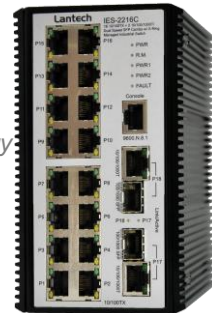# IES-2216C

16 10/100TX + 2 10/100/1000T/Dual Speed SFP Combo w/Pro-Ring

Managed Industrial Switch

- *DNV Type Approval for Ships, Craft and Off-shore Platforms*
- *UL Class I Division II for Group A,B,C and D hazardous location*
- *Pro-ring System: X-Ring, Dual Homing, and Couple Ring Topology*
- *Redundant backup feature w/ Ring recovery time below 10ms*
- *IEEE1588 PTP Client 1~2ms supported***

FCC   CE   cUL   RoHS   DNV   Class I Division II for Group A,B,C,D

OVERVIEW

The Lantech IES-2216C/E is a 16-port 10/100BaseTX + 2-port 10/100/1000T/Dual Speed SFP combo SNMP industrial switch. The SFP interface support both 100M and Giga fiber. The Lantech IES-2216C/E redundant power design and Pro-ring features ensure a high-performance and reliable network connection.

The IES-2216C/E supports relay contact to connect with alarm system in case of power or port failure. The wide-range redundant power design, overload current and power polarity reverse protection provide higher stability in power supply.

Lantech features "Pro-Ring" incorporating X-Ring to find an auto-recovery-path in 10ms when Ring network is failed over and can be ring up to 250 Lantech Industrial Switches in a ring. Lantech Dual Homing feature can ensure two X-Ring groups with redundant back up when connected to a backbone switch. The IES-2216C/E can set back-up masters in X-Ring to ensure the most secure network as well.
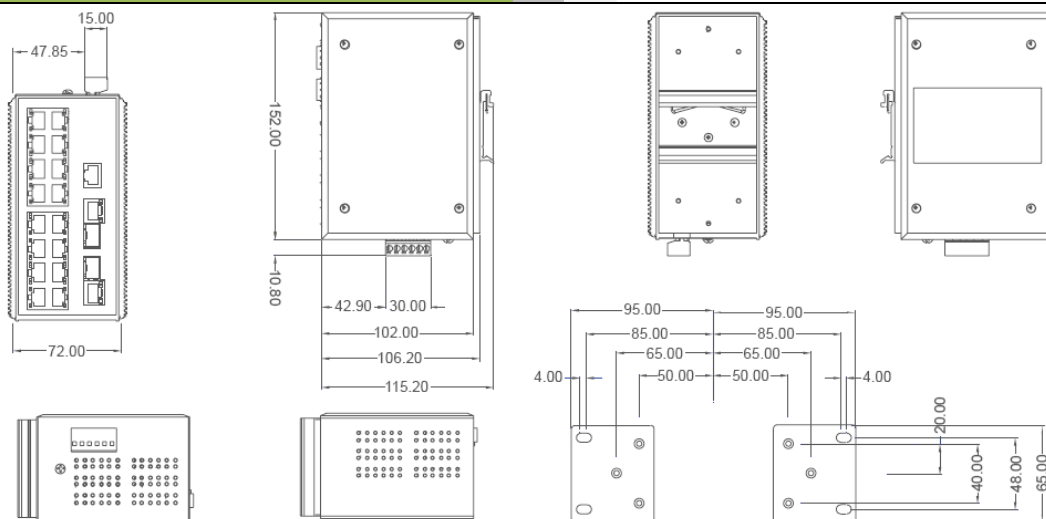
With UL Class I Division II approval, the IES-2216C/E can be implemented in hazardous or explosive condition without accelerating the damage. The -E model can be used in extreme environments with an operating temperature range of -40°C to 75°C. It is the best solution for inflammable environment where the liquid, gas and vapor etc might present the hazardous condition which generally to be found in mining, oil & gas, chemical, processing automation areas.

