

Model Name	ZEQUO 6500	Product Specification	401-36242E-SG-SP01
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1. Summary

ZEQUO 6500 is a Layer 3 Switching Hub with management function having 10BASE-T/100BASE-TX/1000BASE-T ports, SFP extension slots, and SFP+ extension slots.

2. Feature

- (1) Has wire-speed Layer 3 switching function.
- (2) Ports 1 to 24 also have SFP extension slots.
These ports and the 10/100/1000BASE-T twisted pair cable ports cannot be used simultaneously.
- (3) Ports 21 to 24 are 10/100/1000BASE-T ports corresponding to auto negotiation.
Also their speed and communication mode can be switched by configuration.
- (4) Ports 25 to 28 are SFP+ extension slots. They are capable of 10Gbps communications. They can be used as SFP or SFP+ ports.
- (5) Ports 27 and 28 are stacking ports.
Up to four units can be stacked by connecting the ports using optical fiber cable or SFP+ direct attach cables.
- (6) Settings and firmware can be changed and saved by using an SD card.
- (7) All twisted pair ports support straight/cross cable by auto sensing function.
Simply connect devices with straight cables, whether it is a terminal or a network device.
- (8) Power saving mode detects the connection status automatically and saves power consumption to minimum.
- (9) The Ring Redundant Protocol (RRP) is supported, allowing to make a redundant network via ring topology.
- (10) Supports ZEQUO assist Plus. Processes from introduction to maintenance can be performed easily.

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3. Rated/Environmental Conditions

3-1. Power supply	AC100-240V, 50/60Hz, 2.0A (with a built-in power supply)
3-2. Power consumption	Normally, Max.44.4W, Min.24.6W
3-3. Operating environment	Temperature: 0 - 45°C Humidity: 20 - 80%RH (no condensation)
3-4. Storage environment	Temperature: -20 - 70°C Humidity: 10 - 90%RH (no condensation)
3-5. EMC compliance	CISPR 22 Class A EN 55022 Class A AS/NZS CISPR22 Class A VCCI Class A EN 61000-3-2, EN 61000-3-3 CISPR 24 EN 55024 IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-11
3-6. Safety compliance	IEC 60950-1 EN 60950-1
3-7. Environment compliance	RoHS compliant

4. Form

4-1. Form and materials/colors	Dimensions :44mm (Height) × 440mm (Width) × 312mm (Depth) (Excluding protruding sections) Case material :Main unit: SECC, Front face: PC/ABS, Face plate: PC Color :Main unit: Green 03, Front face: Silver 01, Face plate label: Black 01
4-2. Mass (Weight)	4,500g

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5. Hardware Specifications

5-1. Interface	<p>SFP extension slot 1-24 SFF-8472 (DMI:Diagnostic Monitoring Interface) *Select either of RJ45 or SFP for use Optional Accessories: 1000BASE-SX SFP Module (PN54021K-ID) 1000BASE-LX SFP Module (PN54023K-ID)</p> <p>Twisted pair port 21-24 :RJ45 connector Transmitting and receiving network system: IEEE802.3 10BASE-T IEEE802.3u 100BASE-TX IEEE802.3ab 1000BASE-T</p> <p>Transmission speed :10/100/1000Mbps, full/half duplex Compatible cable :Twisted pair cable (At least equivalent to EIA/TIA568 category 5e)</p> <p>Maximum transmission distance :100m Auto-Negotiation :Communication speed and full/half duplex are automatically recognized. The setting can be fixed to 10Mbps, 100Mbps, or 1000Mbps and full duplex or half duplex.</p> <p>Power saving mode : Detects the connection status automatically and saves power consumption to minimum.</p> <p>SFP+ extension slot 25-28 SFF-8472 (DMI:Diagnostic Monitoring Interface) *Select either of RJ45 or SFP for use Optional Accessories: 1000BASE-SX SFP Module (PN54021K-ID) 1000BASE-LX SFP Module (PN54023K-ID) 10GBASE-SR SFP+ Module (PN59021-ID) 10GBASE-LR SFP+ Module (PN59023-ID)</p> <p>Stack port 27-28 SFF-8472 (DMI:Diagnostic Monitoring Interface) Optional Accessories: 1000BASE-SX SFP Module (PN54021K-ID) 1000BASE-LX SFP Module (PN54023K-ID) 10GBASE-SR SFP+ Module (PN59021-ID) 10GBASE-LR SFP+ Module (PN59023-ID) SFP+ Direct Attach Cable (Stack cable 1m)</p>
5-2. Switching mode	<p>Switching method :Store and Forward Switching capacity :128Gbps Packet transfer capability :Non-blocking Max 14,880,000pps/port (10Gbps) Max 1,488,000pps/port (1000Mbps) Max 148,800pps/port (100Mbps) Max 14,880pps/port (10Mbps)</p> <p>MAC Address table :Max 32K entry/unit Buffer memory :2M Byte/unit Flow control :half-duplex Back pressure full-duplex IEEE802.3x</p> <p>Aging timeout :10 to 1,000,000 sec. (Default: 300 sec.) Jumbo frame :13KB</p>

