Contemporary CONTROLS USB22 Network Interface Modules with USB Interface Installation Guide

Contents

1 Contemporary CONTROLS USB22 Network Interface Modules with USB Interface
2 INTRODUCTION
3 SPECIFICATIONS
4 ELECTROMAGNETIC COMPATIBILITY
5 INSTALLATION
6 FIELD CONNECTIONS
7 WARRANTY
8 FAQs
9 Documents / Resources
9.1 References
10 Related Posts

CONTEMPORARY CONTROLS

Contemporary CONTROLS USB22 Network Interface Modules with USB Interface

INTRODUCTION

- The USB22 Series of ARCNET Network Interface Modules (NIMs) links Universal Serial Bus (USB) computers with the ARCNET Local Area Network (LAN). USB has become popular for connecting desktop or laptop computers to peripherals because of its very high-speed interface (up to 480 Mbps) and its convenience of a powered exterior interface with no need to open the computer.
- Each USB22 includes a COM20022 ARCNET controller that can support data rates up to 10 Mbps and a microcontroller to transfer data between the ARCNET and either USB 2.0 or USB 1.1 devices. The NIM is powered from a computer USB port or a USB hub. Models exist for the most popular ARCNET physical layers. A USB cable is also provided.
- **NOTE:** The USB22 Series of NIMs are for users who are willing and able to modify their application-layer software. Some OEM companies have modified their software to work with the USB22. If your application is not provided by one of these companies, you cannot use the USB22 — unless you rewrite your application software or hire a software engineer to do it. (See the SOFTWARE section of this installation guide for information about the Software Developer Kit.) If USB22-compliant software is provided by your OEM and you encounter installation difficulties, you should contact your OEM for resolution of your issue — because Contemporary Controls does not know the OEM software.

Trademarks

Copyright

Contemporary Control Systems, Inc.

- 2431 Curtiss Street
- Downers Grove, Illinois 60515 USA
- **Tel:** 1-630-963-7070
- **Fax:** 1-630-963-0109
- **E-mail:** info@ccontrols.com
- **Web:** www.ccontrols.com

Contemporary Controls (Suzhou) Co. Ltd

- 11 Huoju Road, Science & Technology Park
- New District, Suzhou, PR China 215009
- **Tel:** +86-512-68095866
- **Fax:** +86-512-68093760
- **E-mail:** info@ccontrols.com.cn
- **Web:** www.ccontrols.com.cn

Contemporary Controls Ltd

- 14 Bow Court
- Letchworth Gate, CV5 6SP, UK
- **Tel:** +44 (0)24 7641 3786
- **Fax:** +44 (0)24 7641 3923
- **E-mail** ccl.info@ccontrols.com
- **Web:** www.ccontrols.co.uk

Contemporary Controls GmbH

- Fuggerstraße 1 B
- 04158 Leipzig, Germany
- **Tel:** +49 0341 520359 0
- **Fax:** +49 0341 520359 16
- **E-mail** ccg.info@ccontrols.com
- **Web:** www.ccontrols.de

Disclaimer

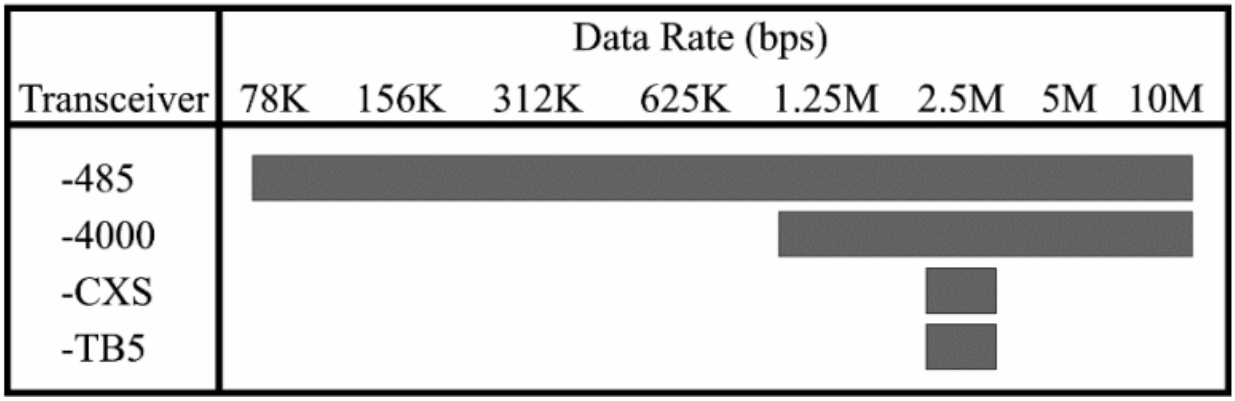
Contemporary Control Systems, Inc. reserves the right to make changes in the specifications of the product

