PENTAIR

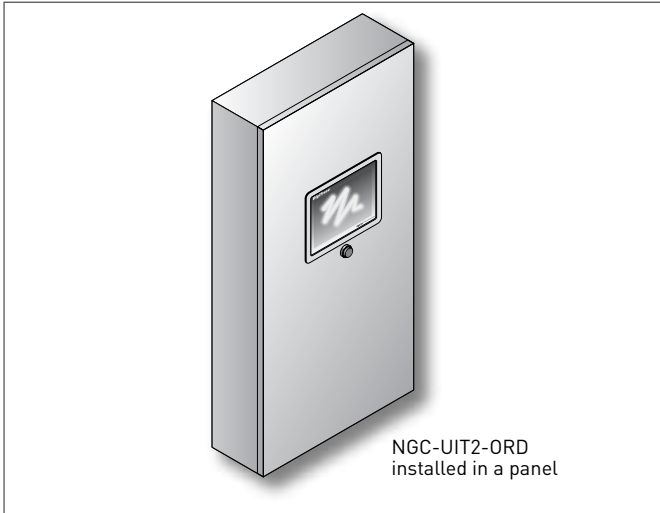## *DigiTrace* NGC-UIT2-ORD
USER INTERFACE TERMINAL FOR DIGITRACE NGC SYSTEMS INSTALLATION INSTRUCTIONS

NGC-UIT2-ORD
installed in a panel

DESCRIPTION

The NGC-UIT2-ORD is a panel mounted display used in conjunction with other DigiTrace control and monitoring devices. The NGC-UIT2-ORD is rated IP 65 (Type 4), and can be mounted indoors or outdoors. The NGC-UIT2-ORD kit includes all hardware required for mounting in a suitable electrical panel. Additional materials are required for electrical connections and are detailed below. These instructions describe how to mount the NGC-UIT2-ORD in an electrical panel and are intended only for personnel experienced in panel construction.

TOOLS REQUIRED

- Masking tape
- Metal file
- In-line torque wrench with 8 mm (5/16 in) socket
- Jig saw (recommend using carbon steel blade with 24TPI)
- #16 (3/16) drill bit

ADDITIONAL MATERIALS (TO BE ORDERED SEPARATELY)

Qty	Description	Manufacturer	Manufacturer Part Number
2	9 pin D-SUB to 10 pin terminal block PCB	Phoenix Contacts	2315162
2	Serial communication cable	L-COM	CSMN9MF-xx xx = Length in ft
3	Alarm relays – 12 Vdc, 12 A, SPDT	Tyco Electronics	RTB14012F
3	Alarm relay sockets	Tyco Electronics	RT78724
1	Push to test alarm light 120 or 230 Vac		

Note: Equivalent parts may be used.

APPROVALS / CERTIFICATIONS

Nonhazardous Locations

ETL
CONFORMS TO UL STD 60950-1
CERTIFIED TO CSA STD C22.2
NO. 60950-1

Intertek
3128486

CE

General

Area of Use	Nonhazardous, indoors or outdoors (IP65, Type 4)
Supply Voltage	9 – 30 Vdc, 3.6 – 1.2 A
Operating Temperature	–30°C to 50°C (–22°F to 122°F)
Min. Storage Temperature	–30°C to 80°C (–22°F to 176°F)
Dimensions	279 mm W X 229 mm H X 70 mm D (11 in. W X 9 in. H X 2.75 in. D)

Alarm Outputs

Transistor open collector outputs	Three open collector outputs, with a range of 5 – 30 Vdc with a max. sink current of 500 mA
Use to drive external relays	Relays may be assigned for alarm outputs.

