Air Handling Unit Controller
US5182

Contents

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Introduction

Congratulations on choosing the TCS US5182 Air Handling Unit Controller! The US5182 is a sophisticated, multi-function HVAC controller for air systems which provides numerous configuration choices.

This manual includes all the information necessary to properly install and wire your US5182. It includes a breakdown of the input and output wiring/connections for each type of connection.

After installing the US5182, refer to the US5182 Quick Setup Guide for instructions on the basic setup of the device via the interactive LCD screen. Refer to the US5182 Configuration Guide for instructions on configuring devices commonly connected to this controller.

If you have questions regarding your US5182, do not hesitate to contact TCS Technical Support at 800.288.9383, ext. 2. Our Technical Support Department hours are Monday – Friday, 7:00 a.m. to 7:00 p.m. (CST).

Mounting

Select a location that allows for easy access to the US5182's removable screw terminal blocks and connection ports. Using the four screw holes in the base of the device, mount the US5182 directly to a flat vertical or horizontal surface in an enclosure that is located away from excessive dust, heat, moisture, or direct sunlight.

Communication

The US5182 has three modes of communication: BACnet MS/TP, BACnet IP, and TCSbus. The communication mode is configured through the Start-up Wizard on the control's LCD interface (see the US5182 Quick Setup Guide). The RS-485 port has a three-wire terminal connection for BACnet MS/TP or TCSbus. The Ethernet port provides the BACnet IP protocol which integrates with networked systems.

Device Terminations

The US5182 has a total of six different input/output termination types, which include:

- Six digital inputs
- Six analog inputs
- Two analog voltage inputs
- Six temperature inputs
- Eight digital outputs
- Six analog outputs

The US5182 also includes:

- One RS-485 port
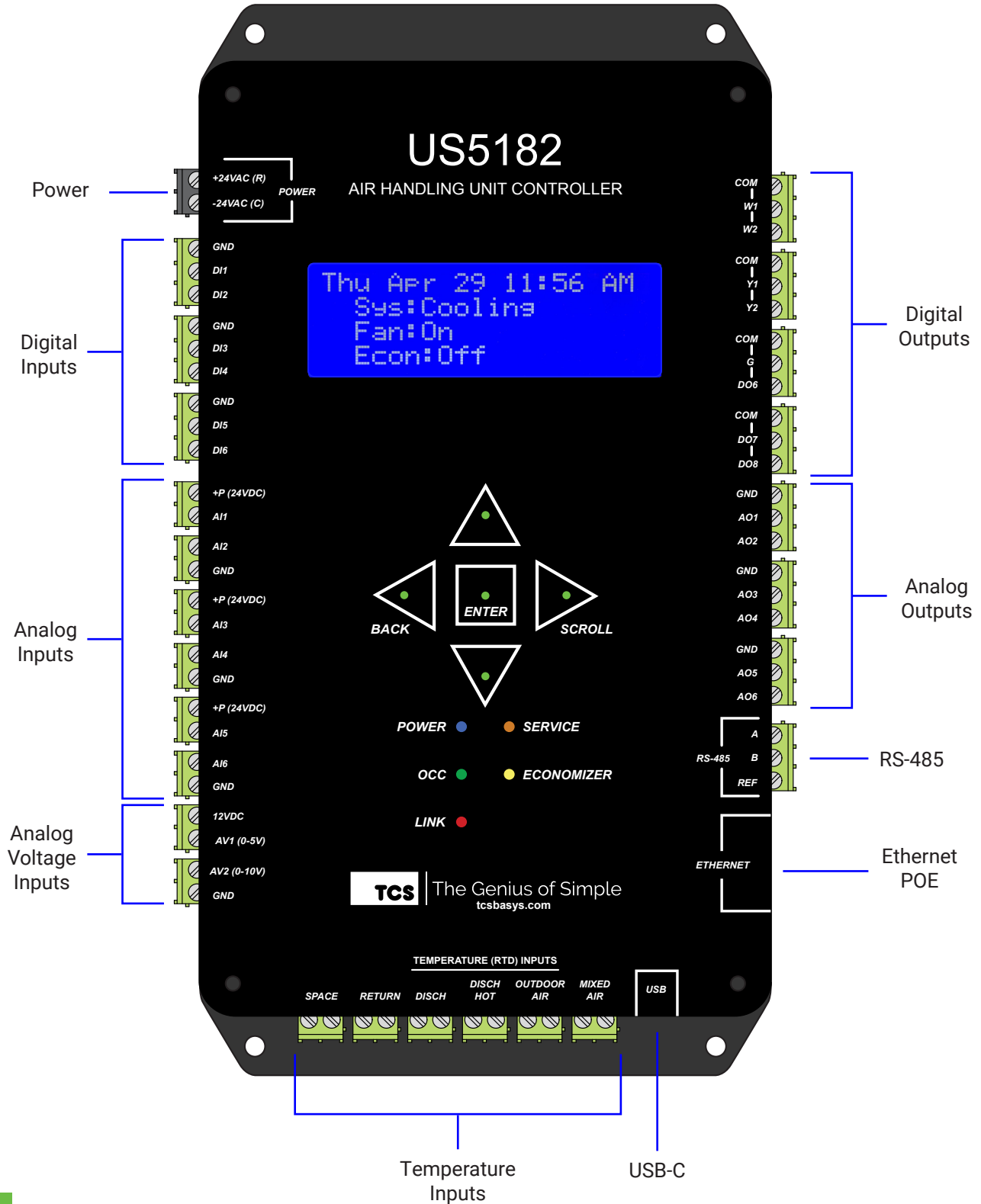- One USB-C port
- One Ethernet port

