Synergy Quattro Input Expansion Option

Introduction

Tidal Engineering's Synergy® Controller is a family of process control systems designed to drop into virtually any environmental test chamber and provide state-of-the-art usability and operating efficiency.

Synergy Quattro Controller features includes:
- Color touch screen
- Ethernet and RS-232 communications. (GPIB is optional)
- Built in 100 MB Data logger
- Data Acquisition, Up to 64 T-type thermocouples (Optional)
- Built in Web Server for remote control
- E-mail Alarms and test data
- Network printing and PDF charts (Optional)
- Compatible with Synergy Manager Software
- Built in USB port compatible with USB Disk drives for data logging and program transfer.
- Expansion Modules available for SSRs, Input Expansion, Output Expansion

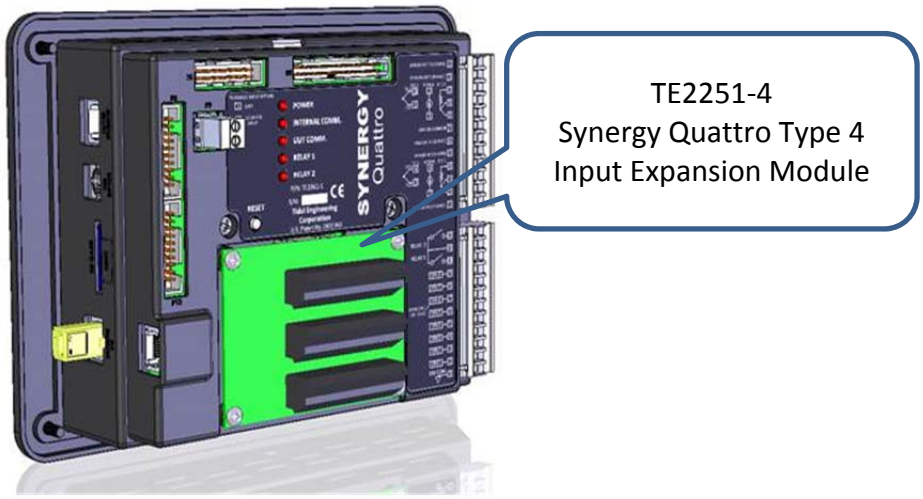
This Synergy application note covers the Synergy Quattro Input Expansion Module, P/N TE2251-4.

- Eight 10-Bit, 0-5 Volts Analog Inputs
- Eight Digital Inputs
- Eight Open Collector Digital Outputs

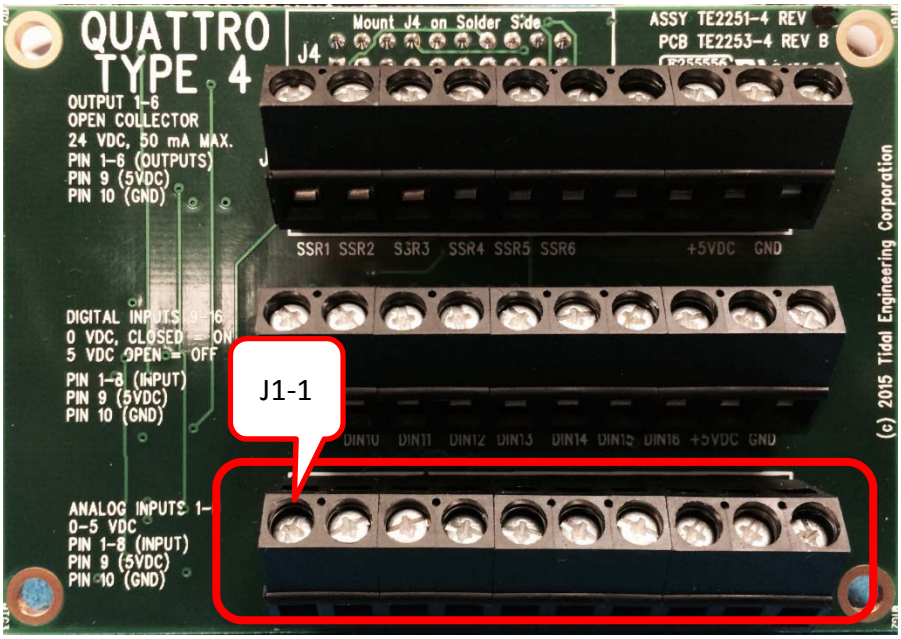
The Analog Inputs are typically used for pressure transducers to monitor the refrigeration system.

