Digital Carbon Dioxide Probe CD1 (#30023 #30024, #30025)

The Networked Robotics Carbon Dioxide Probe enables the remote data collection of atmospheric carbon dioxide concentration via standard wired and wireless computer networks. The probe is used in conjunction with the Networked Robotics NTMS (Network Telemetry Monitoring System) hardware and with Networked Robotics Tempurity™ System software. Tempurity is designed for network-based data collection and monitoring of real-time scientific data in FDA-regulated environments.

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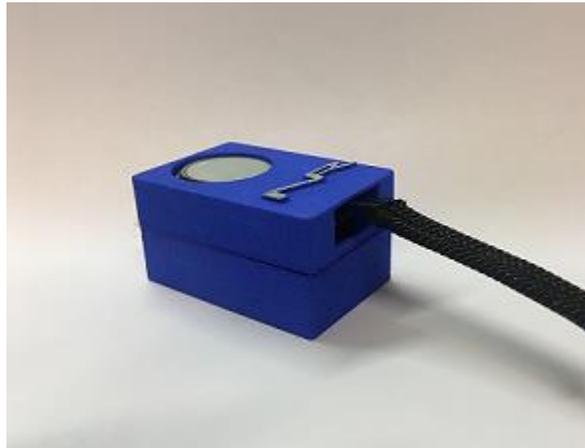
Description

A series of product numbers are used for expected maximum carbon dioxide levels. Products are available for 0-5% (#30023), and 0-20% (#30024), and 0 to 60% (#30024) ranges. The probe reports in units of percent CO2.

One side of the CO2 Probe connects to one of the four measurement ports of the NTMSp version of Networked Robotics' NTMS4 network hardware. The probe is placed in the incubator, room, or other gaseous atmosphere to be analyzed.

This product utilizes the newer NTMSp version of our network hardware and currently is not supported by the NTMS4i version of our network hardware.

Packing List

This package includes the basic hardware you will need to connect the Carbon Dioxide Probe to the NTMS.

- (1) Carbon Dioxide Probe of selected range

- (1) USB to CO2 probe cable

Data Collection from Any Combination of Monitored Devices

Because each NTMS4 unit has 4 "universal" measurement ports, data from any combination of Networked Robotics' unique interfaces to scientific instruments and sensors can be collected with a single NTMS network device. At present the NTMS4p version of our network hardware supports most of our scientific instrument and sensor interfaces.

Installation

The Networked Robotics Digital Carbon Dioxide Probe is attached in an incubator, room, or other source of environmental carbon dioxide, and to the Networked Robotics NTMS network hardware as shown in the diagram above. There are three major steps in the installation of this product:

1) Physical installation
2) Configuration of Networked Robotics NTMS hardware to which the Carbon Dioxide Probe 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 Co2 concentration 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

One of the applications of these products will be for the monitoring of carbon dioxide concentrations in scientific incubators. For these instruments, the Carbon Dioxide Probe will be mounted inside the incubator and connected to NTMSp units mounted outside of the incubator, either on the back of the instrument, on a nearby wall. Attach the probe with the dual-lock provided as described below.

The CO2 Probe should be located in an area where airflow is unrestricted. Avoid areas where an object could block the unit's sensing port, the round white protrusion on the face of the probe.

