

Stratix 2000 Ethernet Unmanaged Switches

Catalog Numbers 1783-US03T01F, 1783-US06T01F, 1783-US05T, 1783-US08T

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Important User Information

Solid-state equipment has operational characteristics differing from those of electromechanical equipment. Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls (Publication [SGI-1.1](#) available from your local Rockwell Automation sales office or online at <http://www.rockwellautomation.com/literature/>) describes some important differences between solid-state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid-state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.





In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.



No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

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Throughout this manual, when necessary, we use notes to make you aware of safety considerations.

	WARNING: Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.
	ATTENTION: Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard and recognize the consequences.
	SHOCK HAZARD: Labels may be on or inside the equipment, for example, drive or motor, to alert people that dangerous voltage may be present.
	BURN HAZARD: Labels may be on or inside the equipment, for example, drive or motor, to alert people that surfaces may reach dangerous temperatures.
IMPORTANT	Identifies information that is critical for successful application and understanding of the product.

North American Hazardous Location Approval

The following information applies when operating this equipment in hazardous locations.	Informations sur l'utilisation de cet équipement en environnements dangereux.
<p>Products marked "CL I, DIV 2, GP A, B, C, D" are suitable for use in Class I Division 2 Groups A, B, C, D, Hazardous Locations and nonhazardous locations only. Each product is supplied with markings on the rating nameplate indicating the hazardous location temperature code. When combining products within a system, the most adverse temperature code (lowest "T" number) may be used to help determine the overall temperature code of the system. Combinations of equipment in your system are subject to investigation by the local Authority Having Jurisdiction at the time of installation.</p>	<p>Les produits marqués "CL I, DIV 2, GP A, B, C, D" ne conviennent qu'à une utilisation en environnements de Classe I Division 2 Groupes A, B, C, D dangereux et non dangereux. Chaque produit est livré avec des marquages sur sa plaque d'identification qui indiquent le code de température pour les environnements dangereux. Lorsque plusieurs produits sont combinés dans un système, le code de température le plus défavorable (code de température le plus faible) peut être utilisé pour déterminer le code de température global du système. Les combinaisons d'équipements dans le système sont sujettes à inspection par les autorités locales qualifiées au moment de l'installation.</p>
<div style="display: flex; align-items: center;">  <div> <p>WARNING: Explosion Hazard -</p> <ul style="list-style-type: none"> • Do not disconnect equipment unless power has been removed or the area is known to be nonhazardous. • Do not disconnect connections to this equipment unless power has been removed or the area is known to be nonhazardous. Secure any external connections that mate to this equipment by using screws, sliding latches, threaded connectors, or other means provided with this product. • Substitution of components may impair suitability for Class I, Division 2. • If this product contains batteries, they must only be changed in an area known to be nonhazardous. </div> </div>	<div style="display: flex; align-items: center;">  <div> <p>AVERTISSEMENT: Risque d'Explosion -</p> <ul style="list-style-type: none"> • Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher l'équipement. • Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher les connecteurs. Fixer tous les connecteurs externes reliés à cet équipement à l'aide de vis, loquets coulissants, connecteurs filetés ou autres moyens fournis avec ce produit. • La substitution de composants peut rendre cet équipement inadapté à une utilisation en environnement de Classe I, Division 2. • S'assurer que l'environnement est classé non dangereux avant de changer les piles. </div> </div>

European Hazardous Location Approval



WARNING: This equipment is intended for use in potentially explosive atmospheres as defined by European Union Directive 94/9/EC and has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of Category 3 equipment intended for use in Zone 2 potentially explosive atmospheres, given in Annex II to this Directive.

Compliance with the Essential Health and Safety Requirements has been assured by compliance with EN 60079-15 and EN 60079-0.



