COMMANDO Soldier IE2000 Series
Managed Industrial Switches Data Sheet

Contents

Product Overview
Features and Benefits
Software
Hardware
Specifications
Support and Warranty
Ordering Information
Document History

Product Overview

COMMANDO Solider IE2000 Series Managed Industrial Switches which are ideal to stand up to extreme temperatures, surges, vibrations, and shocks found in industrial automation, outdoor applications with fully managed, all port perpetual PoE/PoE+ IEEE 802.3af/at compliant Gigabit Ethernet L2+ switches with network resiliency and high availability, delivering robust performance with intelligent switching, scheduling, and distribution of PoE/PoE+ Power on all ports. Perpetual PoE/PoE+ for no power downtime required for growing networks. This series switches are easy to deploy, use, manage and designed exclusively for the networking needs of growing businesses. The security features equipped with today's advance networking hardware and software technology. This Series switches can be deployed in harsh environments to deliver hassle free mission-critical network services and surveillance requirements.

It has fixed uplinks Gigabit Ethernet switches that provide enterprise-class access for campus and branch applications. These Gigabit Ethernet switch enables home and office users to easily connect and supply power to high power wireless access points, PTZ (Pan Tilt Zoom) IP cameras, Surveillance cameras, VoIP telephony systems, kiosks, POS terminals, thin client, 802.11ac and 802.11ax access points, small cells, and connected LED lighting. It also provides the opportunity to add additional Ethernet devices like computers, printers, and Network Attached Storage (NAS) onto a network. This compact PoE/PoE+ switch operates quietly, making it ideal for use in virtually any room or office. These switches are powerful and flexible enough for users to deploy wireless access points, surveillance cameras, IP phones and other PoEPoE+ supported devices over longer distances up to 250 meters and support temperature range -40° C to 80° C.

It provides easy device rack and wall-mounting, on boarding, configuration, monitoring, and troubleshooting. These fully managed switches can provide advanced Layer 2+ and basic Layer 3 features with all ports 802.3at-compliant PoE+ (Power over Ethernet plus) and 802.3af-compliant PoE (Power over Ethernet). Each switchport is capable to deliver 30 W PoE+ power on all ports along with automated power (ON/OFF) scheduling. All PoE model switches are PoE/PoE+ capable to provide power across all access ports for wireless APs, security cameras, and other IoT devices with backward compatibility. Designed for operational simplicity to lower total cost of ownership, they enable scalable, secure, and energy-efficient business operations with intelligent and automated services.

It's software include Static route, QoS Traffic classification based on Layer 2, Layer 3, Layer 4, and priority information Actions including ACL, CAR, and re-marking, Queue scheduling modes such as

PQ, WFQ and PQ+WRR, Congestion avoidance mechanisms, including WRED and tail drop, Traffic shaping, SNMPv1/v2c/v3, ERPS (G.8032), Zero Touch Provisioning (ZTP), 802.1x authentication, RADIUS and TACACS+ authentication for login, DoS, ARP, MAC address attacks, broadcast storms, and heavy-traffic and ICMP attack defenses, Remote Network Monitoring (RMON). These switches have advanced Security features, and advanced Quality of Service (QoS), ideal for all organizations considering reliable, affordable hardware with well-known CLI and simple Web managed real time interface. Scripting capabilities, Layer 3 static and default routing, Automatic MDIX and Auto-negotiation on all ports select the right transmission modes (half or full duplex) as well as data transmission for crossover or straight-through cables dynamically. Moreover, with its innovative energy-efficient technology, can save up to 58% of power consumption, making it an eco-friendly perfect solution for your business network. These switches come with lifetime free software upgrades and patching to enhance features and supports patching, which provides fixes for critical bugs and security vulnerabilities between regular maintenance upgrades. This support allows customers to add new features and upgrades without having to pay a single dollar.

