Series Description

The Connect Series offers a portfolio for Industrial Data Communication (IDC) for fast Ethernet network connectivity. It is designed as an ideal solution for industrial applications. It provides effectiveness when connecting Programmable Controllers (PLCs), Human Machine Interfaces (HMIs), Frequency Inverters and supervisory stations running on industrial servers or computers.

The Connect Series also supplies a selection of managed switches. It has an easy setup procedure, DIN-rail mounting and wall mounting, and a robust IP30 standard design for applications in harsh environments. The Connect Series stands for high temperature variations, which ensures reliable operation at 10/100 Mbps. Furthermore, its high performance switching mechanism meets all requirements for quality industrial data communication.

Purchase Data

ET5-0500 Items

This product contains the following items:

- An ET5-0500 Switch
- DIN-rail mounting and wall mounting
- Quick installation guide

ET5-0600 Items

This product contains the following items:

- An ET5-0600 Switch
- DIN-rail mounting and wall mounting
- Quick installation guide

ET5-0602-M Items

This product contains the following items:

- An ET5-0602-M Switch
- DIN-rail mounting and wall mounting
- Quick installation guide

ET5-0802-M Items

This product contains the following items:

- An ET5-0802-M Switch
- DIN-rail mounting and wall mounting
- Quick installation guide

Product Codes

The following codes should be used when purchasing the product:

Code	Description
ET5-0500	5-Port Industrial Managed Ethernet Switch
ET5-0600	6-Port Industrial Managed Ethernet Switch
ET5-0602-M	6-Port Industrial Managed Ethernet Switch - 4*10/100Base-TX + 2*100FX
ET5-0802-M	8-Port Industrial Managed Ethernet Switch - 6*10/100Base-TX + 2*100FX

Table 1: Managed Switch Model

Doc. Code: CE125002 Rev: A

ET5-0500 Description

ET5-0500 is a 5-ports managed fast Ethernet switch designed to be compact, which makes it ideal for limited spaced panels, such as machine control boxes and duct assembly rooms. For setups in harsh or extreme environments, ET5-0500 can be easily mounted directly on a DIN-rail. IP30 level and rigid metal housing allow the ET5-0500 to resist a wide temperature range, severe electromagnetic interference and vibration.

Software Features:

Network Redundancy

- STP, RSTP, MSTP, ITU-T G.8032 / Y.1344 ERPS v1/v2 (Ethernet Ring Protection Switch)

Configuration

- Http, Https, Telnet, SSH, CLI, TFTP, SNMP v3

Network Management

- QoS (QoS/CoS), storm protection
- IEEE 802.1Q VLAN, supports VLAN
- IGMP snooping v2/v3, MLD snooping v1/v2, IGMP

Filtering, IGMP Group 1024

- IPv4 / IPv6
- NTP client
- SNMP v1/v2c/v3
- LLDP

Security

- MAC-based Authentication
- Access Control List (ACL), 802.1X authentication, RADIUS Server
- VLAN assignment, QoS Assignment

Main Features:

Interface & Performance

- All copper ports support Automatic MDI/MDI-X function
- 5x 10/100Tx Fast Ethernet
- Store-and-forward switching architecture
- 8K MAC Address Table
- 4Mbits Memory Buffer

Power Supply

- Redundant power DC 12~48V with 1 removable 6-pin removable terminal block
- Max. Current 3.5A
- Relay Contact: 24VDC, 1A resistive

Certification

- CE/FCC
- UL 61010-1
- UL 61010-2-201

Operating Temperature

- STD: -10°C ~ 65°C (14°F ~ 149°F)

Housing/Installation

- IP30 Protection
- Installation in a Pollution Degree 2 industrial environment
- DIN-rail mounting and wall mounting.

	ET5-0500
Available Modes	Switch Mode
Connectors	
Ethernet Port	RJ45
Fiber Port	N/A
Power Connection	1 removable 6-contact terminal block
LED diagnóstico	
P1 **P2**	Power Supply Input Indicator
Fault	Lack of redundant power input Indication
Master	Owner Mode Indication (ERPS)
Ring	Ring network connection/activity indication (ERPS)
100 **(LAN Ports 1-5)**	100Mbps connection/traffic indication
10 **(LAN Ports 1-5)**	10Mbps connection/traffic indication

Specification – ET5-0500

		ET5-0500
Technology	**Standards**	IEEE 802.3 10Base-T Ethernet IEEE 802.3u 100Base-TX Fast Ethernet IEEE 802.3x Flow Control IEEE 802.1d STP (Spanning Tree Protocol) IEEE 802.1w RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s MSTP (Multiple Spanning Tree Protocol) ITU-T G.8032 / Y.1344 ERPS v1/v2(Ethernet Ring Protection Switch) IEEE 802.1Q Virtual Local Area Network (VLAN) IEEE 802.1p QoS/CoS Protocol for Traffic Prioritization IEEE 802.1X Network Authentication IEEE 802.1AB Link Layer Discovery Protocol (LLDP) IEEE 802.3ad Link Aggregation (LACP)
	Processing Type	Store and Forward
	Flow Control	IEEE 802.3x flow control, back pressure flow control
Network Management	**Management**	IPv4/IPv6, SNMP v1/v2c/v3, LLDP, LLDP-MED, HTTP, HTTPS, SSHv2 telnet, DHCP client, DHCPv6 client, DHCP server, Port Mirror, DNS client/proxy, IP based Access Filter, ICMPv6, syslog, Time Zone /Daylight Saving, NTP client, RMON, sFlow, Loop detection, Console Port, Power lost warning, relay trigger
	Security	Port-based/Single/Multi 802.1X, ACL (Port/Rate Limiters/ACE), MAC-based Authentication, VLAN assignment, QoS Assignment, Private VLAN, Guest VLAN, RADIUS accounting, TACACS+, IP MAC binding, WEB/CLI authentication, Authorization (15 levels), Port Security Limit Control, ACLs for filtering/policing/port copy, IP source guard, ARP Inspection
	L2 Switching	Port/MAC/Protocol/IP Subnet-based VLAN, VLAN trunking, GARP/GVRP, Loop Guard, Link Aggregation static/LACP, BPDU guard, Error disable recovery, IGMPv2 snooping, MLD snooping, IGMP filtering, IPMC throttling / filtering leave proxy, DHCP snooping, ARP, MEP, G.8032 v1/v2
	L3 Switching	DHCP option82, static routes
	QoS	802.1p Queueing, Input priority mapping, Storm control for Unicast/Multicast/Broadcast, Port/Queue/ACL policer, Port egress shaper, Queue egress shaper, DiffServ (DSCP), Tag remarking, Scheduler mode
	Power Saving	ActiPHY, PerfectReach, IEEE 802.3az EEE power management
	Network Redundancy	STP/RSTP/MSTP, port trunk with LACP, ERPS v1/v2 (<50ms)
	Configuration	Http, Https, Telnet, SSH, CLI, TFTP, SNMP v3

	System / Diagnostics	Dual Image Protection, PING, PING6
Switch Properties	**Switching Fabric (Back-Plane)**	1Gbps
	Priority Queues	8
	Max. Number of VLANs	4095
	VLAN ID Range	VID 1 a 4095
	Memory Buffer	4M bits
	Jumbo Frame	9.6Kbytes
	MAC Table Size	8k
	IGMP Group	1024
	Transfer rate	14,880pps for Ethernet port 148,800pps for Fast Ethernet port
Interface	**RJ45 Ports**	5*10/100 Base-T(X) Auto-Negotiation, Full/Half Duplex, Auto-MDI/MDI-X
	LED Indicators	System: Power 1, Power 2, Master, Ring, Status Ethernet ports: Speed/Link/Active
	RS232 Serial Console	1*RS232 in RJ45 connector with console cable, baud rate 115,200bps,8,N,1
	Relay Contact	24 VDC, 1A resistive
	Network Cable	10Base-T: 2-pair UTP/STP Cat. 3, 4, 5 cable EIA/TIA-568 100-ohm (100m) 100Base-TX: 2-pair UTP/STP Cat. 5 cable EIA/TIA-568 100-ohm (100m)
Power Requirements	**Input Voltage**	Dual 12-48VDC redundant power inputs
	Power Connection	1 removable 6-contact terminal block
	Overload Current Protection	Present (Slow-Blow Fuse)
	Reverse Polarity Protection	Present
	System Power Consumption	Max. 7.5W full loading
Characteristics	**Housing**	Metal, IP30 protection
	Dimensions (W x H x D)	54 x 142 x 99 mm (2.13 x 5.59 x 3.9 inch)
	Weight	Unit weight: 0.87kg (1.91 lb), Shipping weight: 1.17 kg (2.57 lb)
	Mounting	DIN-Rail Mounting, Wall Mounting
Environmental Limits	**Operating Temperature**	STD: -10°C ~ 65°C (14°F ~ 149°F) EOT: -40°C ~ 75°C (-40°F ~ 167°F)
	Storage Temperature	-40°C ~ 85°C (-40°F ~ 185°F)
	Ambient Relative Humidity	5 to 95%, (non-condensing)
Regulatory Approvals	**EMI**	FCC Part 15 Subpart B Class A, CE EN55032/EN61000-6-4 Class A
	EMS	CE EN55024/EN61000-6-2 Class A: IEC61000-4-2 (ESD), IEC61000-4-3 (RS), IEC61000-4-4 (EFT), IEC61000-4-5 (Surge), IEC61000-4-6 (CS), IEC61000-4-8 (Magnetic Field)
	Free Fall	IEC60068-2-32
	Shock	IEC60068-2-27
	Vibration	IEC60068-2-6
	Green	RoHS Compliant
	Safety	UL61010-1, UL61010-2-201
	Compliance	NEMA TS2 (ITS)

