

ETHERLINE ACCESS SWITCH Hardware Installation Guide

ETHERLINE ACCESS M05T/M08T

Version 1.0, June 2017

Information



For more information please visit:

www.lappkabel.com/activenetworkcomponents



LAPP GROUP

P/N: 1802004003010



Overview

The ETHERLINE ACCESS M05T/M08T, which includes both 5 and 8-port smart Ethernet switches, is a cost-effective solution for your Ethernet connections. In addition, the built-in smart alarm function helps system maintainers monitor the health of your Ethernet network.



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

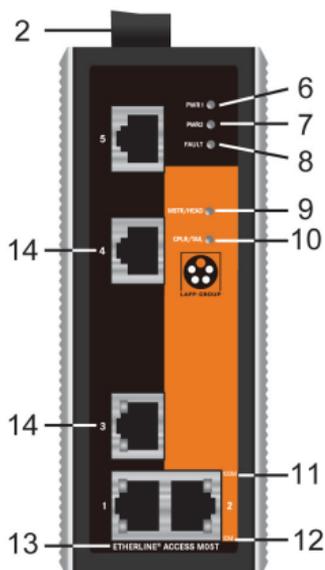
The ETHERLINE ACCESS M05T/M08T is shipped with the following items. If any of these items is missing or damaged, please contact your customer service representative for assistance.

- ETHERLINE ACCESS M05T/M08T Ethernet switch
- RJ45-to-DB9 console port cable
- Protective caps for unused ports
- Hardware installation guide

Panel Layout of ETHERLINE ACCESS M05T/M08T

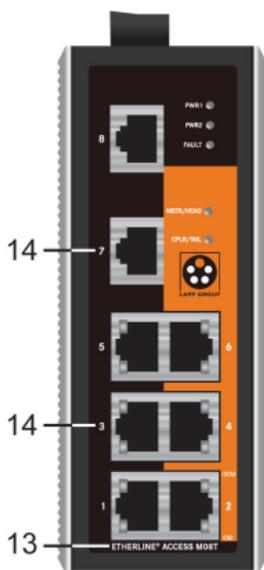
ETHERLINE ACCESS
M05T

Front Panel View

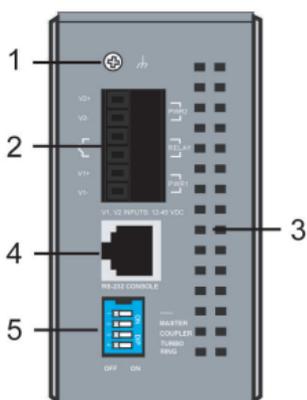


ETHERLINE ACCESS
M08T

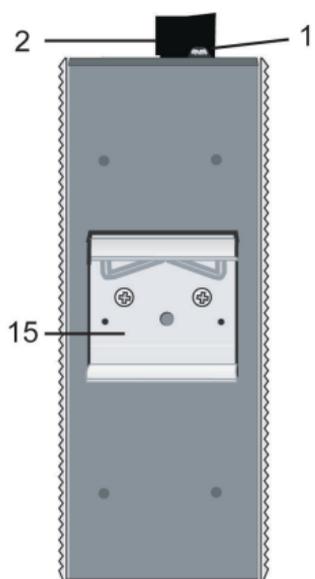
Front Panel View



Top Panel View

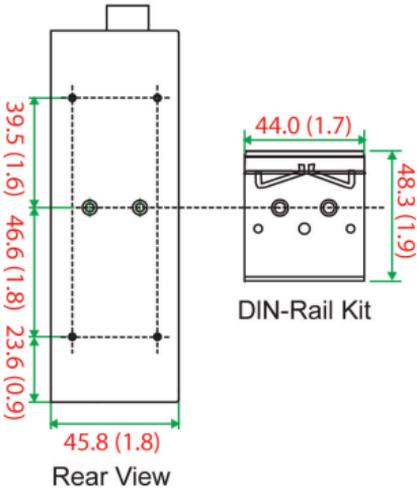
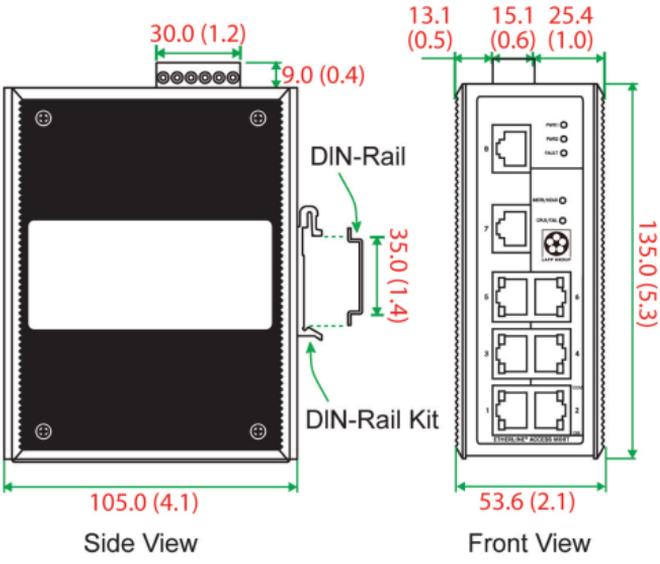