It has a 4K-entry VLAN table which provides VLAN classification according to port-based, protocol-and-port-based, MAC-based, and Flow-based capability. It also supports IVL (Independent VLAN Learning), SVL (Shared VLAN Learning), and IVL/SVL (both Independent and Shared VLAN Learning) for flexible network topology architecture. It provides IEEE802.1ad (Q-in-Q) for double tag insertion and removal function. In additions, VLAN translation function is also supported for Metro Ethernet applications with up to 8K entries L2 MAC table are supported with 2-left 4-way hashing algorithm which can effectively reduce collision ratio. An independent 4K-entry Multicast table is used to support Multicast functions, such as IGMP snooping. The device supports a 4K-entry VLAN/Ingress/Egress Access Control List (ACL). The ACL function supports L2/L3/L4 match fields and performs configurable actions, such as Drop/Permit/Redirect/Mirror/Logging/Policing/Ingress VLAN conversion/Egress VLAN conversion/QoS remarking/VLAN tag status assignment. Per-port ingress/egress bandwidth control and per-queue egress bandwidth control are supported. The device provides three types of packet scheduling, including SP (Strict Priority), WFQ (Weighted Fair Queuing), and WRR (Weighted Round Robin). Each port has 8 physical queues, and each queue provides a leaky-bucket to shape the incoming traffic into the average rate behavior. The Broadcast/Multicast/Unknown-Multicast/Unknown-Unicast storm suppression function can inhibit external and internal malicious attacks. The switch supports 4-sets of port mirror configurations to mirror ingress and egress traffic. RSPAN are also supported for traffic monitoring purposes. For network management purposes, complete MIB counters are supported to provide forwarding statistics in real time. The link aggregation function enhances link redundancy and increases

bandwidth linearly. It offers robust QoS to optimize traffic on your Business Network, these switches provide (Port-based/802.1p/DSCP) QoS to keep latency-sensitive video and voice traffic jitter-free moving smoothly. Additionally, port-based, tag-based VLAN, Voice VLANs can improve security and meet more network segmentation requirements. This series switches also have provisioning of QOS, Static and default routing for IPV6 clients.

Product Highlights

COMMANDO Soldier IE2000 Series Managed Industrial Switches contain 8 & 24 Gigabit Ethernet PoE/PoE+ models along with fixed two 1GE copper-based and 1G Fiber Ports Uplinks. It has 30W Per Port power budget on all ports to meet enhance PoE/PoE+ requirement of IP Phone/AP/LWAP/Wi-Fi Access Point and any other PoE/PoE+ enabled devices. This series offers various layer 2+ Ethernet functions (VLAN, QoS, MAC ACL, Port Security, IPv6, LACP, port mirroring, GVRP and many more). These Gigabit Ethernet switch enables home and office users to easily connect and supply power to high power wireless access points, PTZ (Pan Tilt Zoom) IP cameras, Surveillance cameras, 802.11ac and 802.11ax access points. This compact PoE/PoE+ switch operates quietly, making it ideal for use in virtually any room or office.

Full feature software Licensee free for Lifetime

- **Full featured without license installations:** COMMANDO SoldierOS switches comes with inbuilt free for lifetime for across all model that provides you with an easier, faster, and more consistent experience across the COMMANDO portfolio and across your company for inbuilt all license installation.

- **No Activation key required:** No requirement of PAK (Product Activation Key) to activate L2+ features.

- **Operational Flexibility:** Free patching to enhance features for enhanced version of SoldierOS, with the objective of providing a free licensing solution that does not interrupt the operations of network.

- **Limitless term period for consumption:** For limitless time, permanent and without an expiration date and limitless term period software features can be used. You can consume all features for whatever period you like.

Higher serviceability and return on investment

- **Lower CAPEX:** Ensures network scalability and reduces investment in devices. Lowers Total Cost of Ownership with no license requirement (Lowers Capex).

- **Lower OPEX:** No licenses charge for lifetime. No license fees (Lowers OpEx) lifetime free software upgrades and patching to enhance features and supports patching, which provides fixes for critical bugs and security vulnerabilities between regular maintenance upgrades.

- **Zero cost of switch maintenance:** Lifetime Free Software Licensing and Upgrades are free for lifetime. Users do not have to worry about switch license expiring and software getting outdated and purchasing license (which is constant concern and worry of few other brands) . This series has improved HTTP base firmware upgrade as well as CLI based upgrades which are freely available to all users without any cost or license fee for lifetime. It is easy to install, configure, monitor, and troubleshoot. It significantly reduces cost of administration and Total Cost of Ownership (TCO).