Table 2: Specifications

Hardware Details – ET5-0500

Dimension

ET5-0500 physical dimensions (W x H x D):

54 x 142 x 99 mm (2.13 x 5.59 x 3.9 inch)

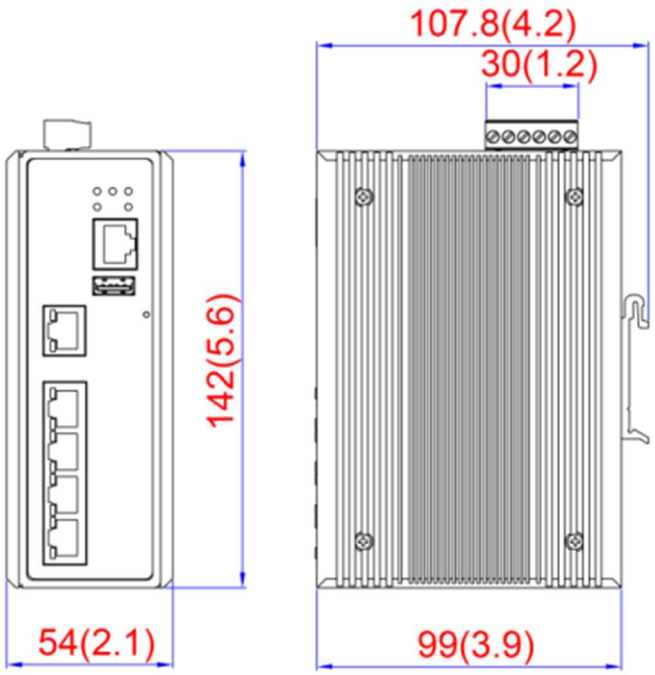

Figure 1: ET5-0500 Physical Dimensions

Unit: mm (inch)

Front Panel

The front panel of the ET5-0500 is shown in the image below:

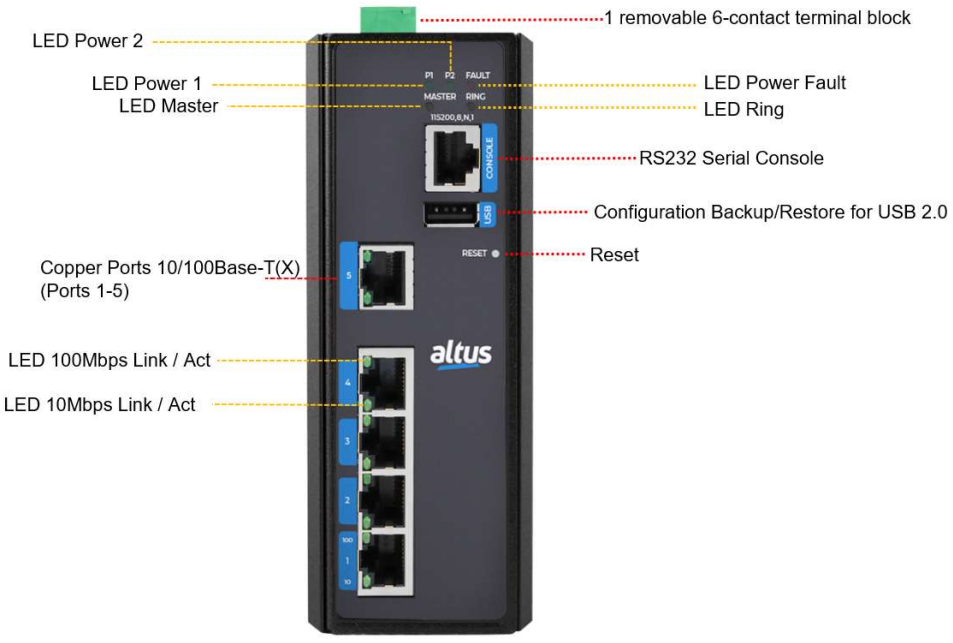

Figure 2: ET5-0500 Front Panel

Top View

The image below demonstrates the top panel of the ET5-0500, which is equipped with one 6-pin removable terminal block connector for dual DC power inputs (12-48VDC).

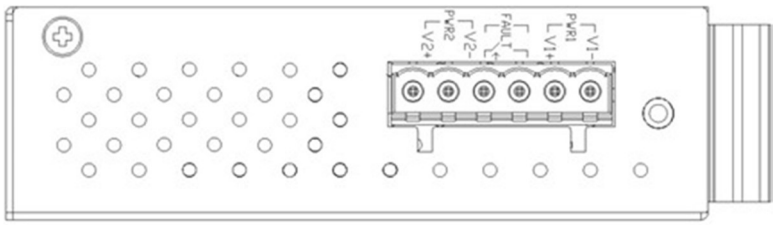

Figure 3: ET5-0500 Top Panel View

LED indicators

LED indicators, situated on the switch's front panel, display both the power input and network status. Each indicator is distinguished by a unique color, and its corresponding meaning is outlined in the table below:

LED	Colour	Description	
P1	Green	On	Power input 1 is active
		Off	Power input 1 is inactive
P2	Green	On	Power input 2 is active
		Off	Power input 2 is inactive
Fault	Green	On	No event happened
	Red	On	Power input 1 or 2 is inactive
			Port link-down/Broken
Master	Green	On	ERPS Owner Mode (Ring Master) is ready
		Off	ERPS Owner Mode is not active
Ring	Green	On	ERPS Ring Network is active and works well
		Flashing	ERPS Ring works abnormally or misconfigure
		Off	ERPS Ring Network is not active
LAN port 1-5 L/A	Green 	On	Connected to the network, 100Mbps
		Flashing	Network is active
		Off	Not connected to the network
	Green 	On	Connected to the network, 10Mbps
		Flashing	Network is active
		Off	Not connected to the network

Table 3: LED indicators for ET5-0500

Doc. Code: CE125002 Rev: A

ET5-0600 Description

ET5-0600 is a 6-ports managed fast Ethernet switch designed to be compact, which makes it ideal for limited spaced panels, such as machine control boxes and duct assembly rooms. For setups in harsh or extreme environments, ET5-0600 can be easily mounted directly on the DIN-rail. IP30 level and rigid metal housing allow the ET5-0600 to resist a wide temperature range, severe electromagnetic interference and vibration.

Software Features:

Network Redundancy

- STP, RSTP, MSTP, ITU-T G.8032 / Y.1344 ERPS v1/v2 (Ethernet Ring Protection Switch)

Configuration

- Http, Https, Telnet, SSH, CLI, TFTP, SNMP v3

Network Management

- QoS (QoS/CoS), storm protection
- IEEE 802.1Q VLAN, supports VLAN
- IGMP snooping v2/v3, MLD snooping v1/v2, IGMP

Filtering, IGMP Group 1024

- IPv4 / IPv6
- NTP client
- SNMP v1/v2c/v3
- LLDP

Security

- MAC-based Authentication
- Access Control List (ACL), 802.1X authentication, RADIUS Server
- VLAN assignment, QoS Assignment

Main Features:

Interface & Performance

- All copper ports support Automatic MDI/MDI-X function
- 6x 10/100Tx Fast Ethernet
- Store-and-forward switching architecture
- 8K MAC Address Table
- 4Mbits Memory Buffer

Power Supply

- Redundant power DC 12~48V with 1 removable 6-pin terminal block
- Max. Current 1A
- Relay Contact: 24VDC, 1A resistive

Certification

- CE/FCC
- UL 61010-1
- UL 61010-2-201

Operating Temperature

- STD: -10°C ~ 65°C (14°F ~ 149°F)

Housing/Installation

- IP30 Protection
- Installation in a Pollution Degree 2 industrial environment
- DIN-rail mounting and wall mounting.