Rear Panel View



1. Grounding screw
2. Terminal block for power input PWR1/PWR2 and relay output
3. Heat dissipation vents
4. Console port
5. DIP switches
6. Power input PWR1 LED
7. Power input PWR2 LED
8. Fault LED
9. MSTR/HEAD: LED indicator
10. CPLR/TAIL: LED indicator
11. TP port's 100 Mbps LED
12. TP port's 10 Mbps LED
13. Model Name
14. 10/100BaseT(X) ports
15. DIN-Rail kit

Mounting Dimensions

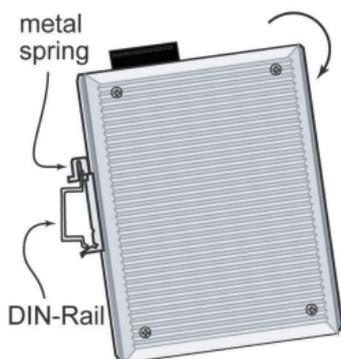


Unit = mm (inch)

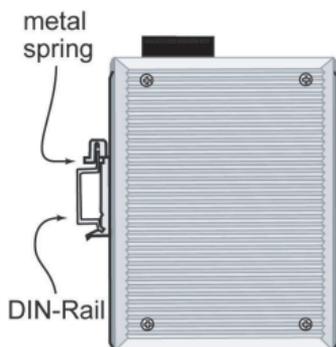
DIN-Rail Mounting

The aluminum DIN-Rail attachment plate should already be fixed to the back panel of the ETHERLINE ACCESS M05T/M08T 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 following figures.

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.



To remove the ETHERLINE ACCESS M05T/M08T switch from the DIN-Rail, simply reverse Steps 1 and 2.

NOTE In order to ensure reliable operations, please make sure the operating temp. of the environment does not exceed the spec. When mounting an ETHERLINE ACCESS M05T/M08T switch with other operating units in a cabinet without forced ventilation, minimum spacing of 5cm on both sides and above/below the switch is recommended.

Wiring Requirements



WARNING

Safety First!

Be sure to disconnect the power cord before installing and/or wiring your ETHERLINE ACCESS M05T/M08T switch.

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.

Be sure to read and follow these important guidelines:

- 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 through the same wire conduit. To avoid interference, wires with different signal characteristics should be routed separately.
- 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 separate.
- When necessary, you should label the wiring to all devices in the system.

Grounding the ETHERLINE ACCESS M05T/M08T

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.



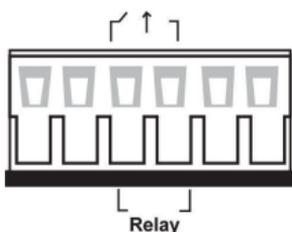
ATTENTION

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

Wiring the Relay Contact

The Relay Contact consists of the two middle contacts of the terminal block on the ETHERLINE ACCESS M05T/M08T's top panel. Refer to the next section for detailed instructions on how to connect the wires to the terminal block connector, and how to attach the terminal block connector to the terminal block receptor.

In this section, we explain the meaning of the two contacts used to connect the Alarm Contact.



FAULT: The two middle contacts of the 6-contact terminal block connector are used to detect both power faults and port faults. The two wires attached to the fault contacts form an open circuit when:

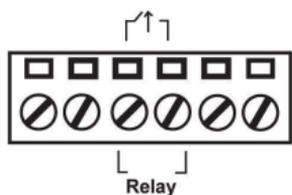
A relay warning event is triggered.

