

**IES-M162C(E)****Industrial Managed Switch****18-port: 16\* 10/100TX + 2\* Combo(10/100/1000T or 100/1000 SFP)****Benefits**

<ul style="list-style-type: none"> <li>■ System Interface/Performance           <ul style="list-style-type: none"> <li>➢ RJ-45 port supports Auto MDI/MDI-X Function</li> <li>➢ SFP(Mini-GBIC) supports 100/1000 Dual Mode</li> <li>➢ Store-and-Forward Switching Architecture</li> <li>➢ Back-plane (Switching Fabric): 7.2Gbps</li> <li>➢ 1Mbits Packet Buffer</li> <li>➢ 8K MAC Address Table</li> <li>➢ Wide Operating Temperature (-40°C ~75°C)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>■ Case/Installation           <ul style="list-style-type: none"> <li>➢ IP-30 Protection</li> <li>➢ DIN Rail and Wall Mount Design</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>■ Power Supply           <ul style="list-style-type: none"> <li>➢ Wide-range Redundant Power Design</li> <li>➢ Power Polarity Reverse Protect</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>■ Spanning Tree           <ul style="list-style-type: none"> <li>➢ Support IEEE802.1d Spanning Tree</li> <li>➢ Support IEEE802.1w Rapid Spanning Tree</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>■ VLAN           <ul style="list-style-type: none"> <li>➢ Support 802.1 Q Tag VLAN</li> <li>➢ GVRP</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>■ X-Ring a           <ul style="list-style-type: none"> <li>➢ X-Ring, Dual Homing, Couple Ring Topology</li> <li>➢ Provide redundant backup feature and the recovery time below 20ms</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>■ Port Trunk with LACP</li> </ul>	<ul style="list-style-type: none"> <li>■ Support IEEE802.1ab LLDP function</li> </ul>
<ul style="list-style-type: none"> <li>■ QoS (Quality of Service)           <ul style="list-style-type: none"> <li>➢ Support IEEE 802.1p Class of Service,</li> <li>➢ Per port provides 4 priority queues</li> <li>➢ Port Base, Tag Base and Type of Service Priority</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>■ Bandwidth Control           <ul style="list-style-type: none"> <li>➢ Ingress Packet Filter and Egress Rate Limit</li> <li>➢ Broadcast/Multicast Packet Filter Control</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>■ Port Mirror: Monitor traffic in switched networks.           <ul style="list-style-type: none"> <li>➢ TX Packet only</li> <li>➢ RX Packet only</li> <li>➢ Both of TX and RX Packet</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>■ System Event Log           <ul style="list-style-type: none"> <li>➢ System Log Server/Client</li> <li>➢ SMTP e-mail Alert</li> <li>➢ Relay Alarm Output System Events</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>■ Security           <ul style="list-style-type: none"> <li>➢ Port Security : MAC address entries/filter</li> <li>➢ IP Security: IP address security management to prevent unauthorized intruder.</li> <li>➢ Login Security: IEEE802.1X/RADIUS</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>■ SNMP Trap           <ul style="list-style-type: none"> <li>➢ Device cold start</li> <li>➢ Power status</li> <li>➢ Authentication failure</li> <li>➢ X-Ring topology changed</li> <li>➢ Port Link up/Link down</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>■ IGMP           <ul style="list-style-type: none"> <li>➢ Query mode for Multi Media Application</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>■ TFTP Firmware Update and System Configure Restore and Backup</li> </ul>
<ul style="list-style-type: none"> <li>■ Provides EFT protection 3kV for power line</li> </ul>	<ul style="list-style-type: none"> <li>■ Electrostatic Discharge Test (ESD, IEC 61000-4-2):           <ul style="list-style-type: none"> <li>➢ Air Discharge: 8kV</li> <li>➢ Contact Discharge: 6kV</li> </ul> </li> </ul>

### Standard Compliance

IEEE Standard	IEEE 802.3 10Base-T Ethernet IEEE 802.3u 100Base-TX IEEE802.3ab 1000Base-T IEEE802.3z Gigabit fiber IEEE802.3x Flow Control and Back Pressure IEEE802.3ad Port trunk with LACP IEEE802.1d Spanning Tree/ IEEE802.1w Rapid Spanning Tree IEEE802.1p Class of Service IEEE802.1Q VLAN Tag IEEE 802.1x User Authentication (Radius) IEEE802.1ab LLDP
---------------	---

