**AMETEK ncc**
National Controls Corp.

Phone **800-323-2593**
       **630-231-5900**
Fax    **630-231-1377**
Internet **www.natcon.com**
**www.nationalcontrols.com**

## Features

- Remotely Monitors up to 255 Enhanced Timers
- Communicates via 2 wire Network to Enhanced Timers
- NEMA4 Front Panel Access Control
- History Report Generation for 1 Year of System Data
- Alarm Report Generation for over 200 Alarm Events
- Remote PC Connection via RS-232 Port
- 12 Tri-Color LED's for "At-a -Glance" System Status Annunciation
- 2 line x 8 Character Alpha-Numeric Display
- Monitors Two Switched Inputs
- Provides One Alarm Output Relay
- Aids in System Diagnostics
- Use to Increase Overall System Efficiency
- Operating Temperature Range from -40° F to 150° F
- ℞ ℞ File #E65038
- One Year Warranty: Warranted to be free from defects in materials or workmanship for One Year from date of purchase
- Made in USA

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# Intelligent Dust Collector Controller – Remote Annunciator Panel
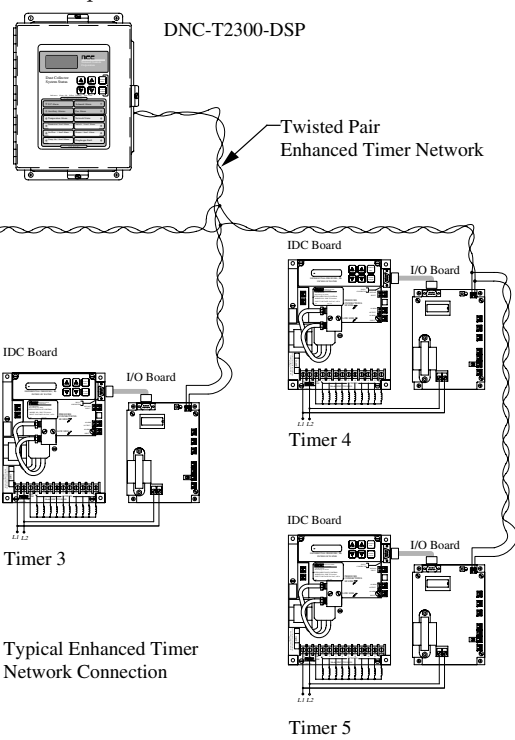## Model DNC-T2300-DSP

**The Model DNC-T2300-DSP** is a remote display panel used to monitor and control the parameters of the Enhanced Timer Network.which consists of 1 to 255 Intelligent Dust Collector Controller and I/O Board combinations or "Enhanced Timers". The Display panel communicates with the Enhanced Timer Network via a simple two wire connection over a distance of up to 1.5 miles. Data generated by the Enhanced Timer Network is presented on a 2 line x 8 character vacuum fluorescent alpha-numeric display. In addition, instantaneous system status is reported by 12 tri-colored LED's, some of which can be user assigned to monitor specific conditions. The Enhanced Timer Network monitored by the display can be interconnected in a variety of ways: in series, parallel, and/or series-parallel. It is also possible to have more than one DNC-T2300-DSP connected to an Enhanced Timer Network.

**Operating logic:** Upon application of power to the unit, communication will be established with the Enhanced Timer Network. When everything on the network is normal, all the LED's will be illuminated green and the data from the first Enhanced Timer on the network will be displayed. If no communication is established, then the message "NET FAIL" will be displayed and the "NETWORK STATUS" LED will begin flashing red to indicate a fault.

Each Enhanced Timer on the network is programmed with its unique ID number. When the Display is presenting the data from any Enhanced Timer on the network, this ID number will be shown as "TIMER xxx" (with xxx being the ID number) along with the data on the alpha-numeric display. The data from any Enhanced Timer on the network will be presented sequentially in a scrolling fashion on the alpha-numeric display, for as long as the Display is set for that particular timer. Enhanced Timer selection is accomplished by accessing the "SELECT TIMER" menu item (see programming tree).

If, during the course of normal operation, an alarm occurs on an Enhanced Timer other than that which is being displayed, the Display will automatically switch to the Enhanced Timer generating the alarm and show the alarm condition along with all other parameters associated with it. Alarm events are annunciated by the alpha-numeric display along with a corresponding LED indicator which will begin flashing red until the alarm condition has been cleared or until the "ALARM CANCEL" key has been pressed.