LCD Display

Display	LCD is a 8.4 in. XGA, color TFT transflective device with integral LED backlight
Touch Screen	5-wire resistive touch screen interface for user entry

Network Connection

Local/ Remote Port	RS-232/RS-485 ports may be used to communicate with host computers (DigiTrace Supervisor Software) or DCS
Local RS-232	A non-isolated, 9 pin D sub male
Remote RS-485 #2	2-wire isolated, 9 pin D sub male
Data Rate	9600 to 57600 baud.
Maximum cable length	For RS-485 not to exceed 1200 m (4000 ft). Cable to be shielded twisted pair.
Field Port	RS-485, 2-wire isolated. Used to communicate with external devices, such as NGC-30-CRM and RMM2. Maximum cable length not to exceed 1200 m (4000 ft). Cable to be shielded twisted pair.
Field RS-485 #1	2-wire isolated, 9 pin D sub male
Data Rate	To 9600 baud
LAN	10/100 Base-T Ethernet port with Link and Activity Status LEDs
USB Ports	USB 2.0 Host port Type A receptacle (X2)

⚠ WARNING:

FIRE HAZARD: The NGC-UIT2-ORD must not be used in hazardous locations. Electrical components within the unit could ignite flammable gases. Do not install the unit where it may be exposed to flammable gases.

⚠ IMPORTANT:

The NGC-UIT2-ORD is an electronic unit. During installation, take the following precautions to avoid damage to its electronic components.

- Handle with care to avoid mechanical damage.
- Keep electronics dry.
- Avoid exposure to static electricity.
- Avoid contamination with metal filings, liquids, or other foreign matter.
- Take care to protect the user interface board on the enclosure door.
- Use agency-approved conduit bushings, adapters, and cable glands to keep the enclosure protected from dust and fluids.

KIT CONTENTS

Qty	Description
1	NGC-UIT2-ORD
12	6/32 in Kep nuts (locking nuts)
1	5-ft 9-pin RS-232 (Null Modem) cable

**Provide Suitable Panel Enclosure, and Determine Locations for NGC-UIT2-ORD Assembly in Panel**

1. **Provide suitable panel enclosure**

   To protect its electronic components, the NGC-UIT2-ORD must be mounted in a non-hazardous location panel with a minimum IP32 (Type 1) enclosure. An IP52 (Type 12) or better enclosure is recommended. The NGC-UIT2-ORD assembly comes with a sealing gasket and hardware to mount the enclosure.

   Note: The DigiTrace NGC-UIT2-ORD is designed for operation in ambient temperatures from –30°C to 70°C (–22°F to 158°F). If the ambient temperature is outside this range, a space heater and/or cooling fan will be required in the panel.

2. **Determine locations for the NGC-UIT2-ORD assembly in the electrical panel**

   The NGC-UIT2-ORD should be located on the front of the panel near eye level (for convenient viewing). The NGC-UIT2-ORD assembly is an electronic unit and must not be located where it will be exposed to strong magnetic fields or excessive vibration.
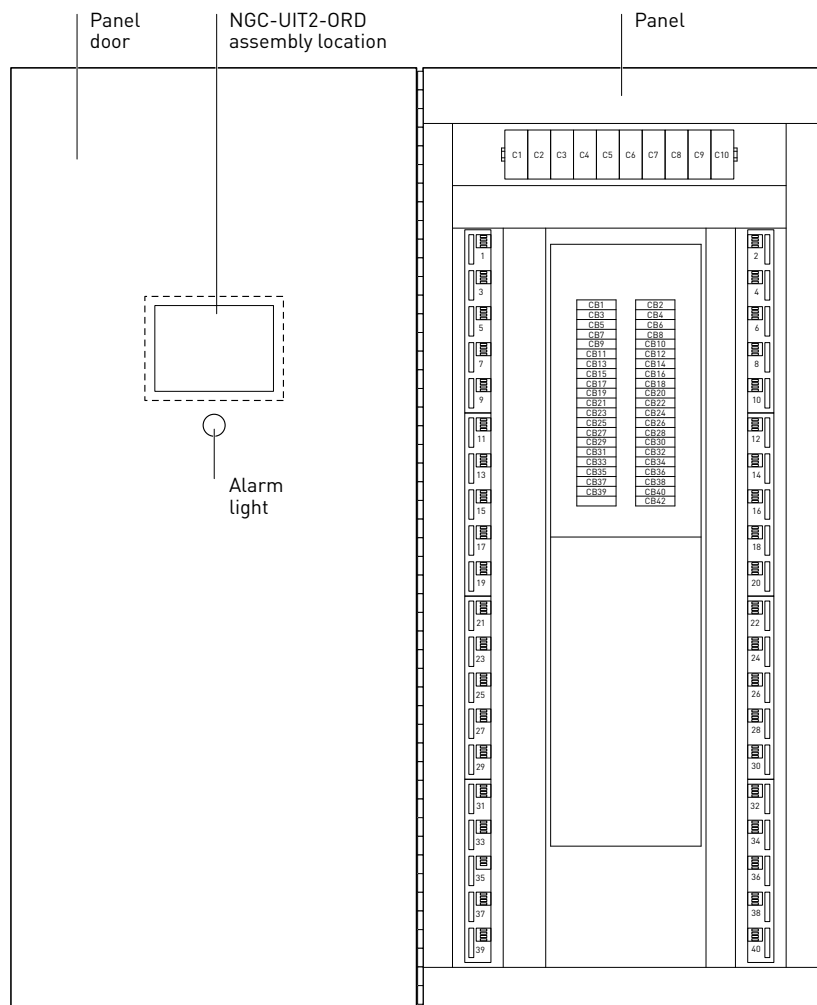
Cut Opening and Mount NGC–UIT2-ORD on Front of Panel

