

ETHERLINE ACCESS SWITCH Hardware Installation Guide

ETHERLINE ACCESS U05T/U08T

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Information



For more information please visit:

www.lappkabel.com/activenetworkcomponents



LAPP GROUP

P/N: 1802002003010



Overview

The ETHERLINE ACCESS U05T/U08T industrial Ethernet switches are entry-level industrial 5 and 8-port Ethernet switches that support IEEE 802.3, IEEE 802.3u, and IEEE 802.3x with 10/100M, full/half-duplex, and MDI/MDIX auto-sensing.

The ETHERLINE ACCESS U05T/U08T provides 12/24/48 VDC (9.6 to 60 VDC)/18 to 30 VAC redundant power inputs that can be connected simultaneously to a live AC/DC power source. The switches are available with a standard operating temperature range from -10 to 60°C, and IP30 metal housing makes them rugged enough for any harsh industrial environment.

To provide greater versatility for use with applications from different industries, the ETHERLINE ACCESS U05T/U08T allow users to enable or disable broadcast storm protection with DIP switches on the outer panel.

The ETHERLINE ACCESS U05T/U08T switches can be easily installed with DIN-Rail mounting as well as distribution boxes. The DIN-rail mounting capability and IP30 metal housing with LED indicators make the plug-and-play ETHERLINE ACCESS U05T/U08T switches reliable and easy to use.



ATTENTION

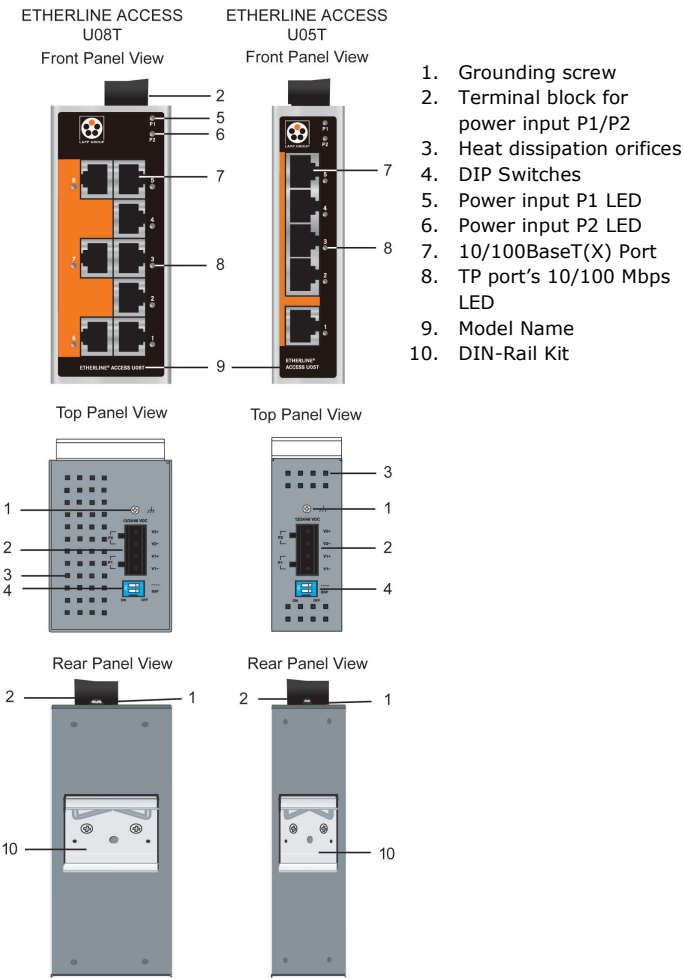
This device complies with part 15 of FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Package Checklist

Your device is shipped with the following items. If any of these items is missing or damaged, please contact your customer service representative for assistance.

