

SYNERGY NANO 3

Designed Specifically For Environmental Test Chambers



Maximize the capabilities of your environmental chambers.

A four channel 1/4 DIN process controller and data logger, Tidal's Synergy Nano 3 controller is engineered to offer all the features needed to maximize the capabilities of your environmental chambers and process ovens in a 1/4 DIN package. Designed to take complete command of the chamber's conditioning systems, its algorithms automatically select heating/cooling modes as required, and totally control programming of temperature, vibration, altitude and humidity versus time. It moreover allows users to program up to nine custom event outputs for special applications and optional features.

Delivering results, the Synergy Nano 3 is a fully functional data logger supporting all controller process inputs and control variables. Process inputs include RTD, thermocouples, voltage, current and up to 64 optional T-Type Thermocouples. Running the Windows™ Embedded operating system, this controller offers RS-232, Ethernet, CAN Bus, and GPIB communications capabilities for built in remote control/monitoring, chart printing, email alerts, and cloud data storage.

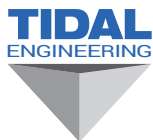
NXP POWERED BY
i.MX 7

NXP® i.MX 7 processor update in the third generation Synergy Nano 3 Controller makes the system very responsive and provide the computing resources to support current and future features and functionality like Cloud connectivity, TPM and Internet based remote control.

The Synergy Controller family, including the Synergy Nano 3, equips the engineers and organizations that operate, maintain, and manufacture environmental test chambers and process ovens with the product range and the support they need to optimize their equipment and processes. Synergy Controller programming and configurations are designed for backward compatibility and obsolescence management.



The Synergy Nano 3 is part of a family of controllers that share common software and UI and can be applied across a wide range of applications.



TIDAL ENGINEERING CORPORATION
2 Emery Avenue, Randolph, NJ 07869
973.328.1173 • info@tidaleng.com

Headquartered in Randolph, NJ, Tidal Engineering Corp. has been designing and building award-winning embedded hardware and software for environmental test and measurement and data acquisition applications since 1992. **Learn more at www.TidalEng.com**

Channels (4)

- Process Variables: Temperature, Humidity, Altitude, Pressure, Vibration, and Light

LCD

- LCD Type: Color, 320 x 240 TFT
- Backlight: LED
- Touch Screen Type: Resistive

Operating System and Processor

- Windows® Embedded Compact 2013
- NXP® i.MX 7 Dual Arm Cortex™-A7, 1 GHz

Storage

- 1 GB Removable SD Flash Memory
- Removable USB Flash Disk
- 512MB DDR2 (32 Bit)

Communications

- 10/100 BaseT Ethernet
 - E-mail, Telnet, FTP, and WebTouch™
- RS-232 Communications
- IEEE 488 (Optional, P/N TE1588)

USB Host (1), USB Device (1)

- USB Flash Memory for program & log files
- USB Mouse, Keyboard, Barcode scanner

Programming

- Windows-friendly program file names
- Step Types:
 - Set Point, Jump Loop, Auto Start, Hold, Pause, and Stop
- Program Storage:
 - Only limited by onboard storage
- Software Features:
 - Real Time clock with battery backup
 - Automatic resume after power failure
 - Software configurable chamber type

Universal Inputs (2)

- RTD
 - Temp. Range: -200° C to 630° C
 - Accuracy: +/- 0.05 Ohms
 - 100 or 500 Ohm Pt., JIS or DIN
- Thermocouple
 - T/C Accuracy: +/- 1° C
 - Types E, B, J, K, R, S, and T
- Process Current
 - Resolution: 16 Bits, 4-20 mA, +/- 0.05%

Process Voltage Inputs (2)

- Resolution: 16 Bits, 0-5 VDC, +/- 0.05%

Virtual Sensors

- Wet Bulb-Dry Bulb Humidity Sensing
- Vaisala HMM30C Humidity Sensor
- Multi-Sensor, Min., Max., Average
- Pressure (Torr) to Altitude (Kft)

Analog Outputs (2)

- Resolution: 12 Bits
- Range 0-5 VDC, +/- 5mV
- Range 0-10 VDC, +/- 10mV (Optional TE1803)
- Range 4-20 mA, +/- 0.1% (Optional TE1803)
- Analog Output Functions:
 - All control variables including SP, PV, PID.