1. **Locate the NGC-UIT2-ORD on front of panel**

   Locate the NGC-UIT2-ORD assembly on the front of the panel at a level convenient for viewing. Make sure the cover on the back of the assembly will not interfere with existing panel hardware.
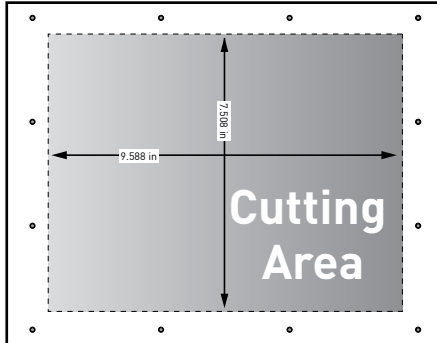
   Note: Cutting the opening for the display is a craft sensitive procedure; if it is not done correctly, the panel door can be damaged. The procedure for laying out and cutting the opening for the display must be undertaken with care, and by personnel qualified and experienced in panel construction.

2. **Prepare and mark the position of the display opening and mounting holes**
   - Use the cut-out directions to lay out the opening for the NGC-UIT2-ORD display.
   - Apply two layers of masking tape around the outer perimeter of the intended opening to prevent scratching the panel surface with the jigsaw.

3. **Cut the display opening**

   Cut the opening for the NGC-UIT2-ORD with a jigsaw using a 24 TPI blade. Take care not to damage the panel door. Remove all rough edges and burrs with a metal file before proceeding.

4. **Drill the mounting holes**

   Drill the 12 holes with a #16 (3/16 in) drill bit to mount the NGC-UIT2-ORD assembly in the panel.

   Note: The following steps are most easily accomplished if the panel door is on a horizontal surface.

