


Features

- On-Board Differential Pressure Sensor
- 4 - 20 mA Output for ΔP
- 8 Character Alphanumeric Display
- Microprocessor Based Control for Stable Timing from -40° F to 150° F
- Enhanced Timer Option:
 - Monitor Additional Devices
 - Record Dust Collector Data
 - Network Timers Together
 - Remote Network Monitor
 - Remote Network Control
- RS232 Port for Remote Monitor & Control
- Automatic Output Setup Capability
- Expanded Cycle Mode allows additional Dust Collector controllers to expand output capabilities
- High Pressure Alarm Indication
- Output Fault Detection
- Alarm Output Contacts
- Alarm Input Sensors
- Pulse Time: Line synchronized to eliminate 8 milliseconds triac turn off variation per Output
- 10 Amp 400V Output Triacs for maximum protection against output shorts. 200VA load rating
- RTV Coating: Conformally coated for protection against vibration, humidity and contamination
- Metal Chassis Provided: For mounting directly into NEMA-4 Box
- Timer Life Tested to eliminate field failures
- Input protection: 30 joule metal oxide varistor
-  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

Dust Collector Controls

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Intelligent, AC-Input, Pulse Cleaning of Bag House Dust Collectors DNC-T2310 and DNC-T2320



Models T2310 & T2320 are microprocessor based bag house filter controllers which combine a ten or twenty output sequencer with a solid state differential pressure sensor to form a small size, and low cost replacement to the separate solid state sequencer and pressure gauge combination most often used in on demand pulse jet cleaning systems. These controllers will sense the pressure difference across the filters of a bag house and initiate a cleaning cycle when the filters start to impede the air flow. When the pressure drops to normal the controller will stop cycling.

Standard Operating Logic: The Timers can operate in the following modes:

- Auto Output
Only configured outputs will be pulsed
Output faults will be detected and indicated
- Manual Output
Outputs will recycle after last output used
- Output Step
A single cleaning pulse can be initiated by pressing the Output Step Key regardless of pressure input
- Continuous Cycle
Controller will cycle indefinitely when the Bypass/Cycle Down Input is shorted.
- Cycle Down
The outputs will be pulsed through a user selected number of complete cycles when the Bypass/Cycle Down Input is shorted. This cycle will occur regardless of pressure input.
- Expanded Output Mode
Controller will cycle to output #10 or #20, then will initiate an extended output mode via the Alarm Input and output terminals to NCC's DNC-T2000 Series Dust Collector Controllers. This will facilitate systems which require greater than 10 or 20 outputs.

Standard Timer Operation Status Indication: The Timer can show the following information on its 8 character alpha-numeric display during normal operation:

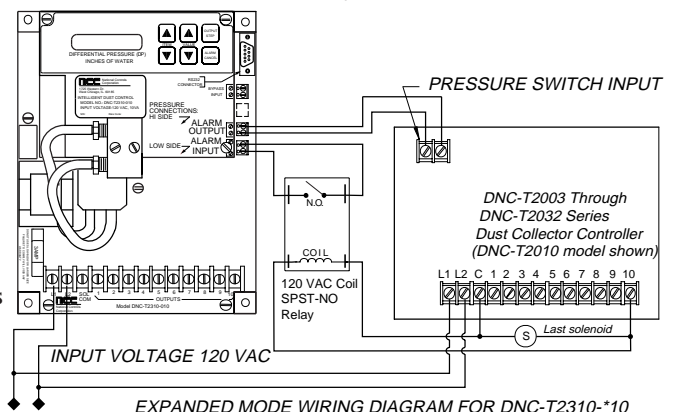
- ΔP from 0" to 15" water column
- Solenoid Fault Conditions
- Auxiliary Alarm Input Closures
- High or Low ΔP Alarms
- Current Output being Pulsed

Upon occurrence of any alarm event, the alarm status is reported on the display along with the output number that was pulsed during the time of the event.