OR

The ETHERLINE ACCESS M05T/M08T is the Master of this Turbo Ring, and the Turbo Ring is broken.

OR

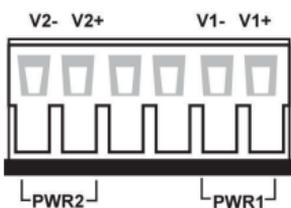
There is a start-up failure.



If none of these three conditions is satisfied, the fault circuit will remain closed.

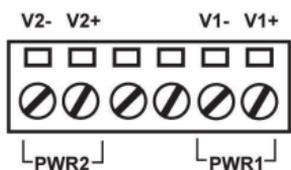
Wiring the Redundant Power Inputs

The top two contacts and the bottom two contacts of the 6-contact terminal block connector on the ETHERLINE ACCESS M05T/M08T's top panel are used for the ETHERLINE ACCESS M05T/M08T's two DC inputs. Top and front views of one of the terminal block connectors are shown in the following figures:



STEP 1: Insert the negative/positive DC wires into the V-/V+ terminals, respectively.

STEP 2: To keep the 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 the ETHERLINE ACCESS M05T/M08T's top panel.



ATTENTION

Before connecting the ETHERLINE ACCESS M05T/M08T to the DC power inputs, make sure the DC power source voltage is stable.

Communication Connections

The ETHERLINE ACCESS M05T model has 5 10/100BaseT(X) Ethernet ports. The ETHERLINE ACCESS M08T model has 8 10/100BaseT(X) Ethernet ports.

10/100BaseT(X) Ethernet Port Connection

The 10/100BaseT(X) ports located on the ETHERLINE ACCESS M05T/M08T's front panel are used to connect to Ethernet-enabled devices.

Next, 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

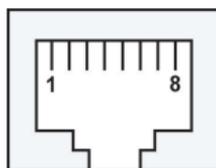
MDI Port Pinouts

Pin	Signal
1	Tx+
2	Tx-
3	Rx+
6	Rx-

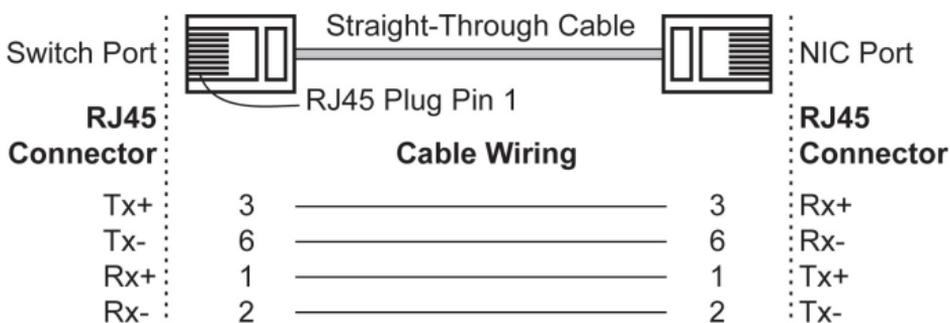
MDI-X Port Pinouts

Pin	Signal
1	Rx+
2	Rx-
3	Tx+
6	Tx-

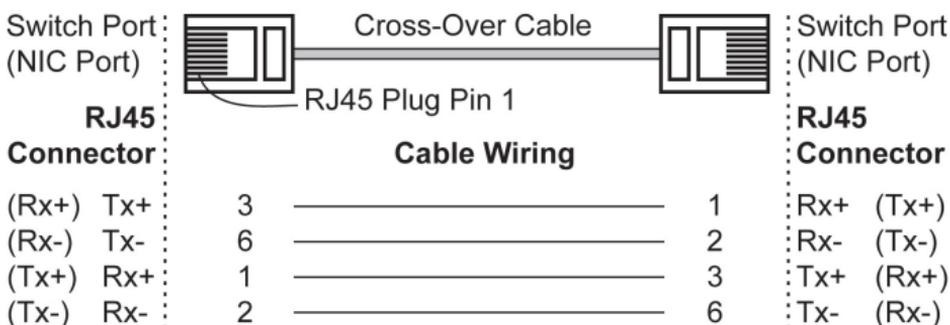
8-pin RJ45



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 DC power sources. If one power source fails, the other live source acts as a backup, and automatically supplies the ETHERLINE ACCESS M05T/M08T with power.