WARNING:

- This equipment is not resistant to sunlight or other sources of UV radiation.
 - This equipment must be installed in an enclosure providing at least IP54 protection when applied in Zone 2 environments.
 - This equipment shall be used within its specified ratings defined by Rockwell Automation.
 - Provision shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 40% when applied in Zone 2 environments.
 - Secure any external connections that mate to this equipment by using screws, sliding latches, threaded connectors, or other means provided with this product.
 - Do not disconnect equipment unless power has been removed or the area is known to be nonhazardous.
-

Environment and Enclosure



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 (6562 ft) without derating.

This equipment is considered Group 1, Class A industrial equipment according to IEC/CISPR 11. Without appropriate precautions, there may be difficulties with electromagnetic compatibility in residential and other environments due to conducted and radiated disturbances.

This equipment is supplied as open-type equipment. 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 enclosure must have suitable flame-retardant properties to prevent or minimize the spread of flame, complying with a flame spread rating of 5VA, V2, V1, V0 (or equivalent) if non-metallic. 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.

In addition to this publication, see:

- Industrial Automation Wiring and Grounding Guidelines, Rockwell Automation publication [1770-4.1](#), for additional installation requirements.
 - NEMA Standard 250 and IEC 60529, as applicable, for explanations of the degrees of protection provided by different types of enclosure.
-

Prevent Electrostatic Discharge



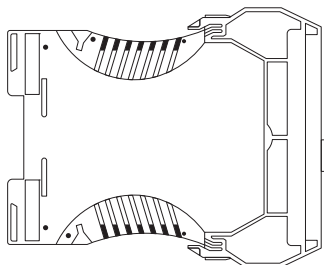
ATTENTION: This equipment is sensitive to electrostatic discharge, which can cause internal damage and affect normal operation. Follow these guidelines when you handle this equipment:

- Touch a grounded object to discharge potential static.
 - Wear an approved grounding wriststrap.
 - Do not touch connectors or pins on component boards.
 - Do not touch circuit components inside the equipment.
 - Use a static-safe workstation, if available.
 - Store the equipment in appropriate static-safe packaging when not in use.
-

About the Stratix 2000 Ethernet Unmanaged Switches

The Ethernet unmanaged switches can be used to divide an Ethernet network into segments, and to direct network traffic more efficiently than using repeating hubs. This allows for a larger network size, regardless of the amount of network traffic.

Connecting one of the switches' ports to a single device segments the network, letting you dedicate bandwidth to that device. Unmanaged switches also enable multiple simultaneous communication between devices on different ports.



The switches are available in the following port configurations for attaching local devices.

Cat. No.	Port Configuration
1783-US03T01F	3-port copper 1-port fiber
1783-US05T	5-port copper
1783-US06T01F	6-port copper 1-port fiber
1783-US08T	8-port copper

The 3-port copper 1-port fiber switch (catalog number 1783-US03T01F) is shown in this publication.

The individual ports autonegotiate link speeds (10 Mbps or 100 Mbps). To improve data throughput, traffic is restricted to ports in a data exchange, while other data is simultaneously exchanged on other ports.

IMPORTANT

The device you connect to a switch should have its Ethernet port configured for autonegotiate to avoid confusion between half- and full-duplex communication. You can also set the device's Ethernet port to half-duplex. Failure to do so may result in higher error rates.

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In addition to a power status indicator, each port has these indicators.

- Each copper port has two link/status/activity indicators (only one of which is active at a time).
- The fiber optic port has one link/status/activity indicator.

When this indicator is lit	Link speed is
Amber (copper port only)	10 Mbps
Green	100 Mbps

The switches operate on low-voltage AC or DC power.

Features supported by the Ethernet unmanaged switches include the following:

- 10 Mbps or 100 Mbps, full- or half-duplex communication, per copper port autonegotiation
- Automatic crossover detection (auto MDIX)
- LC-type fiber optic connector; multimode cable

Use Caution When Handling Switches with Fiber Optic Ports

Observe the following when using the unmanaged switches equipped with fiber optic ports (catalog numbers 1783-US03T01F and 1783-US06T01F).