The Digital Inputs are available for User applications and for complex test chambers. With this expansion, module, the Synergy Quattro can accommodate 16 Digital Inputs.

Mount the Synergy Quattro Type 4 Expansion module to the controller with the supplied screws.

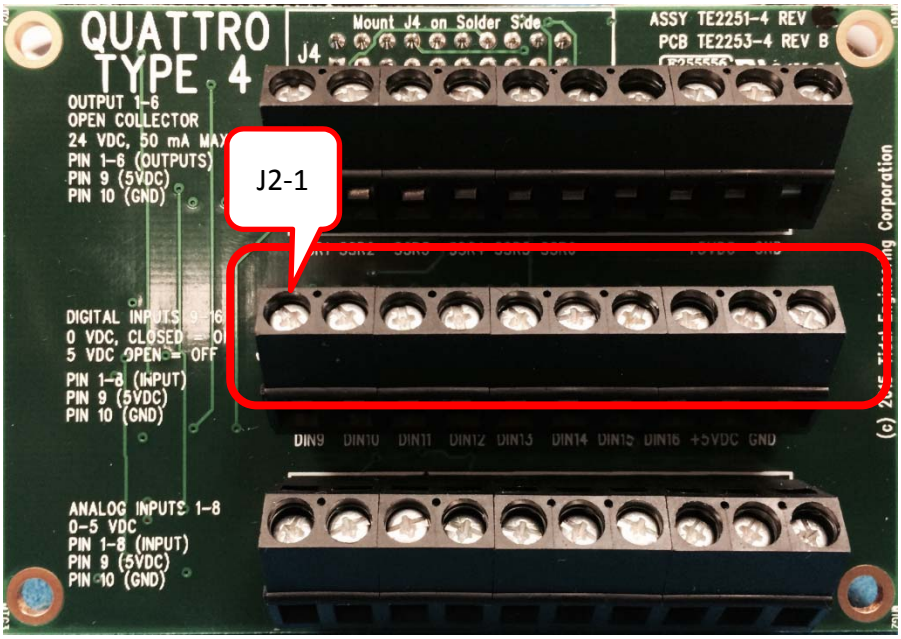


Low Resolution Analog Inputs



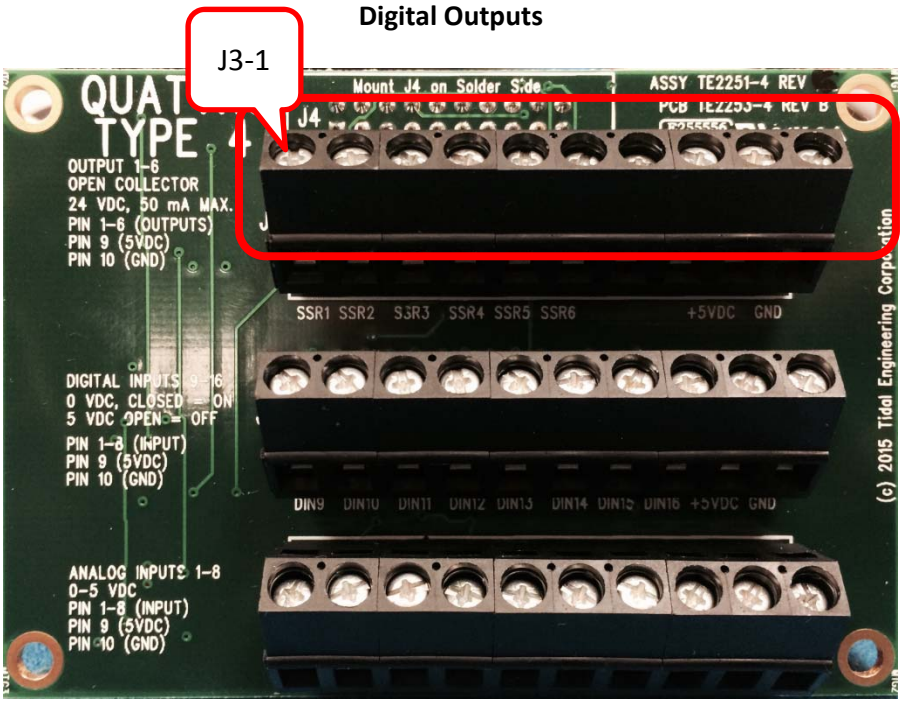
J1 Terminal	Signal	Description
J1-1	Low Res Analog 1	0-5 Volts DC, +/- 2 mV
J1-2	Low Res Analog 2	0-5 Volts DC, +/- 2 mV
J1-3	Low Res Analog 3	0-5 Volts DC, +/- 2 mV
J1-4	Low Res Analog 4	0-5 Volts DC, +/- 2 mV
J1-5	Low Res Analog 5	0-5 Volts DC, +/- 2 mV
J1-1	Low Res Analog 6	0-5 Volts DC, +/- 2 mV
J1-7	Low Res Analog 7	0-5 Volts DC, +/- 2 mV
J1-8	Low Res Analog 8	0-5 Volts DC, +/- 2 mV
J1-9	Common	Common
J1-10	+5 VDC	100 mA available to power sensors.

Digital Inputs



J2 Terminal	Signal	Description
J2-1	Digital Input 9	Contact Closure, 0-5 Volts DC
J2-2	Digital Input 10	Contact Closure, 0-5 Volts DC
J2-3	Digital Input 11	Contact Closure, 0-5 Volts DC
J2-4	Digital Input 12	Contact Closure, 0-5 Volts DC
J2-5	Digital Input 13	Contact Closure, 0-5 Volts DC
J2-6	Digital Input 14	Contact Closure, 0-5 Volts DC
J2-7	Digital Input 15	Contact Closure, 0-5 Volts DC