Lantech DNV-Type Approval IES-2216C-DNV model meets with the most critical test criteria in DNV Type test directives consisting of MED (Marine Equipment Directive), EMC (Electromagnetic Compatibility Directive) and LVD (Low Voltage Directive) in which vibration, high voltage, compass safe distance, salt mist tests, humidity etc are conducted to ensure the switch sustaining the harsh on-board environments often founded in Ships, Crafts and Offshore platforms

FEATURES & BENEFITS

- **16 10/100/1000T + 2 10/100/1000T/Dual Speed SFP Industrial Switch.(Total 18 Port Switch)**
- **8K MAC Address Table / 1Mbits Packet Buffer**
- **RJ-45 Port Support Auto MDI/MDI-X Function**
- **Back-plane (Switching Fabric): 7.2Gbps**
- **IP-30 Protection with DIN rail and Wall-mount design**
- **Overload current and power polarity reverse protection**
- **Wide-range redundant power design**
- **UL Class I Division II for Group A,B,C and D**
- **Pro-Ring**
  - *X-Ring, Dual Homing, and Couple Ring Topology.*
  - *Provides redundant backup feature and the recovery time below 10ms for a ring up to 250 switches*
- **VLAN: Port Based VLAN, 802.1 Q Tag VLAN, GVRP**
- **IEEE802.1d Spanning Tree & IEEE802.1w RSTP**
- **Double Tag VLAN (Q in Q)** , Private VLAN****
- **Bandwidth Control**
  - *Ingress Packet Filter and Egress Rate Limit*
  - *Broadcast/Multicast Packet Filter Control*
- **IGMP with Query mode for Multi Media**

- **QoS (Quality of Service)**
  - *Support IEEE 802.1p Class of Service*
  - *Per port provides 4 priority queues*
  - *Port Base, Tag Base and Type of Service Priority*
- **System Event Log**
  - *System Log Server/Client*
  - *SMTP e-mail Alert*
  - *Relay Alarm Output System Events*
- **Security**
  - *Port Security : MAC address entries/filter*
  - *IP Security: IP address security management to prevent unauthorized intruder.*
  - *Login Security: IEEE802.1X/RADIUS*
- **SNMP Trap**
  - *Device cold start, Power status, Authentication failure, X-Ring topology changed, Port Link up/Link down*
- **Port Trunk with LACP**
- **Support 802.1ab LLDP**
- **TFTP Firmware Update and System Configure Restore/Backup**

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DIMENSIONS (unit=mm)

SPECIFICATION

Hardware Specification

Standards	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 IEEE1588 PTP Precision Time Protocol, 1-2ms**
Switch Architecture	Back-plane (Switching Fabric): 7.2Gbps
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
Connectors	10/100TX: 16 x RJ-45 10/100/1000T/ Mini-GBIC Combo: 2 x RJ-45 + 2 x 100/1000 SFP sockets RS-232 connector: RJ-45 type
Network Cable	10Base-T: 2-pair UTP/STP Cat. 3, 4, 5, 6 cable EIA/TIA-568 100-ohm (100m) 100Base-TX: 2-pair UTP/STP Cat. 5/5E/6 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)
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
Overload current protection	Present
Protocol	CSMA/CD
Power Supply	24 VDC (9~56VDC) -24 VDC (-9~-56VDC); 18~36VAC**, Redundant power with polarity reverse protect function and removable terminal block

Power Consumption	DC input		DC 12V
	Un- load	A	0.441
		W	5.304
	Full- Load	A	0.928
		W	11.136