ATTENTION: Do not look into the optical port. Under certain conditions, viewing the optical port may expose the eye to hazards. When viewed under some conditions, the optical port may expose the eye beyond the maximum permissible exposure recommendations.

Required Tools

You need these tools to install the switch.

Item	Description
Screwdriver	6 mm (0.25 in.) width blade
	3 mm (0.12 in.) width blade, for use with electrical connector

Required System Components

The switches require either of these types of power supplies:

- 24V DC rated voltage (10...35V DC; maximum 4 W power consumption)
- 20V AC rated voltage (10...24V AC; maximum 6VA power consumption)



ATTENTION: To comply with the CE Low-voltage Directive (LVD), this equipment must be powered from a source compliant with Safety Extra Low-voltage (SELV) or Protected Extra Low Voltage (PELV).

To comply with UL restrictions, this equipment must be powered from a source compliant with Class 2.

See the procedure on page [13](#) to wire the switch.

Install the Switch

Follow these procedures to install the switch.



WARNING: An electrical arc can occur:

- if you connect or disconnect the communication cable with power applied to this module or any device on the network.
- if you connect or disconnect wiring while the field-side power is on

This can cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

Mount the Switch

Mount the switch vertically on a horizontal DIN rail, either free-standing or at the rear of the control cabinet. You can mount the switch adjacent to another Stratix 2000 switch.



ATTENTION: Failure to mount the switches vertically on a horizontal DIN rail may result in overheating and switch failure.

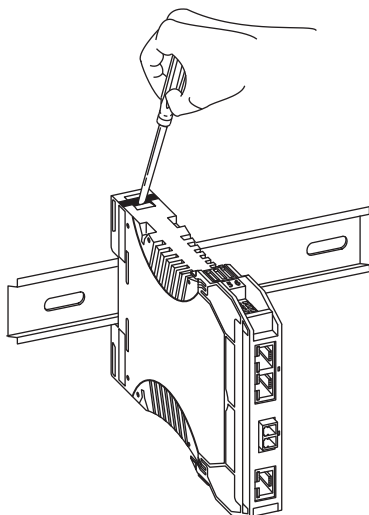
Make sure that the switch is oriented so that the ports face forward. The Power status indicator should be oriented to the right. See the illustrations on page [12](#).



ATTENTION: Maintain 50 mm (2 in.) of space on the right and left sides, and the top and bottom of the switch from enclosure walls, wireways, and adjacent equipment, for ventilation and electrical isolation.

Follow these steps to mount the switch on a DIN rail.

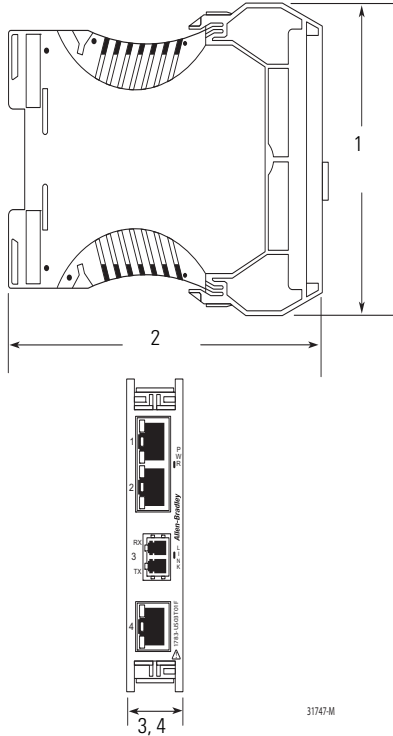
1. Use the 6 mm (0.25 in.) screwdriver to open the latch at either the top or bottom of the switch.
2. Hold the latch open and hook the latch over the DIN rail.
3. Remove the screwdriver and allow the latch to close.



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Product Dimensions

The following illustrations show the switch dimensions.