### Hardware Specification

Switch Architecture	Back-plane (Switching Fabric): 7.2Gbps Packet throughput ability(Full-Duplex): 10.7Mpps @64bytes
Transfer Rate	14,880pps for Ethernet port 148,800pps for Fast Ethernet port 1,488,000pps for Gigabit Fiber Ethernet port
Packet Buffer	1Mbits
Mac Address	8K MAC address table
Flash ROM	4Mbytes
DRAM	32Mbytes
Connector	10/100TX: 16 x RJ-45 10/100/1000T/ Mini-GBIC Combo: 2 x RJ-45 + 2 x 100/1000 Mini-GBIC sockets RS-232 connector: RJ-45 type
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. 5/5E cable EIA/TIA-568 100-ohm (100m)
Optical Cable	Multi-mode: 50/125um~62.5/125um Single mode: 9/125um Available distance: 2km (Multi-mode)/30km (Single-mode) Wavelength: 1310nm (Multi-mode/Single-mode)
Protocol	CSMA/CD
LED	Per unit: Power (Green), Power 1 (Green), Power 2 (Green), Fault (Red), Master (Green) 16 10/100TX : Link/Activity (Green), Full duplex/Collision (Yellow) Giga Copper: Link/Activity (Green), Speed (1000Mbps Green) SFP: Link/Activity (Green)
Reserve polarity protection	Present
Power Supply	DC 12~48V, Redundant power with polarity reverse protect function and removable terminal block
Power Consumption	9.5Watts max.
Operating Humidity	5% to 95% (Non-condensing)
Operating Temperature	IFE-1602GBTMA: -10°C ~60°C ; IFE-1602GBTMAE: -40°C ~75°C
Storage Temperature	-40°C to 85°C
Case Dimension	Metal case. IP-30, 72mm (W) x 105mm (D) x 152mm (H)
Installation	DIN Rail and Wall Mount Design
EMI	FCC Class A, CE EN61000-4-2 (ESD), CE EN61000-4-3 (RS), CE EN-61000-4-4 (EFT), CE EN61000-4-5 (Surge), CE EN61000-4-6 (CS), CE EN61000-4-8, CE EN61000-6-2, CE EN61000-6-4
Safety	UL, cUL, CE/EN60950-1, Class I, Division 2, Groups A, B, C and D Hazardous Locations
Stability Testing	IEC60068-2-32 (Free fall), IEC60068-2-27 (Shock), IEC60068-2-6 (Vibration)

### Software Feature

Management	SNMP v1 v2c, v3/ Web/Telnet/CLI
SNMP MIB	RFC 1215 Trap, RFC1213 MIBII, RFC 1157 SNMP MIB, RFC 1493 Bridge MIB, RFC 2674 VLAN MIB, RFC 1643 , RFC 1757, RSTP MIB, LLDP MIB, Private MIB

VLAN	IEEE 802.1Q Tag VLAN (256 entries)/ VLAN ID (Up to 4K, VLAN ID can be assigned from 1 to 4094.) GVRP (256 Groups)
Port Trunk with LACP	LACP Port Trunk: 4 Trunk groups/Maximum 4 trunk members
LLDP	Support LLDP to allow switch to advise its identification and capability on the LAN
Spanning Tree	Support IEEE802.1d Spanning Tree and IEEE802.1w Rapid Spanning Tree
X-Ring	Support X-Ring, Dual Homing, Couple Ring Topology. Provide redundant backup feature and the recovery time below 20ms.
Quality of Service	The quality of service determined by port, Tag and IPv4 Type of service, IPv4/IPv6 Different Service
Class of Service	Support IEEE802.1p class of service, per port provides 4 priority queues
Port Security	Support 50 entries of MAC address for static MAC and another 50 for MAC filter
Port Mirror	Support 3 mirroring types: "RX, TX and Both packet".
IGMP	Support IGMP snooping v1,v2 256 multicast groups and IGMP query Support multicast filter up to 50 entries
IP Security	Support 10 IP addresses that have permission to access the switch management and to prevent unauthorized intruder.
Login Security	Support IEEE802.1X Authentication/RADIUS
Bandwidth Control	Support ingress packet filter and egress packet limit The egress rate control supports all of packet type and the limit rates are 100K~250Mbps Ingress filter packet type combination rules are Broadcast/Multicast/Unknown Unicast packet, Broadcast/Multicast packet, Broadcast packet only and all of packet. The packet filter rate can be set from 100k to 250Mbps
Flow Control	Support Flow Control for Full-duplex and Back Pressure for Half-duplex
System Log	Support System log record and remote system log server
SMTP	Support SMTP Server and 6 e-mail accounts for receiving event alert
Relay Alarm	Provides one relay output for port breakdown, power fail Alarm Relay current carry ability: 1A @ DC24V
SNMP Trap	Up to 3 Trap stations Cold start, Port link up, Port link down, Authentication Failure, Private Trap for power status, Port Alarm configuration, Fault alarm, X-Ring topology change
DHCP	Provide DHCP Client/ DHCP Server functions
DNS	Provide DNS client feature and support Primary and Secondary DNS server
SNTP	Support SNTP to synchronize system clock in Internet and setting for synchronization interval
Firmware Update	Support TFTP firmware update, TFTP backup and restore.
Configuration upload and download	Support binary configuration file for system quick installation
ifAlias	Each port allows importing 128 Bytes of alphabetic string of word on SNMP and CLI interface.

## Order Information

Product Name	Description
IES-M162C	16 10/100TX + 2 10/100/1000T/ Mini-GBIC Combo w/ X-Ring L2 Managed Industrial Switch (-10°C~60°C)
IES-M162CE	16 10/100TX + 2 10/100/1000T/ Mini-GBIC Combo w/ X-Ring & Wide Operating Temperature (-40°C~75°C) L2 Managed Industrial Switch

X-Ring ( For X-Ring, Couple Ring and Dual Homing details, please look up to user Manual )