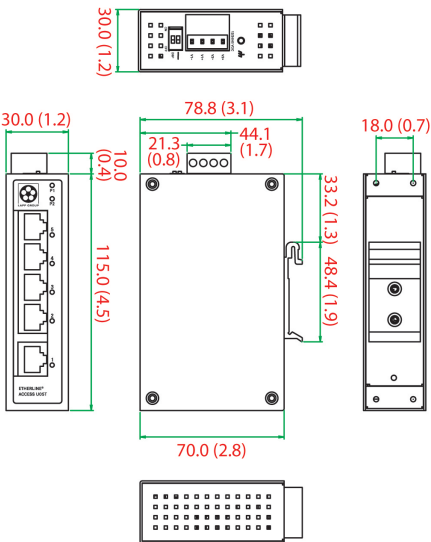
- ETHERLINE ACCESS U05T/U08T switch
- Hardware installation guide

Panel Layout of ETHERLINE ACCESS U08T/U08T

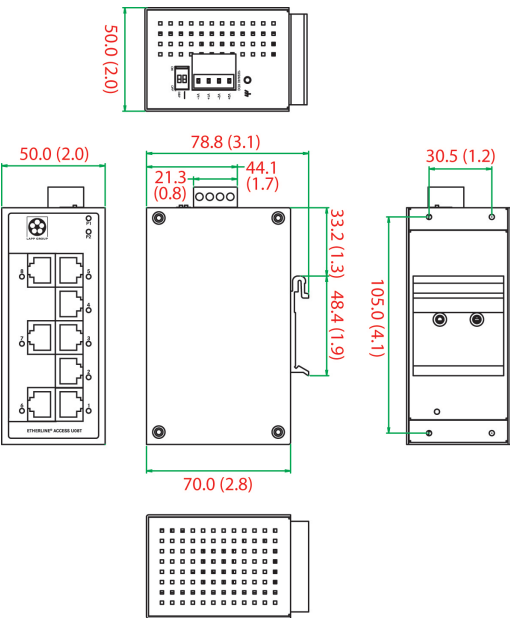


Mounting Dimensions

ETHERLINE ACCESS U05T



ETHERLINE ACCESS U08T



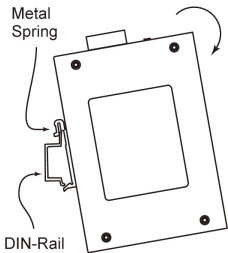
Unit = mm (inch)

DIN-Rail Mounting

The aluminum DIN-rail attachment plate should already be fixed to the back panel of the ETHERLINE ACCESS U05T/U08T when you take it out of the box. If you need to reattach the DIN-rail attachment plate, make sure the stiff metal spring is situated towards the top, as shown in the figures below.

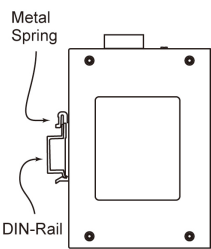
STEP 1:

Insert the top of the DIN-Rail into the slot just below the stiff metal spring.



STEP 2:

The DIN-Rail attachment unit will snap into place as shown below.



To remove the device from the DIN-Rail, simply reverse Steps 1 and 2 above.

Wiring Requirements



WARNING

Safety First!

Turn the power off before disconnecting modules or wires. The correct power supply voltage is listed on the product label. Check the voltage of your power source to make sure that you are using the correct voltage. Do **NOT** use a voltage greater than what is specified on the product label.

These devices must be supplied by a SELV source as defined in the Low Voltage Directive 2006/95/EC and 2004/108/EC.



WARNING

Safety First!

Calculate the maximum possible current in each power wire and common wire. Observe all electrical codes dictating the maximum current allowable for each wire size.

If the current goes above the maximum ratings, the wiring could overheat, causing serious damage to your equipment.

You should also pay attention to the following points:

- Use separate paths to route wiring for power and devices. If power wiring and device wiring paths must cross, make sure the wires are perpendicular at the intersection point.
NOTE: Do not run signal or communications wiring and power wiring in the same wire conduit. To avoid interference, wires with different signal characteristics should be routed separately.
- You can use the type of signal transmitted through a wire to determine which wires should be kept separate. The rule of thumb is that wiring that shares similar electrical characteristics can be bundled together.
- Keep input wiring and output wiring separated.
- It is strongly advised that you label wiring to all devices in the system when necessary.

Grounding the ETHERLINE ACCESS U05T/U08T

Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground screw to the grounding surface prior to connecting devices.

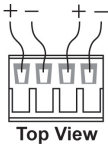


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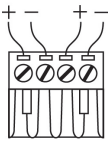
This product is intended to be mounted to a well-grounded mounting surface such as a metal panel.

Wiring the Redundant Power Inputs

The top two contacts and the bottom two contacts of the 4-contact terminal block connector on the device's top panel are used for the device's two AC/DC inputs. Top and front views of one of the terminal block connectors are shown here.