An additional feature of the Display is the normally open Alarm Output Relay which closes on any alarm condition; this output can be used to switch a signalling device to alert the user. When an alarm condition is present, pressing the "ALARM CANCEL" key will cause the Alarm Output Relay to open but keep the Alarm status in effect on the display and change the flashing red LED to a steady amber to indicate that the alarm condition has been acknowledged but has not yet been cleared.
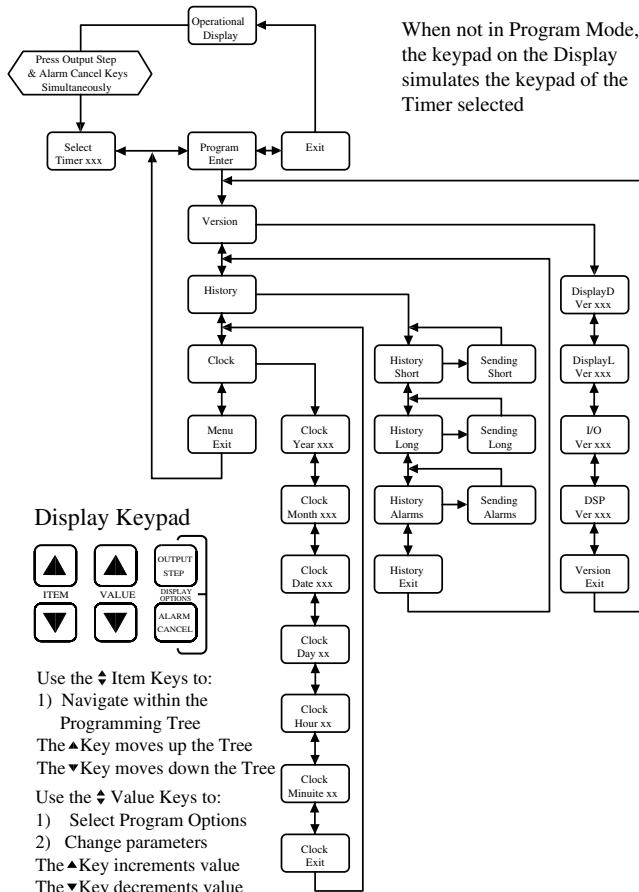


DNC-T2300-DSP

Twisted Pair Enhanced Timer Network

IDC Board
I/O Board
Timer 1

IDC Board
I/O Board
Timer 3

IDC Board
I/O Board
Timer 4

IDC Board
I/O Board
Timer 2

Typical Enhanced Timer Network Connection

IDC Board
I/O Board
Timer 5

# Dust Collector Controls

The six button keypad similar to that found on the Enhanced Timer can be used to program parameters or generate History Reports of any Enhanced Timer on the network (see programming tree for overview). Programming data is sent over the two wire network to the respective Enhanced Timer. History Report data is sent over the RS-232 port on the Display to a device which is capable of displaying and/or storing a comma delimited ASCII file format. A typical application would be to connect a laptop PC computer's RS-232 port to the Display's RS-232 port with a null modem cable and download a History Report into a file for later analysis in a spreadsheet type program. Remote access of the Display functions is also available via the RS-232 port. Using the same connection as stated above, a PC can be used to display all the data provided by an Enhanced Timer as well as program any facet of the Enhanced Timer Network.

Among the features of the Display is a battery backed up Y2K compliant 24 hour Day/Date/Year clock which maintains the Enhanced Timer Network time for accurate recording of History logging and all alarm events for all of the Enhanced Timers on the network. Furthermore, two Alarm Inputs are provided on the Display for monitoring general system alarms or whatever the user desires.
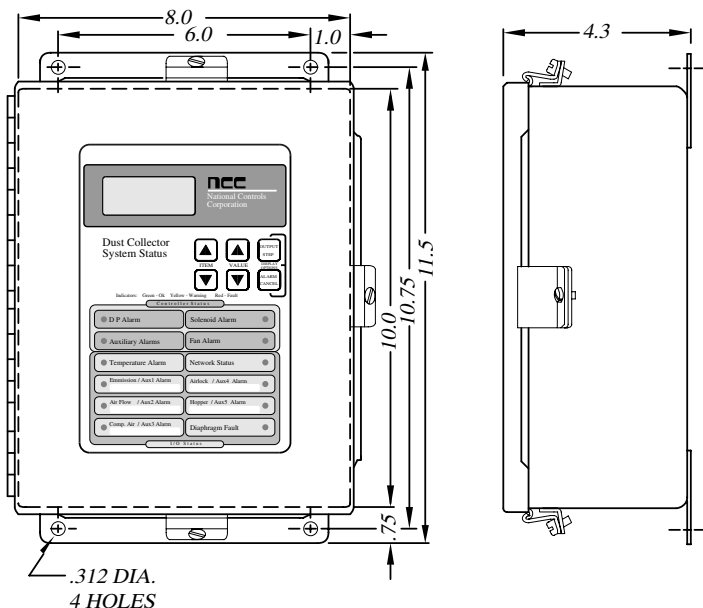
The DNC-T2300-DSP is designed to be used as a central point of control for either a small or large facility which has multiple dust collectors or to monitor a dust collector from a remote location. Since the two wire network utilizes "peer to peer" communication protocol, it is possible to have more than one Display connected to the Enhanced Timer Network to report the status of different Timers simultaneously.