Item	Description	Item	Description
1	108 mm (4.25 in.)	3	22.5 mm (0.89 in.)
2	127.8 mm (5.03 in.)	4	Other versions of the switch (not shown here, catalog numbers 1783-US06T01F and 1783-US08T) are 45 mm (1.77 in.) wide

Wire the Switch



ATTENTION: To comply with the CE Low Voltage Directive (LVD), this equipment must be powered from a source compliant with Safety Extra Low-voltage (SELV) or Protected Extra Low Voltage (PELV).

To comply with UL restrictions, this equipment must be powered from a source compliant with Class 2.

Provide low-voltage AC or DC power to the switch by using the screw terminals at the top and bottom of the switch. The AC connector is at the top of the switch. The DC connector is at the bottom of the switch.

Wire the Switch for AC Operation

This table shows pinouts for the low-voltage AC power supply cable.

Terminal	Designation
4	(Ground) functional earth ground Terminal 1 of the DC connector may be used in place of terminal 4 of the AC connector
5	~ 20 (20V AC nom)
6	~ 20 (20V AC nom)

Follow these steps to wire the switch.

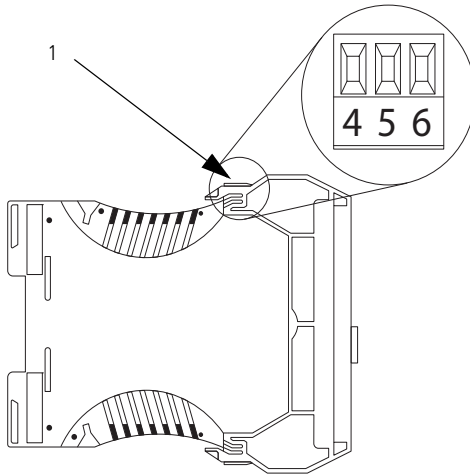
1. Make sure that power to the power supply is turned off.
2. Make sure you have the proper gauge of wire for your power supply.

Minimum wire gauge is 1.5 mm² (16 AWG).

3. Strip approximately 9 mm (0.35 in.) from each end of the wire.
4. If the connector is already installed in the switch (at the top of the switch; see item 1), use a screwdriver to gently pry the connector from the switch.

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5. If the connector is not already installed in the switch, wire the connector before replacing it in the switch.



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Item	Description
1	Screw terminal connection from low-voltage AC power supply to switch

6. Use the 3 mm (0.12 in.) screwdriver to loosen the screw terminals on the connector.
7. Connect one AC output (20V AC nominal) from the low-voltage AC power supply to terminal 5 (~20) and tighten the screw.
8. Connect the other AC output (20V AC nominal) from the low-voltage AC power supply to terminal 6 (~20) and tighten the screw.

9. Connect functional earth ground to terminal 4 and tighten the screw.

IMPORTANT Maximum recommended torque for all screw connections is 0.8 N•m (7 lb•in).

Refer to the grounding considerations on page [20](#).

10. Plug the connector into the switch.
11. Tug gently on the wires to make sure the connections are secure.

Wire the Switch for DC Operation

This table shows pinouts for the DC power supply cable.

Terminal	Designation
1	Ground (functional earth ground) Terminal 4 of the AC connector may be used in place of terminal 1 of the DC connector
2	DC+ (24V DC nom)
3	DC- (0V DC)

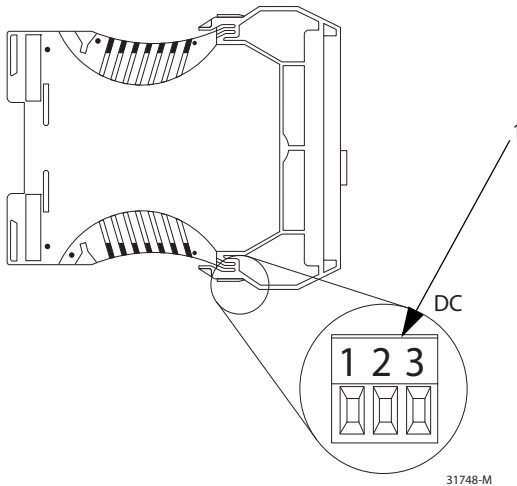
1. Make sure that power to the power supply is turned off.
2. Make sure you have the proper gauge of wire for your power supply.

