

Application Note:

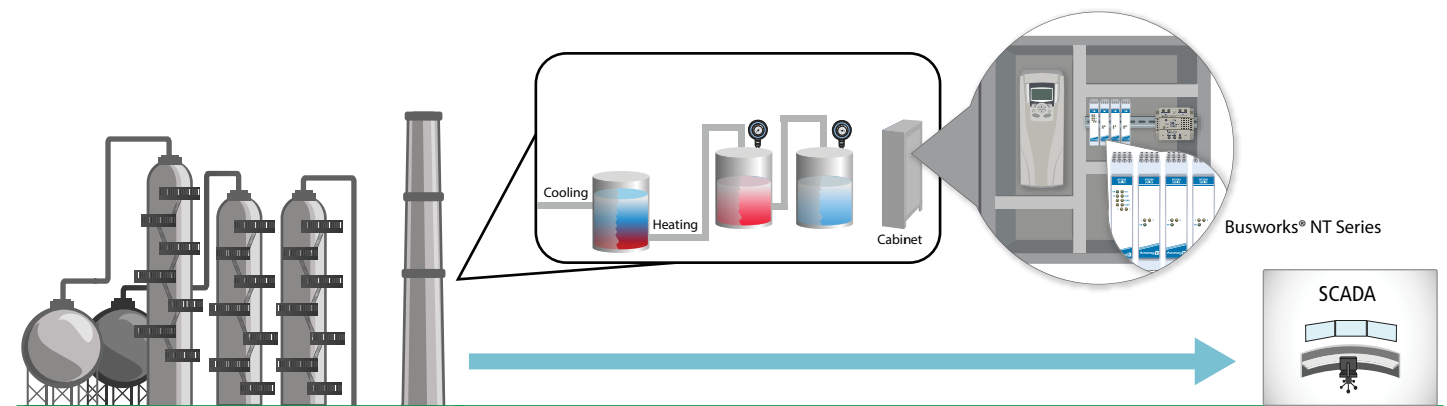
How to Measure Temperature with a High-density Ethernet I/O Solution

Defining the Problem:

Along with monitoring points for pressure, level and flow, a chemical manufacturer has up to 500 temperature measurement points, both thermocouple and RTD, scattered throughout their process. Running and maintaining twisted-pair wire for them all is too expensive both initially and in the long term so an ethernet solution is preferred. Another factor is that their SCADA system license fee is determined by the number of IP addresses on their network. With remote I/O temperature units averaging four to six channels each this could also be a costly solution.

System Requirements:

Their Honeywell Experion® SCADA system utilizes Modbus® TCP/IP protocol. The remote I/O will need to be a Modbus server that can accept a mix of thermocouple and RTD signals. Higher channel density is preferred.



Implementing the Solution:

1. Acromag's BusWorks® NT Series of expandable remote I/O proved to be a good fit for this application. It can be configured in the field for Modbus TCP/IP, Ethernet/IP™ or Profinet® protocols with more coming. A NTE module with two Ethernet ports can be populated with either discrete I/O, analog inputs, analog outputs, thermocouple or RTD.
2. The NT Series benefit is that you can plug in up to three expansion NTX modules of discrete I/O, analog inputs, analog outputs, thermocouple or RTD in any combination. The thermocouple units have eight input channels. The RTD units have four input channels.
3. If at one point of the process you paired one NTE2611-1111 with two NTX2611-0011 and a single NTX2621-0011 you would have 24 thermocouple channels and 4 RTD channels on a single IP address.

Notes:

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Why Acromag:

The BusWorks® NT series has built-in web pages for easy configuration and testing without having to buy extra hardware and software. The flexibility to add on expansion units of any type of I/O allows a unique solution at each location. It is built for rugged environments of up to 20 g shock, 4 g vibration, extreme temperatures, and UL/cUL Class 1; Div2; and ATEX/IECEx Zone 2 (pending) safety rating. Acromag is a Michigan-based manufacturer that has been in business for over 60 years. All Acromag products are manufactured in the USA.

Featured Products:

- [NTE2611-1111](#) Ethernet I/O module with dual RJ45 ports, 8 thermocouple/mV inputs and 2 discrete I/O
- [NTX2611-0011](#) Expansion I/O module with 8 thermocouple/mV inputs and 2 discrete I/O
- [NTX2621-0011](#) Expansion I/O module with 4 RTD/resistance inputs and 2 discrete sinking I/O.

[Get more information on Acromag's NT Series here.](#)