## DNC-T2300-DSP Programming Tree

When not in Program Mode, the keypad on the Display simulates the keypad of the Timer selected

### Display Keypad
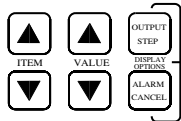
Use the ↕ Item Keys to:
1) Navigate within the Programming Tree
The ▲Key moves up the Tree
The ▼Key moves down the Tree

Use the ↕ Value Keys to:
1) Select Program Options
2) Change parameters
The ▲Key increments value
The ▼Key decrements value

RECEIVE DATA
TRANSMIT DATA
GROUND

RS232 CONNECTOR (TOP VIEW)
9-PIN RS232 D-SUB (PLUG) CONNECTOR MOUNTED ON CONTROLLER MATES WITH 9 PIN (RECEPTACLE) CONNECTOR AMP # 747150-1 OR EQUIV.

GROUND

RS-232 Null Modem Cable Wiring Diagram

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DNC-T2300 DSP

.312 DIA. 4 HOLES

**Alarm File Output Format:**

*IDENTxxx, Year, Month, Day, Hour, Differential Pressure, Emissions, Airflow, Manifold Pressure, Bag Temperature, Temperature Probe Failure, Bad Solenoid, Differential Pressure too Hi/Low, One hour warmup failure, 5 cleaning cycle alarm, External alarm input #1, External alarm input #2, External alarm input #3, External alarm input #4, Triac is shorted on, 0, 0, 0, 0, 0, 0, High emission, High or Low airflow, Manifold pressure current loop out of range, Manifold pressure too low before firing of the solenoid,Manifold pressure did not drop when a solenoid fired,igh bag temperature alarm, High hopper alarm, Airlock fault, 0, Bag temperature probe open, Communication fault, Timer fail, 0, 0, 0, 0, Last solenoid that fired before the alarm, Solenoid number that did not fire, Solenoid number which is stuck on,Last solenoid that fired before alarm input #1, Last solenoid that fired before alarm input #2, Last solenoid that fired before alarm input #3,Last solenoid that fired before alarm input #4.*
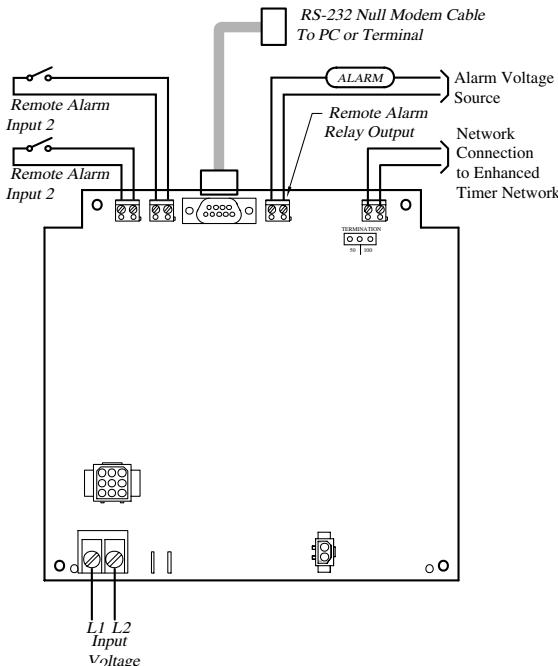
**File Output Format:**

xxx, xx, xx, xx, xx, xxx, xxxx, xxxxxxx, xxxx, xxxx, x, x, x, x, x, x, x, x, x, x, x, 0, 0, 0, 0, 0, 0, x, x, x, x, x, x, x, x, x, 0, x, x, 0, 0, 0, 0, 0, xxx, xxx, xxx, xxx, xxx, xxx, xxx, CR, LF

