Installation Instructions

Original Instructions

AB QUALITY

Allen-Bradley
by **ROCKWELL AUTOMATION**

OptixPanel Standard Operator Panels

Bulletin 2800S

Summary of Changes

This publication contains the following new or updated information. This list includes substantive updates only and is not intended to reflect all changes.

Topic	Page
Update 7.0 and 15.6 in. Cutout.	3
Add: IMPORTANT All systems that have "C" as the final character in the catalog number are not ATEX compliant. Example: 2800S-xxxx-xxC.	7

Safety instructions

⚠️ **ATTENTION:** Read this document and the documents listed in the Additional Resources section about installation, configuration, and operation of this equipment before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards. Activities including installation, adjustments, putting into service, use, assembly, disassembly, safety, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice. If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
Ensure that the environment is free of hazardous gases and/or dust before connecting or disconnecting the system.
In case of partial or total system damage, switch off immediately the equipment and change the system. Cuts or slits on the touch-screen front foil are considered damages compromising the defined protection grade. Transient protection shall be provided that is set at a level not exceeding 140% of 90V at the supply terminals to the equipment. Compliance with regulations lapses if inappropriate maintenance and / or repairs are made by the Customer or by third parties not authorized. For resistive touchscreen only: provision should be made to prohibit the product from being exposed to UV radiation while in use. Care should be taken not to rub or bluff the touchscreen surface in a way that might cause the accumulation of static charge.

⚠️ **ATTENTION:** To ensure the declared protection level, follow these instructions:
- Use only components supplied with the system (hooks, fixing screws).
- Make the mounting cut-out of the system following the instruction described.
- Do not allow layers of dust to form on the system and clean it regularly.
- Before to switch the system on, to avoid condensation, wait until the system temperature reaches the temperature of the environment in which it is installed.
- For connections use fixing systems (ex. screws, slides, clamps) that ensure a reliable contact even with vibrations and ensure that all the interfaces (COM, LAN) are connected in a safe way.
- Execute the wiring of the equipment keeping signals and power cables separated.
- Use interconnection components like cables or other devices that meet the minimum requirements for appropriate use [ex. cable's max temperature 70 °C (158 °F)].
- Do not use damaged components

⚠️ **ATTENTION:** Disposition for electrical connection:
- Strictly follow the instructions of the system's User Manual.
- The systems has the polarity inversion protection. If the system does not switch on, check the connections because the polarity can be inverted.
- Always connect the earth on the system using the proper power supply connector terminal.
- In case of installation of the system on metallic cabinet, ensure the connection between the system earth and the cabinet earth.

Environment and Enclosure Information

⚠️ **ATTENTION:** This equipment is intended for use in a Pollution Degree 2 Industrial Environment, in Overvoltage Category II applications (as defined in IEC 60664-1), at altitudes up to 2000 m (6561 ft) without derating. This equipment is considered Group 1, Class A industrial equipment according to EN 61326-1. Without appropriate precautions, there can be potential difficulties with electromagnetic compatibility in other environments caused by conducted as well as radiated disturbance.This equipment is supplied as open-type equipment for indoor use and can be used only in the ATEX zones declared on the system's marking label. It must be mounted within an enclosure that is suitably designed for those specific environmental conditions that will be present and appropriately designed to prevent personal injury resulting from accessibility to live parts. The interior of the enclosure must be accessible only by the use of a tool. Subsequent sections of this publication may contain additional information regarding specific enclosure type ratings that are required to comply with certain product safety certifications. A label reporting all the "Warning markings" present in the system's ATEX marking label, has to be placed on the container where the system is installed.

RA **Rockwell Automation**

> **ATTENTION:** In addition to this publication, see the following:
> - Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1, for more installation requirements.
> - UL 50, UL 50E, CSA C22.2, No. 94.1, and CSA C22.2, No. 94.2, as applicable, for explanations of the degrees of protection provided by enclosures.

Equipment with the UL/cUL mark complies with the requirements of UL 61010-1, UL 61010-2-201, CSA C22.2 No. 61010-1, CSA C22.2 No. 61010-2-201. Copies of the certificate of compliance are available at rok.auto/certifications.