The photo below shows how the CO2 Probe is connected to the NTMS4p network hardware. It can be attached via any of the four USB ports on the NTMS4p. Remember which port # is used because it will need to be configured for CO2 data collection with the NTMS Configuration Utility as described below.
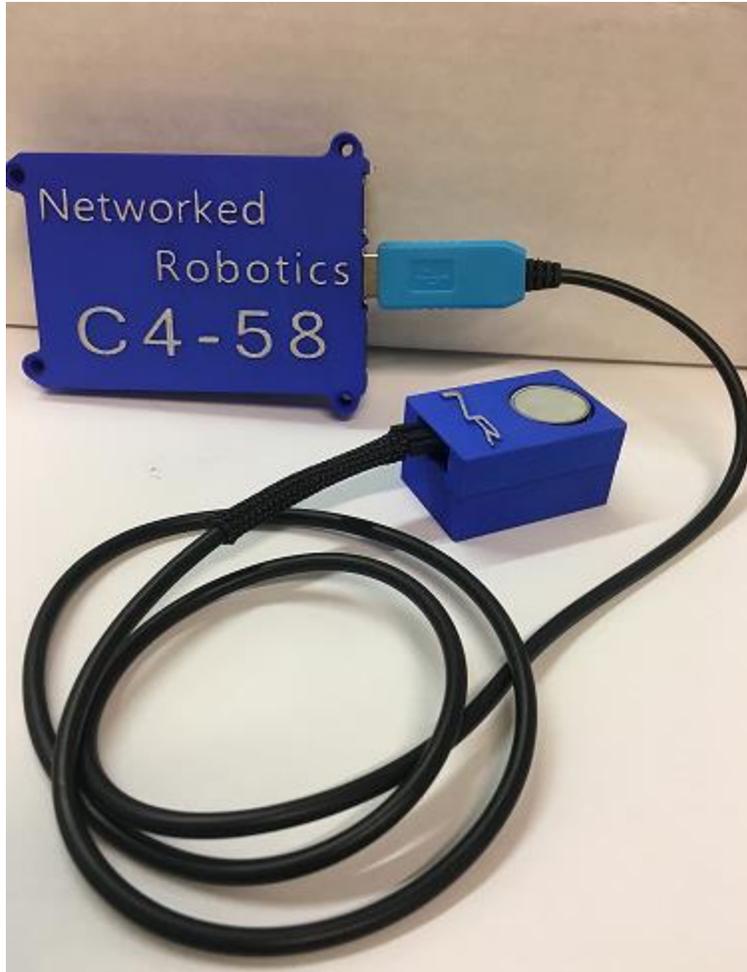
Secure the Co2 sensor to a convenient permanent location using the dual-lock provided on the back. The dual-lock sticks best to metal (except aluminum) or plastic surfaces. It may not adhere as well to surfaces such as drywall or wood, or to porous materials such as concrete. The probe can be removed from its dual-lock base for maintenance or cleaning.
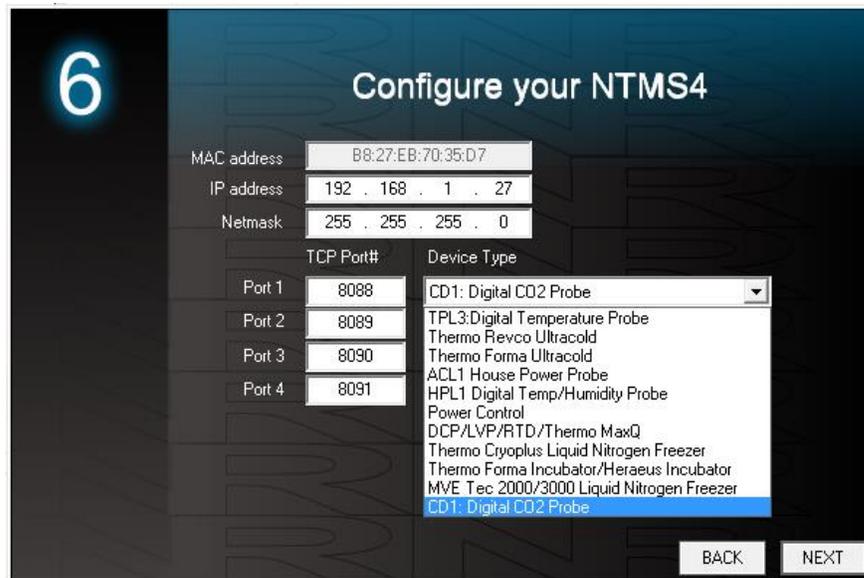
2. Configuring the NTMS

