nVent

RAYCHEM

NGC-UIT2-EX

User Interface Terminal for nVent RAYCHEM NGC Systems Installation Instructions

NGC-UIT2-EX
installed in a panel
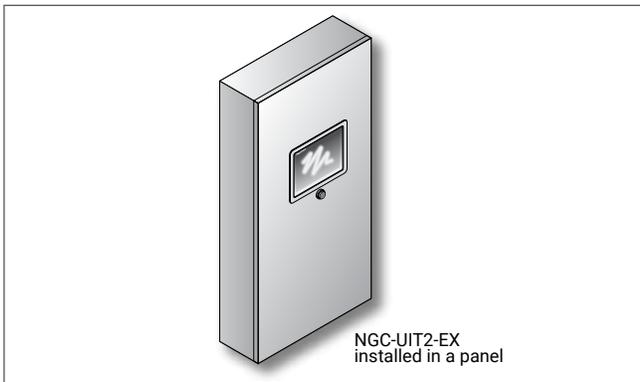
CERTIFICATIONS / APPROVALS

- NEMA 4X, IP65 protection on front panel
- FCC Part15 Subpart B/ICES 003 Class A
- ETL 4000758
  Conforms to ANSI/UL Std. 60950-1 2nd Ed.; CAN/CSA Std. C22.2 No. 60950-1-07; ANSI/ISA Std. 12.12.01-2013 & CAN/CSA Std. C22.2 No. 213-M1987 (R2013)
- CE marking
  - Low Voltage Directive (2006/95/EC) EN 60950-1
  - EMC Directive (2004/108/EC) EN 55022, EN 55024
  - ATEX Directive (94/9/EC) EN 60079-0, EN 60079-15
    - Certificate Number: ITS15ATEX18221X
- IECEx
  - Certificate Number: IECEx ETL 15.0015X

CE ⟨Ex⟩ II 3G ITS15ATEX18221X
IECEx ETL 15.0015X
Ex nA IIC T5 Gc
Class | Div.2 Groups A,B,C,D T5
−40°C ≤ Ta ≤ 60°C

ETL
Intertek
4000758

FC

RoHS

EAC Ex

TC RU C-BE.ИM43.B.01764
2Ex nA IIC T5 Gc IP54
Ta -40°C...+60°C
OOO "ТехИмпорт"

DESCRIPTION

The nVent RAYCHEM NGC-UIT2-EX is a panel mounted display used in conjunction with other RAYCHEM control and monitoring devices. The NGC-UIT2-EX is rated IP 65 (Type 4X), and can be mounted indoors or outdoors. The NGC-UIT2-EX 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-EX in an electrical panel and are intended only for qualified personnel experienced in panel construction.

TOOLS REQUIRED

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

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	TE Connectivity	RTB14012F
3	Alarm relay sockets	TE Connectivity	RT78724
1	Push to test alarm light 120 or 230 Vac		

Note: Equivalent parts may be used.

General

Area of Use	Ordinary (nonhazardous) and Hazardous locations, indoors or outdoors (IP65, Type 4X)
Supply Voltage	9 – 30 Vdc, 15 W Max, AWG 18-22 (0.9 mm^2 - 0.52 mm^2)
Operating Temperature	−40°C to 60°C (−40°F to 140°F)
Min. Storage Temperature	−40°C to 80°C (−40°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)
Humidity Range	10 to 90% Non-Condensing

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	nVent RAYCHEM RS-232/RS-485 ports may be used to communicate with host computers (nVent RAYCHEM 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 nVent RAYCHEM 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 nVent RAYCHEM 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:

Do not connect/disconnect equipment unless power has been switched off or the area is known to be non-hazardous.

Ne débranchez pas l'équipement que l'alimentation est coupée ou que la zone est connue pour être non dangereux.

⚠ IMPORTANT:

• Use appropriately classified Limited Power Source, or LPS. Follow all applicable wiring codes and regulations.

• Peripheral equipment must be suitable for the location in which it is used.

There are no non-incendive circuits or non-incendive field wiring within or associated with the unit.

KIT CONTENTS

Qty	Description
1	NGC-UIT2-EX
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-EX Assembly in Panel

1. Provide suitable panel enclosure

To protect its electronic components, the nVent NGC-UIT2-EX must be mounted in a panel with a minimum IP32 (Type 1) enclosure for non-hazardous locations. An IP54 (Type 4) or better ATEX/IECEx enclosure is required for Hazardous locations. An IP52 (Type 12) or better enclosure is recommended. The NGC-UIT2-EX assembly comes with a sealing gasket and hardware to mount the enclosure.