Top View



Front View

STEP 1:

Insert the negative/positive AC/DC wires into the V-/V+ terminals.

STEP 2:

To keep the AC/DC wires from pulling loose, use a small flat-blade screwdriver to tighten the wire-clamp screws on the front of the terminal block connector.

STEP 3:

Insert the plastic terminal block connector prongs into the terminal block receptor, which is located on device's top panel.



ATTENTION

Before connecting the ETHERLINE ACCESS U05T/U08T to the AC/DC power inputs, make sure the AC/DC power source voltage is stable.

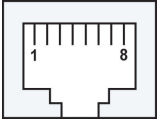
Communication Connections

The ETHERLINE ACCESS U05T model has 5 10/100BaseT(X) Ethernet ports. The ETHERLINE ACCESS U08T model has 8 10/100BaseT(X) Ethernet ports.

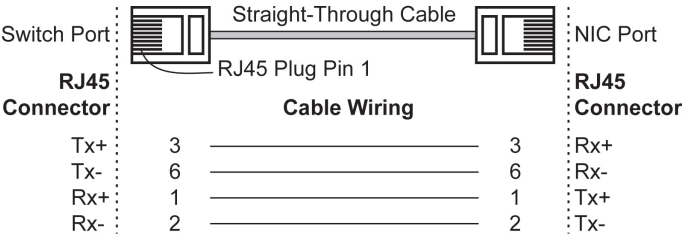
10/100BaseT(X) Ethernet Port Connection

The 10/100BaseT(X) ports located on the device's front panel are used to connect to Ethernet-enabled devices. Below we show pinouts for both MDI (NIC-type) ports and MDI-X (HUB/Switch-type) ports, and also show cable wiring diagrams for straight-through and cross-over Ethernet cables.

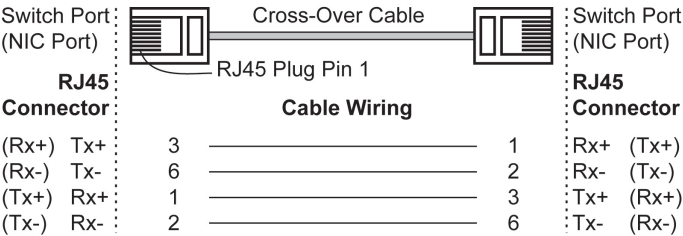
10/100Base T(x) RJ45 Pinouts

MDI Port Pinouts		MDI-X Port Pinouts		8-pin RJ45
Pin	Signal	Pin	Signal	
1	Tx+	1	Rx+	
2	Tx-	2	Rx-	
3	Rx+	3	Tx+	
6	Rx-	6	Tx-	

RJ45 (8-pin) to RJ45 (8-pin) Straight-Through Cable Wiring



RJ45 (8-pin) to RJ45 (8-pin) Cross-Over Cable Wiring

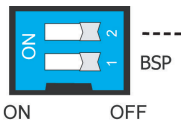


Redundant Power Inputs

Both power inputs can be connected simultaneously to live AC/DC power sources. If one power source fails, the other live source acts as a backup, and automatically supplies all of the ETHERLINE ACCESS U05T/U08T's power needs.

DIP Switch Settings

ETHERLINE ACCESS U05T/U08T DIP Switches



The default setting for each DIP Switch is OFF. The following table explains the effect of setting the DIP Switches to the ON positions.

DIP Switch	Setting	Description
----		Serves no function (reserved for future use).
BSP	ON	Enables broadcast storm protection
	OFF	Disables broadcast storm protection



ATTENTION

To actively updated DIP switch settings, power off and then power on the device.

LED Indicators

The front panel of the ETHERLINE ACCESS U05T/U08T contains several LED indicators. The function of each LED is described in the table below.

LED	Color	State	Description
P1	AMBER	On	Power is being supplied to power input P1.
		Off	Power is not being supplied to power input P1.
P2	AMBER	On	Power is being supplied to power input P2.
		Off	Power is not being supplied to power input P2.
10M	Yellow	On	TP port's 10 Mbps link is active.
		Blinking	Data is being transmitted at 10 Mbps.
		Off	TP Port's 10 Mbps link is inactive
100M	GREEN	On	TP port's 100 Mbps link is active.
		Blinking	Data is being transmitted at 100 Mbps.
		Off	100Base TP Port's link is inactive.