Installation guidelines

> **WARNING:** Special Conditions for Safe Use:
> - The ambient temperature range is 0…50 °C (32…122 °F).
> - Subject devices are to be installed in a tool-only accessible enclosure that provides a degree of protection not less than IP54 for atmospheres with gas or IP6x for atmospheres with dust, in accordance with IEC/EN 60079-0, Explosive atmospheres – Part 0: Equipment – General requirements and IEC/EN 60079-7, Explosive atmospheres – Part 7: Equipment protection by increased safety "e". After installation of subject devices into the enclosure, access to termination compartments shall be dimensioned so that conductors can be readily connected. Grounding conductor should have a minimum cross-sectional area of 1.5 mm² (16 AWG).
> - Subject devices are not to open when energized.
> - Subject devices are for use in an area of not more than pollution degree 2 in accordance with IEC 60664-1.
> - Subject devices are to use copper conductors with a minimum conductor temperature rating of 75 °C (167 °F).
> - Subject devices are to be installed in the vertical position only.
>
> **AVERTISSEMENT:** Conditions particulières d'utilisation sécuritaire :
> - La plage de température ambiante est de 0…50 °C (32…122 °F).
> - Les dispositifs en question doivent être installés dans un boîtier accessible uniquement aux outils qui offre un degré de protection au moins égal à IP54 pour les atmosphères avec gaz ou IP6x pour les atmosphères avec poussièreconformément à la norme CEI/EN 60079-0, Atmosphères explosives – Partie 0 : Équipement – Exigences générales et à la norme CEI/EN 60079-7, Atmosphères explosives – Partie 7 : Protection de l'équipement par une sécurité accrue « e ». Après l'installation des dispositifs en question dans l'enceinte, l'accès aux compartiments de terminaison doit être dimensionné de sorte que les conducteurs puissent être facilement raccordés. Le conducteur de mise à la terre doit avoir une section transversale minimale de 1,5 mm² (16 AWG).
> - Les dispositifs en question doivent être utilisés dans une zone ne dépassant pas le degré de pollution 2 conformément à la norme CEI 60664-1.
> - Les dispositifs visés doivent utiliser des conducteurs en cuivre dont la température nominale minimale est de 75 °C (167 °F).
> - Les dispositifs soumis à l'essai ne doivent être installés qu'en position verticale.

> **WARNING:** This operator panel is intended to operate in an industrial or control room environment, which uses some form of power isolation from the public low-voltage mains. Some operator panel configurations cannot comply with the EN 61000-3-2 Harmonic Emissions standard as specified by the EMC Directive of the European Union. Obtain permission from the local power authority before you connect any computer configuration that draws more than 75 W of AC power directly from the public mains. All I/O cables are rated for indoor use only.
>
> **AVERTISSEMENT:** Ce panneau de commande est conçu pour fonctionner dans un environnement industriel ou de salle de commande, qui utilise une certaine forme d'isolation de l'alimentation électrique du réseau public basse tension. Certaines configurations informatiques ne peuvent pas être conformes à la norme EN 61000-3-2 sur les émissions harmoniques telle que spécifiée par la directive EMC de l'Union européenne. Obtenir l'autorisation de l'autorité d'alimentation locale avant de connecter une configuration informatique qui tire plus de 75 W d'alimentation CA directement du secteur public. Tous les câbles d'E/S sont conçus pour une utilisation à l'intérieur seulement.

| When choosing the installation site, consider the following:	The operator panel can operate in the following environmental conditions:
• The site must have sufficient power. • The site must be indoors. • The site must not expose the operator panel to direct sunlight.	• Operating temperature: 0…50 °C (32…122 °F). • Storage temperature: -20…+60 °C (-4…140 °F). • Operation/storage relative humidity (RH) non condensing: 20%…90%. • Hazardous Location Temperature Class: T4.