Note: The NGC-UIT2-EX is designed for operation in ambient temperatures from −40°C to 60°C (−40°F to 140°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-EX assembly in the electrical panel

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

Conditions of Safe Use

This equipment must be installed in a hazardous location classified cabinet or panel rated as follows:

• Internal and external ambient of: -40°C to +60°C
• Minimum ingress protection rating of IP54
• ATEX / IECEx: Zone 2 or better
• US / CAN: Class I Div 2 or better
• Can only be opened with the use of a tool
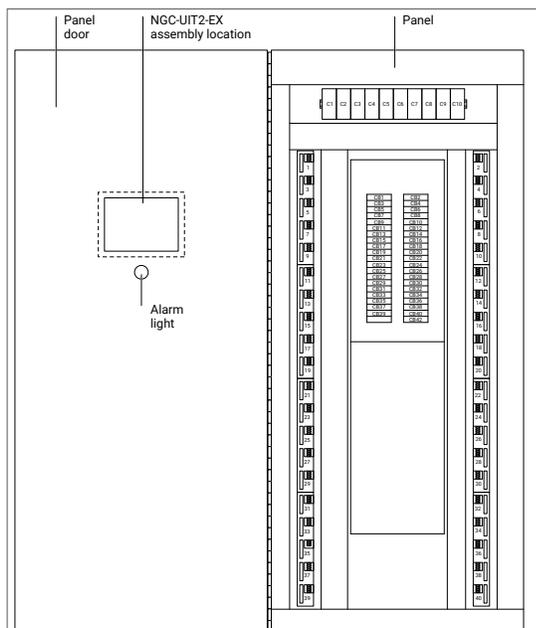
Cut Opening and Mount NGC-UIT2-EX on Front of Panel

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

    Locate the NGC-UIT2-EX 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.

    7.508 in

    9.588 in
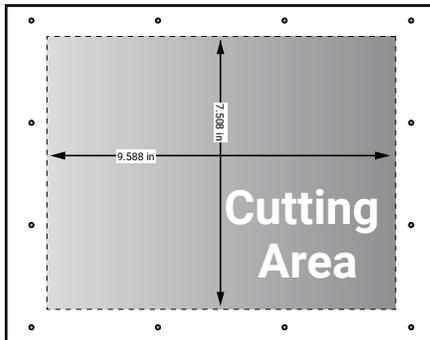
    Cutting Area

    > **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-EX 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-EX 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-EX assembly in the panel.