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5. Hardware Specifications

5-3. Terminal emulator connection	Console port :RJ45 connector 1 port Transmission mode :RS-232C (ITU-TS V.24) Emulation mode :VT100 Communication configuration :9,600bps, 8bit, None Parity control, Stop bit 1 bit
5-4. Stack	Number of units :Four units max. (stackable with ZEQUO 6400 and ZEQUO 6500) Bandwidth :40Gbps max. Stack topology :Chain, Ring
5-5. SD card slot	SD card slot :1 Standard :SD/SDHC Class :2/4/6/10 Size :128MByte to 32GByte
5-6. LED display	<p>(1) POWER LED Green Light : Power is ON. Off : Power is OFF.</p> <p>(2) STATUS LED Green Light : The system is normally operating. Orange Light : Starting Orange Blink : Malfunction (Contact the seller.) Off : Power is OFF.</p> <p>(3) SD CARD LED Green Light : SD card inserted Green Blink : Reading/writing data Orange Blink : SD card error Off : No SD card</p> <p>(4) STACK ID LED Indicating "H" and the STACK ID alternately : Master switch Indicating "h" and the STACK ID alternately : Backup master switch Indicating the STACK ID : Slave switch</p> <p>(5) Port LED LINK/ACT. (Port 1-24) Green Light : Link is established at 1000 Mbps duplex mode. Green Blink : Transmitting and receiving data at 1000 Mbps duplex mode. Off : No devices is connected.</p> <p>LINK/ACT. (Port 21-24) Green Light : Link is established at 1000 Mbps duplex mode. Green Blink : Transmitting and receiving data at 1000 Mbps duplex mode. Orange Light : Link is established at 100 Mbps or 10 Mbps. Orange Blink : Transmitting and receiving data at 100 Mbps or 10 Mbps. Off : No devices is connected.</p> <p>LINK/ACT. (Port 25-28) Green Light : Link is established at 10 Gbps duplex mode. Green Blink : Transmitting and receiving data at 10 Gbps duplex mode. Orange Light : Link is established at 1000 Mbps duplex mode. Orange Blink : Transmitting and receiving data at 1000 Mbps duplex mode.</p>

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6. Software Specifications

6-1. Configuration	Control parameters can be set by the following procedures: (1) Configuration from an asynchronous terminal connected to the console port. (2) Configuration from a remote terminal connected via TELNET and SSH.
6-2. Switching Hub Control	It is possible to check the control and operation of the Switching Hub by ZEQUO assist Plus. Switching Hub can be controlled by the following procedures: (1) Control from an asynchronous terminal connected to the console port. (2) Control from a remote terminal using SSH/TELNET and TCP/IP network connection. (3) Control using SNMP Manager The switching Hub operation status can be checked using the following functions. (1) Fan sensor function (2) Internal temperature sensor function (3) Function to display the CPU usage and memory usage (4) SFP module status checking function (DDM: Digital Diagnostic Monitoring)
6-3. Rebooting	The system can be reboot from the software in the following two modes: (1) Warm start (2) Reset to factory default
6-4. Supported Agent	Management protocol :SNMP v1/v2c/v3 (RFC1157, RFC1901, RFC 1908, RFC 2570, RFC 2575) TELNET (RFC854) SSH v2 (RFC4251, RFC4252, RFC4253, RFC4254, RFC4716) Data transfer protocol :TFTP (RFC783)
6-5. Supported MIB	RFC1213-MIB (MIB II) (RFC 1213) BRIDGE- MIB (RFC 4188) SNMPv2-MIB (RFC 1907) RMON-MIB (RFC 1757, RFC 2819) RMON2-MIB (RFC 2021) EtherLike-MIB (RFC 1643, RFC 2358, RFC 2665) MAU-MIB (RFC 4836) P-BRIDGE- MIB (RFC 4363) IF-MIB (RFC 2233, RFC 2863) RADIUS-AUTH-CLIENT-MIB (RFC 2618) MGMD-STD- MIB (RFC 5519) RIPv2-MIB (RFC 1724) IP-FORWARD-MIB (RFC 4292) IPMROUTE-STD-MIB (RFC 2932) PIM-MIB (RFC 2934) RADIUS-ACC-CLIENT-MIB (RFC 2620) DISMAN-PING-MIB (RFC 2925) DISMAN-TRACEROUTE-MIB (RFC 2925) OSPF-MIB (RFC 1850) VRRP-MIB (RFC 2787) ENTITY-MIB (RFC 2737) IPV6-MIB (RFC 2465)
6-6. System log	Maximum number to be kept: 9,000
6-7. Others	Syslog Client (Transfers system logs to the Syslog server.) TFTP Client (Upgrades the software and saves/loads configuration information.) TELNET Client DHCP Client SNTP LLDP LLDP-MED DNS relay DNS Resolver DHCP Snooping