Mounting requirements

Follow these requirements to mount the operator panel .
- Choose a suitable mounting height.
- To help prevent overheating and to provide access to the I/O ports for cable connections do not cover aeration holes, mount the operator panel with the following minimum clearances from all four sides of the outer frame and back of the computer chassis:
  - X direction ≥ 50 mm (1.96 in.)
  - Y direction ≥ 100 mm (3.93 in.)
  - Z direction ≥ 50 mm (1.96 in.)
- For optimal performance, mount the operator panel in the landscape position, so the I/O ports face down.

Installation min. clearance
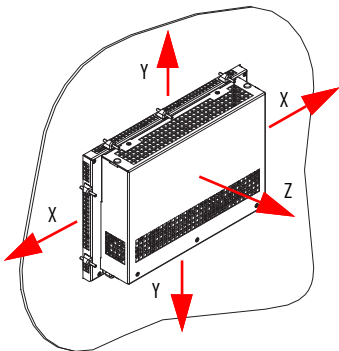
Installation max. tilt
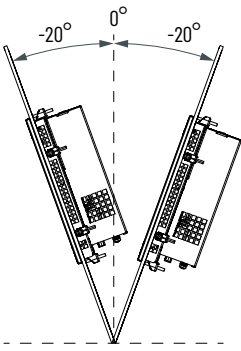
IMPORTANT	The vertical position can be tilted up to 20° forward or 20° backward from the upright position. However, this acceptable tilt angle range decreases the maximum operating air temperature to 45 °C (113 °F). Tilt is NOT acceptable for ATEX installation.

Prepare the Panel Cutout

Observe these guidelines to install the operator panel in a panel.

> **WARNING:** Failure to follow these guidelines can result in personal injury or damage to the panel components. Take precautions so any metal fragments during the panel cutout do not enter components that are installed already in the panel.
>
> **AVERTISSEMENT:** Le non-respect de ces directives peut entraîner des blessures ou des dommages aux composants du panneau. Prendre des précautions pour que les fragments métalliques pendant la découpe du panneau n'entrent pas dans les composants déjà installés dans le panneau.

- Plan the panel cutout area that is needed for your operator panel.
- To ensure installation with proper IP protection grade the following conditions have to be satisfied:
  - The mounting panel material must be 3...6 mm (0.11...0.24 in.) thick with a max deformation limit on the plane of 0.5 mm (0.01 in.).
  - For a uniform gasket seal, the roughness of the panel surface must be ≤ 120 microns (Rz 120).
  - Verify that the area around the panel is clear of obstructions.

Table 1 - Cutout Dimensions

Display Size, in.	Format[1]	Panel Cutout Dimensions[2] [mm (in.)]	
		A	B
7.0	W	196.0 (7.71)	139.5 (5.53)
10.1	W	255.5 (10.05)	174.0 (6.85)
10.4	S	285.0 (11.22)	220 (8.66)
12.1	S	315.0 (12.40)	250 (9.84)
12.1	W	301.0 (11.85)	203.0 (7.99)

Display Size, in.	Format[1]	Panel Cutout Dimensions[2] [mm (in.)]	
		A	B
15.0	S	380.0 (14.96)	295.0 (11.61)
15.6	W	388.0 (15.27)	237.0 (9.33)[3]
			237.5 (9.35)
18.5	W	453.0 (17.83)	274.0 (10.78)
21.5	W	520.0 (20.47)	311.5 (12.26)

(1) Standard (S) format is offered with an analog resistive touch screen. Widescreen (W) format is offered with analog resistive and projective capacitive (PCAP) touch screens.
(2) Tolerance ±1 mm (0.04 in.). (3) Tolerance ±1 mm (0.04 in.).
(3) Valid for Cat. No. 2800S-156XS-N1S and 2800S-156XS-N1B.

Panel Cutout Areas
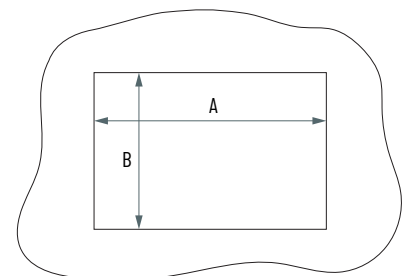
Required Tools for Installation

Tools required:
- Panel cutout tools.
- Hexagonal key 1.5 mm (supplied) and torque limiting screwdriver with a 1.5 mm hex key bit.
- Mounting clips (supplied), for the needed quantity, see Figure 1.
- Safety glasses.