	ET5-0600
Available Modes	Switch Mode
Connectors	
Ethernet Port	RJ45
Fiber Port	N/A
Power Connection	1 removable 6-contact terminal block
LED diagnóstico	
P1 **P2**	Power Supply Input Indicator
Fault	Lack of redundant power input Indication
Master	Owner Mode Indication (ERPS)
Ring	Ring network connection/activity indication (ERPS)
100 **(LAN Ports 1-6)**	100Mbps connection/traffic indication
10 **(LAN Ports 1-6)**	10Mbps connection/traffic indication

Specification – ET5-0600

		ET5-0600
Technology	**Standards**	IEEE 802.3 10Base-T Ethernet IEEE 802.3u 100Base-TX Fast Ethernet IEEE 802.3x Flow Control IEEE 802.1d STP (Spanning Tree Protocol) IEEE 802.1w RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s MSTP (Multiple Spanning Tree Protocol) ITU-T G.8032 / Y.1344 ERPS v1/v2(Ethernet Ring Protection Switch) IEEE 802.1Q Virtual Local Area Network (VLAN) IEEE 802.1p QoS/CoS Protocol for Traffic Prioritization IEEE 802.1X Network Authentication IEEE 802.1AB Link Layer Discovery Protocol (LLDP) IEEE 802.3ad Link Aggregation (LACP)
	Processing Type	Store and Forward
	Flow Control	IEEE 802.3x flow control, back pressure flow control
Network Management	**Management**	IPv4/IPv6, SNMP v1/v2c/v3, LLDP, LLDP-MED, HTTP, HTTPS, SSHv2 telnet, DHCP client, DHCPv6 client, DHCP server, Port Mirror, DNS client/proxy, IP based Access Filter, ICMPv6, syslog, Time Zone /Daylight Saving, NTP client, RMON, sFlow, Loop detection, Console Port, Power lost warning, relay trigger
	Security	Port-based/Single/Multi 802.1X, ACL (Port/Rate Limiters/ACE), MAC-based Authentication, VLAN assignment, QoS Assignment, Private VLAN, Guest VLAN, RADIUS accounting, TACACS+, IP MAC binding, WEB/CLI authentication, Authorization (15 levels), Port Security Limit Control, ACLs for filtering/policing/port copy, IP source guard, ARP Inspection
	L2 Switching	Port/MAC/Protocol/IP Subnet-based VLAN, VLAN trunking, GARP/GVRP, Loop Guard, Link Aggregation static/LACP, BPDU guard, Error disable recovery, IGMPv2 snooping, MLD snooping, IGMP filtering, IPMC throttling / filtering leave proxy, DHCP snooping, ARP, MEP, G.8032 v1/v2
	L3 Switching	DHCP option82, static routes
	QoS	802.1p Queueing, Input priority mapping, Storm control for Unicast/Multicast/Broadcast, Port/Queue/ACL policer, Port egress shaper, Queue egress shaper, DiffServ (DSCP), Tag remarking, Scheduler mode
	Power Saving	ActiPHY, PerfectReach, IEEE 802.3az EEE power management
	Network Redundancy	STP/RSTP/MSTP, port trunk with LACP, ERPS v1/v2 (<50ms)
	Configuration	Http, Https, Telnet, SSH, CLI, TFTP, SNMP v3
	System / Diagnostics	Dual Image Protection, PING, PING6
Switch Properties	**Switching Fabric (Back-Plane)**	1.2Gbps
	Priority Queues	8
	Max. Number of VLANs	4095

	VLAN ID Range	VID 1 a 4095
	Memory Buffer	4M bits
	Jumbo Frame	9.6Kbytes
	MAC Table Size	8k
	IGMP Group	1024
	Transfer rate	14,880pps for Ethernet port 148,800pps for Fast Ethernet port
Interface	**RJ45 Ports**	6*10/100 Base-T(X) Auto-Negotiation, Full/Half Duplex, Auto-MDI/MDI-X
	LED Indicators	System: Power 1, Power 2, Master, Ring, Status Ethernet ports: Speed/Link/Active
	RS232 Serial Console	1*RS232 in RJ45 connector with console cable, baud rate 115,200bps,8,N,1
	Relay Contact	24 VDC, 1A resistive
	Network Cable	10Base-T: 2-pair UTP/STP Cat. 3, 4, 5 cable EIA/TIA-568 100-ohm (100m) 100Base-TX: 2-pair UTP/STP Cat. 5 cable EIA/TIA-568 100-ohm (100m)
Power Requirements	**Input Voltage**	Dual 12-48VDC redundant power inputs
	Power Connection	1 removable 6-contact terminal block
	Overload Current Protection	Present (Slow-Blow Fuse)
	Reverse Polarity Protection	Present
	System Power Consumption	Max. 7.5W full loading
Characteristics	**Housing**	Metal, IP30 protection
	Dimensions (W x H x D)	54 x 142 x 99 mm (2.13 x 5.59 x 3.9 inch)
	Weight	Unit weight: 0.87kg (1.91 lb), Shipping weight: 1.17 kg (2.57 lb)
	Mounting	DIN-Rail Mounting, Wall Mounting
Environmental Limits	**Operating Temperature**	STD: -10°C ~ 65°C (14°F ~ 149°F) EOT: -40°C ~ 75°C (-40°F ~ 167°F)
	Storage Temperature	-40°C ~ 85°C (-40°F ~ 185°F)
	Ambient Relative Humidity	5 to 95%, (non-condensing)
Regulatory Approvals	**EMI**	FCC Part 15 Subpart B Class A, CE EN55032/EN61000-6-4 Class A
	EMS	CE EN55024/EN61000-6-2 Class A: IEC61000-4-2 (ESD), IEC61000-4-3 (RS), IEC61000-4-4 (EFT), IEC61000-4-5 (Surge), IEC61000-4-6 (CS), IEC61000-4-8 (Magnetic Field)
	Free Fall	IEC60068-2-32
	Shock	IEC60068-2-27
	Vibration	IEC60068-2-6
	Green	RoHS Compliant
	Safety	UL61010-1, UL61010-2-201
	Compliance	NEMA TS2 (ITS)

Table 4: Specifications

Hardware Details – ET5-0600

Dimension

ET5-0600 physical dimensions (W x H x D):

54 x 142 x 99 mm (2.13 x 5.59 x 3.9 inch)

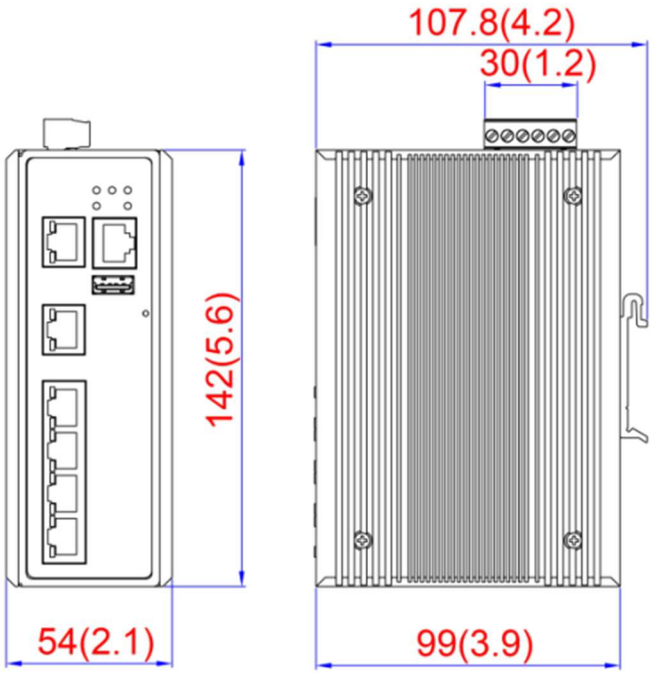

Figure 4: ET5-0600 Physical Dimensions

Unit: mm (inch)

Front Panel

The front panel of the ET5-0600 is shown in the image below:

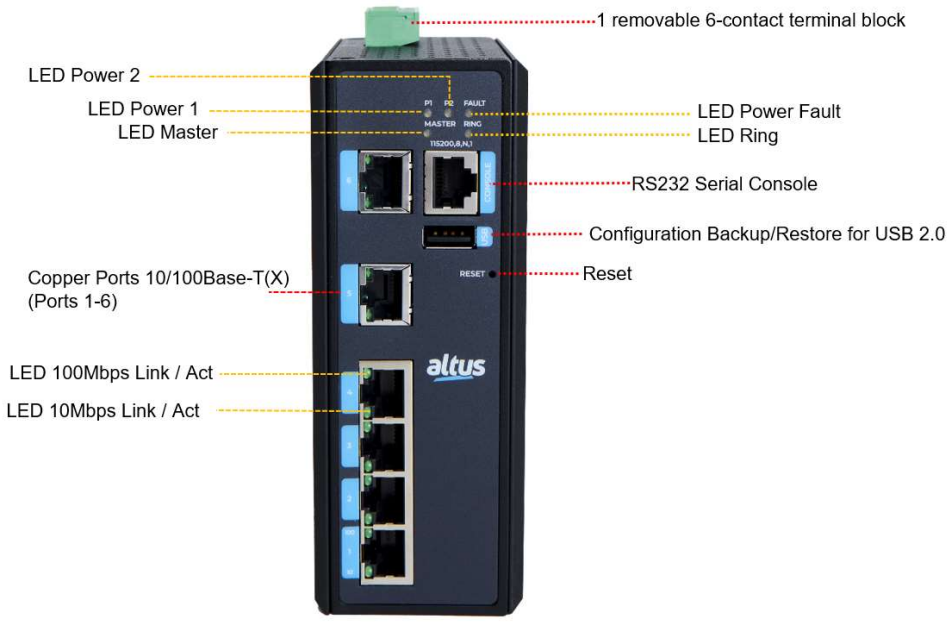

Figure 5: ET5-0600 Front Panel

Top View

The image below demonstrates the top panel of the ET5-0600, which is equipped with one 6-pin removable terminal block connector for dual DC power inputs (12-48VDC).

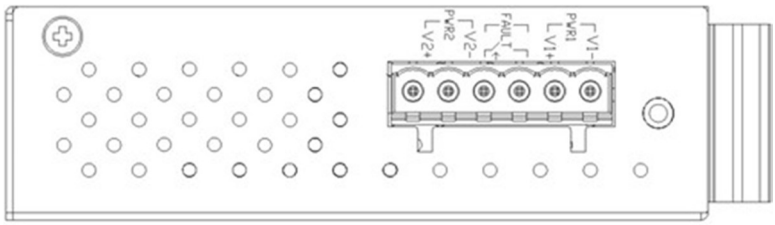

Figure 6: ET5-0600 Top Panel View

LED indicators

The switch's front panel has LED indicators for power and network status. Each LED has a unique color and meaning, detailed in the table below:

LED	Colour	Description	
P1	Green	On	Power input 1 is active
		Off	Power input 1 is inactive
P2	Green	On	Power input 2 is active
		Off	Power input 2 is inactive
Fault	Green	On	No event happened
	Red	On	Power input 1 or 2 is inactive
			Port link-down/Broken
Master	Green	On	ERPS Owner Mode (Ring Master) is ready
		Off	ERPS Owner Mode is not active
Ring	Green	On	ERPS Ring Network is active and works well
		Flashing	ERPS Ring works abnormally or misconfigure
		Off	ERPS Ring Network is not active
LAN port 1-6 L/A	Green 	On	Connected to the network, 100Mbps
		Flashing	Network is active
		Off	Not connected to the network
	Green 	On	Connected to the network, 10Mbps
		Flashing	Network is active
		Off	Not connected to the network

Table 5: LED indicators for ET5-0600

Doc. Code: CE125002 Rev: A

ET5-0602-M Description

ET5-0602-M is a 6-ports managed fast Ethernet switch (4*10/100Tx + 2*100Fx) designed to be compact, which makes it ideal for limited spaced panels, such as machine control boxes and duct assembly rooms. For setups in harsh or extreme environments ET5-0602-M can be easily mounted directly on the DIN-rail. IP30 level and rigid metal housing allow the ET5-0602-M to resist a wide temperature range, severe electromagnetic interference and vibration.

Software Features:

Network Redundancy

- STP, RSTP, MSTP, ITU-T G.8032 / Y.1344 ERPS v1/v2 (Ethernet Ring Protection Switch)

Configuration

- Http, Https, Telnet, SSH, CLI, TFTP, SNMP v3

Network Management

- QoS (QoS/CoS), storm protection
- IEEE 802.1Q VLAN, supports VLAN
- IGMP snooping v2/v3, MLD snooping v1/v2, IGMP

Filtering, IGMP Group 1024

- IPv4 / IPv6
- NTP client
- SNMP v1/v2c/v3
- LLDP

Security

- MAC-based Authentication
- Access Control List (ACL), 802.1X authentication, RADIUS Server
- VLAN assignment, QoS Assignment

Main Features:

Interface & Performance

- All copper ports support Automatic MDI/MDI-X function
- 4-port 10/100Base-T(X) Fast Ethernet + 2-port 100Fx – SC
- Store-and-forward switching architecture
- 8K MAC Address Table
- 4Mbits Memory Buffer

Power Supply

- Redundant power DC 12~48V with connective 1*6-pin removable terminal block
- Max. Current 1A
- Relay Contact: 24VDC, 1A resistive

Certification

- CE/FCC
- UL 61010-1
- UL 61010-2-201

Operating Temperature

- STD: -10°C ~ 65°C (14°F ~ 149°F)

Housing/Installation

- IP30 Protection
- Installation in a Pollution Degree 2 industrial environment
- DIN-rail mounting and wall mounting.

	ET5-0602-M
Available Modes	Switch Mode
Connectors	
Ethernet Port	RJ45
Fiber Port	SC
Power Connection	1 removable 6-pin terminal block
LED diagnóstico	
P1 **P2**	Power Supply Input Indicator
Fault	Lack of redundant power input Indication
Master	Owner Mode Indication (ERPS)
Ring	Ring network connection/activity indication (ERPS)
L/A **(Fiber Ports 5-6)**	Connection/traffic indication
100 **(LAN Ports 1-4)**	100Mbps connection/traffic indication
10 **(LAN Ports 1-4)**	10Mbps connection/traffic indication

Specification – ET5-0602-M

		ET5-0602-M
Technology	**Standards**	IEEE 802.3 10Base-T Ethernet IEEE 802.3u 100Base-TX Fast Ethernet IEEE 802.3x Flow Control IEEE 802.1d STP (Spanning Tree Protocol) IEEE 802.1w RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s MSTP (Multiple Spanning Tree Protocol) ITU-T G.8032 / Y.1344 ERPS v1/v2(Ethernet Ring Protection Switch) IEEE 802.1Q Virtual Local Area Network (VLAN) IEEE 802.1p QoS/CoS Protocol for Traffic Prioritization IEEE 802.1X Network Authentication IEEE 802.1AB Link Layer Discovery Protocol (LLDP) IEEE 802.3ad Link Aggregation (LACP)
	Processing Type	Store and Forward
	Flow Control	IEEE 802.3x flow control, back pressure flow control
Network Management	**Management**	IPv4/IPv6, SNMP v1/v2c/v3, LLDP, LLDP-MED, HTTP, HTTPS, SSHv2 telnet, DHCP client, DHCPv6 client, DHCP server, Port Mirror, DNS client/proxy, IP based Access Filter, ICMPv6, syslog, Time Zone /Daylight Saving, NTP client, RMON, sFlow, Loop detection, Console Port, Power lost warning, relay trigger
	Security	Port-based/Single/Multi 802.1X, ACL (Port/Rate Limiters/ACE), MAC-based Authentication, VLAN assignment, QoS Assignment, Private VLAN, Guest VLAN, RADIUS accounting, TACACS+, IP MAC binding, WEB/CLI authentication, Authorization (15 levels), Port Security Limit Control, ACLs for filtering/policing/port copy, IP source guard, ARP Inspection
	L2 Switching	Port/MAC/Protocol/IP Subnet-based VLAN, VLAN trunking, GARP/GVRP, Loop Guard, Link Aggregation static/LACP, BPDU guard, Error disable recovery, IGMPv2 snooping, MLD snooping, IGMP filtering, IPMC throttling / filtering leave proxy, DHCP snooping, ARP, MEP, G.8032 v1/v2
	L3 Switching	DHCP option82, static routes
	QoS	802.1p Queueing, Input priority mapping, Storm control for Unicast/Multicast/Broadcast, Port/Queue/ACL policer, Port egress shaper, Queue egress shaper, DiffServ (DSCP), Tag remarking, Scheduler mode
	Power Saving	ActiPHY, PerfectReach, IEEE 802.3az EEE power management
	Network Redundancy	STP/RSTP/MSTP, port trunk with LACP, ERPS v1/v2 (<50ms)
	Configuration	Http, Https, Telnet, SSH, CLI, TFTP, SNMP v3
	System / Diagnostics	Dual Image Protection, PING, PING6
	Switching Fabric (Back-Plane)	1,6Gbps