- Alarm Outputs
The isolated Alarm Output contacts will close for alarm conditions such as output faults, high pressure alarm, warm-up failure, etc. During an alarm condition, a corresponding message is displayed

- Alarm Input
A closure across the Alarm Input terminals will be indicated on the display as well as initiate the Alarm Output

In addition to the standard operation of the T2310 & T2320, an enhanced operation option is available with the use of the DNC-T2300-I/O Remote Input/Output module in conjunction with the DNC-T2300-DSP Remote Annunciator Panel. The T2310 & T2320 Timers along with the DNC-T2300-I/O constitutes the "Enhanced Timer" system which allows the user to monitor and record the data parameters associated with a dust collector system. This system can range in size from 1 to 255 dust collectors, all reporting to a central location, the DNC-T2300-DSP.



Enhanced Timer Operation Status Indication: The Timer can show the following information on its 8 character alpha-numeric display during normal operation:

- ΔP from 0" to 15" water column
- Solenoid Fault Conditions
- Auxiliary Alarm Input Closures
- DNC-T2300-I/O Alarm Input Closures
- High or Low ΔP Alarms
- Current Output being Pulsed
- DNC-T2300-I/O Analog Input Status

Upon occurrence of any alarm event, the alarm status is reported on the display along with the output number that was pulsed during the time of the event.

RS-232 Port:

■ Remote Terminal

An ANSI type terminal is required for remote monitoring and programming of the controller. Connection to the controller is made via the RS-232 port (9 pin D-Sub connector). All the functions and display status accessible from the controller is available through the ANSI terminal.

■ Remote I/O Interface

The 2310/2320 controllers are capable of communication with the DNC-T2300-I/O board via the RS-232 port. This allows the user to monitor up to three 4-20mA analog inputs, three contact closure type inputs, and one J type thermocouple. The I/O module is programmed via the 2310/2320 keypad and can be user defined to set alarm points from remote sensors of parameters such as emission, air flow, pressure, broken bags, fan motor current, etc. Refer to the data sheet for the DNC-T2300-I/O for additional information.

Programming Logic: The controller as supplied from the factory will require user configuration. Upon application of power the display will indicate "SETUP". The operator must then configure the various operating parameters using the six key keyboard of the controller before normal cleaning operation can begin. The programmable parameters for Standard Operation as displayed are:

■ OUTPUT

Auto Configuration - will automatically sense the solenoids connected to the outputs and will only pulse those outputs during cleaning cycles.

Manual Configuration - the controller will pulse each output until the last output programmed and then recycle to output #1

- LAST - the number of the last output used.
- LO ΔP - Low Pressure Setpoint, the pressure at which the controller will stop its cleaning cycle.
- HI ΔP - High Pressure Setpoint, the pressure at which the controller will start its cleaning cycle.
- ON - Output Solenoid On Time.
- OFF - Off Delay Time Between Output Solenoid Activation.
- ALARM - High Differential Pressure Alarm Set-point, the pressure at which the controller will close its alarm contacts

For Enhanced Timer programming information, see IDC Programming Tree on page 4-6.

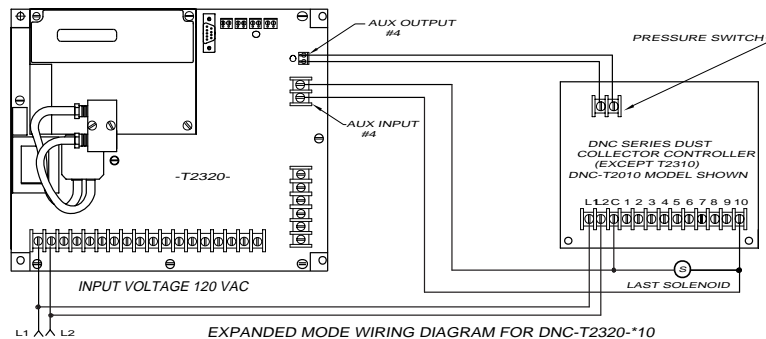
Additional Features: The 2310/2320 controllers also provide:

■ 4 - 20 Milliampere Output Loop

This output will provide a continuous reading from 4 -20 mA corresponding to the sensed differential pressure range of 0" to 15" water column. This is a standard feature.