Supplied tools

Sequence No.	Dscription
1	Clip
2	Hexagonal key

Install the operator panel

To install the operator panel in the panel cutout, perform the following steps.

| IMPORTANT	You need two people to install the operator panel; one person holds the operator panel in place while the second person installs the mounting clips.

1. Remove all electrical power from the panel before you make the cutout.
2. Cut an opening in the panel area to the dimensions needed for your operator panel.
3. After the cutout is completed, clean the panel area of all debris and metal fragments.
4. Make sure that the sealing gasket is positioned properly on the operator panel.

Sealing gasket / Clip holes

Sealing gasket
Clip hole

IMPORTANT	The gasket is a part of the display and forms a compression-type seal. Therefore, do not use sealing compounds.

5. From the front of the panel insert the operator panel into the cutout (A) and rotate it (B) until it adheres completely to the panel (C).
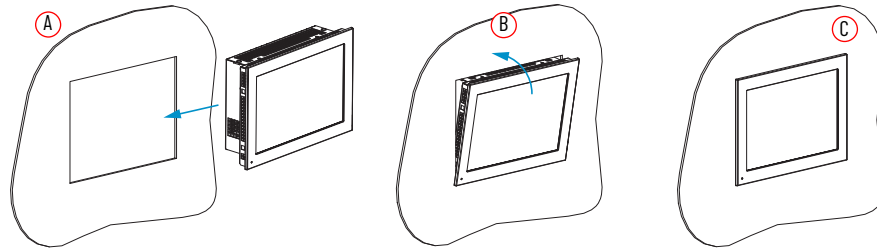
6. Slide the mounting clips into the holes on all four sides of the operator panel and repeat the procedure in step 7 through step 9 for all the clips.
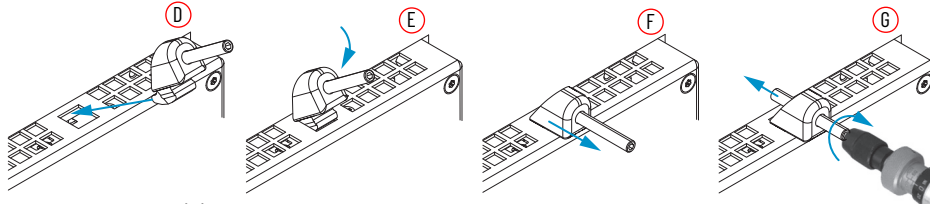

7. Insert the clip into the mounting hole side (D).
8. Rotate it down (E) and pull it outward (F).
9. According to the tighten sequence in Figure 1, tighten the mounting clips (G) with the supplied hexagonal key and verify the torque of 0.2 N•m (1.8 lb•in) with a limiting screwdriver (requires a 1.5 mm hex key bit).