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

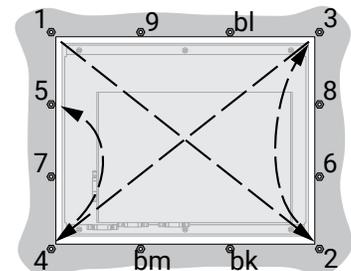5. **Mount the user interface assembly onto the panel door**
    - Place the NGC-UIT2-EX assembly in position; the twelve studs go through the twelve holes on the NGC-UIT2-EX assembly mounting plate (see figure below).
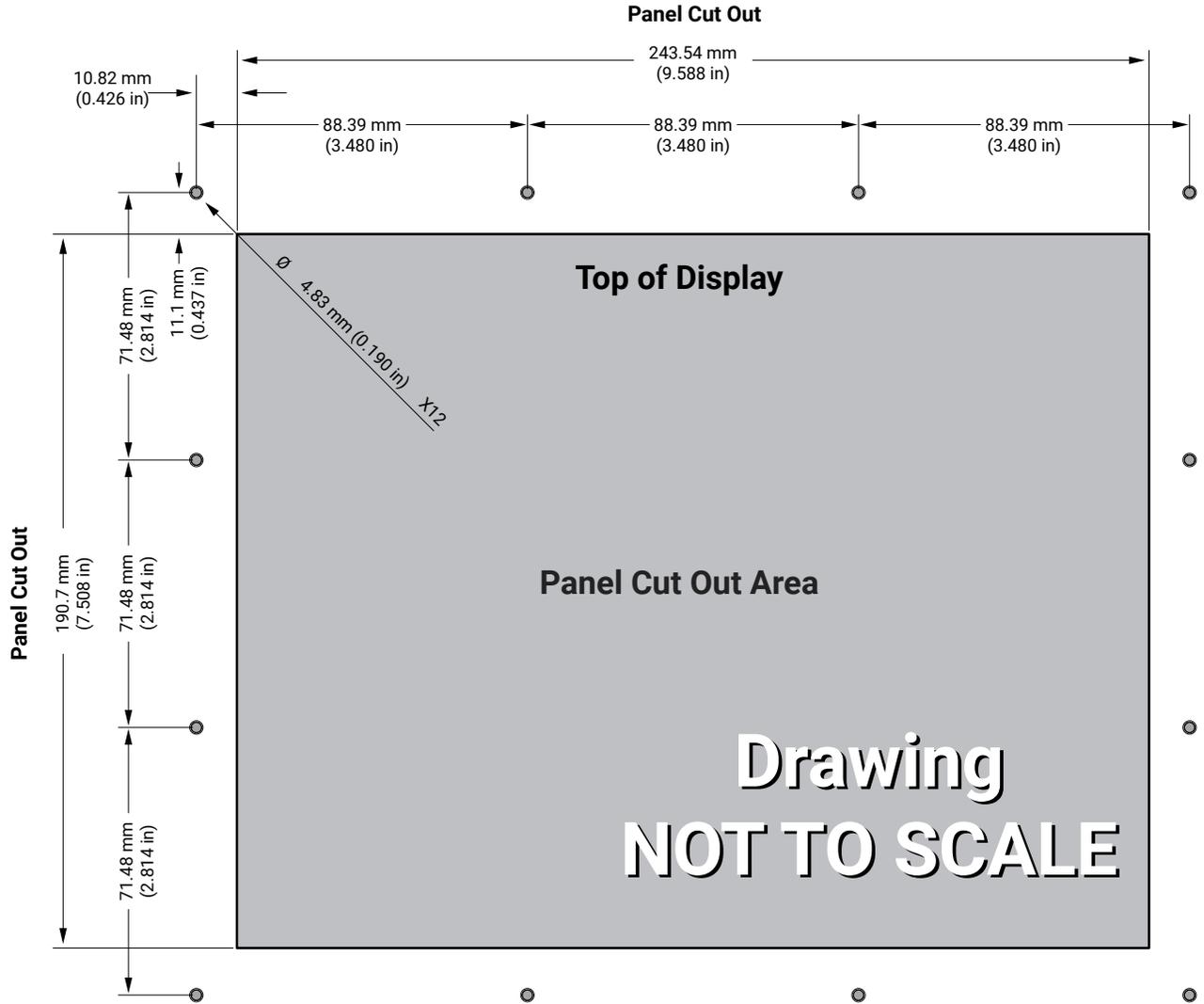
Panel door