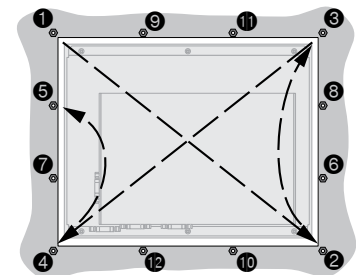5. **Mount the user interface assembly onto the panel door**
   - Place the NGC-UIT2-ORD assembly in position; the twelve studs go through the twelve holes on the NGC-UIT2-ORD assembly mounting plate (see figure below).
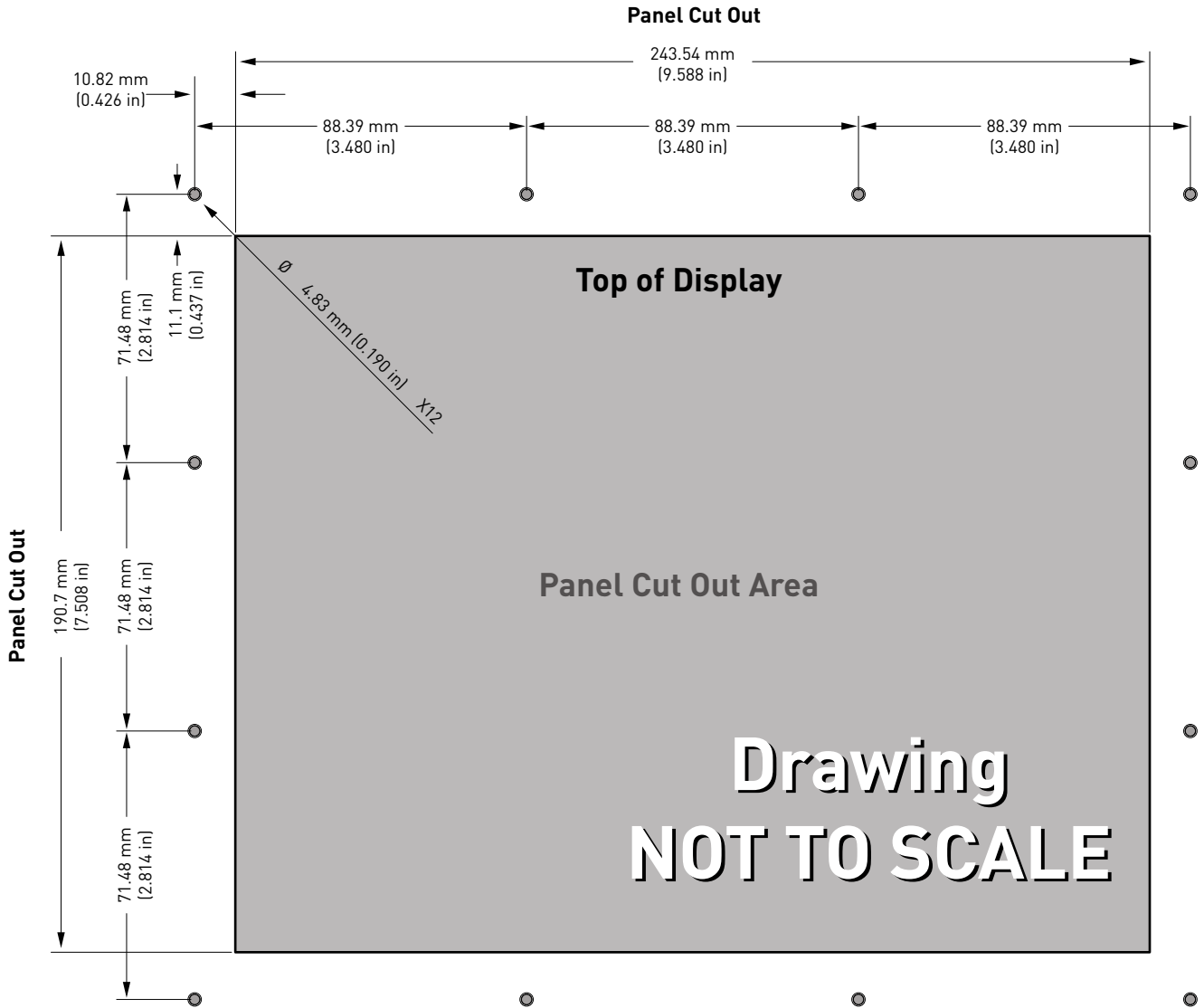

Panel door

NGC-UIT2-ORD display with sealing gasket

NGC-UIT2-ORD display

Inside of panel door
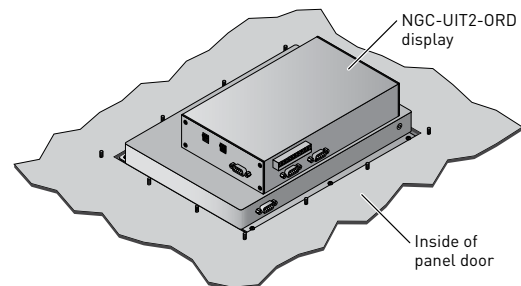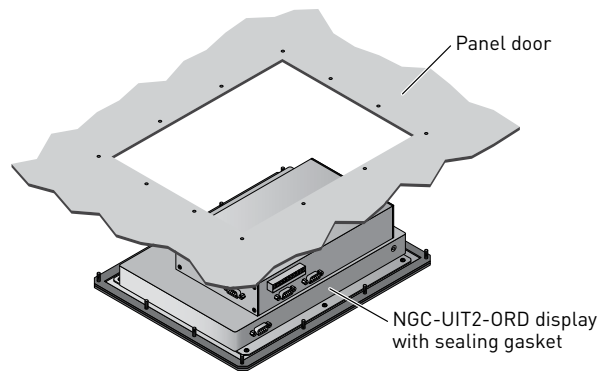
- Place the supplied 6/32 in Kep nuts on each of the twelve mounting studs. Fasten only hand tight.