- Supports and Use Open standard protocols, so interoperable with devices from other vendors, enabling long-term network evolution.

- Supports IP packet fragmentation and reassembling, enabling oversized IP packets to travel across a WAN network without limited by the MTU. The switch can also identify fragmented packets to seamlessly interconnect with routers.

High-performance IP routing

- Supports Static route and Default route configuration. Support up to 8000 MAC address tables depending on model, 512 IP routing table entries, up to 512 host routes and dynamic routing is supported by hardware with maximum performance.

- IPv6 addressing and static routing is supported along with monitoring and troubleshooting commands.

Inter-device Link Aggregation, High Efficiency and Reliability

- Support link aggregation LAG/LACP with 8 group. Switches in an LAG all work in active state to share traffic and back up each other, enhancing system reliability.

- 8 Ports can be aggregated in to single LAG/LACP group which allowing flexible networking.

L3 Highlights

- Layer 3 Static Routing up to 512 static route entries along with DHCP server.
- DHCP server, Client, Relay along with DHCP Snooping, DHCP Snooping option82.
- L4/L3/L2 access control lists (ACLs) for granular network access control including 802.1x port authentication.
- SNMP v1/v2c/v3 and RMON remote monitoring.

- IGMP v1/v2/v3 and MLD v1/v2 snooping, providing advanced multicast filtering and optimization.
- Advanced QoS (Quality of Service) for traffic prioritization including port based, 802.1p and L4/L3/L2 DSCP based. L4/L3/L2 QoS optimize voice and video applications.
- Provides IP-MAC Binding, Port Security, Storm control and DHCP Snooping which protect against broadcast storms, ARP attacks.
- Comprehensive IPv6 supporting management, IPv6 ready QoS and ACL, ensuring investment protection and a smooth migration to IPv6-based network.
- Auto "denial-of-service" (DoS) prevention.
- Easily troubleshoot any problem in network with Ping, trace route, various show and debug command and WEB GUI based real time status of device.

L2+/L2 Highlights

- Store-and-forward Switching Scheme.
- Solid performance with non-blocking architecture, up to 8000 entries MAC Address Table.
- With 4-way hashing algorithm, 4094 VLANs, 1500 ACL entries, 512 static routes, Maximum packet length 10000 bytes and also supports Jumbo frames of 10000 bytes.
- 2-hash algorithm selection for L2 table searching/learning with Aging timer range from 0.2s to 1600000s.
- Security with 802.1X, Serial Port Analyzer (SPAN) and Bridge Protocol Data Unit (BPDU) Guard.
- Independent 512 entry L2/IP Multicast table for multicast function.
- Advanced L2+ switching and security features like IP-MAC-Port-VID Binding, Static/Dynamic Port Security (MAC-based), DoS defend feature, Dynamic ARP Inspection.
- Advanced VLAN support for better network segmentation.
- Port mirroring with 4-sets of port mirrors for network monitoring.

Other Highlights

- 8 & 24 ports with auto-negotiation 10/100/1000Mbps PoE/PoE+ Models.
- Extra 4 Ports with fix two 1G Fiber and 1GE Copper Uplinks.
- 30W Max Per port (PoE/PoE+).
- PoE/PoE+ power supply transmission is more reliable due to design of robust network transformer which uses high current.
- All ports are capable for PoE/PoE+ with sufficient power budget for 8 & 24 ports PoE/PoE+ Switch models.
- PD detection will automatically detect and provide required power for your PoE/PoE+ devices.
- Easily configurable PoE/PoE+ scheduling to automate ON/OFF of PoE/PoE+ capable devices on particular specified time per port basis.
- Perpetual PoE/PoE+ provides non-stop PoE/PoE+ power. Switch can continue to provide power during configuration reset and reboot, the PDs will not loss power while reloading.
- Advanced per port PoE/PoE+ controls for remote power management to automate ON/OFF of PoE/PoE+ capable devices on particular specified timing per port basis.
- Easy to manage device with Web based Graphical User Interface (WEB GUI), Command-Line Interface (CLI) - Telnet / SSH / HTTPS with RJ45 or console cables.
- Dual image feature for reduced down-time when the firmware is being upgraded or downgraded or image file getting corrupted.
- WEB/CLI managed modes, SNMP, RMON bring abundant management features
- Supports Cable Diagnostics by Web GUI as well as CLI.
- Watchdog function used to protect the system from specific software or hardware failures that may cause the system to stop responding and self-recover from hanged state.
- With Zero Touch Provisioning: A simple, secure, unified plug and play.
- CPU Dual Core having frequency 500 MHz along with CPU Memory DRAM of 1GB , Flash memory of 256 MB and Packet Buffer memory of up to 4.1MB.
- Surge protection up to ±6KV to designed to automatically protect Switches from surge events by limiting transient voltages and diverting surge currents.
- Small form-factor, fan-less design for silent operation. Perfect for noise sensitive environments.
- All ports capable of Gigabit Ethernet speed.