Figure 1 - Mounting clips tighten and torque sequence by display size

⚠ **ATTENTION:** Tighten the mounting clips to the specified torque to provide a proper seal and to help prevent product damage. Rockwell Automation assumes no responsibility for water or chemical damage to the operator panel or other equipment within the enclosure because of improper installation.
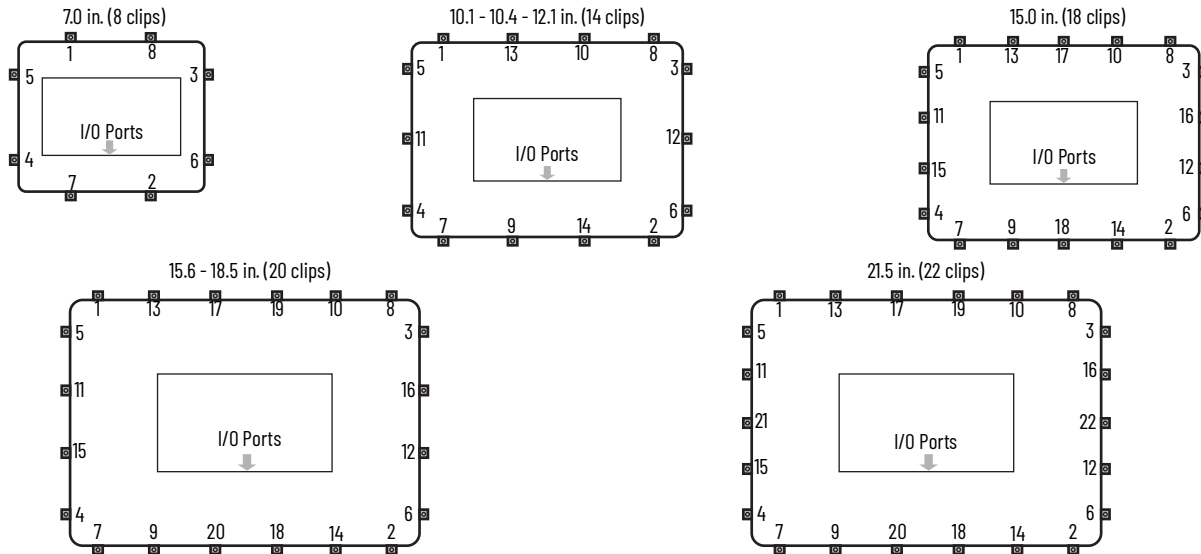
Connectors/LEDs/Buttons

Connect peripheral cables to the appropriate I/O ports on the operator panel. To comply with EN 61326-1, use the following for cable types. All I/O cables must be used only indoors, and USB cables must be less than 3 m (9.84 ft) long.
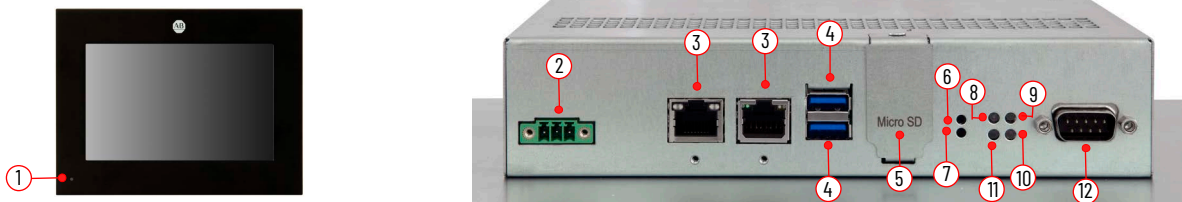
⚠ **WARNING**: USB connectors not for use in hazardous locations. To use only for initial setup and maintenance.

AVERTISSEMENT: le connecteurs USB ne doit pas être utilisé dans des endroits dangereux. Doit être utilisé pour la configuration initiale et la maintenance seulement.

Table 2 – Connectors / LEDs / Buttons.

Item No.	Description	Required cable	LED Color	Function
1	Front Power On LED	–	Green	Indicates the system is powered on.
2	DC power	Unshielded	–	Power connector.
3	LAN	Shielded	–	RJ45 connector.
4	USB 3.0	Shielded	–	USB 3.0 connector.
5	Micro SD	–	–	Micro SD slot push push type.
6	Restart button	–	–	Forces an internal reset, as if power was lost temporarily and then returned. **IMPORTANT:** Use this button only if there are no better options, like keyboard or mouse commands, or if the resumed DC power does not restart the computer. System reset can cause data loss and possible corruption to the operating system.
7	Factory reset button	–	–	Allows the total restoration of the firmware and factory settings with the deletion of all application data.
8	Restart / Power LED	–	Red	Power supply ON and Boot sequence FAIL.
			Red	Restart button pressed.
			Green	Power supply ON and correct BOOT sequence.
9	LED COM1 TX	–	Green	Transmission signal for COM interface.
10	LED COM1 RX	–	Green	Receive signal for COM interface.
11	Factory Reset LED	–	Blue	Factory reset procedure in progress.
			OFF	Standard/common status.
12	COM1	Shielded	–	RS232/422/485 isolated serial port connector.