described within this manual at any time without notice and without obligation of Contemporary Control Systems, Inc. to notify any person of such revision or change.

SPECIFICATIONS

- **Electrical**
  - **Current demand:** 400 mA (max)
- **Environmental**
  - **Operating temperature:** 0°C to +60°C
  - **Storage temperature:** –40°C to +85°C
  - **Humidity:** 10% to 95%, non-condensing

ARCNET Data Rates



- **Shipping Weight**
  - 1 lb. (.45 kg)
- **Compatibility**
  - ANSI/ATA 878.1
  - USB 1.1 and USB 2.0
- **Regulatory Compliance**
  - CE Mark, RoHS
  - CFR 47, Part 15 Class A
- **LED Indicators**
  - ARCNET Activity — green
  - USB — green

- **RJ-45 Connector Pin Assignments**

	4000	485	TB5
4	Line	Line –	Line –
5	Line	Line +	Line +

(All other pins are unused.)

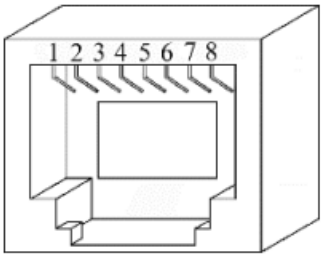


Figure 1 — RJ-45 Connector

- **Screw Terminal Pin Assignments**

	4000	485
1	Line	Line –
2	Shield	Shield
3	Line	Line +

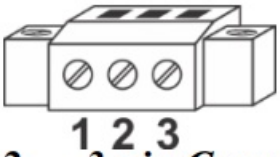


Figure 2 — 3-pin Connector

Mechanical

(The case dimensions shown below are valid for all models.)

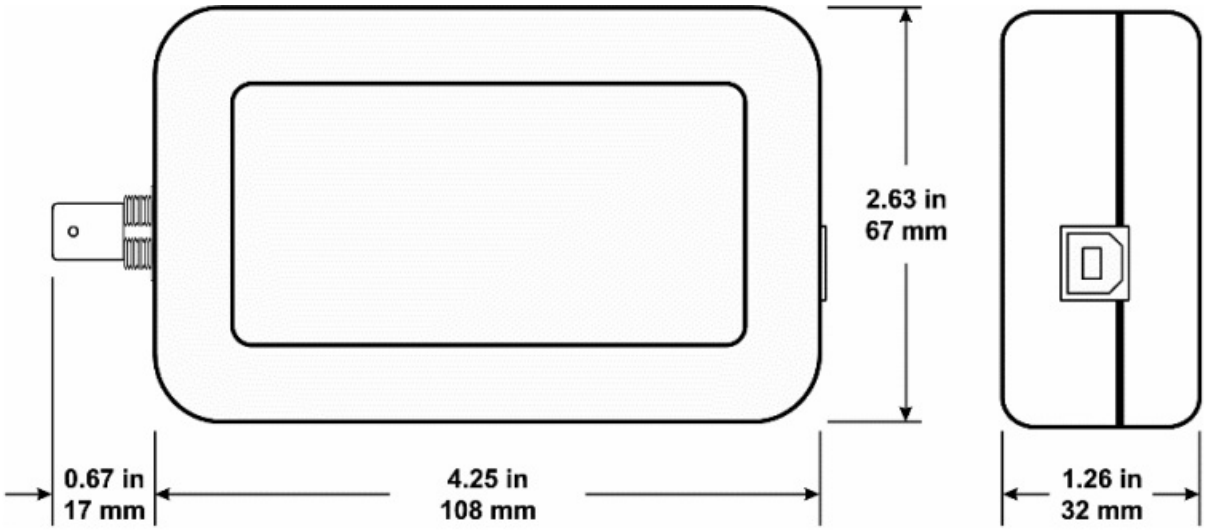


Figure 3 — USB22-CXB Dimensions

ELECTROMAGNETIC COMPATIBILITY

- All USB22 models comply with Class A radiated and conducted emissions as defined by EN55022 and CFR 47, Part 15. This equipment is intended for use in non-residential areas.