- Full speed of data transferring with (Auto-Negotiation/Auto MDI/MDIX)
- Long life electrolytic capacitance to increase the operational life of switches.
- High Quality PCB Circuit Board and PCB Surface Treatment Using Gold Sinking Process
- Rack and Wall mount design that enables to mounts in an EIA-standard 19-inch telco rack or equipment cabinet along with Rack-mounting kit available with device. Which enables horizontal surface mounting, wall mounting and having durable robust metal body.
- Bilateral heat dissipation.
- Power and ports status/ activity and PoE Max indicator LED lights.
- RJ45 Gold plated with 3U thickness
- Supports Energy Efficient Ethernet (IEEE802.3az), Innovative energy-efficient technology which saves up to 56% of power consumption for energy saving in the future.
- RoHS Compliant with most of the packaging material can be recycled and reused.
- Comes with up to 3 years extended warranty.

Features and Benefits

Industrial-grade Ethernet Switches

It is specifically designed to connect devices in network environments that are subject to extreme operating temperatures of -40°C to 80°C along with Vibration and Shock resistant making them ideal for harsh work environments & Outdoor use.

DHCP Server

Multiple IPv4 DHCP pools with Inbuilt DHCP server can be set. DHCP pools and interface for individual VLANs. It also supports IPv4/ IPv6 DHCP Client, IPv4/ IPv6 DHCP Relay Option 82, IPv4/ IPv6 DHCP Snooping.

Perpetual POE/PoE+

With Perpetual PoE/PoE+, no power downtime to connected PD devices. PD devices remains power ON even when any software process is not running on the switch. Provides non-stop PoE/PoE+ power and continue to provide power during configuration and reboot, the PDs will not lose power while reloading. The Perpetual POE provides uninterrupted power to connected powered device (PD) even when the switch is booting to make it highly available network without any interruptions.

Intelligent PoE/ PoE+ with Automated Scheduling

It automates the PoE/PoE+ requirements in networks on per port basis. Advanced per port PoE/PoE+ controls for remote power management to automate ON/OFF of PoE/PoE+ capable devices on particular specified timing per port basis with auto ON/OFF PoE/PoE+ as per Scheduled time which makes them intelligent.

Dual Image

It can be configured with one image is set as start-up image, and the other is set as the backup image. After you upgrade a firmware, the switch will automatically map the firmware file to the backup image.

Watchdog Function

This ensures high availability which is used to protect a system from specific software or hardware failures that may cause the system to stop responding and self-recover from hanged state.

L3 Features

This series is having L3 features with IPv4/IPv6 with 512 static routing entries, QoS, ACLs(Port based/ IP based/ MAC Based), DHCP Server and Client, DHCP Snooping, DHCP Snooping

option82, DHCP Relay.

L2+/L2 Features

This series is having advance L2+/L2 features like Port aggregation up to 8 ports, VLAN, Voice VLAN, GVRP, 802.1X authentication, centralized MAC authentication, Guest VLAN, RADIUS authentication, SSH 2.0, Port isolation, Port security, MAC address learning limit, IP Source guard, Dynamic ARP inspection, Preventing man-in-the-middle attacks and ARP DoS attacks, IP/Port/MAC binding. Flexible Software features provides wide range of Layer 2 functions like VLAN, Multicasting, Quality of Service (QoS), Security.