NGC-UIT2-ORD display

Inside of panel door
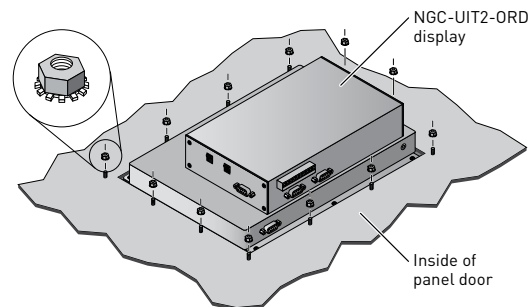
- Look at the front of the panel, and align the NGC-UIT2-ORD assembly so it is level (loosen nuts if necessary to reposition the NGC-UIT2-ORD assembly).
- After the display is properly positioned, tighten the nuts to 0.9 newton-meters (8 inch-pounds) of torque using a 8 mm (5/16 in) in-line torque wrench. **Do not overtighten and risk damage to hardware.**
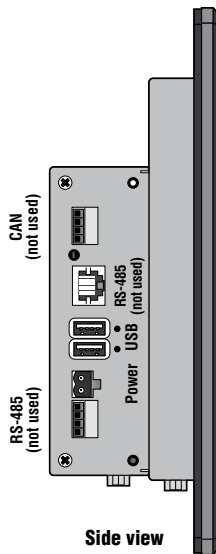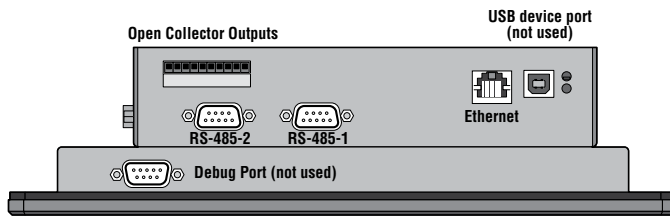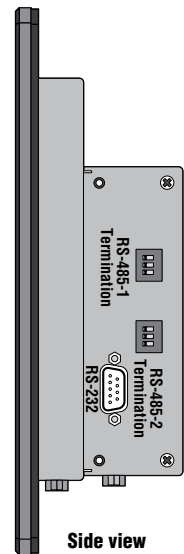- **Tighten Kep nuts in the sequence shown for proper sealing.**

Panel Cut Out

243.54 mm
(9.588 in)

10.82 mm
(0.426 in)

88.39 mm
(3.480 in)

88.39 mm
(3.480 in)

88.39 mm
(3.480 in)

Ø 4.83 mm (0.190 in) X12

Top of Display

Panel Cut Out

11.1 mm
(0.437 in)

71.48 mm
(2.814 in)

190.7 mm
(7.508 in)

71.48 mm
(2.814 in)

71.48 mm
(2.814 in)

71.48 mm
(2.814 in)

Panel Cut Out Area

Drawing
NOT TO SCALE

DigiTrace®

Front view

CAN
(not used)

RS-485
(not used)

RS-485
(not used)

Power USB

Open Collector Outputs

USB device port
(not used)

RS-485-2   RS-485-1

Ethernet

Debug Port (not used)

