



The Bard Telcom Climate Watch System

The Bard Telcom ClimateWatch System (TCS24) is a building monitoring and direct digital control system for use with one or two (2) Bard 1-1/2 ton through 6 ton Wall-Mount air conditioners. The Bard TCS24 allows you to remotely monitor (24-hours a day) and digitally control The Wall-Mount™ air conditioning unit based on user-defined control strategies. The sensing devices mounted within The Wall-Mount™ unit function to input analog data such as temperature as well as digital data such as air flow, compressor status, or filter status. The system provides monitoring and sending several alarms with the built-in capability of automatically dialing out to a pager or line printer to report alarm conditions.

The complete “turn key” telcom system consists of a state of the art TCS24 direct digital controller, Climate Watch software, two (2) Bard Wall-Mount air conditioners and a special control module “V” that is factory mounted within the Bard Wall-Mount air conditioner.



APPLICATIONS

- > Communication and Electric Equipment Shelters
- > Central Office Buildings
- > Remote Access Buildings
- > Cable and Satellite Buildings
- > PCS Enclosures
- > Office Buildings



TCS24 SYSTEM FEATURES

BUILDING POINTS MONITORED

- Space temperature and space humidity
- Outdoor temperature & outdoor humidity
- Fire alarm circuit and fire trouble circuit
- Occupancy override switch
- Main power to the building
- Door is open or ajar

WALL-MOUNT POINTS CONTROLLER

- Blower on unit 1 and unit 2
- Economizer on unit 1 and unit 2
- Compressor on unit 1 and unit 2
- Heating on unit 1 and unit 2

SENSORS BUILT-IN

- Outdoor temperature
- Outdoor humidity
- Indoor temperature
- Indoor humidity (optional)

WALL-MOUNT POINTS MONITORED IN EACH UNIT

- Indoor blower airflow
- Discharge air temperature
- Valid compressor current sensor
- Compressor lockout relay
- Dirty filter sensor

LEAD/LAG CONTROL SEQUENCE

- Controller will switch between lead & lag wall-mount units every 24 hours to provide equal wear on the units.
- Adjustable from 24 to 168 hours in 12-hour increments.

ALARM POINTS AVAILABLE

- Compressor current failure on units 1 & 2
- Dirty filter on unit 1 and unit 2
- Main power failure
- Fire alarm and fire trouble

MODEL TCS24-HDM-002

BUILDING POINTS CONTROLLED

- Power Transfer relay
- Shelter alarm circuit
- Heating and cooling with built-in thermo shock.
- Door Alarm

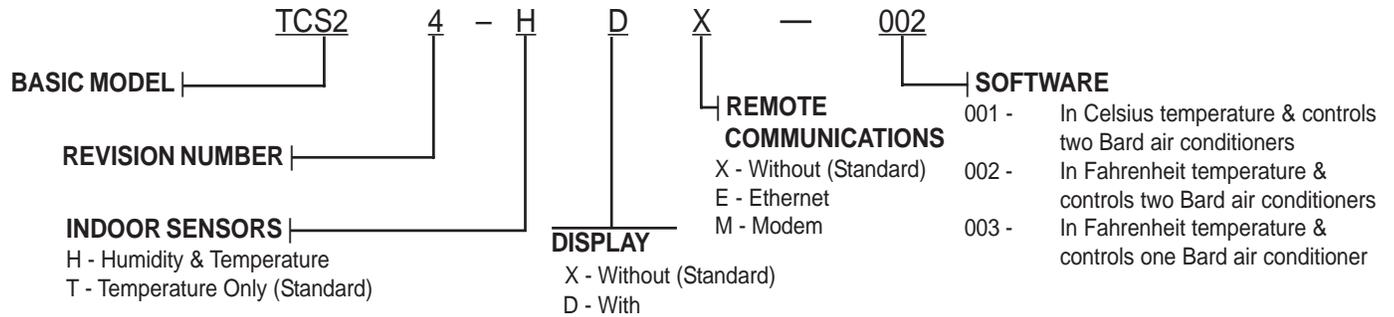
Memory logging allows you to monitor eight points every hour up to 5.3 days. Points monitored are:

- Space temperature and space humidity
- Economizer and compressor run hours
- Outdoor temperature and outdoor humidity
- Discharge air temperature on unit 1 & 2

ALARM POINTS AVAILABLE

- High space and low space temperature
- High space and low space humidity
- Blower failure on unit 1 & 2
- Compressor lockout on unit 1 & 2
- Door is open or ajar