Main Outputs (6)

- DC Outputs: Model TE1858-31
 - 0 to 24 VDC max., 50 mA, Open Collector
- Relay Outputs: Model TE1858-32
 - Contact Rating: 1.5 A, 250 VAC
- SSR Outputs: Model TE1858-33
 - Contact Rating: 1 A, 250 VAC

Auxiliary Outputs (6)

- 0 to 24 VDC max., 50 mA, Open Collector

Event Outputs (6) Optional

- TE2251-6: Triac Outputs, 3A, 100-240VAC
- TE1708-6: Relay Outputs, 6A, 100-240VAC

Digital Inputs (4) (12 w/TE1858-4)

- Ground: TRUE, Open Circuit: FALSE
- Voltage Range: -0.5 to +5.5 VDC

Data Logging

- Capacity: 100 MB/file
- Interval: 1 Second to 60 Minutes
- Data:
 - Process Variables
 - Process Setpoints
 - PID Variables
 - PID Constants
 - UUT T-Type Thermocouples

Alarm Types

- Temp-Guard Fail-Safe Monitor
- Low Program/Storage Memory
- Low Storage Card Memory
- Open Sensor
- High/Low Process Limit
- High/Low Deviation Limit
- User Programmable Alarms

Compliance

- Touch Safe Terminals
- IP-65 and Nema 4X

Power Requirements

- 100 to 240 VAC, 47 to 63 Hz
- 10 Watts

Warranty

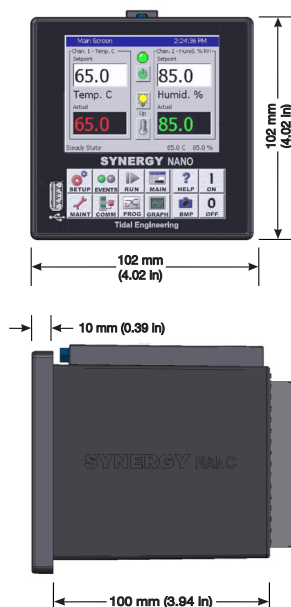
- 3 Year Limited Warranty

Operating Conditions

- Temperature: 10° C to 30° C
- Humidity: 0 to 90% RH, non-condensing

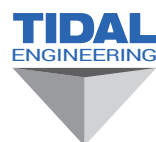
Size and Weight

- 3.78" W x 3.78" H x 3.94" D, 1.5 lbs.



Synergy Nano 3 Controller Part Numbers:

- TE1858-31: Synergy Nano 3 w/DC Outputs
- TE1858-32: Synergy Nano 3 w/Relay Outputs
- TE1858-33: Synergy Nano 3 w/SSR Outputs
- TE2503: Synergy Nano 3 Upgrade Kit (From Nano 2)
- TE1299-16: Synergy UUT Thermocouple Monitor
- TE1499-16: Synergy Current Monitor
- TE2251-6: Triac Output Board, 6-Channel
- TE2551-12S: Super Switching, 12-Channel
- TE1708-6: Relay Output Board, 6-Channel
- TE1865: Synergy LabVIEW Driver
- TE1588: Synergy 488 GPIB option
- TE1566-1: Synergy Lab Manager Software
- TE2367-6: Synergy CAN Bus Adapter
- TE2013: Synergy Pressure Altitude Feature
- TE2042: Synergy Cascade Control Feature
- TE2271: Synergy Premium Connectivity Subscription
 - TE1567: Synergy WebTouch Remote
 - TE2175: Synergy Printer & WebChart
 - TE2176: Synergy Server
 - TE2177: Synergy Network Share
 - TE2373: Modbus TCP Server



TIDAL ENGINEERING CORPORATION
2 Emery Avenue, Randolph, NJ 07869
973.328.1173 • info@tidaleng.com

*"We share success stories
and product highlights
at TidalEng.com"*

SYNERGY MAN & KID RETRO