Bottom view

RS-485-1
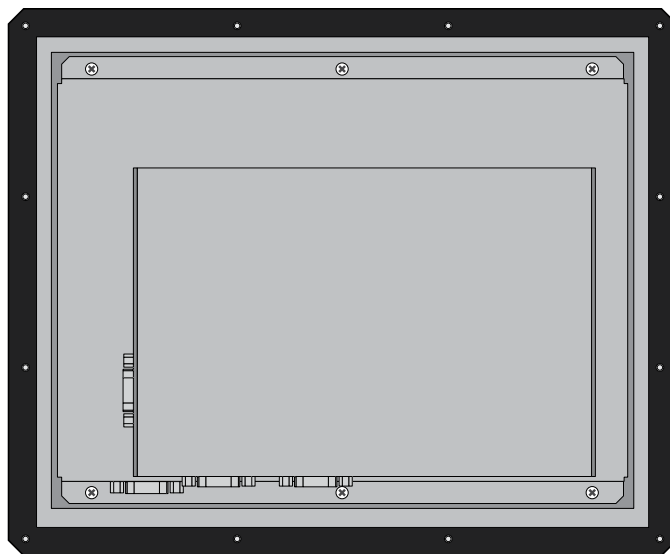Termination

RS-485-2
Termination
RS-232

Side view

Side view

Back view

Connect Power

Connect 12 Vdc to the male power connection fitting located on the left side of the NGC-UIT2-ORD. The "+" lead should go to the terminal marked "9–30 Vdc" and the "−" lead should go to the terminal marked "GND".

Note: The NGC-UIT2-ORD is rated for 9–30 Vdc. Since the NGC-30-CRM modules are rated for 12 Vdc, we have used this voltage to also power the NGC-UIT2-ORD. As a result, the recommend alarm relays and lights detailed in the "Additional Materials" are rated for 12 Vdc.
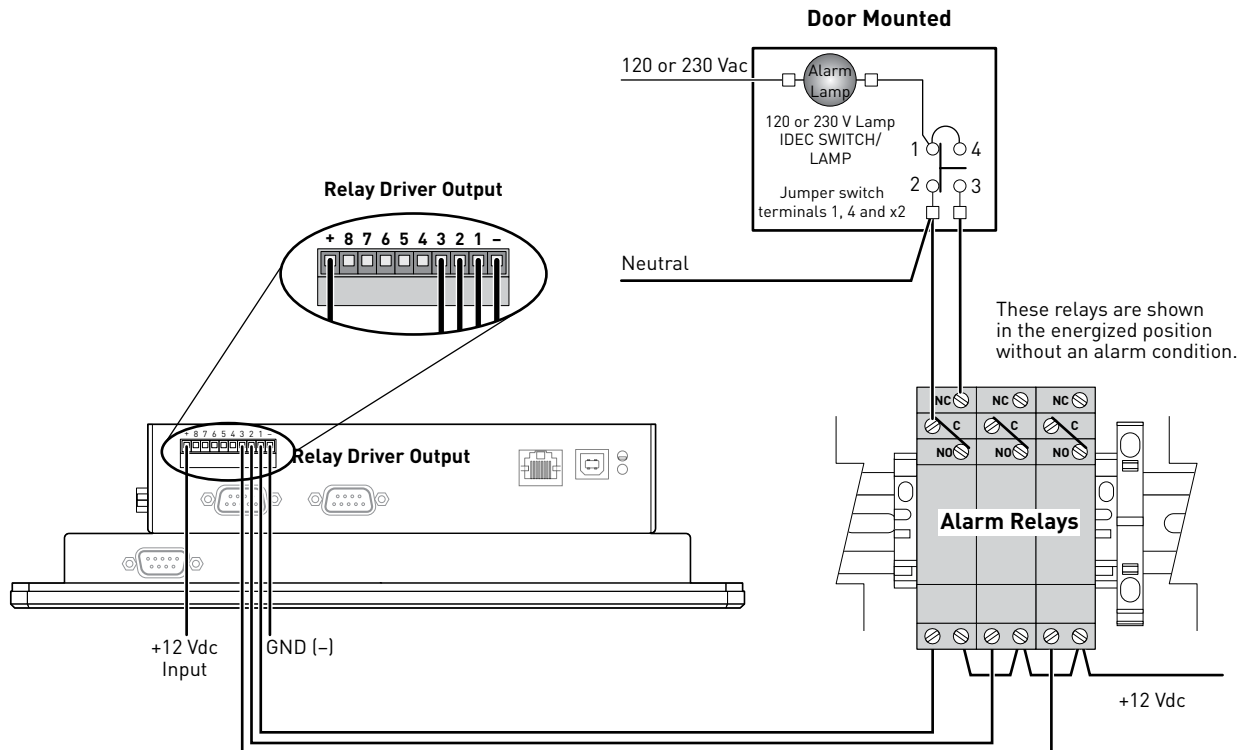
+12 Vdc input