■ 24 Hour Time / Day / Month Clock

The clock feature will allow a daily automatic turn on and turn off command to be implemented by the controller. It can be programmed to start and stop the cleaning cycles for up to seven events per week. This is an optional feature found on the "B" series models



Specifications

Factory Default Settings:

- Lo Pressure = 2" water column
- HI Pressure = 4" water column
- Alarm Pressure = 14" water column
- Output Quantity = 10
- Off Time = 15 seconds
- On Time = 0.10 seconds
- Output Configuration = Manual
- I/O Expansion = No

Inputs:

Voltage: 105 -135 VAC, 50/60 Hz.

Maximum Ratings at 135 VAC Input Voltage:

Power Consumption: 10 VA, without loads

● DNC-T2310:

- Bypass Switch Open Circuit Voltage: 24 VDC.
- Bypass Switch Short Circuit Current: 4.3mA
- Alarm Inputs 1-3:
 - Open Circuit Voltage: 24VDC.
 - Short Circuit Current: 4.3 mA

Important Notice to Users:

Our timers are capable of use in a wide array of devices and in various applications. Any device or system incorporating a timer should be so designed that, in the event of failure, malfunction or normal wear-out of the timer, the system will become inoperative in a manner which will prevent property damage or bodily injury.

Caution:

1. Do not mount controls in high vibration areas without shock mounts.
2. Do not mount controls in areas of high dust or corrosive atmospheres without a protective enclosure.
3. Do not use a converter or inverter for the power source.
4. Do not mount control in high transient voltage areas without an isolation transformer
5. Do not leave control box open.
6. Do not allow a local repair shop to repair the controls, as we employ some very sophisticated components that could be further damaged. For service, call us directly: 800-323-2593

Specifications

continued

• DNC-T2320:

Bypass Switch Open Circuit Voltage: 24 VDC.
Bypass Switch Short Circuit Current: 4.3mA
Alarm Inputs 1-3:
Open Circuit Voltage: 24VDC.
Short Circuit Current: 4.3 mA
Auxiliary Input #4: 90-135 VAC, 50/60 Hz
6.6mA at 135 VAC

Air Pressure Measurement:

Sensor Type: Silicon Piezoresistive Transducer with Dual Inlets

Measurement Range: 0.0 to 15.0 Inches of Water

Accuracy: ± 2% of Full Scale at 77° Fahrenheit
25° Celsius ± 6% of Full Scale Over Temperature and Voltage Range

Maximum Continuous Pressure: 10 PSI.

Display:

Type: 8 Character 16 Segment Vacuum Fluorescent Display; Characters: .2" High, Alpha-Numeric.

Timing:

Solenoid On Time Range: .01 - .50 Seconds.

Solenoid Off Time Range: 1 -999 Seconds.

Timing Accuracy : -2 mS, +10 mS or ±1%, whichever is greater. Solenoid On Time is synchronized to the AC Line.

Outputs:

Maximum Solenoid Output: 200VA or Watts at maximum duty cycle.

Solenoid Output Voltage: Input Voltage - 2.5 VAC @ 200 VA Load

Solenoid Output Type: Solid State TRIAC.

Solenoid Output Short Circuit Protection:

3AG Fast Acting
120 volt units: 3Amp/250 VAC Fuse
240 volt units: 1.5Amp/250 VAC Fuse

• DNC-T2310:

Alarm Output Type: 1-FORM A Relay Contact.