Battery removal

This Operator Panel contains a sealed lithium battery that could need replacement during its life. Battery replacement can be done only in a non-hazardous environment. For instructions to remove and replace the battery, refer to publication OptixPanel Standard Operator Panel User Manual publication 2800S-UM001. At the end of its life, collect the battery contained in this Operator Panel separately from any unsorted municipal waste.

DC Power Supply Guidelines

All operator panels have the following features:

- The internal power supply of the operator panel has a galvanically isolated DC-DC converter board for increased electrical noise immunity.
- Reverse polarity circuitry, overvoltage, and a 3 A soldered fuse provide input power protection.

Inrush current

I_{pk} (<5A)

I_{pk}: load peak
T: time

T<4ms

Follow these guidelines to select the DC power to supply the operator panel.

- The operator panel must be powered with a voltage of 24V DC 1.5A (18…32V DC SELV input voltage range).
- Power consumption is rated at 40 W max @ 50 $^{\circ}$C (122 $^{\circ}$F) ambient temperature.
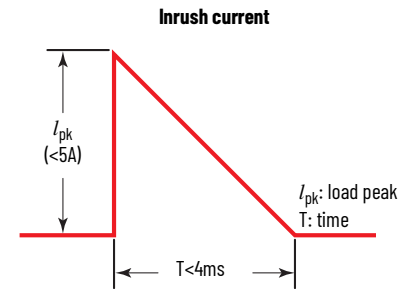
Connect DC Power

⚠️ **ATTENTION:** The system has to be powered with a 24VDC 1.5A (18…32V) power supply which satisfies the requirements of safe extra low voltage (SELV) in accordance with IEC/EN/DIN EN/UL61010-1 and UL61010-2-201. The power supply has to fulfill the requirements NEC Class2 or LPS in accordance with IEC/EN/DIN EN/UL61010-1 and UL61010-2-201.

To minimize ground loop currents and noise, we recommend that DC powered models use only one grounded connection.

## Install the Factory-supplied DC Power Connector Assembly

Tools required:
- Adjustable torque screwdriver with M2 and M3 flat-blade screw bits.
- Wire stripper, cutter, and crimper tool.
- Cutting pliers.

Terminal block cabling procedure

Table 3 – Terminal Block Connection Specifications

Item No.	Description	Value
1	DC+ (24V DC nominal)	1.5mm^2 (16 AWG) wire
2	DC- (0V DC nominal)	
3	Ground wire	
4	Stripped wire length	7 mm (0.275 in.)
5	Terminal block	–
6	Polarity symbol	–
7	Torque range to secure DC power wires	0.22...0.25 N•m (0.16...0.18 ft•lb)
8	Torque value to reinstall DC terminal block to computer	0.3 N•m (0.22 lb•in)
9	Cable tie (qty: 1)	–
10	Labels (qty: 2)	–
11	Half cover with cable tie slot	–
12	Half closing cover	–

DC power connector assembly

Terminal block cover kit
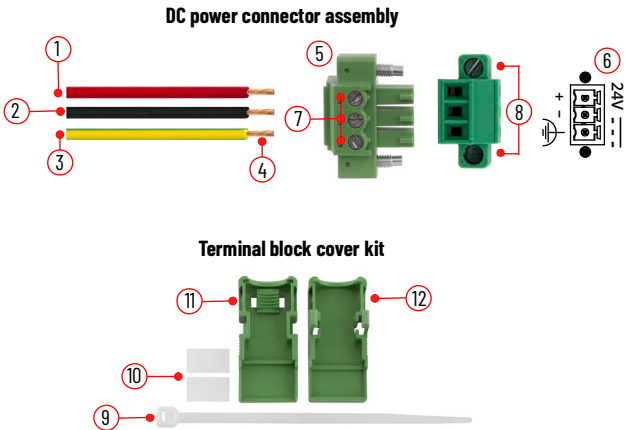
1. Remove the DC terminal block (5) from the operator panel.
2. Use wires not included, (1) (2) (3) with 1.5mm^2 (16 AWG) cross section with copper conductor certified for operation at least 75°C (167°F).