The US5182 has removable screw terminal blocks that are accessible from the side, making physical connections easier in the field. The device terminations allow for specific configurations, as indicated in this manual. Wiring methods and details are outlined in each section.

Configuration

You can configure the US5182 by connecting it directly to a PC running TCS Insight software or other BACnet software platform via a USB-A to USB-C cable. If the US5182 will be used as a stand-alone device, all configuration should be completed before installation. If the device is to be wired for communications, be sure to identify the US5182 with a unique MS/TP or IP address (see the US5182 Quick Setup Guide).

Installation

US5182 Wiring Connections

Make wiring connections using a small screwdriver. The terminal blocks are removable, which may simplify the installation.


US5182
AIR HANDLING UNIT CONTROLLER

Thu Apr 29 11:56 AM
   Sys:Cooling
   Fan:On
   Econ:Off

Power — +24VAC (R), -24VAC (C), POWER

Digital Inputs — GND, DI1, DI2, GND, DI3, DI4, GND, DI5, DI6

Analog Inputs — +P (24VDC), AI1, AI2, GND, +P (24VDC), AI3, AI4, GND, +P (24VDC), AI5, AI6, GND

Analog Voltage Inputs — 12VDC, AV1 (0-5V), AV2 (0-10V), GND

Digital Outputs — COM, W1, W2, COM, Y1, Y2, COM, G, DO6, COM, DO7, DO8

Analog Outputs — GND, AO1, AO2, GND, AO3, AO4, GND, AO5, AO6

RS-485 — A, B, REF

Ethernet POE — ETHERNET

Temperature Inputs — TEMPERATURE (RTD) INPUTS: SPACE, RETURN, DISCH, DISCH HOT, OUTDOOR AIR, MIXED AIR

USB-C — USB

BACK, ENTER, SCROLL

POWER, SERVICE, OCC, ECONOMIZER, LINK

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Power

The US5182 is powered from a 24 VAC +20/−5% transformer. If wiring for communications, dedicated power must be used to power the device, rather than power from the HVAC equipment. Several TCS controllers may be powered from the same transformer, provided that the transformer has enough power.

Connect the power source using 18AWG two-wire twisted, stranded, shielded, or unshielded wire.

NOTE: Do **not** connect to 120VAC. When multiple TCS devices are using a single transformer, the polarity of the power wiring must be maintained. All TCS devices are half-wave rectified and have common return paths.
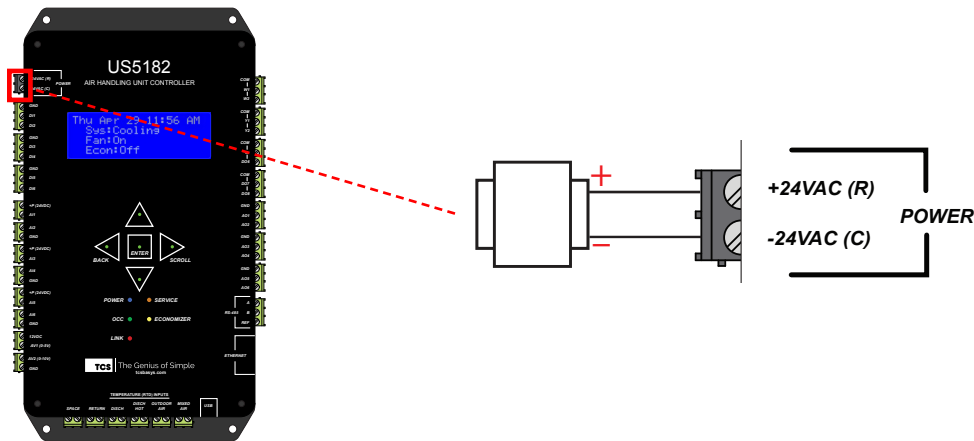