9-30 Vdc
GND
− +
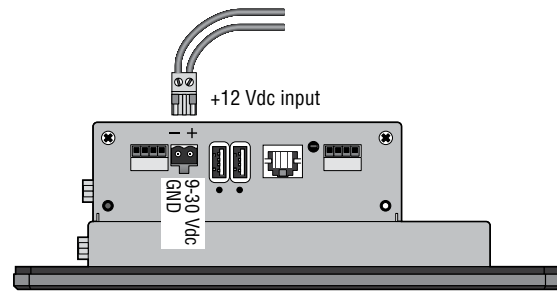
Install Common Alarm Light and Alarm Relays

Mount the 3 alarm relays on a DIN rail inside the panel enclosure. Mount the Alarm light on the panel's door below the touch screen.

Per the below drawing, bring 12 Vdc to the Relay Driver Output at the bottom of the touch screen, to the alarm relays and alarm light.

Per the below drawing, wire between the Relay Driver Output, alarm relays, and alarm light.

Door Mounted

120 or 230 Vac

Alarm Lamp

120 or 230 V Lamp
IDEC SWITCH/ LAMP

1   4
2   3

Jumper switch terminals 1, 4 and x2

Neutral

Relay Driver Output

+ 8 7 6 5 4 3 2 1 −

These relays are shown in the energized position without an alarm condition.

Relay Driver Output

NC   NC   NC
C   C   C
NO   NO   NO

Alarm Relays

+12 Vdc Input   GND (−)

+12 Vdc

Communication

The NGC-UIT2-ORD has two isolated RS-485 ports located at the bottom.

Field Side Port (RS-485-1)

The RS-485 port labeled "RS-485-1" is the field side port that is used to communicate with ModBus devices (ie. NGC-30-CRM/S, RMM2 and NGC-20).

Host Port (RS-485-2) – Optional

The RS-485 port labeled "RS-485-2" is the Host side port that is used to communicate with to a host computer (using DigiTrace Supervisory Software) or to a DCS.

Local Host Port (RS-232) – Optional

The RS-232 port can be used as local Host port that is used to communicate with to a host computer (using DigiTrace Supervisory Software). If the RS-232 port is utilized, the supplied female to female, 9-pin null modem adaptor cable must be used.

Connection

The wiring connection to both RS-485-1 and RS-485-2 are the same.

Install the two 9 pin D-SUB to 10 pin terminal block on a DIN rail inside the panel enclosure. (Note: These should be placed were the Serial cable from the bottom of the NGC-UIT2-ORD mounted on the panel door can be easily accessible).

Connect one end of the Serial communication cables to the ports labeled RS-485-1 and RS-485-2 on the touch screen and the other ends to the 9 pin D-SUB to 10 pin terminal block. (**Note**: The lengths of Serial communication cables are based upon were the touch screen is located and the 9 pin D-SUB to 10 pin terminal block. You should locate these parts first, measure, and then purchase your Serial communication cables).