Alarm Output Rating: 3 Amp @ 120/240 VAC

• DNC-T2320:

Alarm Output Type: 1-FORM A Relay Contact
Alarm Output Rating: 3 Amp @ 120/240 VAC
Aux. Output #4 Type: 1-FORM A Relay Contact

Aux. Output #4 Rating: 3 Amp @ 120/240 VAC

Current Loop:

Type: 4 - 20 mA current loop, current is sourced by the controller. Signal represents 0 - 15 inches of differential pressure (ΔP).
Accuracy: ±.3 mA of displayed pressure.

Serial Communications:

Type: RS-232.

Terminal Emulation: ANSI VT100

Mode: 9600 Baud, 8-Data Bits 1-Start Bit
1-Stop Bit, X ON - X OFF, No Parity

Connector: Type 9-Pin Male IBM Compatible D-SUB Connector

Environmental:

Operating Temperature Range:-40° to 150° Fahrenheit, -40° to 65° Celsius

Environmental Protection: Conformal Coating for Humidity and Vibration

Contact Factory for Additional Information

Ordering Information

Outputs	Description	Aux. Inputs	Input Voltage	Off Time	Part Number
10	With 4-20 mA Loop	3	105 - 135 VAC	1 - 999 Sec.	DNC-T2310-A10
10	With 4-20 mA Loop & 24 Hr. Clock	1	105 - 135 VAC	1 - 999 Sec.	DNC-T2310-B10
10	With 4-20 mA Loop	3	210 - 270 VAC	1 - 999 Sec.	DNC-T2310-A220
10	With 4-20 mA Loop & 24 Hr. Clock	1	210 - 270 VAC	1 - 999 Sec.	DNC-T2310-B220
20	With 4-20 mA Loop	4*	105 - 135 VAC	1 - 999 Sec.	DNC-T2320-A10
20	With 4-20 mA Loop & 24 Hr. Clock	2*	105 - 135 VAC	1 - 999 Sec.	DNC-T2320-B10
20	With 4-20 mA Loop	4*	210 - 270 VAC	1 - 999 Sec.	DNC-T2320-A220
20	With 4-20 mA Loop & 24 Hr. Clock	2*	210 - 270 VAC	1 - 999 Sec.	DNC-T2320-B220

* When unit is configured for expanded mode operation, input #4 is not available

Accessories:

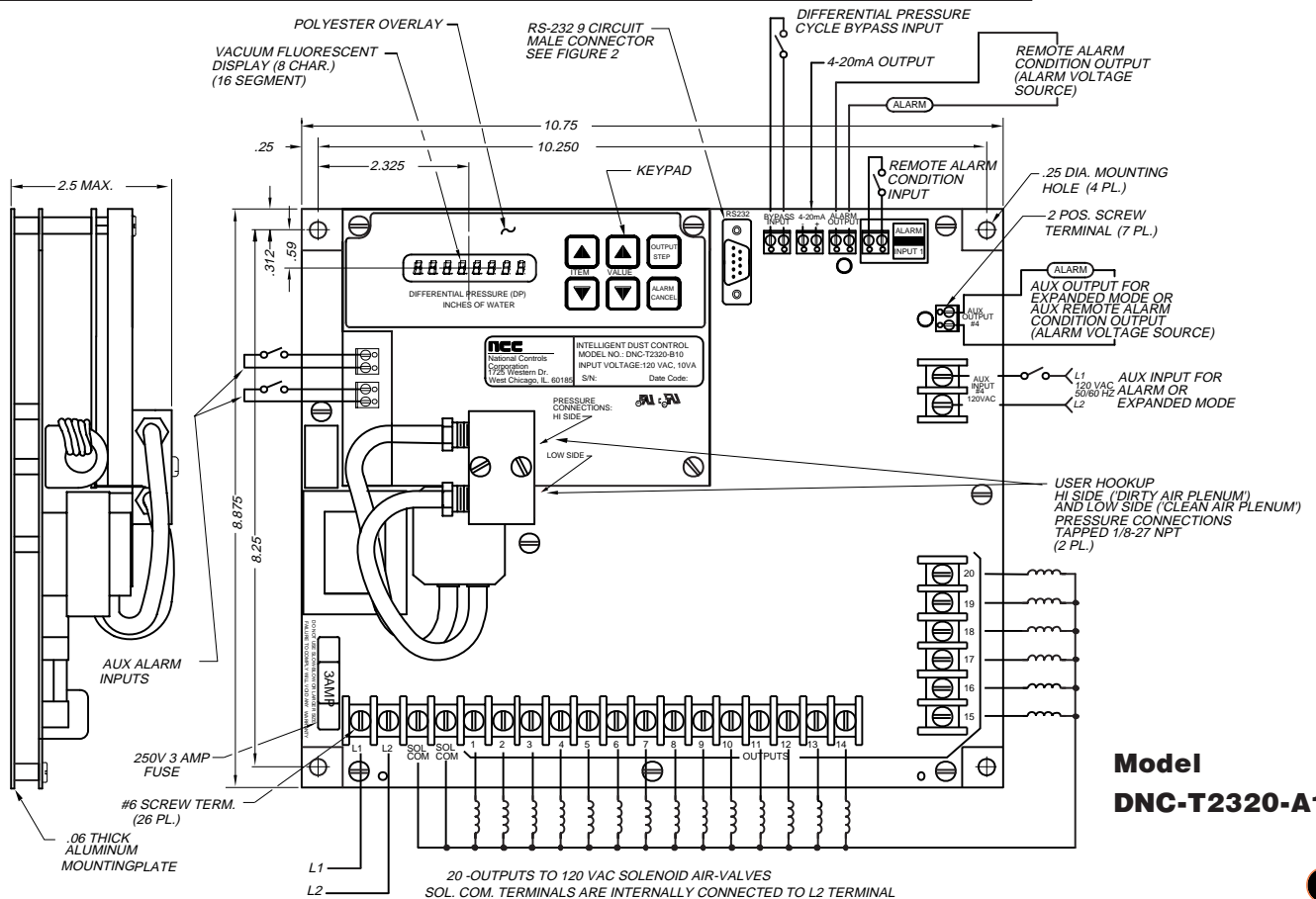
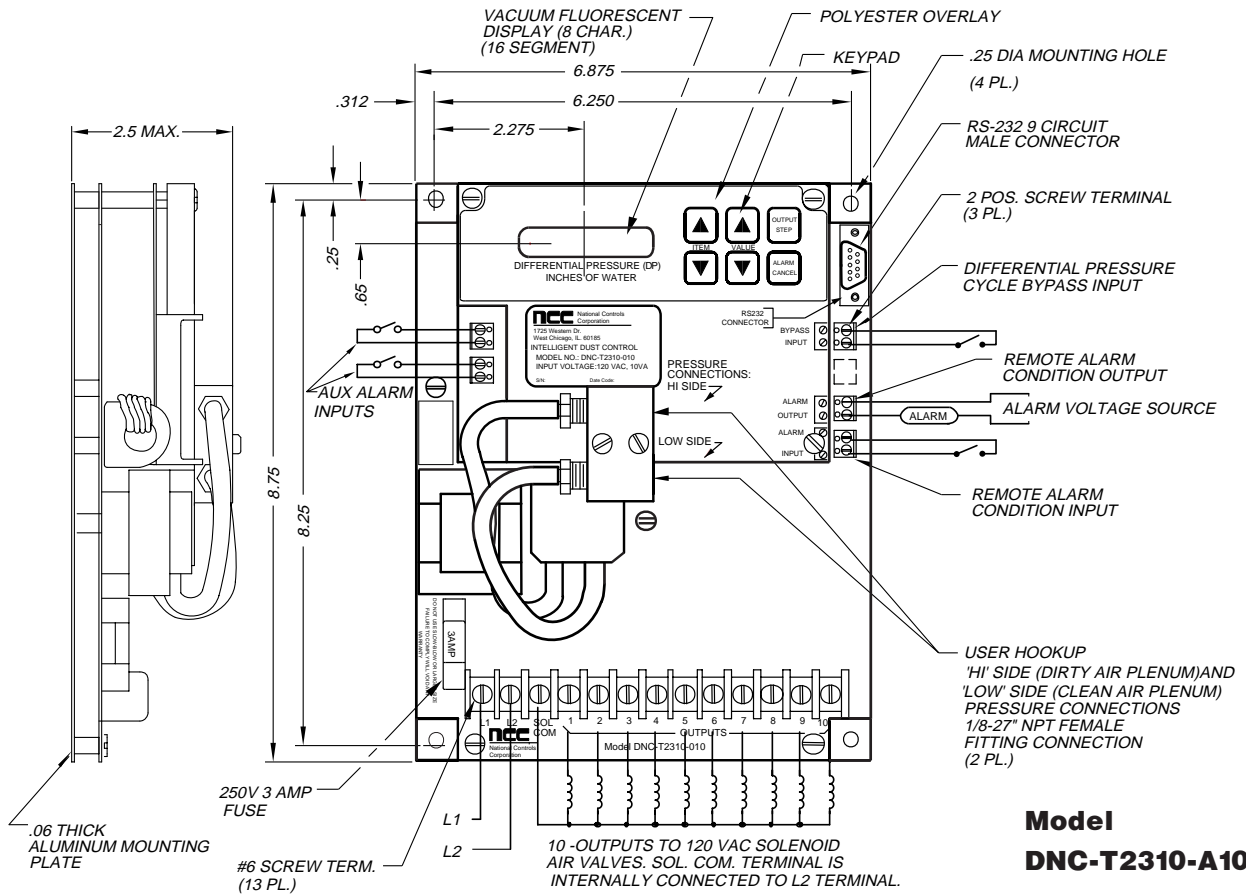
Description	Dimensions	Part Number
NEMA-4 Enclosure - Steel	10" x 8" x 4"	BOX-A1008-CHNF
NEMA-4 Enclosure - Steel	12" x 10" x 5"	BOX-A1210-CHNF
NEMA-4 Window Enclosure - Fiberglass	10" x 8" x 6"	BOX-A1008-CHSC
NEMA-4 Window Enclosure - Fiberglass	12" x 10" x 6"	BOX-A1210-CHSC
Pulse Width Meter	6.5" x 2.7" x 1"	TNC-PM360-010
Pilot Lamp	NEMA-4 Rated Red Light	ASL-00RED-NEMA-4
On/Off Switch	NEMA-4 Rated w Legend Plate	MSW-0DPST-001