> The colors of wires should follow regulations applicable where the system will be used.

3. Strip 7 mm (0.275 in.) from the end of each power wire (4).
4. Insert each stripped end into the DC terminal block and fix it with the corresponding screws (7) with 0.22...0.25 N•m (0.16...0.18 ft•lb) torque.

Terminal block cover assembly
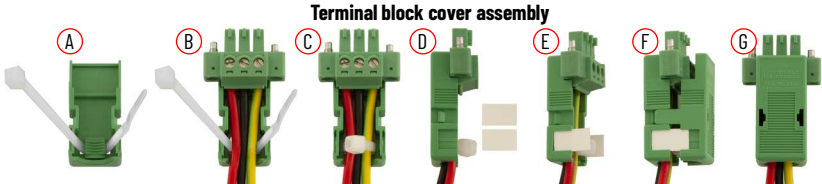
5. Insert the cable tie (9) through the slots of the terminal block (11) connector clamp [step (A)].
6. Slide the connector half with the attached tie onto the end of the DC terminal block [step (B)].
7. Tighten the tie and remove the excess part [step (C)].
8. Install the white labels (10) supplied with the terminal block cover kit [steps (D) (E)].

> The white label can be used for identification or other information.

9. Align and install the other connector (12) clamp half [step (F)] to complete the assembly [step (G)].

> When installed correctly, both tabs of the clamp half lock into place.

10. Connect the DC terminal block (complete with cables and cover) to the Operator Panel chassis and fix it with the corresponding screws (8) with 0.3 N•m (0.22 ft•lb) torque.

Connect DC Power

1. Power on the system.
2. Front Power LED (1) and Restart/Power LED (2) will light green.
3. The operating system desktop appears after few seconds.

Install the Factory-supplied metal retention plates to connect Ethernet cables

The system is provided with metal retention plates, screws and zip ties provided in the box. Their purpose is to support Ethernet cables after plug in the ports.

Tools required:
- Adjustable torque screwdriver with M3 Phillips screw bit.
- Cutting pliers.

1. Position the metal retention plate (1) in front of the LAN port and fix it with the provided screw (3) with 0.22...0.25 N•m (0.16...0.18 ft•lb) torque [step (A)] .
2. Insert the LAN cable in the LAN port [step (B)].
3. Insert the zip tie around the LAN cable and the beveled edge of the plate (1) [step (C)].
4. Tighten the tie (2) and remove the excess part [step (D)].

Metal retention kit

Item No.	Description
1	Metallic plates (qty: 2)
2	M3 screws (qty: 2)
3	Zip ties (qty: 2)
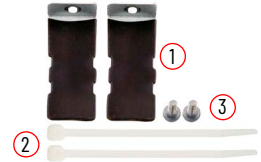
Disassembly and maintenance

Switch off the equipment before to carry out maintenance services on the system. To avoid electrostatic charge on the system, use only specific "EPA" zone cleaning products and damp cloths. Before to reassemble the system into the equipment, ensure that there are no changes in the mechanical or electrical features, the seal ensures the defined ingress protection grade, the fixing tools are in good conditions and ensure the right tightening. For battery substitution refer to the system's User Guide. If any component is in poor conditions, immediately contact support.

ATEX Certification

IMPORTANT All systems that have "C" as the final character in the catalog number are not ATEX compliant. Example: 2800S-xxxx-xxC

Read this document very carefully because it contains safety information that takes priority over the system's User Manual. This document contains the instructions, the information, and the specific conditions, for the safe use of the systems and must be always taken as reference for installing, managing or updating the ATEX marked systems. The systems must be installed, managed and updated only by qualified personnel. The non-compliance with the safety instructions present into this document can result in death or serious injury. No responsibility is assumed by Rockwell Automation for any consequence arising from the improper use of the system in respect to the contents of the present document.

The contents of this document are referred only to the following systems on which the ATEX marking label is present.