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7. Layer 2 Switching Functions

7-1. Spanning Tree	IEEE 802.1D Spanning Tree Protocol, Rapid Spanning Tree Protocol IEEE 802.1Q Multiple Spanning Tree Protocol
7-2. VLAN	IEEE802.1Q Private VLAN Guest VLAN MAC-based VLAN Subnet based VLAN Number of VLAN registrations: 4,094 (including default) Asymmetric VLAN Voice VLAN
7-3. Trunking	Link Aggregation function (STATIC/LACP) Up to 48 groups can be created (up to 8 ports per group).
7-4. Port Monitoring	Traffic of the target port can be copied to the specified port and transmitted. (Two or more target ports can be specified.) RSPAN
7-5. Multicast	IGMP Snooping (IGMP v1/v2/v3) function (Maximum group number :4,096, Number of Static registrations:64) MLD snooping (MLDv2) function (Maximum group number :4,096, Number of Static registrations:64)
7-6. QoS	IEEE802.1p 8 levels of Priority Queue supported Scheduling Method: Priority Queuing (PQ:Strict priority queuing) Weighted Round Robin (WRR:Weighted round robin scheduling)
7-7. Authentication Function	Web-based authentication IEEE802.1X Port-based authentication Web-based authentication, Mac-based authentication using IEEE 802.1X Web-based authentication, Dynamic VLAN function using IEEE 802.1X Guest VLAN using IEEE 802.1X (EAP-MD5/TLS/PEAP authentication method)
7-8. Access Control	Access control can be controlled by the following parameters: (1)IP address (Source or Destination) (2)MAC address (Source or Destination) (3)TCP/UDP port number (Source or Destination) (4)VLAN ID (5)IEEE 802.1p Priority (6)DSCP (7)Protocol (8)ICMP type (9)TCP SYN Flag
7-9. Ring protocol	Redundancy is enabled by ring topology. (Up to 8 group can be registered.)

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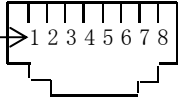
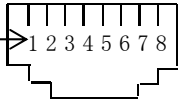
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8. Layer 3 Switching Functions

8-1. IP interface	IP interface :256 max. Multiple IP addresses :5 / Interface
8-2. IPv4 routing	Static RIP v1/v2 OSPF v3 (maximum number of Neighbor:200, 32 when device is stacking) Policy-based routing
8-3. IPv6 routing	Static OSPF v2 (maximum number of Neighbor:32) Policy-based routing
8-4. Routing table	Static :256 (IPv4), 128 (IPv6) Dynamic :12K (IPv4), 6K (IPv6)
8-5. IP forwarding	95 M bps max.
8-6. VRRP	Maximum number of virtual router :256
8-7. Multicast routing	IGMPv1/v2/v3 Maximum group number :4,096 Number of Static registrations :1,024 MLD v1/v2 Maximum group number :2,048 DVMRP v3 Maximum number of Neighbor :100 Routing table size :1,024 PIM Dense mode (IPv4) Maximum number of Neighbor :100 PIM Sparse mode (IPv4/v6) Maximum number of Neighbor :100 Routing table size :4,096 (IPv4), 2,048 (IPv6) PIM Sparse-Dense mode (IPv4) PIM-SSM (IPv4) Maximum number of multicast forwarding packets :2,048 (shared by IPv4/v6)
8-8. DHCPv4 server	Allocatable IP address :1,024/pool Max. pool :10 Max. manual binding address :16
8-9. DHCPv6 server	Allocatable IP address :4,096 (shared by all pools) Max. pool :16 Max. manual binding address :64
8-10. DHCP relay	DHCP Option:60, 61, 82 Supported local relay

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9. Connector Pin Arrangement