Using a shielded, twisted pair cable (Belden CDT cable 8761 or equivalent, maximum length is 1219 meters (4000 feet), connect to terminals 3 (–) and 4 (+) on the 9 pin D-SUB to 10 pin terminal blocks taking note of the polarity.
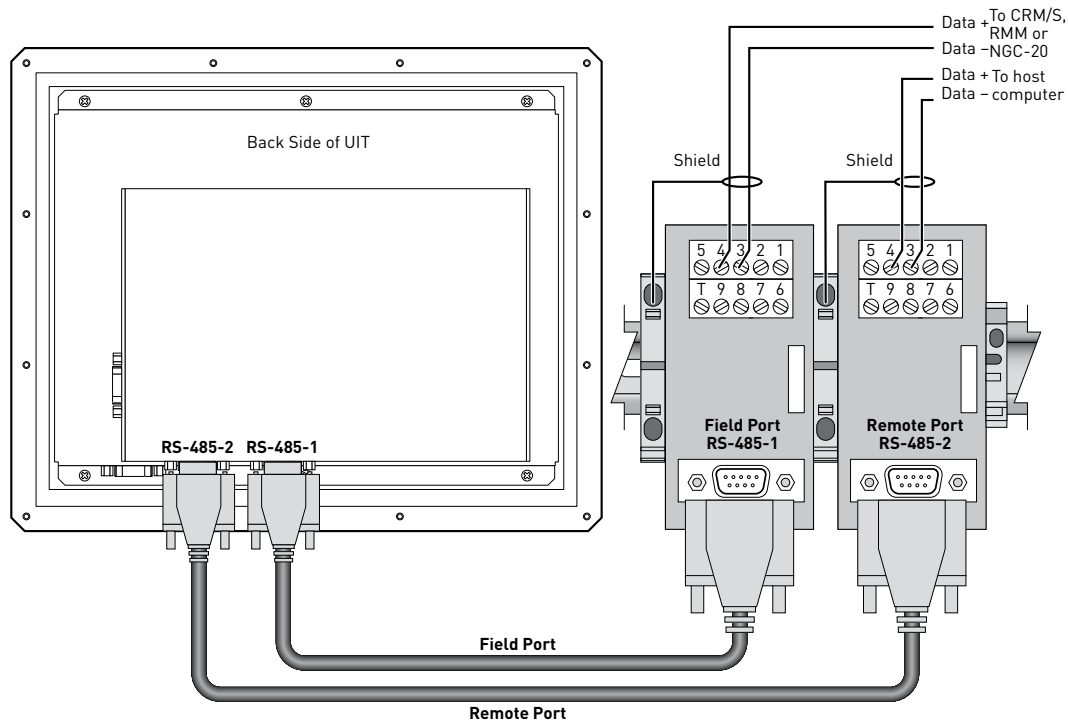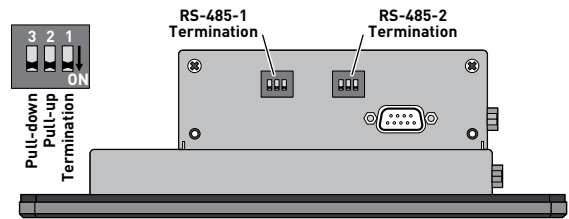

Servicing

The NGC-UIT2-ORD contains no user-serviceable parts. Contact your Pentair Thermal Management representative for service and an authorization number if required.

Cleaning

The touch screen area of the NGC-UIT2-ORD may be cleaned with a damp or dry cloth. Typical window cleaning agents may be applied to aid in the removal of dirt, dust and grease. **Do not use abrasive cleaners.**
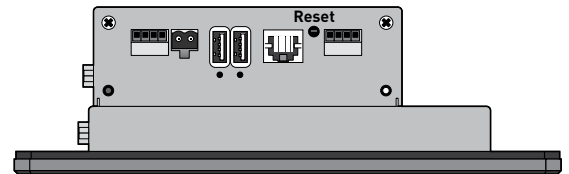
RS-485 configuration switches

The configuration switches are found on the right side of the NGC-UIT2-ORD. Refer to the table below for settings.

Switch	Position On	Off	Comments
Pull-down	(As-shipped default) RS-485 network "–" signal is forced to a determinate state when idle.	RS-485 network "–" signal is not forced to a determinate state when idle.	One device (typically this NGC-UIT2-ORD) on the RS-485 network should force the network "-" signal to a determinate state.
Pull-up	(As-shipped default) RS-485 network "+" signal is forced to a determinate state when idle.	RS-485 network "+" signal is not forced to a determinate state when idle.	One device (typically this NGC-UIT2-ORD) on the RS-485 network should force the network "+" signal to a determinate state.
Termination	(As-shipped default) RS-485 network is terminated with 120-ohm resistor.	RS-485 network is not terminated.	Terminate the device (NGC-UIT2-ORD or other) that is at each end of the RS-485 network, for a total of two terminated devices. No other devices on the network should be terminated.

Reset switch

The Reset switch can be found on the side of the NGC-UIT2-ORD. A pointed object is required to press the reset switch and restart the NGC-UIT software.