Digital Inputs

Digital inputs are used to receive status signals such as filter status, fan status, etc. Use unpowered dry contacts only with 18AWG two-wire twisted, stranded, shielded, or unshielded wire.
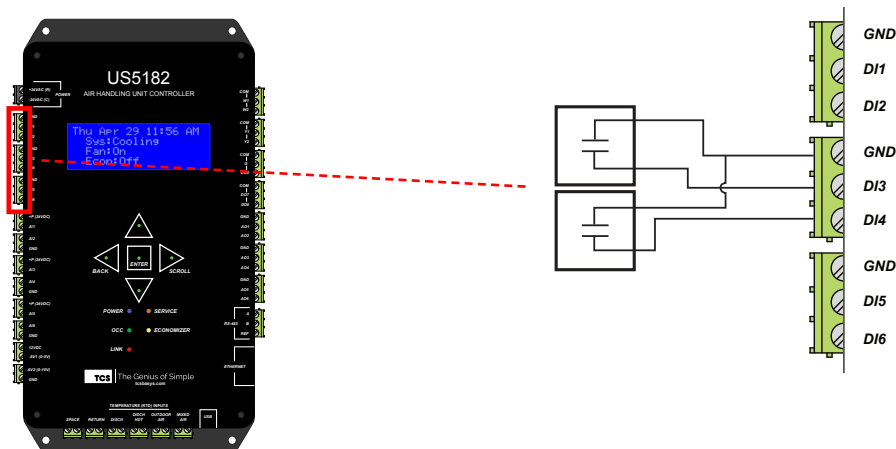
Analog Inputs

Connect 4 – 20mA analog inputs to the US5182 using 18AWG two-wire twisted, stranded, shielded wire. The inputs can be two-wire or self-powered.
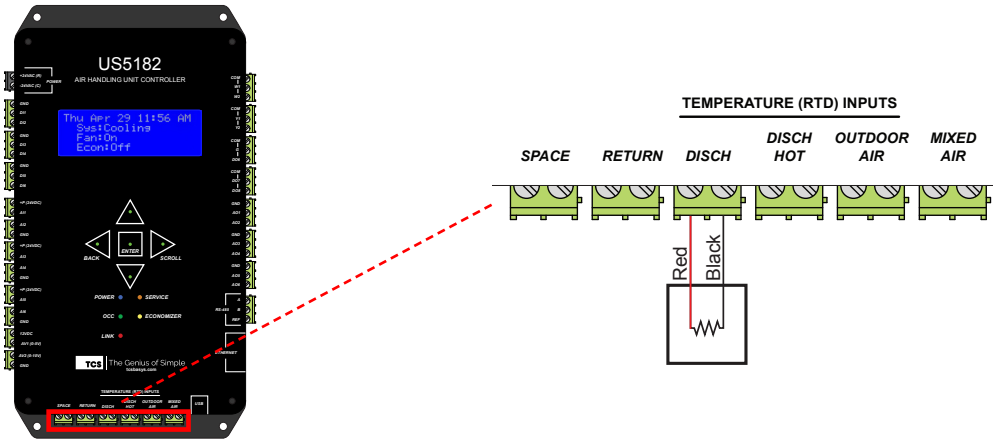