9-1. Port 1 - 24										
Status	Pin No.	1	2	3	6	4	5	7	8	
MDI-X	Signal	BLDB+	BLDB-	BLDA+	BLDA-	BLDD+	BLDD-	BLDC+	BLDC-	
MDI	Signal	BLDA+	BLDA-	BLDB+	BLDB-	BLDC+	BLDC-	BLDD+	BLDD-	
9-2. Console port										
Pin No.	Signal	Pin No.	Signal							
1	NC	5	GND							
2	NC	6	RXD							
3	TXD	7	NC							
4	GND	8	NC							

10. Installation Procedures and Accessories

10-1. Installation Procedures	Mounting to rack
10-2. Accessories	<ul style="list-style-type: none"> (1) Installation Guide :1 (2) CD-ROM :1 (3) Mounting bracket (for 19-inch rack) :2 (4) Screw (for 19-inch rack) :4 (5) Screw (for fixing the main unit and the 19 inch rack mount bracket) :8 (6) SFP+ Direct Attach Cable :1 (7) Rubber foot :4 (8) Dummy SD card :1 (9) Power cord (TIS 166-2549)(*) :1 <p>* The attached power cord is dedicated for AC 100 - 240 V use.</p>

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11. Optional accessories

11-1. 1000BASE-SX SFP Module (Model No. :PN54021K-ID)	Fiber optic port connector type Standards Transmission speed Compatible cable Maximum transmission distance	:LC connector (Duplex) :IEEE802.3z 1000BASE-SX : 1000Mbps, full duplex :Fiber cable 50/125 μ m Multi Mode Fiber 62.5/125 μ m Multi Mode Fiber :550 m at 50/125 μ m 220 m at 62.5/125 μ m
11-2. 1000BASE-LX SFP Module (Model No. :PN54023K-ID)	Fiber optic port connector type Standards Transmission speed Compatible cable Maximum transmission distance	:LC connector (Duplex) :IEEE802.3z 1000BASE-LX : 1000Mbps, full duplex :Fiber cable 10/125 μ m Single Mode Fiber 50/125 μ m Multi Mode Fiber 62.5/125 μ m Multi Mode Fiber :10 km when Single Mode Fiber is used 550 m when Multi Mode Fiber is used
11-3. 10GBASE-SR SFP+ Module (Model No. :PN59021-ID)	Fiber optic port connector type Standards Transmission speed Compatible cable Maximum transmission distance	:LC connector (Duplex) :IEEE802.3ae 10GBASE-SR :10Gbps full duplex :Fiber cable 50/125 μ m Multi Mode Fiber 62.5/125 μ m Multi Mode Fiber :300 m at 50/125 μ m 33 m at 62.5/125 μ m
11-4. 10GBASE-LR SFP+ Module (Model No. :PN59023-ID)	Fiber optic port connector type Standards Transmission speed Compatible cable Maximum transmission distance	:LC connector (Duplex) :IEEE802.3ae 10GBASE-LR :10Gbps full duplex :Fiber cable 10/125 μ m Single Mode Fiber :10km

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12. Prohibitions when Using the Product to Guarantee Safety

The manufacturer assumes no responsibility for any problems occurring when the following conditions are not satisfied. Observe the following items when using the product.