TCS24 MODEL NOMENCLATURE



TCS24 Models	Outdoor Temperature Sensor Outdoor Humidity Sensor Indoor Temperature Sensor	Indoor Humidity Sensor	Dehumidification Control Option	Display and Keypad	Modem	Ethernet Network Module
TCS24-TXX-002	Yes	No	No	No	No	No
TCS24-TXM-002	Yes	No	No	No	Yes	No
TCS24-TXE-002	Yes	No	No	No	No	Yes
TCS24-TDX-002	Yes	No	No	Yes	No	No
TCS24-TDM-002	Yes	No	No	Yes	Yes	No
TCS24-TDE-002	Yes	No	No	Yes	No	Yes
TCS24-HXX-002	Yes	Yes	Yes ①	No	No	No
TCS24-HXM-002	Yes	Yes	Yes ①	No	Yes	No
TCS24-HXE-002	Yes	Yes	Yes ①	No	No	Yes
TCS24-HDX-002	Yes	Yes	Yes ①	Yes	No	No
TCS24-HDM-002	Yes	Yes	Yes ①	Yes	Yes	No
TCS24-HDE-002	Yes	Yes	Yes ①	Yes	No	Yes

① Requires special air conditioners rated for concurrent operation of compressor & electric heater - special code option D053 or D066 for air conditioner.

TCS24 SPECIFICATIONS

Processor:	Intel 8097 16-bit processor
Software:	Interface software is provided based on ASI Expert. Software can be connected to TCS21 controller via a com port on a PC or remote connection via a 9600 baud modem.
Inputs:	16 software selectable analog inputs. These inputs have 8-bit resolution with ± 0.4% accuracy. Voltage range is from 0 to 10VDC. Current rating is from 5 MA to 10VDC.
Outputs:	12 binary form "A" relay outputs. Relays are SPST N.O. Contact rating is 24 VAC, 5A resistance and 24 VAC, 2A inductive.
Front Panel:	Built-in programming panel with touch screen LCD backlit display.
Environmental:	Temperature 32° to 130°F (0 to 55°C). Relative humidity 10 to 95%. Non condensing.
Battery:	10-year extended life.
Management Logging:	Monitor 8 points every hour up to 5.3 days.
Electrical:	208/240 VAC ± 10% 50/60Hz, 3 Amp
Modem:	Hayes compatible suitable for asynchronous communications via a 9600 baud modem. (Optional)
Ethernet Network Module:	Ethernet communication module suitable for communication via a TCP/IP network. Is compatible with LAN/WANs and the Internet. Requires a dedicated IP address. (Optional)
Mechanical Specifications:	<ul style="list-style-type: none"> > 26-1/4" (667mm) height x 17" (432mm) width x 5-1/2" (140mm) depth > Cabinet is 20 gauge steel, with 16 gauge door, with beige baked-on polyester enamel. > Requires 27" (686mm) height x 18" (457mm) width mounting area > Shipping weight is 27 lbs. (12.3 kilograms)

VENTILATION OPTIONS

WALL-MOUNT ECONOMIZER ACCESSORY

1. Economizer to provide "free cooling" when the outside temperature is cool enough to provide needed cooling without running the compressor. This DDC economizer is available as a factory installed option in models W**A & W**L Series Units. Economizer model nomenclature is "D" for factory installation. An example would be W36A1-A10DXXXXV. Decision for free cooling can be based on enthalpy or dry bulb temperature only.

INVERTER ACCESSORY (*Field supplied*)

1. Inverter can be used to provide forced air cooling through The Wall-Mount's economizer system when a power failure occurs. To utilize the power failure management portion of the TCS24, a field-supplied inverter and battery backup system should be installed in the telecommunication shelter.

ENGINEERING SPECIFICATION GUIDE

Furnish and install a one piece, factory assembled, prewired, and pretested DDC controller. The units will have the following features and be manufactured by Bard Manufacturing Company, Inc. Model No. TCS24 _____.

1.0 Enclosure Construction -

The enclosure shall be constructed of 20 gauge cabinet with 16 gauge door prepainted steel. Cleaned, rinsed, sealed and dried before the polyurethane primer is applied. The cabinet is handsomely finished with a baked on textured enamel, which allows it to withstand 1000 hours of salt spray exposure.

2.0 Communication -

Remote communication options with the controller available via modem or ethernet network module.