Switch Properties	**Priority Queues**	8
	Max. Number of VLANs	4095
	VLAN ID Range	VID 1 a 4095
	Memory Buffer	4M bits
	Jumbo Frame	9.6Kbytes
	MAC Table Size	8k
	IGMP Group	1024
	Transfer rate	14,880pps for Ethernet port 148,800pps for Fast Ethernet port
Interface	**RJ45 Ports**	4*10/100 Base-T(X) Auto-Negotiation, Full/Half Duplex, Auto-MDI/MDI-X
	Fiber Port	2*100Base-FX SC type connector
	LED Indicators	System: Power 1, Power 2, Master, Ring, Status Ethernet ports: Speed/Link/Active Fixed fiber: Link/Active
	Wavelength	1310nm (Multi-Mode)
	RS232 Serial Console	1*RS232 in RJ45 connector with console cable, baud rate 115,200bps,8,N,1
	Relay Contact	24 VDC, 1A resistive
	Network Cable	10Base-T: 2-pair UTP/STP Cat. 3, 4, 5 cable EIA/TIA-568 100-ohm (100m) 100Base-TX: 2-pair UTP/STP Cat. 5 cable EIA/TIA-568 100-ohm (100m)
	Optical Cable	Multi-mode cable - 50/125um or 62.5/125um, Single-mode cable - 9/125um or 10/125um
Power Requirements	**Input Voltage**	Dual 12-48VDC redundant power inputs
	Power Connection	1 removable 6-contact terminal block
	Overload Current Protection	Present (Slow-Blow Fuse)
	Reverse Polarity Protection	Present
	System Power Consumption	Max. 7.5W full loading
Characteristics	**Housing**	Metal, IP30 protection
	Dimensions (W x H x D)	54 x 142 x 99 mm (2.13 x 5.59 x 3.9 inch)
	Weight	Unit weight: 0.88kg (1.94 lb), Shipping weight: 1.18 kg (2.60 lb)
	Mounting	DIN-Rail Mounting, Wall Mounting
Environmental Limits	**Operating Temperature**	STD: -10°C ~ 65°C (14°F ~ 149°F) EOT: -40°C ~ 75°C (-40°F ~ 167°F)
	Storage Temperature	-40°C ~ 85°C (-40°F ~ 185°F)
	Ambient Relative Humidity	5 to 95%, (non-condensing)
Regulatory Approvals	**EMI**	FCC Part 15 Subpart B Class A, CE EN55032/EN61000-6-4 Class A
	EMS	CE EN55035/EN61000-6-2 Class A: IEC61000-4-2 (ESD), IEC61000-4-3 (RS), IEC61000-4-4 (EFT), IEC61000-4-5 (Surge), IEC61000-4-6 (CS), IEC61000-4-8 (Magnetic Field)
	Free Fall	IEC60068-2-32
	Shock	IEC60068-2-27
	Vibration	IEC60068-2-6
	Green	RoHS Compliant
	Safety	UL61010-1, UL61010-2-201
	Compliance	NEMA TS2 (ITS)

Table 6: Specifications

Hardware Details – ET5-0602-M

Dimension

ET5-0602-M physical dimensions (W x H x D):

54 x 142 x 99 mm (2.13 x 5.59 x 3.9 inch)

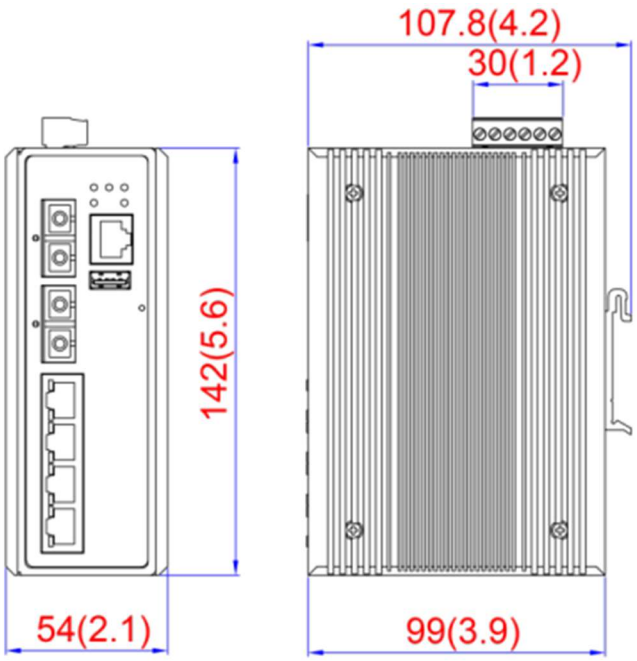

Figure 7: ET5-0602-M Physical Dimensions

Unit: mm (inch)

Front Panel

The front panel of the ET5-0602-M is shown in the image below:

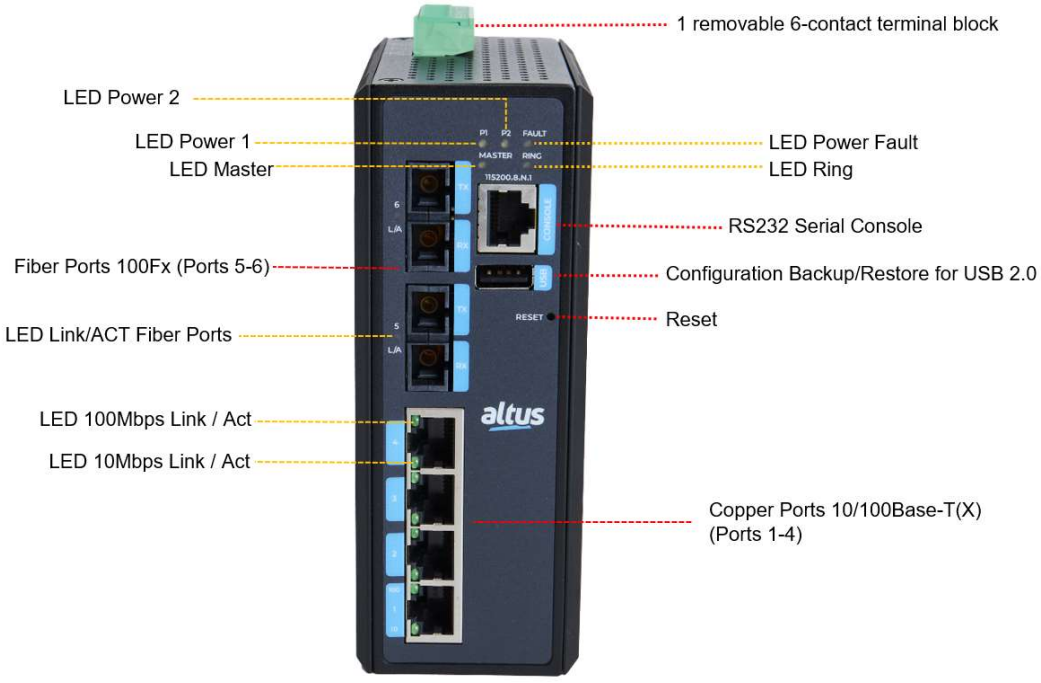

Figure 8: ET5-0602-M Front Panel

Top View

The image below demonstrates the top panel of the ET5-0602-M, which is equipped with one 6-pin removable terminal block connector for dual DC power inputs (12-48VDC).

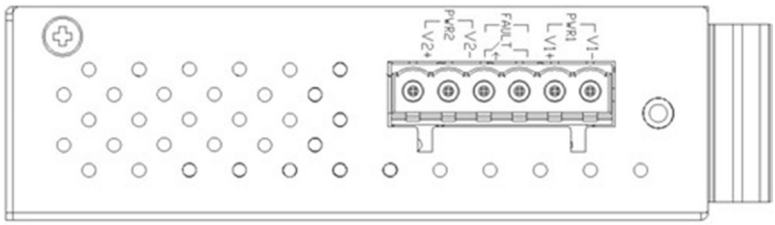

Figure 9: ET5-0602-M Top Panel View

LED indicators

There are LED indicators located on the front panel of the switch that show the power input and network status. Each LED indicator has a different color and has its own meaning, as shown in the table below:

LED	Colour	Description	
P1	Green	On	Power input 1 is active
		Off	Power input 1 is inactive
P2	Green	On	Power input 2 is active
		Off	Power input 2 is inactive
Fault	Green	On	No event happened
	Red	On	Power input 1 or 2 is inactive
			Port link-down/Broken
Master	Green	On	ERPS Owner Mode (Ring Master) is ready
		Off	ERPS Owner Mode is not active
Ring	Green	On	ERPS Ring Network is active and works well
		Flashing	ERPS Ring works abnormally or misconfigure
		Off	ERPS Ring Network is not active
LAN port 1-4 L/A	Green 	On	Connected to the network, 100Mbps
		Flashing	Network is active
		Off	Not connected to the network
	Green 	On	Connected to the network, 10Mbps
		Flashing	Network is active
		Off	Not connected to the network
L/A (Fiber Port 5-6)	Green	On	Connected to network, 100Mbps
		Flashing	Network is active
		Off	Not connected to the network

Table 7: LED indicators for ET5-0602-M

Special Models

- **ET2-0602-S1:** 6 fast Ethernet ports - 4x10/100Tx + 2x100Fx (SC Connector, Single-mode, 10km/1310nm)
- **ET2-0602-S3:** 6 fast Ethernet ports - 4x10/100Tx + 2x100Fx (SC Connector, Single-mode, 30km/1310nm)

Doc. Code: CE125002 Rev: A

ET5-0802-M Description

ET5-0802-M is a 8-ports managed fast Ethernet switch (6*10/100Tx + 2*100Fx) designed to be compact, which makes it ideal for limited spaced panels, such as machine control boxes and duct assembly rooms. For setups in harsh or extreme environments ET5-0802-M can be easily mounted directly on the DIN-rail. IP30 level and rigid metal housing allow the ET5-0802-M to resist a wide temperature range, severe electromagnetic interference and vibration.