Minimum wire gauge is 1.5 mm² (16 AWG).

3. Strip approximately 9 mm (0.35 in.) from each end of the wire.
4. If the connector is already installed in the switch, use a screwdriver to gently pry the connector from the switch.

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If the connector is not already installed in the switch (at the bottom of the switch; see item 1 below), wire the connector before replacing it in the switch.



Item	Description
1	Screw terminal connection from DC power supply to switch

5. Use the 3 mm (0.12 in.) screwdriver to loosen the screw terminals on the connector.
6. Connect DC+ (24V DC nominal) from the power supply to terminal 2 and tighten the screw.
7. Connect DC- (0V DC) from the power supply to terminal 3 and tighten the screw.
8. Connect functional earth ground to terminal 1 and tighten the screw.

IMPORTANT Maximum recommended torque for all screw connections is 0.8 N•m (7 lb•in).

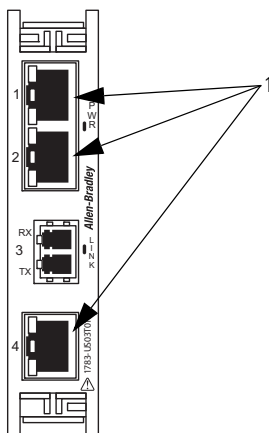
Refer to the grounding considerations on page [20](#).

9. Plug the connector into the switch.
10. Tug gently on the wires to be sure the connections are secure.

Connect the Copper Ethernet Ports

Follow these steps to connect the copper Ethernet ports on the switch.

1. Locate the copper Ethernet RJ45 ports on the front of the switch.



Item	Description
1	Copper Ethernet ports

2. Connect one end of an Ethernet cable to one of the copper ports on the front panel of the switch.
3. Connect the other end of the Ethernet cable to a device in your Ethernet network.

Connect the Fiber Optic Ethernet Port

Follow these steps to connect the fiber-optic Ethernet port on the switch.

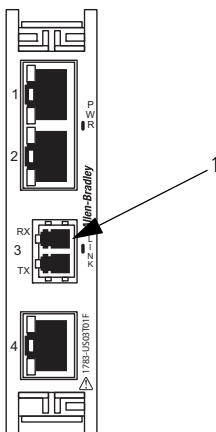


ATTENTION: Do not look into the optical port. Under certain conditions, viewing the optical port may expose the eye to hazards. When viewed under some conditions, the optical port may expose the eye beyond the maximum permissible exposure recommendations.

TIP

For fiber optic specifications, see page [24](#).

1. Locate the fiber-optic Ethernet port on the front of the switch.



Item	Description
1	Fiber optic Ethernet ports

2. Connect the duplex LC-connector end of the fiber optic cable to the fiber-optic Ethernet port.
3. Connect the other end of the cable to a device in your network, or to another switch if connecting switches together.

Grounding Considerations



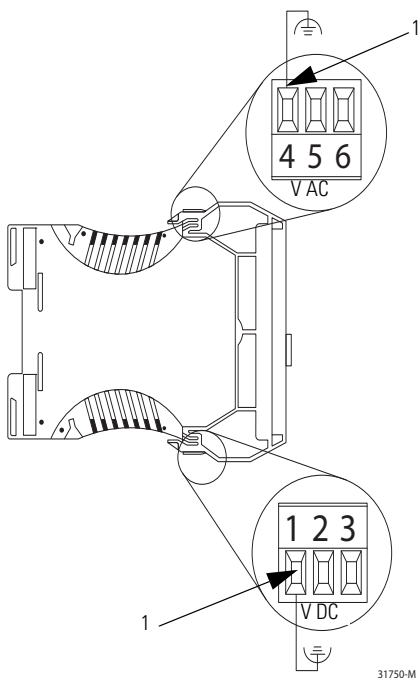
ATTENTION: For proper grounding, you must always connect the power supply functional-ground screw when connecting the power supply. You must provide an acceptable grounding path for each device in your application. For more information on proper grounding guidelines, refer to Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

This product is intended to be mounted to a well-grounded mounting surface, such as a metal panel. The functional-earth ground connection to the product is through the specified pin on the AC and DC connection terminals.