Configure your NTMS network hardware for data collection from this instrument. This is done by running the latest version of the NTMS Configuration Wizard from any PC that is on the same subnet 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 3.0 or higher.
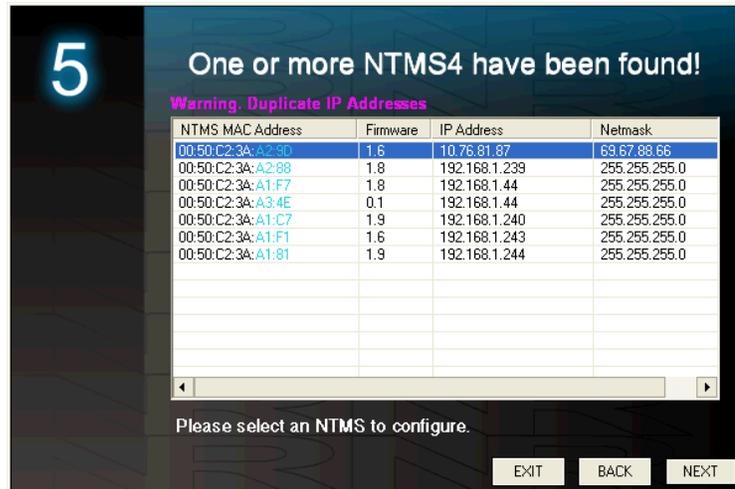
2. Select the NTMS to which the interface is attached, and proceed to the "NEXT" screen. (IP addresses must be set properly for your institution. If you are uncertain about the IP address to use, check with your network administrator.)

3. Click on the NTMS measurement port where the probe is connected, and under the "Device Type" drop down, select "CD1 Digital CO2 Probe ".

4.

5. 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 voltage reading from the probe.

Windows 7 -10 clients may need to enable the Telnet utility as follows: 1 Start. 2 Control Panel. 2 Programs and Features. 3 Turn Windows Features on or off (upper right of screen). 4 Check "Telnet Client". 5 Press Ok.

1. From Windows choose "START", then "RUN", and then type "CMD" and press return.
2. In 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.
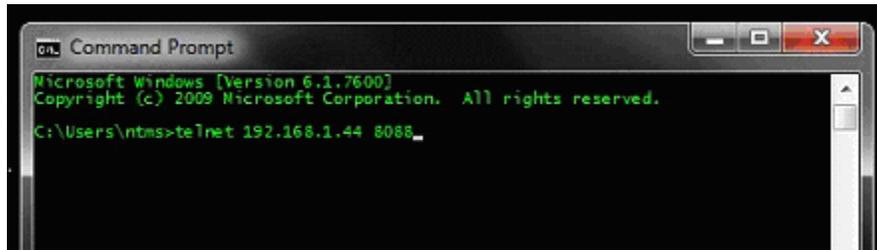
3. If you are successfully connected through the network you will see a blank screen.
4. Type a capital "C", the command character for this device. A CO2 percentage and the associated checksum value should be returned. For more about debugging network connections to monitored devices see the Tempurity System User's Guide.

For use with the Tempurity System, you will need to add the network address (IP address and network port address) of the new monitored device (the voltage probe) to the Tempurity Server configuration. See the Tempurity System User's Guide section on server configuration for more information.

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

Configuring Data Collection in the Tempurity Server Configuration Utility 🔧

Use of the Carbon Dioxide Probe requires definition of a monitored device of type "CO2" in the Tempurity Server Configuration Utility. See the Tempurity System User's Guide for more information.

The control character to acquire data from a Carbon Dioxide Probe is "C".

Operation

The Networked Robotics' NTMSp-version network hardware continually reads CO2 concentrations from the Carbon Dioxide Probe at approximately 4 second intervals. The most recent value collected by the NTMS is available for network requests by the Tempurity System which by default collects remote data at one minute intervals.

Reference

Power Supply

The Carbon Dioxide Probe derives its 5v power from the USB connection to the NTMSp hardware.

Unique IDs

This product does not contain an electronic unique ID.

Communications Specifications

The CO2 probe communicates with the NTMSp using low voltage RS-232 at 9600 bps 8N1. You can collect data through this product via the USB port of a personal computer. Contact Networked Robotics for more information.

Physical Specifications

Weight:	17 grams
Length:	46 mm
Width:	30 mm
Height:	24 mm

(Specifications do not include cable)

Performance and Accuracy

This product is based on the Cozir™ sensor line from GSS. Accuracies are those published by GSS and Co2meter.com.

The probe is affected by altitude and should not be used without correction at high elevations.

Support

If you need assistance with your Digital CO2 probes or other products, contact Networked Robotics by phone at 877-FRZ-TEMP (877-379-8367) or by email at
support@networkedrobotics.com