Two-wire 4 – 20mA
Unpowered Inputs

Two-wire 4 – 20mA
Powered Inputs
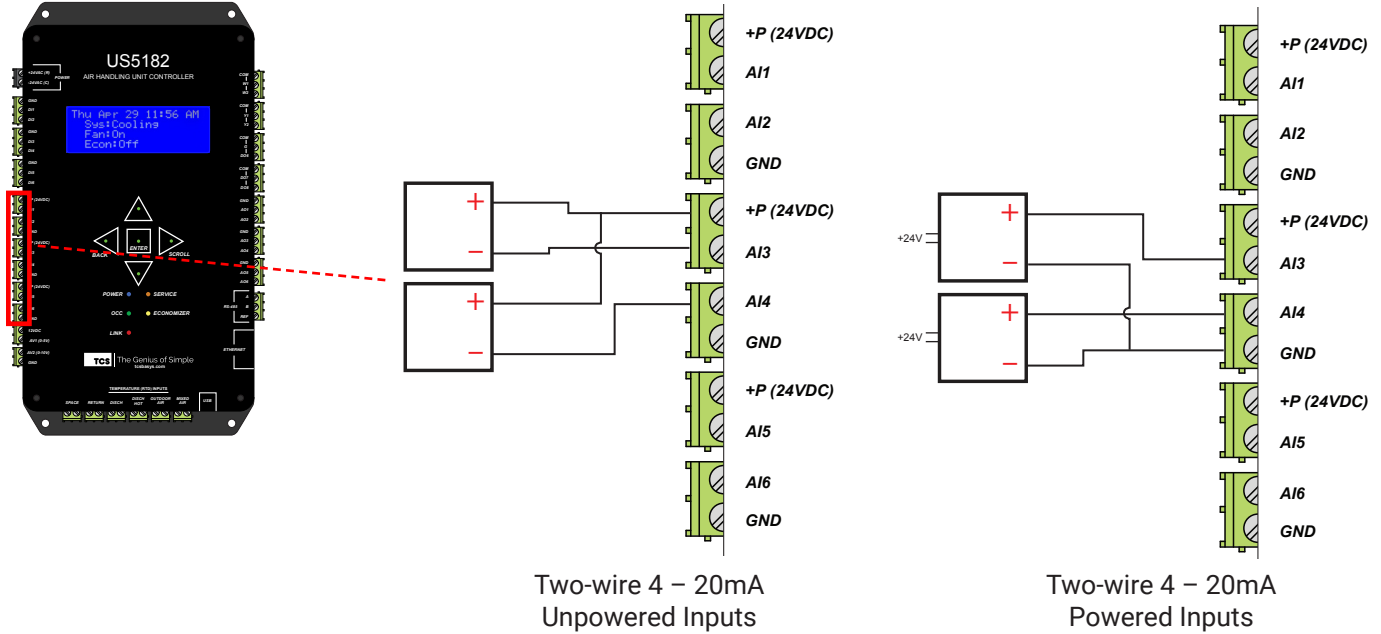
Analog Voltage Inputs

Connect analog voltage inputs using 18AWG two-wire twisted, stranded, shielded wire.