Warning

- This is a Class A product as defined in EN55022. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

INSTALLATION

SOFTWARE (Windows® 2000/XP/Vista/7)

When a USB cable first connects the NIM to a PC and you are prompted for a driver, follow the instructions that appear when you click on the Software Developer Kit link at the following URL: www.ccontrols.com/support/usb22.htm.

INDICATOR LIGHTS

- **ARCNET:** This will flash green in response to any ARCNET activity.
- **USB:** This LED glows green so long as a valid active USB connection exists to an attached computer.

FIELD CONNECTIONS

The USB22 is available in four models that vary by transceiver type for connecting to an ARCNET LAN via a certain kind of cable. Each model's transceiver is identified by the suffix (-4000, -485, -CXB, or -TB5) separated from the main number by a hyphen.

CXB Coaxial Bus

Generally, two types of coaxial cables are used with ARCNET: RG-62/u and RG-59/u. RG-62/u is recommended because it matches the 93-ohm -CXB impedance and can thus achieve the maximum 1000-foot segment

distance. Although RG-59/u does not match the -CXB impedance (it is a 75-ohm cable), it will still work, but the segment length may be limited. Never attach the coax cable directly to the USB22-CXB; always use the provided BNC “T” connector. The “T” connector allows the coaxial bus to continue as shown with device A in Figure 4. Apply the provided 93-ohm BNC terminator to the “T” if the USB22 terminates the coax in an end-of-line situation as shown with device B in Figure 4.

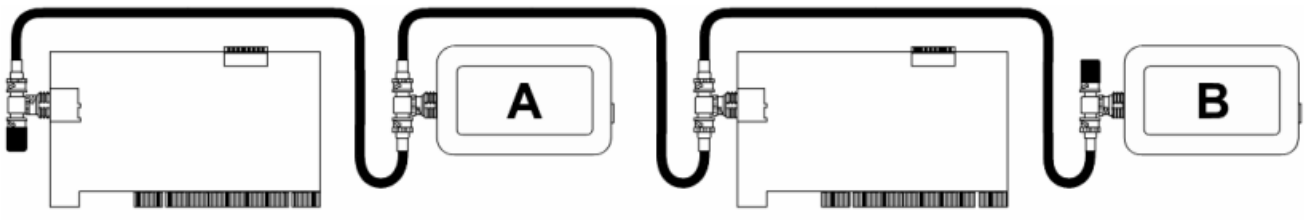


Figure 4 — Possible Connections for the USB22-CXB

TB5 Twisted-pair Bus

- The -TB5 transceiver accommodates twisted-pair cabling via a pair of RJ-45 jacks which allow the unit to be daisy-chained at any location on the bus segment. Usually IBM type 3 unshielded twisted-pair cable (UTP) is used, but shielded cable (STP) can also be used to provide continuous shielding between devices.
  When the USB22-TB5 is located at the end of a bus segment, apply the provided 100-ohm terminator to the empty RJ-45 jack to match the cable impedance.

485 DC-Coupled EIA-485

- Two models support DC-coupled EIA-485 segments. The USB22-485 provides dual RJ-45 jacks and the USB22-485/S3 offers a 3-pin screw terminal. Each segment can be up to 900 feet of IBM type 3 (or better) STP or UTP cable while supporting up to 17 nodes. Make sure the phase integrity of the wiring remains consistent throughout the network. All phase A signals on NIMs and hubs must connect. The same applies to phase B. Refer to Figures 1 and 2 for connector wiring.

Termination

- If the NIM is located at the end of a segment, apply 100 ohms of termination. For the USB22-485, insert a terminator in its empty RJ-45 jack. For the USB22-485/S3, attach a resistor to its 3-pin connector.

Bias

- Bias must also be applied to the network to prevent the differential receivers from assuming invalid logic states when the signal line is floated. Bias is provided on the USB22-485 by a set of 806-ohm pull-up and pull-down resistors.

