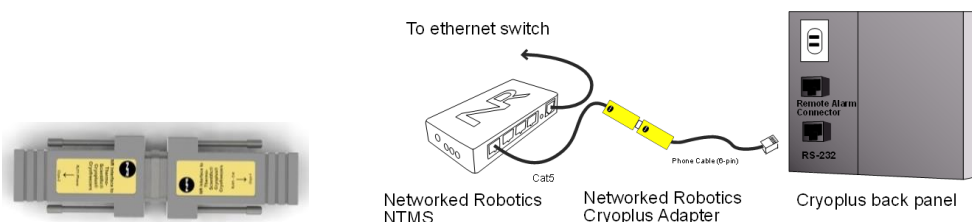




Networked
Robotics

Interface to Thermo Fisher Scientific® Cryoplus® Liquid Nitrogen Freezers (#30013)

The Networked Robotics Interface to Thermo Scientific® Cryoplus® cryofreezers enables the remote measurement of temperatures from all models of Cryoplus® liquid nitrogen freezers. This interface is designed to be used as part of the Tempurity™ System for the collection, storage, and monitoring of scientific data through computer networks. The interface is used in conjunction with the Networked Robotics NTMS (Network Telemetry Monitoring System) hardware and Networked Robotics' Tempurity System software. The Tempurity System is designed for data collection and monitoring in FDA-regulated environments including pharmaceutical, medical, and food industries.



Description

The interface is connected to the serial port on the back panel of the Cryoplus freezer and to the Networked Robotics NTMS network hardware as shown in the diagram above, thus enabling remote monitoring. The readings that are shown on the front panel of the instrument are the readings that are stored in the Tempurity™ System. This interface is appropriate for all versions of Cryoplus brand cryofreezers up to Cryoplus 4.

Packing List

This package includes the basic hardware you will need to connect the cryofreezer to the NTMS.

- (1) Networked Robotics Cryoplus Adapter (comprised of two pieces labeled NTMS and Cryoplus)
- (1) RJ-45 Coupler for extensions
- (1) Cat5 cable
- (1) Phone cable

Collection from Multiple Monitored Devices

Because each NTMS4 unit has 4 measurement ports, data from 4 cryofreezers, or other types of monitored devices such as Networked Robotics sensors, or direct connections to many types of

freezers or other scientific equipment, can be collected simultaneously. Only a single monitored device, a direct connection to a Cryoplus liquid nitrogen freezer is shown in the figure above.

Hardware Installation

There are three major steps in the installation of this hardware:

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

Each of these steps should be performed successfully before attempting to configure real-time data collection via the Tempurity System. Detailed information on configuring this “monitored device” through 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

Cables

Use the included 6-pin phone cable to connect the interface adapter to the Cryoplus RS-232 connector, and the included Cat5 cable to connect the adapter to the NTMS measurement port as shown in the diagram above. The two connectors that make up the adapter are labeled and may not be reversed. Make sure that the Cryoplus-labeled unit is on the Cryoplus side, and the NTMS-labeled adapter is on the NTMS side of the connection.

Be careful not to connect the interface to the RJ-11 port labeled “Alarm Contacts”. This is the same format connector (phone-style connector) as that used for the RS-232 connection and is easy to connect inappropriately.

Cryofreezer Front Panel Setup


No setup steps are necessary to ensure that the cryofreezer sends data appropriately. Just plug the interface in at the back of the unit.

Extensions


The reach of the interface, and thus the cryofreezer, 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 either 6-pin phone cable or CAT5. Extensions are best made on the NTMS side of the connection. You can mount your NTMS network hardware in a network closet, and “patch” the connection to a Cryofreezer adapter using a standard wall plate in your lab or office.

2. Configuring the NTMS Physical Port for the Appropriate Data Collection Type

Configure your NTMS network hardware for data collection from this type of instrument.

This is done by running the latest version of the NTMS Configuration Wizard  from any PC that is on the same subnet (behind the same router) as the NTMS to be configured. You can obtain the configuration wizard from the “download” section of the Networked Robotics web page. New sensor and interface types are being added periodically to the wizard so the screens below may change.

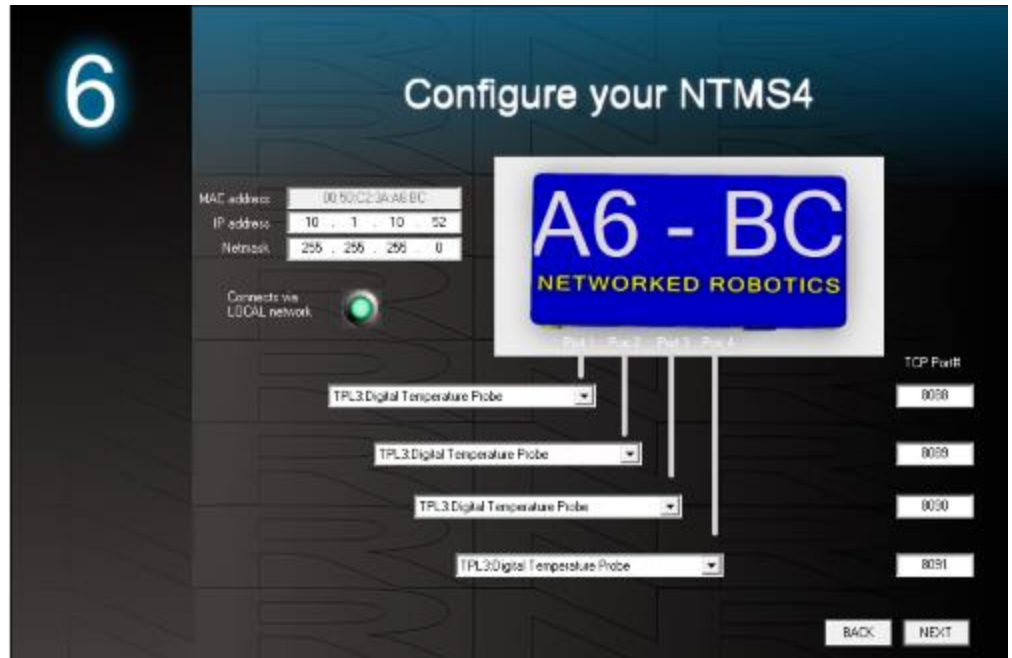
1. Run the wizard and verify that the NTMS to which the interface is attached is discovered. This NTMS must be running firmware revision 2.0 or higher. If it is not, stop the installation and upgrade your NTMS hardware's firmware with the