0 – 5VDC Input

0 – 10VDC Input
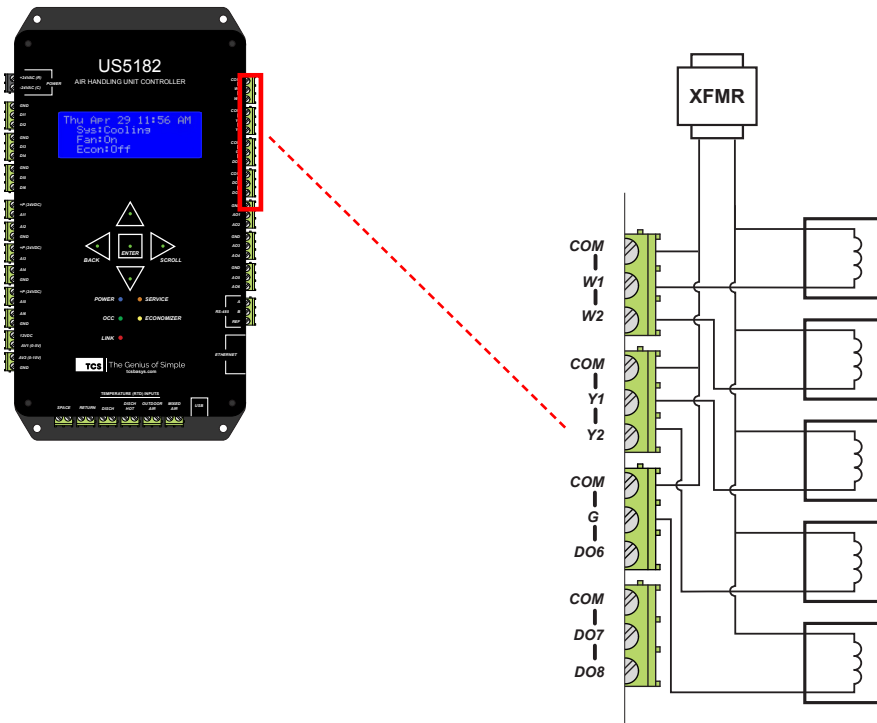
The Genius of Simple
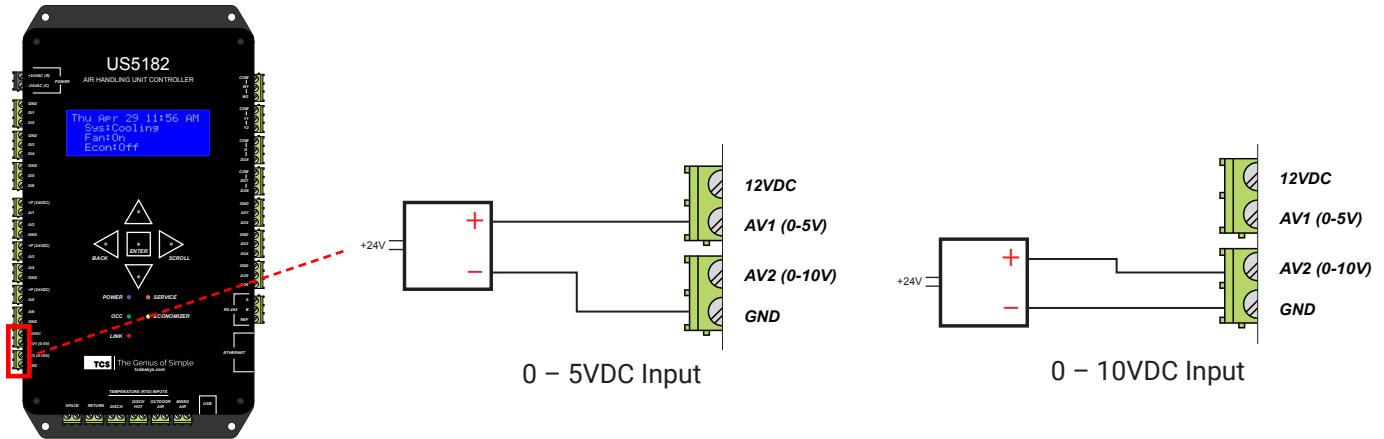
Temperature Inputs

Connect PtRTD 1000Ω temperature inputs using 18AWG two-wire twisted, stranded, shielded wire, maximum 250 ft. length.

Digital Outputs

Connect 24VAC coil relays to these ports. Make connections using 18AWG two-wire twisted, stranded, shielded, or unshielded wire.

Analog Outputs

Connect 4 – 20mA, analog output devices using 18 – 22AWG two-wire twisted, stranded, shielded, or unshielded wire. Connected actuators, motors, or drives must be powered separately from the US5182. If you desire a 2 – 10VDC output, use an included 500Ω resistor.

NOTE: AO5 and AO6 can be configured as voltage or current outputs via Ubiquity Cloud or TCS Insight software.