J2-8	Digital Input 16	Contact Closure, 0-5 Volts DC
J2-9	Common	Common
J2-10	+5 VDC	100 mA available to power sensors.

Digital Outputs



J3 Terminal	Signal	Description
J3-1	Digital Output 1	Open Collector, 24 VDC Max, 50 mA Max.
J3-2	Digital Output 2	Open Collector, 24 VDC Max, 50 mA Max.
J3-3	Digital Output 3	Open Collector, 24 VDC Max, 50 mA Max.
J3-4	Digital Output 4	Open Collector, 24 VDC Max, 50 mA Max.
J3-5	Digital Output 5	Open Collector, 24 VDC Max, 50 mA Max.
J3-6	Digital Output 6	Open Collector, 24 VDC Max, 50 mA Max.
J3-7	Not Used	
J3-8	Not Used	
J3-9	Common	Common
J3-10	+5 VDC	100 mA available to power sensors.

Appendix A Reference Materials

Download the Synergy Quattro data sheet, technical manual, and installation guide here:
http://www.tidaleng.com/datasheets/Synergy_Nano_data_sheet_0945_web.pdf
http://www.tidaleng.com/Synergy_Nano_Technical_Manual_Rev_A08.pdf
http://www.tidaleng.com/techmans/TE2258_REV_A_Synergy_Nano_Installation_Manual.pdf

You can access our YouTube channel to see some of the unique features and benefits of our controllers here: https://www.youtube.com/channel/UCxJF1O5aUDzcpdlCCoCKh6w

The application notes on these topics can be accessed using the links below.