NTMS Upgrade Wizard  available from the Networked Robotics download-page. There are special precautions needed when upgrading an NTMS running firmware version 1.x to firmware version 2.0 or higher.

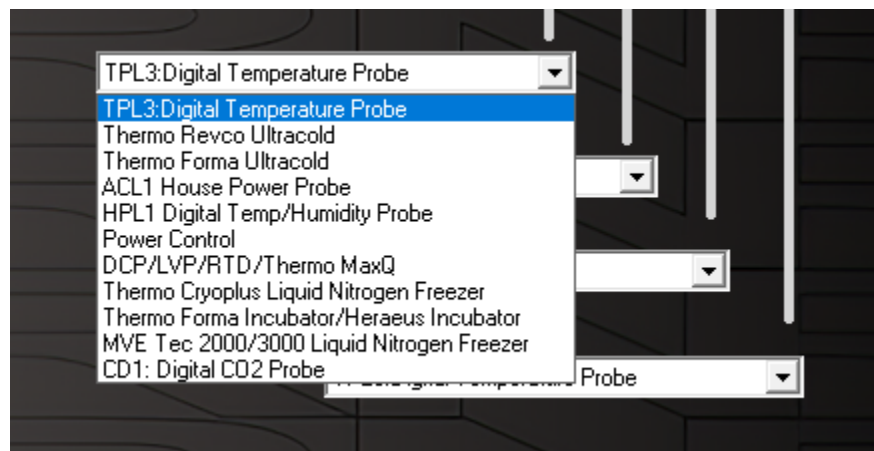
- 2.



3. Select the NTMS to which the interface is attached and proceed to the "NEXT" screen. (IP addresses must be set properly for your institution. If you are uncertain about the IP address to use, check with your network administrator.)



4. Click on the drop-down for the physical port on the NTMS where the probe is connected, and under the “Device Type” drop down, select TPL3.



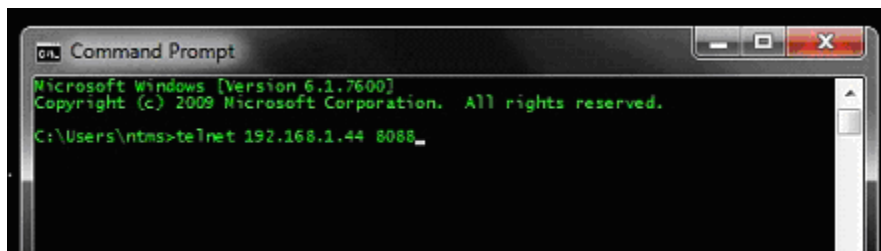
3. Testing Data Collection through the Network

Once the configuration is complete, we recommend manually testing the ability to make network temperature measurements by using the common “Telnet” utility. This can be done from any networked computer with access to the NTMS network hardware.

Telnet is included with Windows but you may need to activate it. On Windows 10 and 11 computers activate the Telnet utility as follows: 1 Start 2 Control panel 3 Programs 4 Turn Windows Features on or off 5 Check “Telnet Client” 6 Click Ok

1. From the Windows Command Prompt. On some Windows versions click the Windows key (start), then type "CMD", and then click on the command prompt.
2. At the black screen type "Telnet" + *IP Port* (where *IP* is the IP address and *Port* is the network port address (e.g.8088) as selected by your use of the NTMS Configuration Wizard in screen 6 as described above.)

For example "Telnet 10.1.200.3 8088"



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 probe. A temperature and the associated checksum value should be returned.

Failure to connect indicates a network problem. An "error" message indicates a problem in the connection at the instrument. If a temperature is not returned, check network parameters, network ports, firewalls and connections and try again. It is best to confirm successful network data collection using Telnet before attempting to configure data collection in the Tempurity System.

For more about debugging network connections to probes see the appendix of the Tempurity System User's Guide.



Operation

The NTMS network hardware continually reads temperatures and other data from the cryofreezer(s). The most recent values are available for network requests by the Tempurity System. Each reading takes about 3 seconds.

As an alternative or supplemental method of temperature data collection, consider using the Networked Robotics RTD probe (Product #30014), which is capable of use at extreme temperatures. If you wish to store alarm (yes/no) information, you may also wish to use the Networked Robotics DCP (Product #30008) probe for data collection from the alarm contact connector.

Reference

Communications Specifications

The RS232 connection between the Cryoplus and the NTMS operates at 9600,8.n1 speed and parity.

Physical Specifications

Weight:	68 grams	Width:	3.18 cm
Length:	12.7 cm	Height:	1.90 cm

Support

If you need assistance with your Networked Robotics interface to Cryoplus Freezers 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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