NGC-UIT2-EX display with sealing gasket

NGC-UIT2-EX display

Inside of panel door
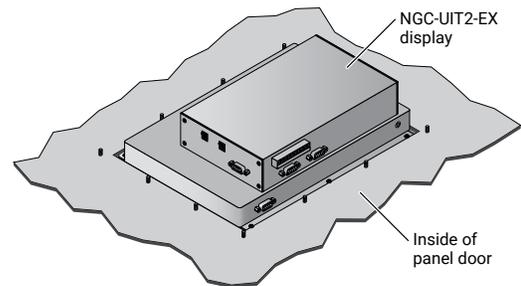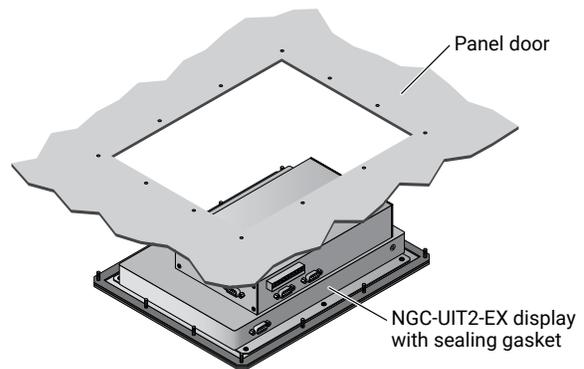
- Place the supplied 6/32 in Kep nuts on each of the twelve mounting studs. Fasten only hand tight.
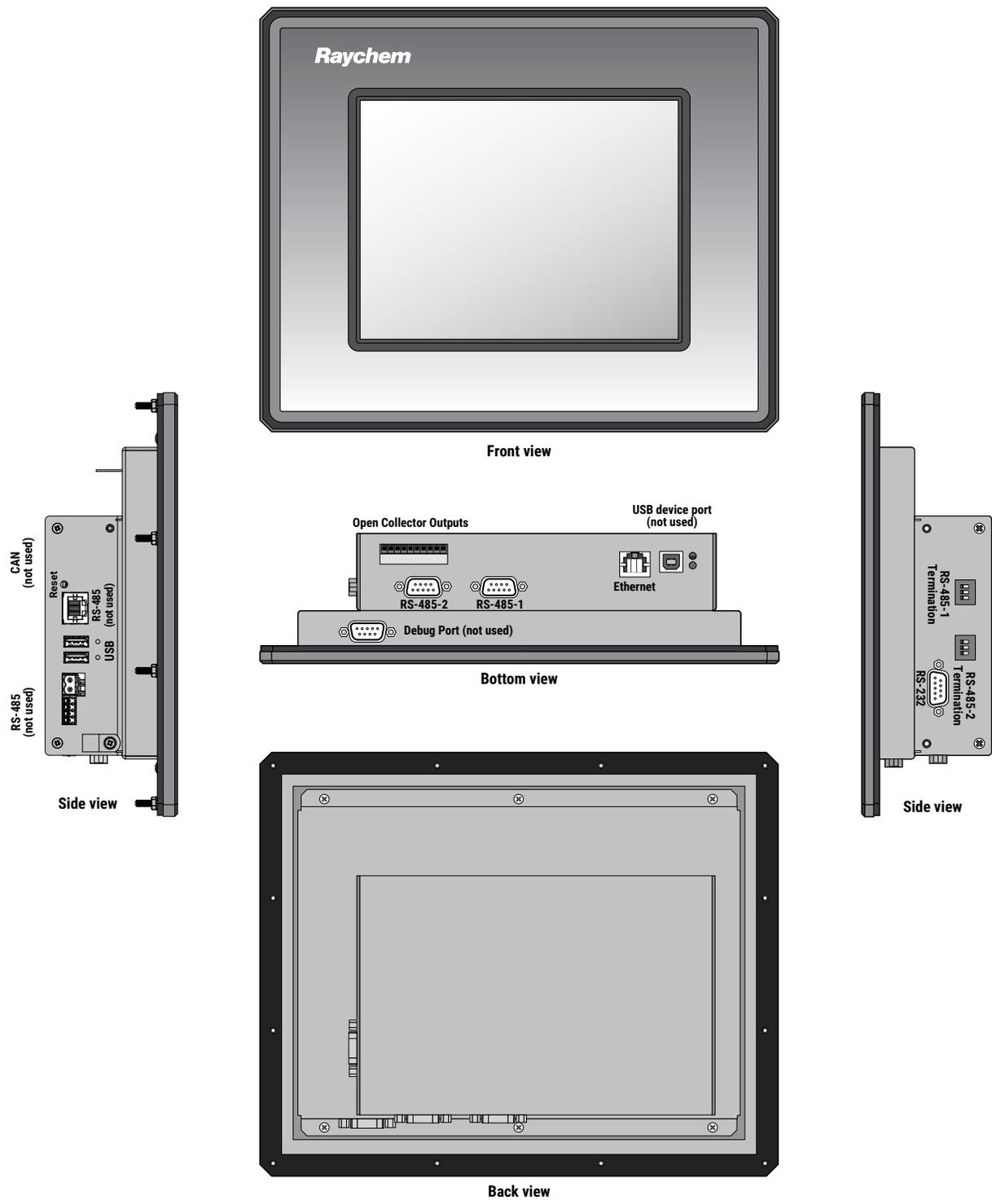
NGC-UIT2-EX display

Inside of panel door
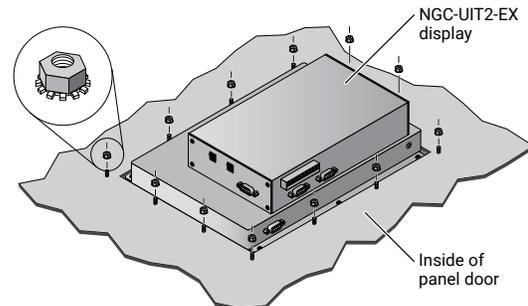
- Look at the front of the panel, and align the NGC-UIT2-EX assembly so it is level (loosen nuts if necessary to reposition the NGC-UIT2-EX assembly).
- After the display is properly positioned, tighten the nuts to 0.56 newton-meters (5 inch-pounds) of torque using a 8 mm (5/16 in) in-line torque wrench. **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)