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**Short and Long Term Memory File Output Format:**

*IDENTxxx(1-255), Year(last 2 digits), Month(1-12), Day(1-31), Hour(0-23), Differential Pressure(inches H2O), Emissions or AUX1 (percentage), Airflow (SCFM) or AUX2 (percentage), Manifold Pressure (PSI) or AUX3 (percentage), Bag Temperature(?F), Number of Solenoids that fired.*

**File Output Format:**

xxx, xx, xx, xx, xx, xxx, xxxx, xxxxxxx, xxxx, xxxx, xxxxx, CR, LF



RS-232 Null Modem Cable To PC or Terminal

Remote Alarm Input 2

Remote Alarm Input 2

ALARM

Remote Alarm Relay Output

Alarm Voltage Source

Network Connection to Enhanced Timer Network

TERMINATION
50  100

L1 L2
Input Voltage

## Specifications

### Inputs

**Voltages:** 105 - 135 VAC, 50/60 Hz.
210 - 270 VAC, 50/60 Hz

**Switched Inputs:**
Alarm Input Open Circuit Voltage: 10 VDC
Alarm Input Short Circuit Current: 13 mA

**#1: Display 1 Alarm**
Status LED: "Auxiliary Alarms"

**#2: Display 2 Alarm**
Status LED: "Auxiliary Alarms"

### Outputs

**Alarm Output**
Type: 1-Form A (S.P.S.T) Relay Contact
Rating: 3 Amps @ 120/240 VAC

**Display**
2 line x 8 Character
Alpha-Numeric Vacuum Fluorescent, .3" high

**Status LED's**
Quantity: 12
Type: Tri-Color; Red, Yellow, Green
Indications:  Red     - Fault
Yellow - Alarm Acknowledged
Green  - Normal
Status LED Nomenclature:
dP Alarm                    Solenoid Alarm
Auxiliary Alarms         Fan/Alarm 1
Temperature Alarm     Network Status
Emission/Aux 1 Alarm  Airlock/Aux4 Alarm
Air Flow/Aux 2 Alarm  Hopper/Aux5 Alarm
Comp.Air/Aux3 Alarm  Diaphragm Fault

### Serial Communications:

Null Modem type connection required between Display and Terminal or PC.

**Type:** RS-232.

**Mode:** 9600 Baud, 8-Data Bits
1-Stop Bit, No Parity

**Function:** Dedicated For Communication with an ANSI type VT100 Terminal.

**Connector:** Type 9-Pin Male IBM  Compatible D-SUB Connector. Null Modem type connection required between Display and Terminal or PC.

### Network Connection:

**Type:** 2 Wire Twisted Pair

**Transmission Line:** 2 Wire Twisted Pair (Belden 85102 or 8471 or equiv.. recommended)

**Termination:** 50 or 100 ohm, jumper selectable resistor

*Free Topology* - 50 ohm termination on only one end of the network bus. Remove jumper on all other bussed units.
Node to Node distance: 1640.5 ft. max.
Bus Length:              1640.5 ft. max.

*Double Terminated* - 100 ohm termination on each end of the network bus. Remove jumper on all other bussed units.
Bus Length:              8858.3 ft. max.

**Network Connection Device:**
Echelon FTT-10A Transceiver

### Environmental

**Operating Temperature:** -40° to 66°C
**Storage Temperature:** -40°C to 70°C
**Humidity:** 90% Non-Condensing
**Protection:** RTV conformal coat for humidity and vibration.

*Contact Factory for Additional Information*

### Ordering Information

| Input  Voltage | Part Number |
|---|---|
| 105 - 135 VAC | DNC-T2300-DSP |
| 210 - 270 VAC | DNC-T2301-DSP |

*The DNC-T230\*-DSP is housed in a NEMA 4 type enclosure ready for mounting. This enclosure is made of heavy gauge steel and has a continuous hinge cover. All seams are continuously welded. The finish is gray hammer-tone enamel inside and out, over phosphatized surfaces.*

*Note. In order to keep abreast of the latest technology, AMETEK NCC reserves the right to change components and/or design of controls without notice.*