Operating Humidity	5% to 95% (Non-condensing)
Operating Temperature	-20°C~60°C / -4°F~140°F (Standard model) -40°C~75°C / -40°F~167°F (-E / DNV model)
Storage Temperature	-40°C~85°C / -40°F~185°F
Case Dimension	Metal case. IP-30, 72mm (W) x 105mm (D) x 152mm (H)
Weight	1409 g
Installation	DIN Rail and Wall Mount Design.
EMI &EMS	FCC Class A, CE EN61000-4-2 (ESD), CE EN61000-4-3 (RS), CE EN61000-4-4 (EFT), CE EN61000-4-5 (Surge), CE EN61000-4-6 (CS), CE EN61000-4-8, CE EN61000-4-11, CE EN61000-4-12, CE EN61000-6-2, CE EN61000-6-4
Safety	UL, cUL, CE/EN60950-1 UL Class I Division II for Group A,B,C and D hazardous location
Stability Testing	IEC60068-2-32 (Free fall), IEC60068-2-27 (Shock), IEC60068-2-6 (Vibration)
MTBF	220111 hrs
Warranty	5 years

Software Specification

Management	SNMP v1 v2c, v3/ Web/Telnet/CLI Management
IGMP	Supports IGMP snooping v1,v2 256 multicast groups and IGMP query
VLAN	Port Based VLAN IEEE 802.1Q Tag VLAN (256 entries)/ VLAN ID (Up to 4K, VLAN ID can be assigned from 1 to 4096.) GVRP (256 Groups) Double Tag VLAN (Q in Q)** Private VLAN**

SNMP MIB	RFC 1215 Traps MIB, RFC 1213 MIBII, RFC 1157 SNMP MIB, RFC 1493 Bridge MIB, RFC 2674 VLAN MIB, RFC 1643 EtherLike, RFC 1757 RMON, RSTP MIB, Private MIB
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
Port Security	Support 100 entries of MAC address for static MAC and another 100 for MAC filter
IP Security	Supports 10 IP addresses that have permission to access the switch management and to prevent unauthorized intruder
Login Security	Supports IEEE802.1X Authentication/RADIUS
SNTP	Supports SNTP to synchronize system clock in Internet
SMTP	Supports SMTP Server and 6 e-mail accounts for receiving event alert
Bandwidth Control	Supports 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	Supports Flow Control for Full-duplex and Back Pressure for Half-duplex
Pro-Ring	Supports Pro-Ring system covers X-Ring, Dual Homing, and Couple Ring Topology.

	Provide redundant backup feature and the recovery time below 10ms
Spanning Tree	Supports IEEE802.1w Rapid Spanning Tree
Port Mirror	Support 3 mirroring types: "RX, TX and Both packet".
Quality of Service	The quality of service determined by port, Tag and IPv4 Type of service, IPv4/IPv6 Different Service
Class of Service	Supports IEEE802.1p class of service, per port provides 4 priority queues
System Log	Supports System log record and remote system log server
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	Provides DHCP Client/ DHCP Server functions
DNS	Provides DNS client feature and support Primary and Secondary DNS server
Firmware Update	Supports TFTP firmware update, TFTP backup and restore.
Configuration upload / download	Supports binary configuration file for system quick installation

*Future Release
**Optional

ORDERING INFOMATION

- **IES-2216C…….....…….......P/N: 8350-650**
  16 10/100TX + 2 10/100/1000T/Dual Speed SFP Combo w/Pro-Ring managed Industrial Switch; -20 to 60°C
- **IES-2216C-E…….....…….......P/N: 8350-655**
  16 10/100TX + 2 10/100/1000T/Dual Speed SFP Combo w/Pro-Ring managed Industrial Switch; -40 to 75°C
- **IES-2216C-DNV......…….......P/N: 8350-650DNV**
  16 10/100TX + 2 10/100/1000T/Dual Speed SFP Combo w/Pro-Ring managed Industrial Switch; -40 to 75°C; DNV Approval
  *Redundant power without polarity reverse protect function
- **IES-2216C-AC……….....…….P/N: 8350-650-AC**
  16 10/100TX + 2 10/100/1000T/Dual Speed SFP Combo w/Pro-Ring managed Industrial Switch; -20 to 60°C; 18~36VAC
- **IES-2216C-E-AC……….....…….P/N: 8350-655-AC**
  16 10/100TX + 2 10/100/1000T/Dual Speed SFP Combo w/Pro-Ring managed Industrial Switch; -40 to 75°C; 18~36VAC
- **IES-2216C-DNV-AC......…….P/N: 8350-650DNV-AC**
  16 10/100TX + 2 10/100/1000T/Dual Speed SFP Combo w/Pro-Ring managed Industrial Switch; -40 to 75°C; DNV Approval; 18~36VAC
  *Redundant power without polarity reverse protect function