Ground

- All devices on the segment should be referenced to the same ground potential to achieve the common mode voltage (+/–7 Vdc) required for the EIA-485 specification. A ground connection is not provided by the NIM. It is assumed adequate grounding is supplied by the existing equipment. Refer to the existing equipment user

manual for a discussion of grounding requirements.

4000 AC-Coupled EIA-485

- The AC-coupled EIA-485 transceiver offers advantages over the DC-coupled version. No bias adjustments are needed and wiring polarity is unimportant. Much higher common mode voltage levels can be achieved with AC coupling because the transformer coupling has a breakdown rating of 1000 VDC.
  However, AC-coupling also has disadvantages. AC-coupled segments are shorter (700 feet max) and are limited to 13 nodes compared to 17 for DC-coupling. Also, AC-coupled transceivers operate only at 1.25, 2.5,5.0, and 10 Mbps, whereas DC-coupled transceivers function overall standard data rates.
- Two models support AC-coupled EIA-485 segments. The USB22-4000 provides dual RJ-45 jacks, whereas the USB22-4000/S3 offers a 3-pin screw terminal.
- Cabling rules are similar to those for DC-coupled NIMs. Wire nodes in a daisy-chain fashion. Refer to Figures 1 and 2 for connector pin assignments. Termination should only be applied to devices located at the two ends of the segment. Do not mix AC-coupled and DC-coupled devices on the same segment; however, bridging the two technologies is possible with active hubs that have appropriate transceivers.

NEED MORE HELP INSTALLING THIS PRODUCT?

Technical support documents and software are freely downloadable from:
www.ccontrols.com/support/usb22.htm When contacting our offices by telephone, ask for Technical Support.

WARRANTY

- Contemporary Controls (CC) warrants this product to the original purchaser for two years from the product shipping date. Product returned to CC for repair is warranted for one year from the date the repaired product is shipped back to the purchaser or for the remainder of the original warranty period, whichever is longer. If the product fails to operate in compliance with its specification during the warranty period, CC will, at its option, repair or replace the product at no charge.
- The customer is, however, responsible for shipping the product; CC assumes no responsibility for the product until it is received. CC’s limited warranty covers products only as delivered and does not cover repair of products that have been damaged by abuse, accident, disaster, misuse, or incorrect installation. User modification may void the warranty if the product is damaged by the modification, in which case this warranty does not cover repair or replacement. This warranty in no way warrants the suitability of the product for any specific application. IN NO
- EVENT WILL CC BE LIABLE FOR ANY DAMAGES INCLUDING LOST PROFITS, LOST SAVINGS, OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PRODUCT EVEN IF CC HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, OR FOR ANY CLAIM BY ANY PARTY OTHER THAN
- THE PURCHASER. THE ABOVE WARRANTY IS INSTEAD OF ANY AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED OR STATUTORY, INCLUDING THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE OR USE, TITLE AND NONINFRINGEMENT.

RETURNING PRODUCTS FOR REPAIR

- **Return the product to its purchase site using the instructions at this URL: www.ccontrols.com/rma.htm.**

DECLARATION OF CONFORMITY

- Additional compliance documentation can be found on our website.

FAQs

- **Q: What are the trademarks associated with the USB22 Series?**
  - **A:** The trademarks associated with the USB22 Series include Contemporary Controls, ARC Control, ARC DETECT, BASautomation, CTRLink, EXTEND-A-BUS, and RapidRing.
- **Q: How can I power the USB22 NIM?**
  - **A:** The USB22 NIM can be powered either directly from a computer's USB port or a USB hub.
- **Q: What are the regulatory compliances of the USB22 Series?**
  - **A:** The USB22 Series complies with CE Mark, RoHS CFR 47, Part 15 Class A regulatory standards.

Documents / Resources

 USB22 Series ARCNET® Network Interface Modules with USB Interface INSTALLATION GUIDE INTRODUCTION CONTEMPORARY CONTROLS	Contemporary CONTROLS USB22 Network Interface Modules with USB Interface [pdf] Installation Guide USB22 Network Interface Modules with USB Interface, USB22, Network Interface Modules with USB Interface, Interface Modules with USB Interface, Modules with USB Interface, USB Interface

References

- **User Manual**