Software Features:

Network Redundancy

- STP, RSTP, MSTP, ITU-T G.8032 / Y.1344 ERPS v1/v2 (Ethernet Ring Protection Switch)

Configuration

- Http, Https, Telnet, SSH, CLI, TFTP, SNMP v3

Network Management

- QoS (QoS/CoS), storm protection
- IEEE 802.1Q VLAN, supports VLAN
- IGMP snooping v2/v3, MLD snooping v1/v2, IGMP

Filtering, IGMP Group 1024

- IPv4 / IPv6
- NTP client
- SNMP v1/v2c/v3
- LLDP

Security

- MAC-based Authentication
- Access Control List (ACL), 802.1X authentication, RADIUS Server
- VLAN assignment, QoS Assignment

Main Features:

Interface & Performance

- All copper ports support Automatic MDI/MDI-X function
- 6-port 10/100Base-T(X) Fast Ethernet + 2-port 100Fx – SC
- Store-and-forward switching architecture
- 8K MAC Address Table
- 4Mbits Memory Buffer

Power Supply

- Redundant power DC 12~48V with connective 1*6-pin removable terminal block
- Max. Current 3.5A
- Relay Contact: 24VDC, 1A resistive

Certification

- CE/FCC
- UL 61010-1
- UL 61010-2-201

Operating Temperature

- STD: -10°C ~ 65°C (14°F ~ 149°F)

Housing/Installation

- IP30 Protection
- Installation in a Pollution Degree 2 industrial environment
- DIN-rail mounting and wall mounting.

	ET5-0802-M
Available Modes	Switch Mode
Connectors	
Ethernet Port	RJ45
Fiber Port	SC
Power Connection	1 removable 6-contact terminal block
LED diagnóstico	
P1 **P2**	Power Supply Input Indicator
Fault	Lack of redundant power input Indication
Master	Owner Mode Indication (ERPS)
Ring	Ring network connection/activity indication (ERPS)
L/A **(Fiber Ports 7-8)**	Connection/traffic indication
100 **(LAN Ports 1-6)**	100Mbps connection/traffic indication
10 **(LAN Ports 1-6)**	10Mbps connection/traffic indication

Specification – ET5-0802-M

		ET5-0802-M
Technology	**Standards**	IEEE 802.3 10Base-T Ethernet IEEE 802.3u 100Base-TX Fast Ethernet IEEE 802.3x Flow Control IEEE 802.1d STP (Spanning Tree Protocol) IEEE 802.1w RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s MSTP (Multiple Spanning Tree Protocol) ITU-T G.8032 / Y.1344 ERPS v1/v2(Ethernet Ring Protection Switch) IEEE 802.1Q Virtual Local Area Network (VLAN) IEEE 802.1p QoS/CoS Protocol for Traffic Prioritization IEEE 802.1X Network Authentication IEEE 802.1AB Link Layer Discovery Protocol (LLDP) IEEE 802.3ad Link Aggregation (LACP)
	Processing Type	Store and Forward
	Flow Control	IEEE 802.3x flow control, back pressure flow control
Network Management	**Management**	IPv4/IPv6, SNMP v1/v2c/v3, LLDP, LLDP-MED, HTTP, HTTPS, SSHv2 telnet, DHCP client, DHCPv6 client, DHCP server, Port Mirror, DNS client/proxy, IP based Access Filter, ICMPv6, syslog, Time Zone /Daylight Saving, NTP client, RMON, sFlow, Loop detection, Console Port, Power lost warning, relay trigger
	Security	Port-based/Single/Multi 802.1X, ACL (Port/Rate Limiters/ACE), MAC-based Authentication, VLAN assignment, QoS Assignment, Private VLAN, Guest VLAN, RADIUS accounting, TACACS+, IP MAC binding, WEB/CLI authentication, Authorization (15 levels), Port Security Limit Control, ACLs for filtering/policing/port copy, IP source guard, ARP Inspection
	L2 Switching	Port/MAC/Protocol/IP Subnet-based VLAN, VLAN trunking, GARP/GVRP, Loop Guard, Link Aggregation static/LACP, BPDU guard, Error disable recovery, IGMPv2 snooping, MLD snooping, IGMP filtering, IPMC throttling / filtering leave proxy, DHCP snooping, ARP, MEP, G.8032 v1/v2
	L3 Switching	DHCP option82, static routes
	QoS	802.1p Queueing, Input priority mapping, Storm control for Unicast/Multicast/Broadcast, Port/Queue/ACL policer, Port egress shaper, Queue egress shaper, DiffServ (DSCP), Tag remarking, Scheduler mode
	Power Saving	ActiPHY, PerfectReach, IEEE 802.3az EEE power management

	Network Redundancy	STP/RSTP/MSTP, port trunk with LACP, ERPS v1/v2 (<50ms)
	Configuration	Http, Https, Telnet, SSH, CLI, TFTP, SNMP v3
	System / Diagnostics	Dual Image Protection, PING, PING6
Switch Properties	**Switching Fabric (Back-Plane)**	1.6Gbps
	Priority Queues	8
	Max. Number of VLANs	4095
	VLAN ID Range	VID 1 a 4095
	Memory Buffer	4M bits
	Jumbo Frame	9.6Kbytes
	MAC Table Size	8k
	IGMP Group	1024
	Transfer rate	14,880pps for Ethernet port 148,800pps for Fast Ethernet port
Interface	**RJ45 Ports**	6*10/100 Base-T(X) Auto-Negotiation, Full/Half Duplex, Auto-MDI/MDI-X
	Fiber Port	2*100Base-FX SC type connector
	LED Indicators	System: Power 1, Power 2, Master, Ring, Status Ethernet ports: Speed/Link/Active Fixed fiber: Link/Active
	Wavelength	1310nm (Multi-Mode)
	RS232 Serial Console	1*RS232 in RJ45 connector with console cable, baud rate 115,200bps,8,N,1
	Relay Contact	24 VDC, 1A resistive
	Network Cable	10Base-T: 2-pair UTP/STP Cat. 3, 4, 5 cable EIA/TIA-568 100-ohm (100m) 100Base-TX: 2-pair UTP/STP Cat. 5 cable EIA/TIA-568 100-ohm (100m)
	Optical Cable	Multi-mode cable - 50/125um or 62.5/125um, Single-mode cable - 9/125um or 10/125um
Power Requirements	**Input Voltage**	Dual 12-48VDC redundant power inputs
	Power Connection	1 removable 6-contact terminal block
	Overload Current Protection	Present (Slow-Blow Fuse)
	Reverse Polarity Protection	Present
	System Power Consumption	Max. 13W full loading
Characteristics	**Housing**	Metal, IP30 protection
	Dimensions (W x H x D)	54 x 142 x 99 mm (2.13 x 5.59 x 3.9 inch)
	Weight	Unit weight: 0.86kg (1.90 lb), Shipping weight: 1.22 kg (2.69 lb)
	Mounting	DIN-Rail Mounting, Wall Mounting
Environmental Limits	**Operating Temperature**	STD: -10°C ~ 65°C (14°F ~ 149°F) EOT: -40°C ~ 75°C (-40°F ~ 167°F)
	Storage Temperature	-40°C ~ 85°C (-40°F ~ 185°F)
	Ambient Relative Humidity	5 to 95%, (non-condensing)
Regulatory Approvals	**EMI**	FCC Part 15 Subpart B Class A, CE EN55022/ /EN61000-6-4 Class A
	EMS	CE EN55024/EN61000-6-2 IEC61000-4-2 (ESD), IEC61000-4-3 (RS), IEC61000-4-4 (EFT), IEC61000-4-5 (Surge), IEC61000-4-6 (CS), IEC61000-4-8 (Magnetic Field)
	Free Fall	IEC60068-2-32
	Shock	IEC60068-2-27
	Vibration	IEC60068-2-6
	Green	RoHS Compliant
	Safety	UL61010-1, UL61010-2-201