Auto MDI/MDI-X Connection

The Auto MDI/MDI-X function allows users to connect the device's 10/100BaseTX ports to any kind of Ethernet device, without needing to pay attention to the type of Ethernet cable being used for the connection. This means that you can use either a straight-through cable or cross-over cable to connect this device to Ethernet devices.

Dual Speed Functionality and Switching

The ETHERLINE ACCESS U05T/U08T's 10/100 Mbps switched RJ45 port auto negotiates with the connected device for the fastest data transmission rate supported by both devices. ETHERLINE ACCESS U05T/U08T is a plug-and-play device, so that software configuration is not required at installation, or during maintenance. The half/full duplex mode for the switched RJ45 ports is user dependent and changes (by auto-negotiation) to full or half duplex, depending on which transmission speed is supported by the attached device.

Switching, Filtering, and Forwarding

Each time a packet arrives at one of the switched ports, a decision is made to either filter or forward the packet. Packets with source and destination addresses belonging to the same port segment will be filtered, constraining those packets to one port, and relieving the rest of the network from the need to process them. A packet with destination address on another port segment will be forwarded to the appropriate port, and will not be sent to ports where it is not needed. Packets that are used in maintaining the operation of the network (such as the occasional multi-cast packet) are forwarded to all ports. The ETHERLINE ACCESS U05T/U08T operates in the store-and-forward switching mode, which eliminates bad packets and enables peak performance to be achieved when there is heavy traffic on the network.

Switching and Address Learning

The ETHERLINE ACCESS U05T/U08T has an address table that can hold up to 1024 addresses, which makes it suitable for use with large networks. The address tables are self-learning, so that as nodes are added or removed, or moved from one segment to another, the ETHERLINE ACCESS U05T/U08T automatically keeps up with new node locations. An address-aging algorithm causes the least-used addresses to be deleted in favor of newer, more frequently used addresses. To reset the address buffer, power down the unit and then power it back up.

Auto-Negotiation and Speed Sensing

All of the ETHERLINE ACCESS U05T/U08T's RJ45 Ethernet ports independently support auto-negotiation for speeds in the 10BaseT and 100BaseTX modes, with operation according to the IEEE 802.3u standard. This means that some nodes could be operating at 10 Mbps, while at the same time, other nodes are operating at 100 Mbps. Auto-negotiation takes place when an RJ45 cable connection is made, and then each time a LINK is enabled. The ETHERLINE ACCESS U05T/U08T advertises its capability for using either 10 Mbps or 100 Mbps transmission speeds, with the device at the other end of the cable expected to advertise in a similar manner. Depending on what type of device is connected, this will result in agreement to operate at a speed of either 10 Mbps or 100 Mbps. If an ETHERLINE ACCESS U05T/U08T RJ45 Ethernet port is connected to a non-negotiating device, it will default to 10 Mbps speed and half-duplex mode, as required by the IEEE 802.3u standard.

Specifications

Technology	
Standards	IEEE 802.3 for 10BaseT, IEEE 802.3u for 100BaseT(X) and 100BaseFX, IEEE 802.3x for Flow Control
Processing Type	Store and Forward
Flow Control	IEEE 802.3x flow control, back pressure flow control
Interface	
RJ45 Ports	10/100BaseT(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection
LED Indicators	P1, P2 (Power), 10/100M (TP port)
DIP Switch	enable/disable broadcast storm protection
Power	
Input Voltage	12/24/48 VDC (9.6 to 60 VDC), 18 to 30VAC (47 to 63 Hz)
Input Current @ 24 VDC	ETHERLINE ACCESS U05T: Max. 0.1 A ETHERLINE ACCESS U08T: Max. 0.13 A
Connection	Removable 4-contact terminal block
Overload Current Protection	1.1 A
Reverse Polarity Protection	Present
Physical Characteristics	
Housing	IP30 protection, metal case
Dimensions	ETHERLINE ACCESS U08T: 50 x 115 x 70 mm ETHERLINE ACCESS U05T: 30 x 115 x 70 mm
Weight	ETHERLINE ACCESS U08T: 275 g ETHERLINE ACCESS U05T: 175 g
Installation	DIN-Rail Mounting
Environmental Limits	
Operating Temperature	-10 to 60°C (14 to 140°F)
Storage Temperature	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)
Regulatory Approvals	
Safety	UL508
Maritime	DNV, GL
EMC	EN 55032/24
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 IEC 61000-4-11
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6