AppNote 1 - Replacing a VersaTenn III Controller
AppNote 2 - Synergy Controller Data Logging Capacity Calculations
AppNote 3 - Retrofitting a Qualmark HALT/HASS Chamber :
AppNote 4 - Configuring the Synergy Controller to Read from a Bar Code scanner :
AppNote 5 - Synergy Controller vs. VersaTenn III :
AppNote 7 - Synergy Controller WebTouch Remote Feature
AppNote 8 - Using SimpleComm application to communicate with the Synergy Controller
AppNote 10 - Synergy Controller Retransmit Signal Conditioner :
AppNote 20 - Using the TE1908 Single Channel Thermocouple Signal Conditioner.
AppNote 25 - Using the Synergy Controller with Space Chamber applications.
AppNote 26 - Using the programmable User Alarms with the Synergy Controller.
AppNote 40 - Two Point Calibration.
AppNote 45 - Using the Synergy Controller's ftp server.
AppNote 49 - Synergy Controller Security Enhancements.
AppNote 56 - Using the Synergy Controller Watchdog Timers.
AppNote 58 - Synergy Controller Wet-Bulb/Dry-Bulb Humidity Measurements.
AppNote 59 - Synergy Controller Wireless Network Setup.
AppNote 60 - Graphing Synergy Log Files in Microsoft Excel.
AppNote 67 - Synergy Controller Mounting Options.
AppNote 71 - Synergy Controller PWM Retransmit Feature
AppNote 72 - Synergy Controller Thermocouple Data Acquisition with Synergy UUT Modules
AppNote 74 - Synergy Controller LED Backlight Retrofit Kit
AppNote 77 - Synergy Controller Remote Start/Stop Feature
AppNote 84 - Synergy Controller E-Mail Feature
AppNote 85 - Synergy Controller Logging Features and Applications
AppNote 89 - Synergy Controller Loop-Back Setup
AppNote 90 - Synergy Controller Network Printing Feature
AppNote 91 - Synergy Controller Built-In Alarms
AppNote 95 - Synergy Controller Kft and other Pressure Display
AppNote 96 - Synergy Controller Analog Retransmit Applications
AppNote 99 - Synergy Server Feature
AppNote 102 - Synergy Certified OEM and Installer Training
AppNote 106 - Synergy Controller Cascade Loop (Part Temperature) Control Feature
AppNote 107 - Synergy Controller Programming with Python
AppNote 109 - Synergy488 Kit Setup for Synergy Nano and Synergy Quattro GPIB
AppNote 112 - General Purpose Logic Programming for OEMS and Integrators
AppNote 113 - Main Screen Display Setup Options
AppNote 116 - Synergy Controller Pressure Applications
AppNote 117 - Synergy Controller Help System Video QR Codes.
AppNote 121- Synergy_Controller_Ramp_Rate_Control

About the Synergy Controller Family
Tidal Engineering's Synergy Controllers; the Synergy Micro 2, Synergy Quattro, and the ¼ DIN Synergy Nano provide state-of-the-art usability and connectivity for environmental test control and data acquisition and combine the functions of a chamber controller and a data logger and are designed to improve test efficiency by supporting both factory automation and test and measurement protocols and standards.

Synergy Controller feature highlights includes:

- ➔ Color touch screen
- ➔ Ethernet, RS-232 and GPIB communications
- ➔ Built in 100 MB Data logger with USB drive support
- ➔ Data Acquisition, up to 64 T-type thermocouples (Optional)
- ➔ Built-in Web Server for remote control; WebTouch Remote ™
- ➔ Compatible with Synergy Manager for PC based control, monitoring and programming.
- ➔ Built-in FTP Server for factory automation and test and measurement applications

For more information regarding these controllers please visit http://www.tidaleng.com/synergy.htm

About Tidal Engineering
Headquartered in Randolph, NJ, Tidal Engineering Corporation has been designing and building award-winning embedded hardware and software for test and measurement and data acquisition applications since 1992. The company is recognized for technical expertise in such areas as Embedded IEEE 488, and turnkey SCADA (Supervisory Control and Data Acquisition) systems.

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