Table 8: Specifications

Hardware Details – ET5-0802-M

Dimension

ET5-0802-M physical dimensions (W x H x D):

54 x 142 x 99 mm (2.13 x 5.59 x 3.9 inch)

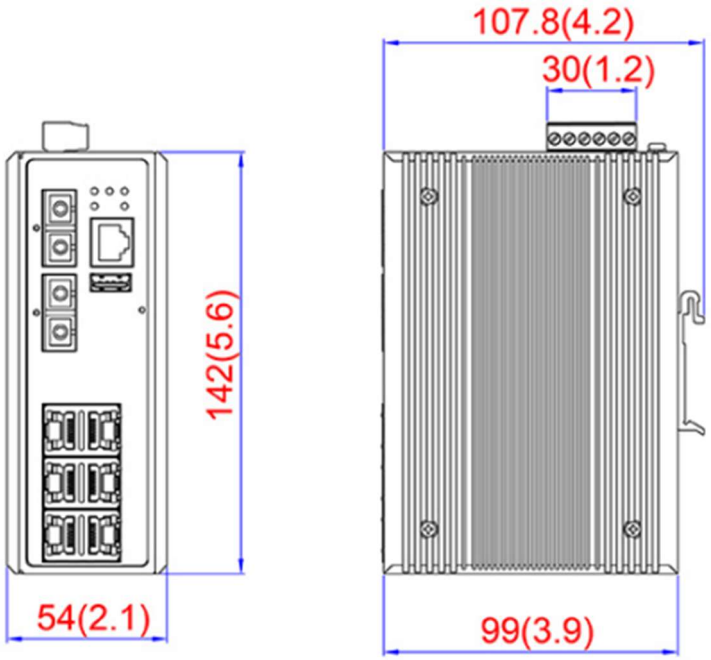

Figure 10: ET5-0802-M Physical Dimensions

Unit: mm (inch)

Front Panel

The front panel of the ET5-0802-M is shown in the image below:

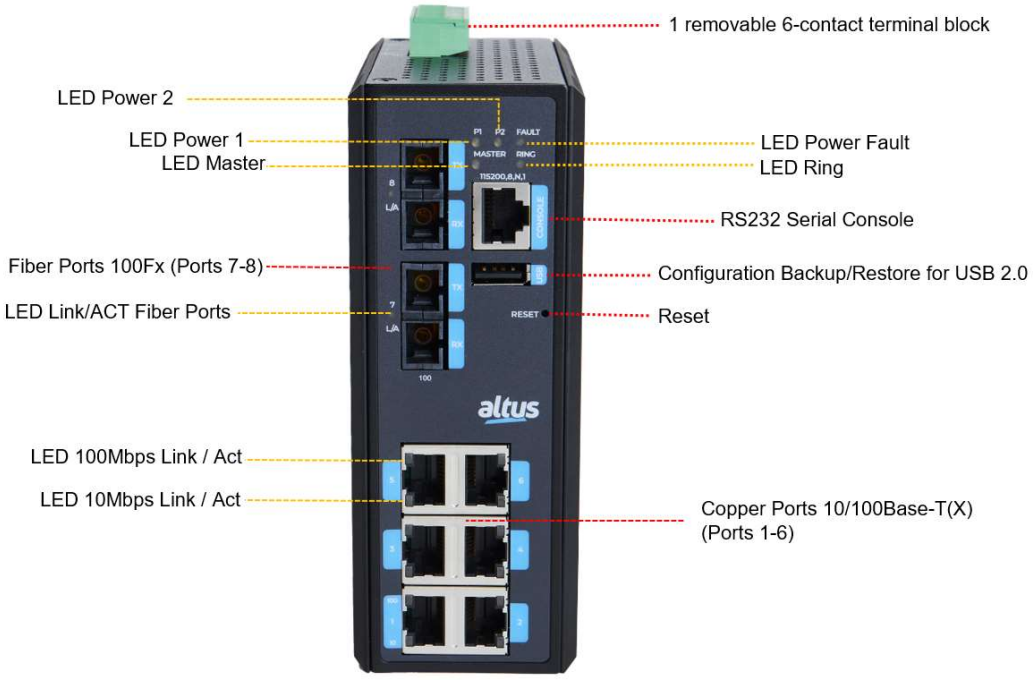

Figure 11: ET5-0802-M Front Panel

Top View

The image below demonstrates the top panel of the ET5-0802-M, which is equipped with one 6-pin removable terminal block connector for dual DC power inputs (12-48VDC).

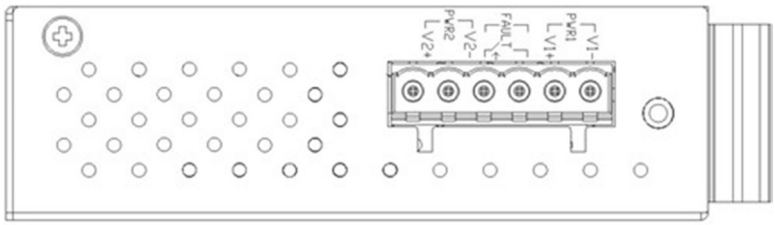

Figure 12: ET5-0602-M Top Panel View

LED indicators

There are LED indicators located on the front panel of the switch that show the power input and network status. Each LED indicator has a different color and has its own meaning, as shown in the table below:

LED	Colour	Description	
P1	Green	On	Power input 1 is active
		Off	Power input 1 is inactive
P2	Green	On	Power input 2 is active
		Off	Power input 2 is inactive
Fault	Green	On	No event happened
	Red	On	Power input 1 or 2 is inactive
			Port link-down/Broken
Master	Green	On	ERPS Owner Mode (Ring Master) is ready
		Off	ERPS Owner Mode is not active
Ring	Green	On	ERPS Ring Network is active and works well
		Flashing	ERPS Ring works abnormally or misconfigure
		Off	ERPS Ring Network is not active
LAN port 1-6 L/A	Green 	On	Connected to the network, 100Mbps
		Flashing	Network is active
		Off	Not connected to the network
	Green 	On	Connected to the network, 10Mbps
		Flashing	Network is active
		Off	Not connected to the network
L/A (Fiber Port 7-8)	Green	On	Connected to network, 100Mbps
		Flashing	Network is active
		Off	Not connected to the network

Table 9: LED indicators for ET5-0802-M

Special Models

- **ET5-0802-S1** 8- Ports fast Ethernet – 6x10/100Tx + 2x100Fx (Connector SC, single-mode, 10km/1310nm)
- **ET5-0802-S3** 8- Ports fast Ethernet - 6x10/100Tx + 2x100Fx (Connector SC, single-mode, 30km/1310nm)

Ports

Ethernet ports

RJ45 ports automatically identify connections from 10Base-T and 100Base-TX devices. Automatic MDI/MDIX means that the switch can connect to another switch or workstation without changing direct or crossover cabling. See in the table below the squematic of crossover and direct cables:

Crossover Cable		**Direct Cable**	
Nº / Pin signal	Nº / Pin signal	Nº / Pin signal	Nº / Pin signal
1 / RX+	3 / TX+	1 / RX+	1 / TX+
2 / RX-	6 / TX-	2 / RX-	2 / TX-
3 / TX+	1 / RX+	3 / TX+	3 / RX+
6 / TX-	2 / RX-	6 / TX-	6 / RX-

Table 10: 10/100Base-T(X) Pinout

NOTE:"+" and "-" signals represent the polarity of the wires that make up each pair.

Fiber ports

The Fiber Port of the SC connector Type can operate in Multimode. When connecting Fiber Ports to each other, follow the instructions as illustrated below to make the connection correctly. A wrong connection will cause abnormal operation.