Marking	Cat. number reference	Standards	
II 3D Ex tc IIIC T 70°C Dc II 3G Ex ec ic IIC T4 Gc X 0°C≤Tamb≤+50°C WARNING - DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT WARNING - DO NOT OPEN WHEN ENERGIZED	2800S-xxxDx-xxx 2800S-xxxEx-xxx 2800S-xxxXx-xxx	EN60079-0:2018	Explosive atmospheres – Part 0: Equipment – General Requirements
		EN60079-7:2015+A1:2018	Explosive atmospheres – Part 7: Equipment protection by increased safety "e"
		EN60079-11:2012+A11:2013	Explosive atmospheres – Part 11: Equipment protection by intrinsic safety"i"
		EN60079-31:2014	Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure "t"
II 3D Ex tc IIIC T70°C Dc II 3G Ex ec ic IIC T4 Gc X 0°C≤Tamb≤+50°C WARNING - DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT WARNING - DO NOT OPEN WHEN ENERGIZED	2800S-xxxFx-xxx	EN60079-0:2018	Explosive atmospheres – Part 0: Equipment – General Requirements
		EN60079-7:2015+A1:2018	Explosive atmospheres – Part 7: Equipment protection by increased safety "e"
		EN60079-31:2014	Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure "t"

WARNING: EXPLOSION HAZARD. Do not disconnect equipment while the circuit is live or unless the area is known to be free of ignitable concentrations.
AVERTISSEMENT: DANGER D'EXPLOSION. Ne pas débrancher l'équipement pendant que le circuit est sous tension ou à moins que la zone ne soit exempte de concetrations inflammables.

European Union Directive Compliance

This equipment meets the European Union Directive requirements when installed within the European Union or EEA regions and have the CE marking. A copy of the declaration of the conformity is available at rok.auto/certifications.

Declaration of Conformity

Rockwell Automation, Inc. declares that the Optix Panel Standard Family, 2800S, when so marked are in compliance with Essential Health and Safety Requirements of Directive 2014/34/EU (ATEX) as follows:

- Equipment Group II, Equipment Category 3.
- Type of Dust Protection "Ex tc IIIC T 70°C Dc ".
- Type of Gas Protection "Ex ec ic IIC T4 Gc" (for Aluminium, Aluminium True Flat, Stainless steel IP69K Bezel).
- Type of Gas Protection "Ex ec IIC T4 Gc" (for Aluminium and Glass TrueFlat Bezel).

Compliance to standard EN 60079-0:2018, EN 60079-7:2015 +A1:2018, EN 60079-11:2012 +A11:2013 and EN 60079-31:2014. The full text of the EU declarations of conformity is available at the following website: rok.auto/certifications.

Additional Resources

These documents contain additional information concerning related products from Rockwell Automation. You can view or download publications at rok.auto/literature.

Resource	Description
OptixPanel Standard operator panel User Manual, publication 2800S-UM001	Provides details on how to install, configure, operate, and troubleshoot the OptixPanel operator panels.
OptixPanel Technical Data, publication 2800-TD001	Provides technical specifications about the OptixPanel operator panels.
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines to install a Rockwell Automation industrial system.
Product Certifications Website, rok.auto/certifications	Provides declarations of conformity, certificates, and other certification details.

Rockwell Automation Support

Use these resources to access support information.

Technical Support Center	Find help with how-to videos, FAQs, chat, user forums, Knowledgebase, and product notification updates.	rok.auto/support
Local Technical Support Phone Numbers	Locate the telephone number for your country.	rok.auto/phonesupport
Technical Documentation Center	Quickly access and download technical specifications, installation instructions, and user manuals.	rok.auto/techdocs
Literature Library	Find installation instructions, manuals, brochures, and technical data publications.	rok.auto/literature
Product Compatibility and Download Center (PCDC)	Download firmware, associated files (such as AOP, EDS, and DTM), and access product release notes.	rok.auto/pcdc

Documentation Feedback

Waste Electrical and Electronic Equipment (WEEE)

 At the end of life, this equipment should be collected separately from any unsorted municipal waste.

Rockwell Automation maintains current product environmental compliance information on its website at rok.auto/pec.

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PN-696495