IMPORTANT Only one of these ground connections is required.

- Pin 1 on the DC connection terminals
 - Pin 4 on the AC connection terminals
-

Connect the functional earth (FE) ground to the ground pin of either the DC (pin 1) or AC (pin 4) power connector on one of the connectors at the top and bottom of the switch.



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Item	Description
1	Connect the functional earth (FE) ground to the ground pin of either the DC (pin 1) or AC (pin 4) connector

Refer to Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#), for additional information.

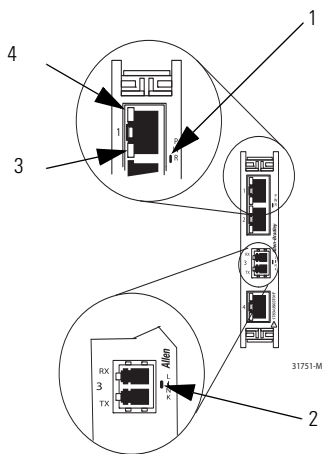
Status Indicators

To aid in troubleshooting, the switch contains these indicators:

- A power indicator labeled PWR
- Two-link status indicators on each copper Ethernet port (on the RJ45 connector)

These indicators are not labeled on the switch faceplate.

Switches with a fiber-optic Ethernet port have an additional Ethernet link-status indicator labeled LINK.



Item	Description	Item	Description
1	PWR status indicator	3	Lower-copper port status indicator (green)
2	Fiber optic Ethernet port LINK status indicator	4	Upper-copper port status indicator (amber)

Status Indicators

Indicator	Status	Description
PWR	Solid green	The switch is powered
Upper copper port status indicator only	Solid amber	10 Mbps Ethernet link
	Flashing amber	There is activity on the 10 Mbps Ethernet link connected to this copper port
Lower copper port status indicator only	Solid green	100 Mbps Ethernet link
	Flashing green	There is activity on the 100 Mbps Ethernet link connected to this copper port
LINK	Solid green	An Ethernet link exists on the fiber optic port
	Flashing green	There is activity on the Ethernet link on the fiber optic port

Specifications

Technical Specifications - Stratix 2000 Switches

Attribute	1783-US03T01F, 1783-US06T01F, 1783-US05T, 1783-US08T
Enclosure type rating	Meets IP20
Inrush current, max	2.2 A
AC power-supply voltage rating	20V AC (10...24V AC)
DC power-supply voltage rating	24V DC (10...35V DC)
Isolation voltage	30V (continuous), Basic Insulation Type, between communication ports and power ports No isolation between individual communication ports Type tested at 500V AC for 60 s
Power consumption, max	4 W (6VA) Current 400 mA at 10V DC max
Wire size	Communication connectors: RJ45 connector according to IEC 60603-7, 2 or 4 pair Category 5e min cable according to TIA 568-B.1 or Category 5 cable according to ISO/IEC 24702 Power connectors: 1.5...2.5 mm ² (16...14 AWG) solid or stranded copper wire rated at 75 °C (167 °F) or greater 1.2 mm (3/64 in.) insulation max
Torque, max recommended	0.8 N•m (7 lb•in) on power connectors
Fiber-optic Ethernet data rate	100 Mbps
Fiber-optic connecting mode	Full duplex
Fiber-optic wavelength	1310 nm
Fiber-optic cable length, max	Graded index multimode fiber; 2000 m (6562 ft)
Fiber-optic link budget	8 dB with 62.5 / 125 μm multimode cable 4 dB with 50 / 125 μm multimode cable
Fiber-optic connector type	LC