National Controls Corporation offers NEMA-4 type enclosures for mounting our controls. These enclosures are made of heavy gauge steel or fiberglass and have a continuous hinge cover. All seams are continuously welded. The finish is gray hammer-tone enamel inside and out, over phosphatized surfaces for steel units, smooth gray finish for fiberglass units.

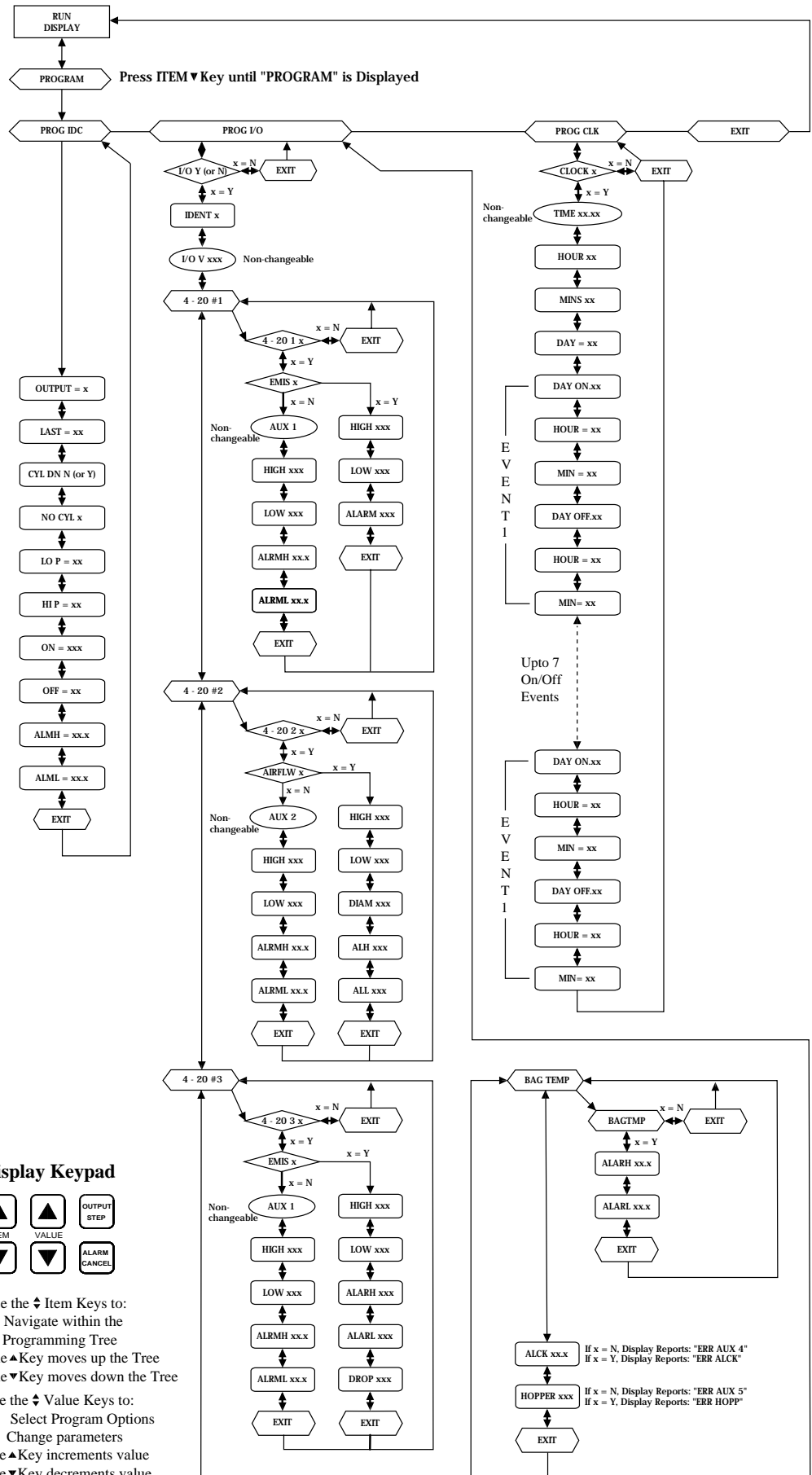
Note In order to keep abreast of the latest technology National Controls Corporation reserves the right to change components and/or design of controls without notice.

Dust Collector Controls

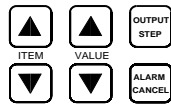
NCC
National Controls Corporation
 Phone **800-323-2593**
630-231-5900
 Fax **630-231-1377**
 Internet www.natcon.com



IDC Programming Tree



Display Keypad



Use the \updownarrow Item Keys to:
 1) Navigate within the Programming Tree
 The \uparrow Key moves up the Tree
 The \downarrow Key moves down the Tree

Use the $\leftarrow \rightarrow$ Value Keys to:
 1) Select Program Options
 2) Change parameters
 The \rightarrow Key increments value
 The \leftarrow Key decrements value