Relay Contact

The ETHERLINE ACCESS M05T/M08T switch has one relay contact located on the top panel. For detailed instructions on how to connect the relay contact power wires to the two middle contacts of the 6-contact terminal block connector, see the **Wiring the Relay Contact** section. A typical scenario would be to connect the fault circuit to a warning light located in the control room. The light can be set up to switch on when a fault is detected.

The relay contact has two terminals that form a fault circuit for connecting to an alarm system. The two wires attached to the fault contacts form an open circuit when (1) a relay warning event is triggered, (2) the ETHERLINE ACCESS M05T/M08T is the Master of this Turbo Ring, and the Turbo Ring is broken, or (3) there is a start-up failure. If none of these three conditions occur, the fault circuit will be closed.

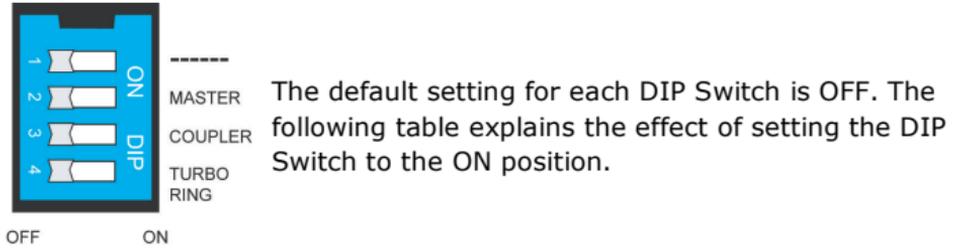
Turbo Ring DIP Switch Settings

ETHERLINE ACCESS M05T/M08T switches are plug-and-play managed redundant Ethernet switches. The proprietary Turbo Ring protocol provide better network reliability and faster recovery time. Turbo Ring's recovery time is less than 300 ms (**Turbo Ring**) or 20 ms (**Turbo Ring V2**) —compared to a 3 to 5-minute recovery time for commercial switches—decreasing the possible loss caused by network failures in an industrial setting.

There are 4 Hardware DIP Switches for Turbo Ring on the top panel of the ETHERLINE ACCESS M05T/M08T that can be used to set up the Turbo Ring easily within seconds. If you do not want to use a hardware DIP switch to set up Turbo Ring, you can use a web browser, Telnet, or console to disable this function.

NOTE Refer to the **Turbo Ring DIP Switch** section and **Using Communication Redundancy** section in the user's manual for detailed information about the settings and usage of **Turbo Ring** and **Turbo Ring V2**.

ETHERLINE ACCESS M05T/M08T DIP Switches



"Turbo Ring" DIP Switch Settings

DIP 1	DIP 2	DIP 3	DIP 4
Reserved for future use.	<u>ON</u> : Enables this device as the Ring Master.	<u>ON</u> : Enables the default "Ring Coupling" ports.	<u>ON</u> : Activates DIP switches 1, 2, 3 to configure "Turbo Ring" settings.
	<u>OFF</u> : This device will not be the Ring Master actively.	<u>OFF</u> : Do not use this device as the ring coupler.	<u>OFF</u> : DIP switches 1, 2, 3 will be disabled.

"Turbo Ring V2" DIP Switch Settings

DIP 1	DIP 2	DIP 3	DIP 4
<u>ON</u> : Enables the default "Ring Coupling (backup)" port.	<u>ON</u> : Enables this device as the Ring Master.	<u>ON</u> : Enables the default "Ring Coupling" port.	<u>ON</u> : Activates DIP switches 1, 2, 3 to configure "Turbo Ring V2" settings.
<u>OFF</u> : Enables the default "Ring Coupling (primary)" port.	<u>OFF</u> : This device will not be the Ring Master actively.	<u>OFF</u> : Do not use this device as a ring coupler.	<u>OFF</u> : DIP switches 1, 2, 3 will be disabled.