Technical Specifications - Stratix 2000 Switches

Attribute	1783-US03T01F, 1783-US06T01F, 1783-US05T, 1783-US08T
Wiring category ⁽¹⁾	2 - on power ports 2 - on communication ports
North American temp code	T4
IEC temp code	T4

- (1) Use this Conductor Category information for planning conductor routing. Refer to Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

Environmental Specifications - Stratix 2000 Switches

Attribute	1783-US03T01F, 1783-US06T01F, 1783-US05T, 1783-US08T
Temperature, operating <ul style="list-style-type: none"> IEC 60068-2-1 (Test Ad, Operating Cold) IEC 60068-2-2 (Test Bd, Operating Dry Heat) IEC 60068-2-14 (Test Nb, Operating Thermal Shock) 	0...60 °C (32...140 °F)
Temperature, nonoperating <ul style="list-style-type: none"> IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold) IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat) IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) 	-40...85 °C (-40...185 °F)
Relative humidity <ul style="list-style-type: none"> IEC 60068-2-30 (Test Db, Unpackaged Damp Heat) 	5...95% noncondensing
Vibration <ul style="list-style-type: none"> IEC 60068-2-6 (Test Fc, Operating) 	2 g @ 10...500 Hz

Environmental Specifications - Stratix 2000 Switches

Attribute	1783-US03T01F, 1783-US06T01F, 1783-US05T, 1783-US08T
Operating shock • IEC 60068-2-27 (Test Ea, Unpackaged Shock)	15 g
Nonoperating shock • IEC 60068-2-27 (Test Ea, Unpackaged Shock)	30 g
Emissions • CISPR 11	Group 1, Class A
ESD immunity • IEC 61000-4-2	1783-US06T01F: 4 kV contact discharges 8 kV air discharges 1783-US03T01F, 1783-US05T, 1783-US08T: 6 kV contact discharges 8 kV air discharges
Radiated RF immunity • IEC 61000-4-3	10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM at 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM at 1890 MHz 1V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz
EFT/B immunity • IEC 61000-4-4	±2 kV at 5 kHz on power ports ±2 kV at 5 kHz on communication ports
Surge transient immunity • IEC 61000-4-5	±1 kV line-line(DM) and ±2 kV line-earth(CM) on power ports ±2 kV line-earth(CM) on communication ports
Conducted RF immunity • IEC 61000-4-6	10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz

Certifications - Stratix 2000 Switches

Certifications (when product is marked)⁽¹⁾	1783-US03T01F, 1783-US06T01F, 1783-US05T, 1783-US08T
c-UL-us	<ul style="list-style-type: none"> • UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584. • UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.
CE	European Union 2004/108/EC EMC Directive, compliant with: <ul style="list-style-type: none"> • EN 61326-1; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B)
C-Tick	Australian Radiocommunications Act, compliant with: <ul style="list-style-type: none"> • AS/NZS CISPR 11; Industrial Emissions
Ex	European Union 94/9/EC ATEX Directive, compliant with: <ul style="list-style-type: none"> • EN 60079-15; Potentially Explosive Atmospheres, Protection "n" • EN 60079-0; General Requirements • II 3 G Ex nA II T4 X

(1) See the Product Certification link at <http://www.ab.com> for Declarations of Conformity, Certificates, and other certification details.

Additional Resources

These documents contain additional information concerning related Rockwell Automation products.

Resource	Description
EtherNet/IP Industrial Protocol White Paper, publication ENET-WP001A	Describes how to implement services and data objects on a TCP/UDP/IP based Ethernet network.
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, http://www.ab.com	Provides declarations of conformity, certificates, and other certification details.

You can view or download publications at <http://www.rockwellautomation.com/literature>. To order paper copies of technical documentation, contact your local Rockwell Automation distributor or sales representative.

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