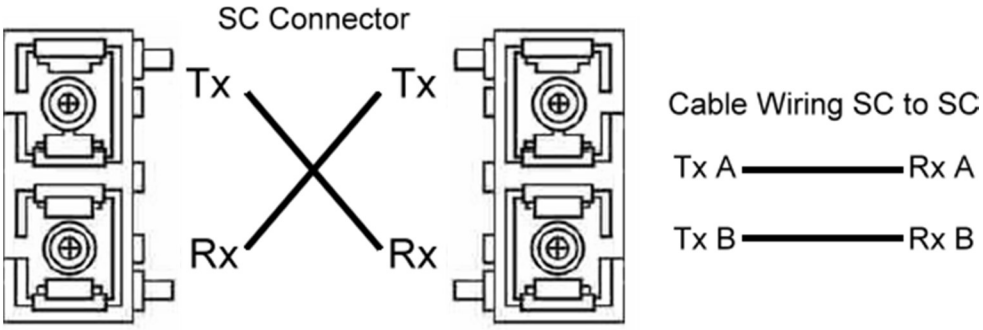

Figure 13: SC Multimode Connector Fiber Port

Caution: This is a Class 1 Laser/LED product. Do not look directly at the Laser/LED beam

Cabling

Use the 2/4 pair CAT 5e twisted pair cable or top cabling for RJ45 port connections. The cable between the switch and the device (switch, hub, workstation, etc.) must be less than 100m long.

Fiber segment using single-mode connector type must use 9/125µm single-mode fiber cable. Using multimode connector type must use 50 or 62.5/125µm multi-mode fiber cable.

Connecting Power Inputs

The steps below demonstrate the electrical installation process of the equipment.

Step 1: Insert the positive and negative wires into the PWR1 (V1+, V1-) and PWR2 (V2+, V2-) contacts on the terminal block connector as shown below in image:

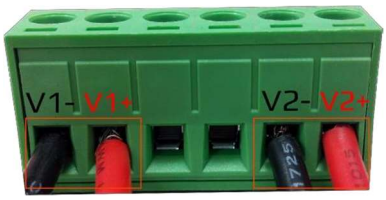

Figure 14: Power Terminal Block

Step 2: Tighten the wire-clamp screws to prevent the wires from loosening, as shown below in image:

Figure 15: Power Terminal Block

Note : Use only copper conductors (60-75ºC). Tighten the screws at 0.56 N.m.The wire gauge for the block terminal should be 18-20 AWG (0.81mm to 1.02mm).

Connecting the Fault Alarm Contact

The fault alarm contact is in the middle of the terminal block connector as shown below. By inserting the wires, it will detect the fault status including power failure or port link failure (managed industrial switch only) and form a normally open circuit. The following image shows an application example for the fault alarm.

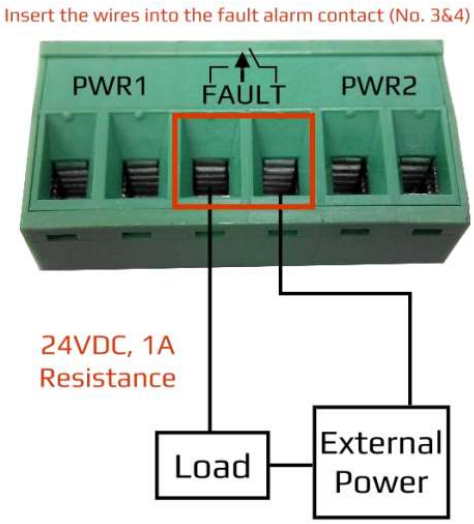

Figure 16: Connecting the Fault Alarm Contact

Note: The wire gauge for the block terminal should be between **12-24 AWG (0.51mm to 2.05mm).** If only using one power source, jumper Pin 1 to Pin 5 and Pin 2 to Pin 6 to eliminate power fault alarm.

Grounding note

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. The groundingscrew symbol is shown below:

Figure 17: Ground screw

Caution: Using shielded wires allows better electromagnetic compatibility.

Mechanical Assembly

DIN Rail Mounting

The DIN-Rail is pre-installed on the industrial Ethernet switch from the factory. If the DIN-Rail isn't on the switch, Follow the next images to learn how to install it.

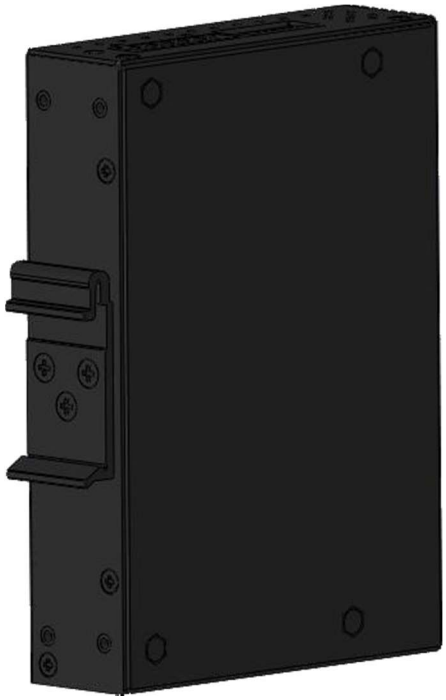

Figure 18: Switch back and DIN rail holder

Follow the steps below to learn how to fix the switch.

Step 1: Use the screws to install the DIN rail holder on the back of the switch.

Step 2: To remove the DIN rail holder, do the opposite of Step 1.

Step 3: After the DIN rail holder installed on the back of the switch, insert the top of the bracket into the rail, asshown in the image below:

Figure 19: Insert the switch into the DIN rail

Step 4: Pull the bracket slightly down the rail, as shown in the image below:

Figura 20: Stabilize the switch on the DIN rail

Step 5: Check if the bracket is mounted tightly on the rail.

Step 6: To remove the rail switch, do the opposite of the steps above.

Wall Mounting

Follow the steps below to mount the switch using the wall mount bracket, as shown in the image below.

Step 1: Remove the DIN rail holder from the switch when loosening the screws.

Step 2: Position the wall mount brackets on the top and bottom of the switch.

Step 3: Use the screws to secure the wall mount bracket to the switch.

Step 4: Use the hook holes at the corners of the wall mount bracket to secure the switch to the wall.

Step 5: To remove the wall mount bracket, do the opposite of the steps above.

Figure 21: DIN rail support

Below, in image are the dimensions of the wall mounting holder:

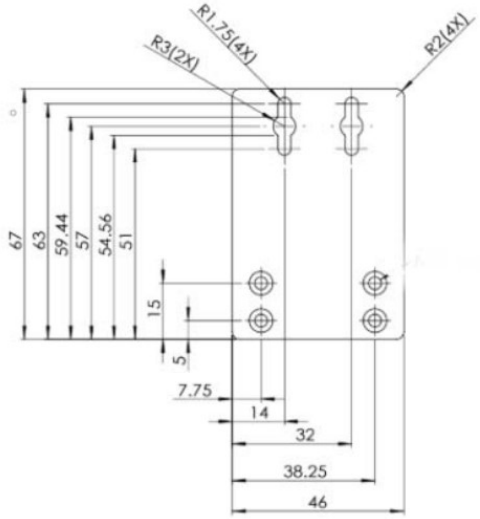

Figure 22: Wall Mounting Holder Dimensions

Hardware Installation

Installation Steps

This section explains how to install the switch:

Installation Steps:

Step 1: Unpack the switch from the original box

Step 2: Make sure the bracket screwed onto the switch.

• If the DIN rail bracket not screwed into the switch, refer to the DIN Rail Mounting section for DIN Rail Installation.

• If you want to wall mount the switch, refer to the Wall Mounting section.

Step 3: To attach the switch to a DIN rail or wall, see the Mechanical Mounting section.

Step 4: Power up the switch and then the Power LED will turn on.

• If you need help connecting the power cords, refer to the Connecting Power Inputs section.

• See the LED Indicators section for LED light indication.

Step 5: Prepare the straight-through CAT5 twisted pair cable for the Ethernet connection.

Step 6: Insert one end of the RJ45 cable into the switch's Ethernet port, and the other end into the Ethernet network device (PC, server, etc.). The Ethernet port LED on the switch will light when the cable is plugged into the network device.

• See the LED Indicators section for indication of LED lights.

Step 7: When all connections made and the LED lights indicate normal operation, installation is complete.

Troubleshooting

- Make sure you have the correct power cord and/or adapter. Never use a power supply or adapter with a non-compliant DC output voltage, or you will burn the equipment.

- Select the appropriate UTP/STP cable to establish the network. Use an unshielded twisted pair cable (UTP, or Unshielded Twisted Pair) or a shielded twisted pair cable (STP, or Shielded Twisted Pair) for RJ45:100Ω CAT5e connections for 10M/100Mbps. Also, ensure that the length of any twisted pair cable connection does not exceed 100 meters.
- Diagnosing LED indicators: To aid in problem identification, the switch can be easily monitored with LED indicators, which help identify if any problems exist.
- See the LED Indicators section for LED light indication
- If the power indicator LED does not turn on when the power cord plugged in, the user may be having a problem with the cord. Look for loose power connections, power outages, or power outlet surges.
- Contact Altus for technical support service if the problem still cannot be resolved.
- If the switch LED indicators are normal and the cables are properly connected, but packets still not being transmitted, check the configuration or status of the Ethernet devices in the system.