NOTE If you do not enable any of the ETHERLINE ACCESS M05T/M08T switches to be the Ring Master, the Turbo Ring protocol will automatically choose the ETHERLINE ACCESS M05T/M08T with the smallest MAC address range to be the Ring Master. If you accidentally enable more than one ETHERLINE ACCESS M05T/M08T to be the Ring Master, these ETHERLINE ACCESS M05T/M08T switches will auto-negotiate to determine which switch will be the Ring Master.

NOTE To switch on the Master or Coupler functions of the DIP switch, you need to enable the Turbo Ring Pole first.

LED Indicators

There are several LEDs on the ETHERLINE ACCESS M05T/M08T's front panel. The function of each LED is described in the following table.

LED	Color	State	Description
PWR1	AMBER	On	Power is being supplied to power input PWR1.
		Off	Power is not being supplied to power input PWR1.
PWR2	AMBER	On	Power is being supplied to power input PWR2.
		Off	Power is not being supplied to power input PWR2.
FAULT	RED	On	When (1) a relay warning event is triggered, (2) the ETHERLINE ACCESS M05T/M08T is the Master of this Turbo Ring, and the Turbo Ring is broken, or (3) start-up failure.
		Off	When a relay warning event is not triggered.
MSTR/ HEAD	GREEN	On	When the ETHERLINE ACCESS M05T/M08T is set as the Master of the Turbo Ring, or as the Head of the Turbo Chain.
		Blinking	The ETHERLINE ACCESS M05T/M08T has become the Ring Master of the Turbo Ring, or the Head of the Turbo Chain, after the Turbo Ring or the Turbo Chain is down.
		Off	When the ETHERLINE ACCESS M05T/M08T is not the Master of this Turbo Ring or is set as the Member of the Turbo Chain.
CPLR/ TAIL	GREEN	On	When the ETHERLINE ACCESS M05T/M08T coupling function is enabled to form a back-up path, or when it's set as the Tail of the Turbo Chain.
		Blinking	When the Turbo Chain is down.
		Off	When the ETHERLINE ACCESS M05T/M08T disables the coupling function, or is set as the Member of the Turbo Chain.
10M (TP)	GREEN	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 (TP)	GREEN	On	TP port's 100 Mbps link is active.
		Blinking	Data is being transmitted at 100 Mbps.
		Off	TP Port's 100 Mbps link is inactive.

Auto MDI/MDI-X Connection

The Auto MDI/MDI-X function allows users to connect the ETHERLINE ACCESS M05T/M08T'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 the ETHERLINE ACCESS M05T/M08T to Ethernet devices.

Specifications

Technology	
Standards	IEEE802.3, 802.3u, 802.3x, 802.1D, 802.1Q, 802.1w, 802.1p
Protocols	IGMP V1/V2 device, GMRP, GVRP, SNMPv1/v2c/v3, DHCP Server/Client, TFTP, SNTF, SMTP, RARP, RMON, HTTP, Telnet, Syslog, DHCP Option 66/67/82, BootP, LLDP, Modbus TCP, IPv6
MIB	MIB-II, Ethernet-Like MIB, P-BRIDGE MIB, RMON MIB Group 1, 2, 3, 9, Bridge MIB, RSTP MIB
Forwarding and Filtering Rate	148810 pps
Processing Type	Store and Forward
Flow Control	IEEE802.3x 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
Console	RS-232 (RJ45)
LED Indicators	PWR1, PWR2, FAULT, 10/100M (TP port), CPLR/TAIL and MSTR/HEAD
Relay Contact	One relay output with current carrying capacity of 1A @ 24 VDC
DIP Switches	Master, Coupler, Turbo Ring, Reserve
Power	
Input Voltage	ETHERLINE ACCESS M05T/M08T: 12 to 45 VDC, redundant inputs
Input Current @ 24 VDC	ETHERLINE ACCESS M05T: Max. 0.24 A ETHERLINE ACCESS M08T: Max. 0.24 A
Connection	One removable 6-pin terminal block
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristics	
Housing	Metal, IP30 protected
Dimensions	53.6 × 135 × 105 mm
Weight	0.65 kg (ETHERLINE ACCESS M05T) 0.89 kg (ETHERLINE ACCESS M08T)
Installation	DIN-Rail
Environmental Limits	
Operating Temperature	0 to 60°C (32 to 140°F)
Storage Temperature	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5% to 95% (non-condensing)

Regulatory Approvals	
Safety	UL 508
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: 2 kV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6