* = Optional 500Ω Resistor
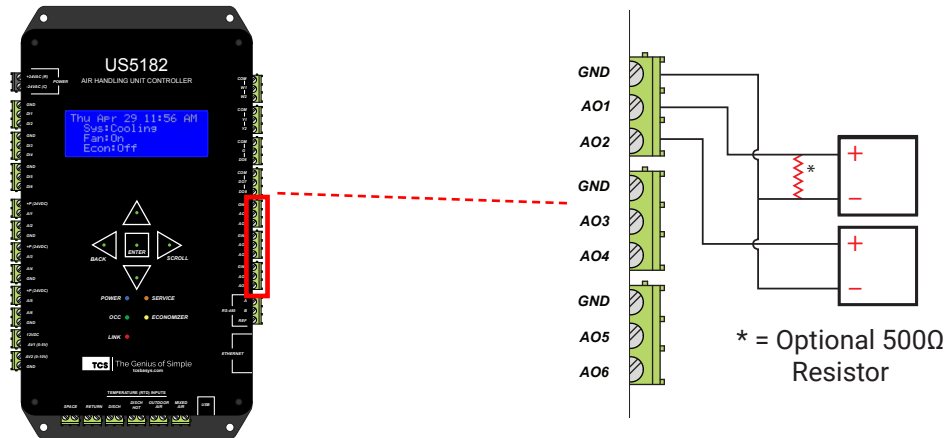
RS-485 Port

For communication wiring, use 22AWG three-wire twisted, stranded, shielded wire. The communication wiring must be installed separately from other wiring whether they are power, sensor, or other communication wiring. This will minimize interference throughout the network.
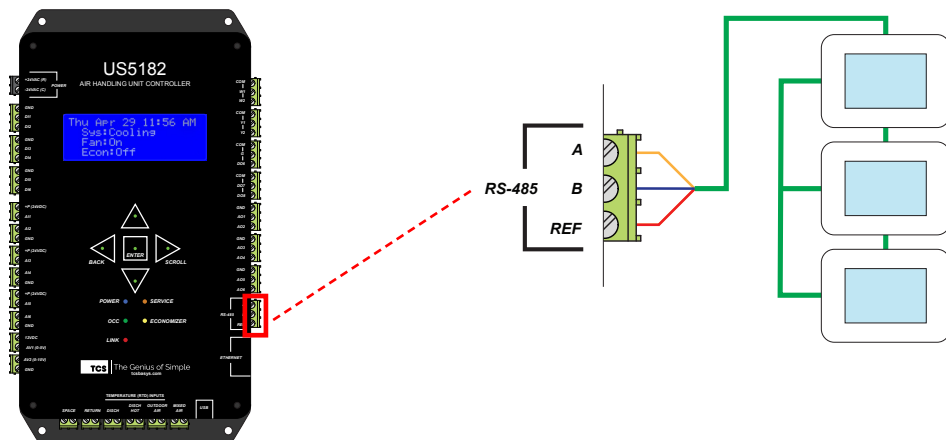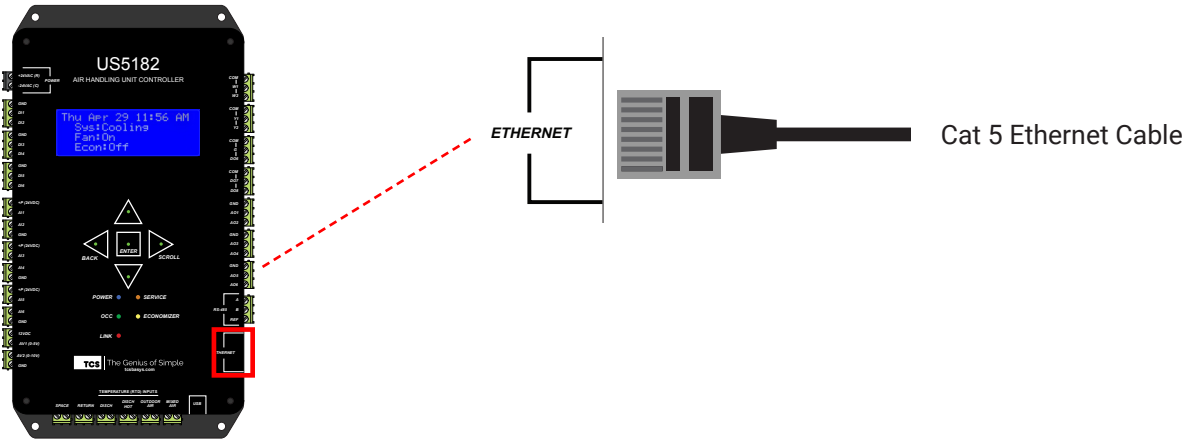
Ethernet Port

The Power Over Ethernet (POE) port can be used to provide power to the device and for LAN communications. Use a Cat 5 or greater cable to make connections.

NOTE: Providing power via the Ethernet port while providing power via the 24VAC Power port will not harm the device.

ETHERNET

Cat 5 Ethernet Cable

USB Port

The USB-C port is used to configure the US5182 via a laptop running TCS Insight configuration software version 2.5.0.7 or later, which can be downloaded from the TCS website. **Earlier versions of Insight will not allow you to configure the US5182**.

Connect a USB-A to USB-C cable (NOT a mini-USB or micro-USB cable) between the US5182 and the PC.

USB

USB-A

USB-C

USB Cable