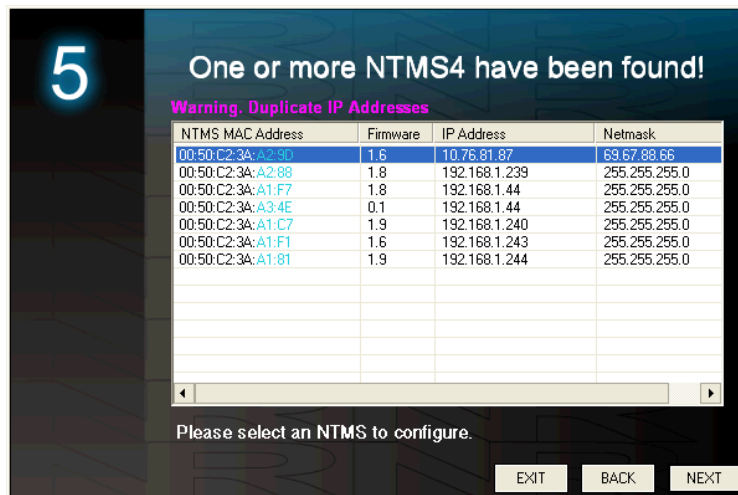
The ultracold freezer can be as far as 400 feet away from the Networked Robotics NTMS network hardware. You can easily extend the length of any connection using the included RJ-45 coupler and CAT5 cable.

You can also mount your NTMS network hardware in a network closet, and “patch” this connection from the NTMS to an ultracold freezer using a standard network wall plate.

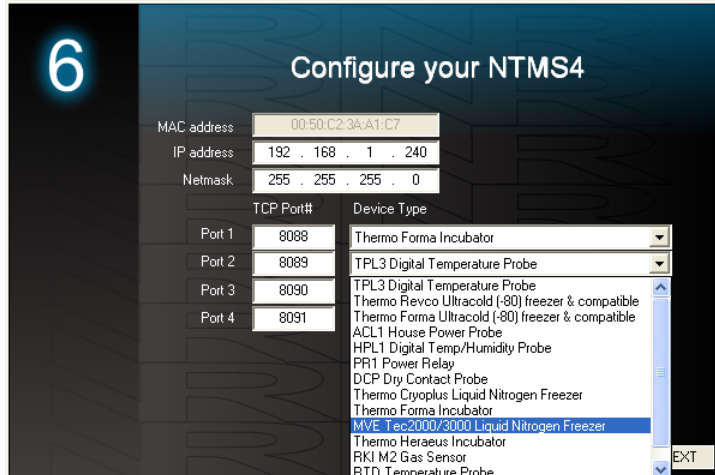
2. Configuring the NTMS

Configure the NTMS measurement port for the type of monitored device from which data will be collected (a Revco-Compatible direct connection). This is done by running the latest version of the NTMS Configuration Wizard  from any PC on the same subnet as the NTMS to be configured. This configuration program is often updated as support for new monitored device types becomes available from Networked Robotics. You can obtain the Configuration Wizard from the download section of the Networked Robotics web page.

1. Make sure that the NTMS is connected to the network. For details, see the Quickstart Manual.
2. Record the NTMS unique ID that is shown on the yellow and white label on the side of the NTMS unit to which the freezer is attached. Record which physical port number (1-4) you have connected the freezer to. You will need to use this information for the step below.
3. Run the NTMS Configuration Wizard from the same local area network as the NTMS that is connected to the ultracold freezer and verify that the NTMS is discovered as shown below. (NTMS hardware must be running firmware revision 1.6 or higher. If it is not, stop the installation and upgrade your NTMS hardware’s firmware with the NTMS Upgrade Wizard  available from the Networked Robotics download page.)



4. Select the NTMS, and then click “NEXT” (We will assume the IP address information is already set for your NTMS; if not, see the NTMS installation guide.)
5. Click on the NTMS measurement port where the incubator interface is connected, and under the “Device Type” drop down, select “Thermo-Revco Ultracold”.



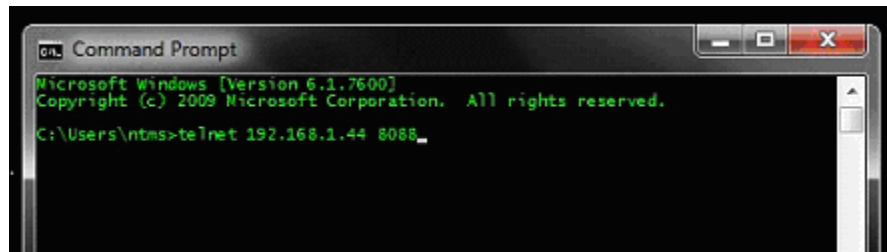
6. Click “NEXT” to complete the NTMS configuration.

3. Testing Data Collection through the Network

Once the configuration is complete as described above we recommend testing the ability to make network temperature and other measurements by using the “Telnet” utility from any PC. This commonly-used network utility sends simple network commands that will elicit a temperature from the ultracold freezer. For more about debugging network connections to monitored devices see the appendix of the Tempurity System User’s Guide.

On Windows 7 clients you may need to enable the Telnet utility as follows: 1 Start 2 Control panel 3 Turn Windows Features on or off 4 Check “Telnet Client” 5 Press Ok

1. From Windows click “START”, then “RUN”, and then type “CMD” and return.
2. At the black screen type “Telnet” + *IP Port* (where *IP* is the IP address and *Port* is the network port address as selected by your use of the NTMS Configuration Wizard as described above.)



3. If you are successfully connected through the network you will see a blank screen.
4. Type a capital “T”; the command character for this interface. A temperature and the associated checksum value should be returned.

If a temperature is not returned, check network parameters, network ports, firewalls and connections and try again before attempting to configure data collection using Tempurity System software.

For use with the Tempurity System, you will need to add the network address of the new monitored device (the ultracold freezer) to the Tempurity Server configuration.

See the Tempurity System User's Guide and the section on server configuration for more information.

Operation

The NTMS network hardware continually reads temperatures and other data from the ultracold(s). The most recent values are available for network-based data requests by the Tempurity System. Each reading takes about 3 seconds. The most recent local reading is sent upon request to the network.

Reference

Unique IDs

Networked Robotics' sensor unique IDs are not supported via this direct interface.

Communications Specifications

The RS232 connection between the Revco-compatible freezer and the NTMS operates at 9600,8.n1 speed and parity.

Physical Specifications

Weight:	34 grams
Length:	6.35 cm
Width:	3.18 cm
Height:	1.90 cm

Support

If you need assistance with your Revco-compatible Interface or other products, contact Networked Robotics by phone at 877-FRZ-TEMP (877-379-8367) or by email at support@networkedrobotics.com

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