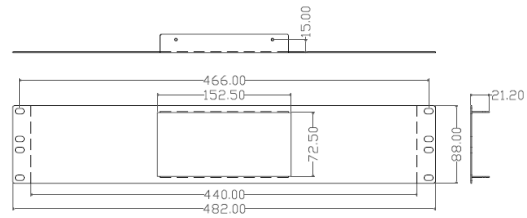# OPTIONAL ACCESSORIES

DIN Rail Power

- **AD1048-24FS** 24VDC, 2A, Wide AC Input, Convection Cooled, DIN Rail or Wall Mounted, RoHS, Operating Temp. -20°C~50°C (ambient, derating each output at 2.5% per degree from 50°C ~ 75°C, which means the output is 18 Watts at 75°C.)
- **AD1024-24F** 24VDC, 1A, Wide AC Input, Convection Cooled, DIN Rail or Wall Mounted, RoHS, Operating Temp. -20°C~50°C (ambient, derating each output at 2.5% per degree from 50°C ~ 75°C, which means the output is 9 Watts at 75°C.)
- **AD1240-48S** 48VDC, 5A, Wide AC Input, Build-in fan Cooled, DIN Rail or Wall Mounted, RoHS, Operating Temp. -20°C~50°C (ambient, derating each output at 2.5% per degree from 50°C ~ 70°C)
- **AD1120-48F** 48VDC, 2.5A, Wide AC Input, Build-in fan Cooled, DIN Rail or Wall Mounted, RoHS, Operating Temp. -20°C~50°C (ambient, derating each output at 2.5% per degree from 50°C ~ 70°C)

Mini GBIC (SFP)

8330-162	MINI GBIC 1000SX (LC/0.5km) Transceiver	8330-061	100Base LX 30KM, Single-mode, LC Transceiver
8330-163	MINI GBIC 1000SX2 (LC/2km) Transceiver	8330-188	LTSFP-1000BX-10KM Transceiver (WDM 1310)
8330-165	MINI GBIC 1000LX (LC/10km) Transceiver	8330-189	LTSFP-1000BX-10KM Transceiver (WDM 1550)
8340-0591	MINI GBIC 1000LHX (LC/40km) Transceiver	8330-186	LTSFP-1000BX-20KM Transceiver (WDM 1310)
8330-166	MINI GBIC 1000XD (LC/50km) Transceiver	8330-187	LTSFP-1000BX-20KM Transceiver (WDM 1550)
8330-169	MINI GBIC 1000XD (LC/60km) Transceiver	8330-180	LTSFP-1000BX-40KM Transceiver (WDM 1310)
8330-167	MINI GBIC 1000ZX (LC/80km) Transceiver	8330-182	LTSFP-1000BX-40KM Transceiver (WDM 1550)
8330-170	MINI GBIC 1000EZX (120km) Transceiver	8330-181	LTSFP-1000BX-60KM Transceiver (WDM 1310)
8330-168	MINI GBIC 10/100/1000T (100m) Transceiver	8330-183	LTSFP-1000BX-60KM Transceiver (WDM 1550)
8330-060	100Base FX 2KM, Multi-mode, LC Transceiver	8330-184	LTSFP-1000BX-80KM Transceiver (WDM 1490)
8330-065	100Base FX 5KM, Multi-mode, LC Transceiver	8330-185	LTSFP-1000BX-80KM Transceiver (WDM 1550)

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Rack Mounting Kit

■ **MBAK19001**   19" Rack Mounting Kit for
72x105x152mm Industrial Switch

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