- * Modem - the controller shall include a modem to allow remote communication and control of the controller. The modem shall be suitable for asynchronous communications at 9600 baud (optional) _____.
- * Ethernet Network Module - the controller shall include an ethernet card and all software to allow remote communication and control of the controller (optional) _____.

3.0 DDC Controller -

A System Controllers (SC) for the air conditioning units shall be based upon multi-layer printed circuit boards in metal enclosures, with 16 bit microcontrollers, battery backed calendar clock chips, two communication ports on board RS232 and RS485, a minimum input resolution of 10 bits and minimum scan time of 1 second, and minimum communication speed of 9600 baud.

Each SC shall have 16 universal inputs, 12 normally open relay outputs, and eight 0-10 volt DC analog outputs. The universal inputs shall be pre-programmed to interpret up to four contact closures in conjunction with a resistor ladder to any single input; they shall also read 0-5 volt DC and 4-20 ma inputs as standard, and have built-in look up table of 3,000 ohm thermistors. Inputs may be used for temperature, pressure, flow, voltage, current, frequency and for pulse counting.

Relay outputs may be configured for maintained, momentary, or pulse width modulation operation, with or without interlocks, and with or without verification of status of the controlled device. Outputs shall be rated for 5 amps at 24 volts. Analog outputs shall be suitable for 5 ma over 0-10 volt DC, referenced to ground.

Object oriented firmware shall be embedded in each SC, so that specific applications can be configured by linking pre-programmed objects. Objects shall include PID control, logic, schedules, timers, dynamic and static trending, optimum start, demand management, calculated points, remote points, broadcast, and event logging. Multiple instances of each object shall be available, so that for example up to 256 logic gates may be utilized. No high level language shall be required for configuring the SC. Configurations shall be stored in non-volatile EEPROM memory, and shall be retained indefinitely through power outages.

The hardware clock in each SC shall maintain time and date regardless of power failures. The SC shall automatically spring forward and fall back at the onset and conclusion of daylight savings time.

LEDs shall indicate the status of each binary output, and the status of the communication busses. Four LEDs shall be available on each SC for user configurable alarm/indication.

SC shall have Molex type connectors for inputs, outputs and power, and two part terminals for communication wiring, so that a controller can be replaced by unplugging the connectors and plugging them into a replacement.

ENGINEERING SPECIFICATION GUIDE (continued)

4.0 Sensors

The Controller shall include sensors for Outdoor Temperature, Outdoor Humidity, and Indoor Temperature.

The Controller shall include a sensor for Indoor Humidity (optional) _____

5.0 Operator Interface

Operator interfaces shall be provided for remote _____ and/or on-site _____ operation.

The on-site interface shall consist of a Display and Keypad _____ and/or Bard Telcom ClimateWatch Software _____ running on a personal computer.

The remote interface shall consist of Bard Telcom ClimateWatch Software running on a personal computer.

6.0 Display and Touch Screen

This operator interface shall consist of a microprocessor based Display and Keypad suitable for stand alone operation with the TCS24. It shall communicate with the controller via an RS-485 bus. It shall include a 32 character LCD display and touch screen.

Building personnel, if authorized, shall be able to modify setpoints, monitor select building parameters and alarms, and control the air conditioners for troubleshooting purposes. Three levels of password protection shall be provided so that each user shall have their own password, and each may be allowed varying levels of authority to make changes such as modifying set points.

7.0 Bard Telcom ClimateWatch Software

Operator interface software shall be provided for the building personnel based on ASI Expert, to enable complete operation of the system by pointing and clicking with a mouse. The software shall be suitable for direct connection to the TCS24 controller via a com port on a PC or for remote connection via 9600 baud modem.

Password protection shall be such as to limit changes that may be made by any user in accordance with his authority and responsibility.

Building personnel, if authorized, shall be able to modify setpoints, monitor select building parameters and alarms, and control the air conditioners for troubleshooting purposes by pointing and clicking with a mouse.

Selected temperatures may be trended on screen, and trend data may be transferred to an EXCEL spread sheet or any other DDE program.

The Controller software shall maintain room temperature changes to less than 15° per hour to prevent thermoshock to equipment.

Alarm conditions shall be logged.

In case of a critical alarm condition when the building is not occupied, the system shall be able to automatically dial out to designated phone numbers and convey the nature of the alarm.



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Due to our continuous product improvement policy, all specifications subject to change without notice.

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