71.48 mm
(2.814 in)

11.1 mm
(0.437 in)

Ø 4.83 mm (0.190 in) X12

Top of Display

Panel Cut Out

190.7 mm
(7.508 in)

71.48 mm
(2.814 in)

Panel Cut Out Area

71.48 mm
(2.814 in)

**Drawing
NOT TO SCALE**

71.48 mm
(2.814 in)

Front view

CAN
(not used)

Reset

RS-485
(not used)

USB

RS-485
(not used)

Side view

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

Back view

Connect Power

Connect 12 Vdc to the male power connection fitting located on the left side of the NGC-UIT2-EX. The "+" lead should go to the terminal marked "9–30 Vdc" and the "−" lead should go to the terminal marked "GND". Ensure the cables are routed through the cable clamp as shown.

Note: The NGC-UIT2-EX 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-EX. As a result, the recommend alarm relays and lights detailed in the "Additional Materials" are rated for 12 Vdc.

Provision shall be made external to the equipment to provide transient protection at a level not exceeding 119V at the power supply terminals.
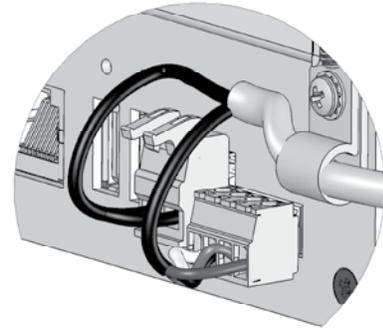
Install Common Alarm Light and Alarm Relays

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.
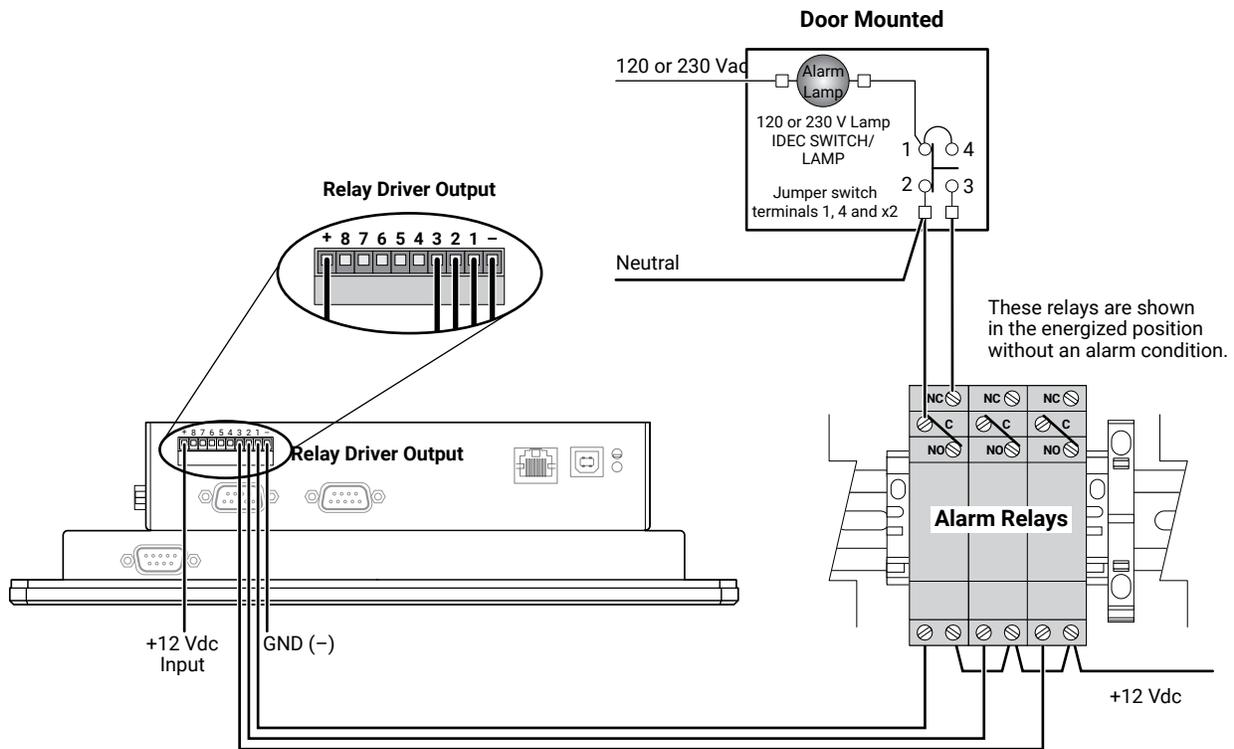
Communication