- (1) Do not use power supply other than AC 100 – 240 V.
Deviation could lead to fire, electric shock, and/or equipment failure.
- (2) Do not handle the power cord with wet hand.
Deviation could lead to electric shock, and/or equipment failure.
- (3) Do not handle this Switching Hub and connection cables during a thunderstorm.
Deviation could lead to electric shock.
- (4) Do not disassemble and/or modify this Switching Hub.
Deviation could lead to fire, electric shock, and/or equipment failure.
- (5) Do not damage the power cord. Do not bend too tightly, stretch, twist, bundle with other cord, pinch, put under a heavy object and/or heat it.
Damaged power cord could lead to fire, short, and/or electric shock.
- (6) Do not put foreign objects (such as metal and combustible) into the opening (such as twisted pair port, console port), and/or do not drop them into the inside of the Switching Hub.
Deviation could lead to fire, electric shock, and/or equipment failure.
- (7) Do not connect equipments other than 10BASE-T/100BASE-TX/1000BASE-T to twisted pair port.
Deviation could lead to fire, electric shock, and/or equipment failure.
- (8) Do not place this Switching Hub in harsh environment (such as near water, high humid, and/or high dust).
Deviation could lead to fire, electric shock, and/or equipment failure.
- (9) Do not place this Switching Hub under direct sunlight and/or high temperature.
Deviation could lead to high internal temperature and fire.
- (10) Do not install this Switching Hub at the location with continuous vibration or strong shock, or at the unstable location.
Deviation could lead to injury and/or equipment failure.
- (11) Do not put this Switching Hub into fire.
Deviation could lead to explosion and/or fire.
- (12) Do not insert any modules other than the optional SFP modules (PN54021K-ID/PN54023K-ID) into the SFP extension slot. Do not insert any modules other than the optional SFP modules (PN54021K-ID/PN54023K-ID) and SFP+ module(PN59021-ID/PN59023-ID) into the SFP+ extension slot. Do not insert any modules other than the optional SFP modules (PN54021K-ID/PN54023K-ID) and SFP+ module(PN59021-ID/PN59023-ID), SFP+ Direct Attach Cable into the stacking port. For the latest information about compatible modules, check our website.
- (13) Do not use the supplied power cord for anything other than this product.
Deviation could lead to fire, electric shock, and/or equipment failure.
- (14) Unplug the power cord in case of equipment failure.
Deviation, such as keeping connected for a long time, could lead to fire.
- (15) Connect this Switching Hub to ground.
Deviation could lead to electric shock, malfunction, and/or equipment failure.
- (16) Connect the power cord firmly to the power port.
Deviation could lead to electric fire, shock, and/or malfunction.
- (17) Unplug the power cord if the STATUS/ECO LED blinks in orange (system fault).
Deviation, such as keeping connected for a long time, could lead to fire.

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12. Prohibitions when Using the Product to Guarantee Safety

- (18) Handle the Switching Hub carefully so that fingers or hands may not be damaged by twisted pair port, console port, or power cord hook block.

13. Basic Instructions for the Use of This Product

- (1) For inspection and/or repair, consult the retailer.
- (2) Use commercial power supply from a wall socket, which is close and easily accessible to this Switching Hub.
- (3) Unplug the power cord when installing or moving this Switching Hub.
- (4) Unplug the power cord when cleaning this Switching Hub.
- (5) Use this Switching Hub within the specifications. Deviation could lead to malfunction.
- (6) Do not touch the metal terminal of the RJ45 connector, the modular plug of connected twisted pair cable. Do not place charged objects in the proximity of them. Static electricity could lead to equipment failure.
- (7) Do not put the modular plug of the connected twisted pair cable on objects that can carry static charge, such as carpet. Do not place it in the proximity. Static electricity could lead to equipment failure.
- (8) Do not put a strong shock, including dropping, to this Switching Hub. Deviation could lead to equipment failure.
- (9) Before connecting a console cable to the console port, discharge static electricity, for example by touching metal appliance (do not discharge by touching this Switching Hub).
- (10) Do not store and/or use this Switching Hub in the environment with the characteristics listed below. (Store and/or use this Switching Hub in the environment in accordance with the specification.)
- High humidity. Possible spilled liquid (water).
 - Dusty. Possible static charge (such as carpet).
 - Under direct sunlight.
 - Possible condensation. High/low temperature exceeding the specifications environment.
 - Strong vibration and/or strong shock.
- (11) Please use this Switching Hub in place where ambient temperature is from 0 to 45°C. Failure to satisfy the conditions above may result in a fire, electric shock, equipment failure, and/or malfunction. Such events are not covered by the warranty. Do not block the ventilator of the Switching Hub. Blocked ventilator induces the heat accumulation inside, causing equipment failure and/or malfunction.
- (12) When using two Switching Hubs, do not stack them. When you place them side by side, allow for a space of 20 mm or more between them. This space is not necessary if you use supplied connection brackets.
- (13) Do not insert any modules other than the optional SFP modules (PN54021K-ID/PN54023K-ID) into the SFP extension slot. Do not insert any modules other than the optional SFP modules (PN54021K-ID/PN54023K-ID) and SFP+ module(PN59021-ID/PN59023-ID) into the SFP+ extension slot. Do not insert any modules other than the optional SFP modules (PN54021K-ID/PN54023K-ID) and SFP+ module(PN59021-ID/PN59023-ID), SFP+Direct Attach Cable into the stacking port. Deviation could lead to fire, electric shock, and/or equipment failure. For the latest information about compatible modules, check our website.
- (14) Please note that operation will not be guaranteed if any SD card other than the separately sold Panasonic SD card is installed into the SD card slot. Format the card with this Switching Hub.
- (15) When connecting the stacks, be sure to use firmware versions that are identical for all of the device. Please note that operations are not guaranteed if the firmware versions are different.

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