The NGC-UIT2-EX 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 RAYCHEM 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 RAYCHEM 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-EX 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.
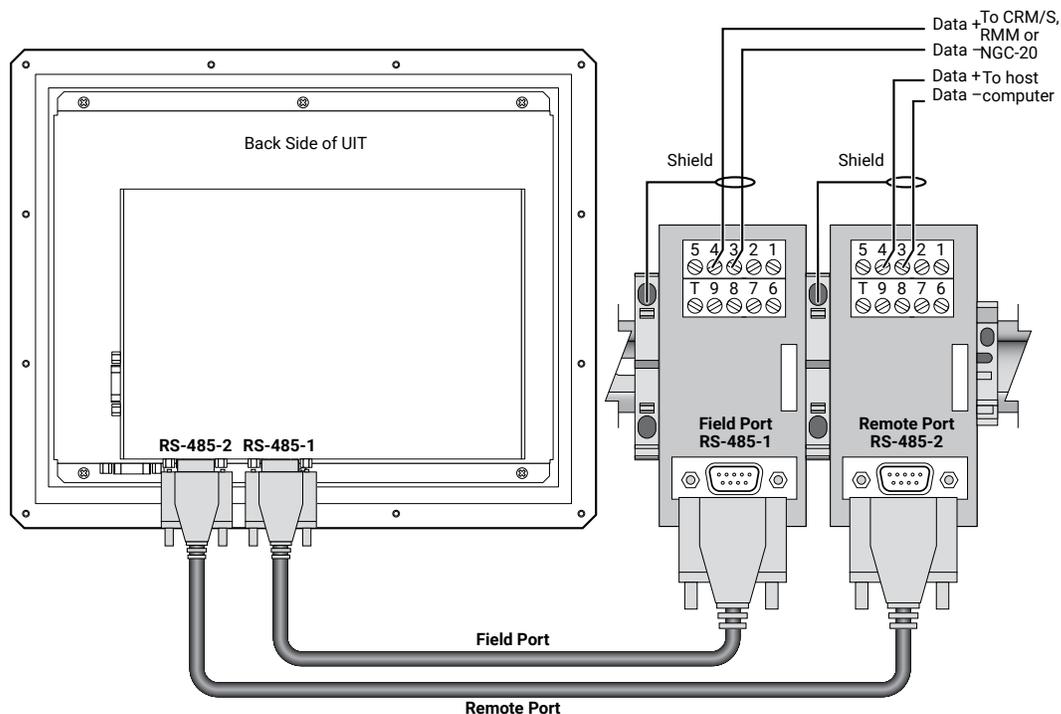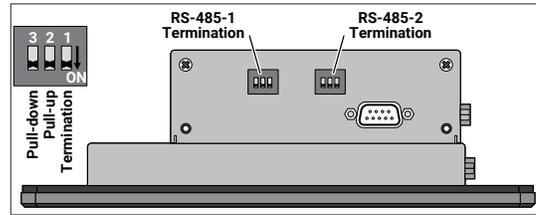

Servicing

The NGC-UIT2-EX contains no user-serviceable parts. Contact your nVent representative for service and an authorization number if required.

Cleaning

The touch screen area of the NGC-UIT2-EX may be cleaned with a damp 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-EX. Refer to the table below for settings.

Switch	Position On	Position 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-EX) 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-EX) 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-EX 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-EX. A pointed object is required to press the reset switch and restart the NGC-UIT software.
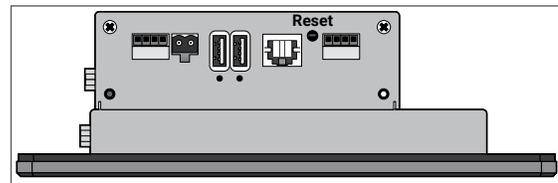
Product Label

North America
Tel +1 800 545 6258
Fax +1 800 527 5703
thermal.info@nvent.com

Europe, Middle East, Africa
Tel +32 16 213 511
Fax +32 16 21 36 04
thermal.info@nvent.com

Asia Pacific
Tel +86 21 2412 1688
Fax +86 21 5426 3167
cn.thermal.info@nvent.com

Latin America
Tel +1 713 868 4800
Fax +1 713 868 2333
thermal.info@nvent.com

nVent.com