Secure Networking

IEEE 802.1X port-based access control with surveillance VLAN, Port Security, Protected Port which also Prevent ARP Spoofing. L4/L3/L2 access control lists (ACLs) for granular network access control including 802.1x port authentication. ACL, L4 to L2 feature restricts access to sensitive network resources. DHCP Snooping ensures IP address allocation integrity by only allowing DHCP messages from trusted DHCP servers and dropping malformed DHCP messages with a port or MAC address mismatch. With DHCP Snooping binding and option82 enabled, it can combine dot1x and ARP. IP-MAC-Port-VID Binding, Port Security, Storm control which protect against broadcast storms. The switches support ARP attack and DoS attack prevention to safeguard the network.

Multicast

IGMP Snooping (v1,v2,v3), Multicast Listener Discovery (MLD) (v1/v2), Multicast VLAN Registration (MVR) designed for distribution of multicast traffic across segregated access networks which enables more efficient distribution of multicast streams in Layer 2 network.

QoS Features

Advanced QoS (Quality of Service) for traffic prioritization including port based, 802.1p and L4/L3/L2 DSCP based. L4/L3/L2 QoS optimize voice and video applications. Access Control List based, VLAN ID based IP precedence, COS and DSCP. Policy Based on Port & VLAN, Remark DSCP, COS/ 802.1p, Precedence, COS for SP, WRR for Scheduling and matching the IP fragmentation of message.

Easy Management with CLI/WEB GUI

With familiar and popular Command Line interface (CLI), there is no need for engineers to be hired or additional resources to be spent on training and/or learning the switch CLI. The command set are familiar and well known in the industry. Web Graphical User Interface (Web GUI), Command Line interface (CLI), RADIUS/TACACS+ with industry standard CLI and easy to use Web GUI. Management is made easy via a Web GUI or industry-standard Command Line Interface (CLI), with

administration traffic protected via SSL or SSH encryption. SNMP (v1/v2c/v3) and RMON support enables the switch to be polled for valuable status information and allows it to send traps when abnormal events occur.

Lifetime Free Software Licensing and Upgrades

SoldierOS Software license and Upgrades are free for lifetime. Users do not have to worry about switch license expiring and software getting outdated (which is constant concern and worry of few other brands).

This series has improved HTTP base firmware upgrade as well as CLI based upgrades which are freely available to all users without any cost or license fee for lifetime. COMMANDO Soldier IE2000 Series Switches are easy to install, configure, monitor, and troubleshoot. It significantly reduces cost of administration and Total Cost of Ownership (TCO).

Auto MDIX Capabilities

Auto sensing/Auto PoE/PoE+ 10/100/1000 ports with auto MDIX capabilities which also removes speed and duplex mismatches automatically as well as covers larger physical distance with copper pairs compared to other brands best switches.

Flexible Service Control

With various ACLs to flexibly control ports. It also supports Port-based VLAN assignment, MAC address-based VLAN assignment, Protocol-based VLAN assignment, and Network segment-based VLAN assignment. These secure and flexible VLAN assignment modes are used in networks where users move frequently. It also supports GARP VLAN Registration Protocol (GVRP), which dynamically distributes, registers, and propagates VLAN attributes to ensure correct VLAN configuration and reduce network administrator workloads. This series switches supports SSH v1/v2/v3, RMON, port-based traffic statistics, LLDP/LLDP-MED.

Compact Design with Flexibility of additional ports

The switches provide additional deployment flexibility, fiber connectivity as well as combo options for easy expansion of your networks. So, you can directly connect to a high-performance storage server or deploy a long-distance uplink to another switch.

Perfect for Noise-Sensitive Environments

These are the ideal solution for the most advanced small and medium organizations looking for the best combination of features, performance, and value. These switches are purposely designed for converged networks where voice, video, data are all carried on a single network platform. This series comes with fan-less switches models along with Small form-factor perfect for noise sensitive environments.

Zero Maintenance

Cost efficient switches, with a reasonable PoE/PoE+ power budget for all ports to have PoE/PoE+ configurable and also scheduler to automated Power ON/OFF connected PoE/PoE+ devices as per scheduled timing with Cost of ownership is less compared to other products of same features as well as zero maintenance. Maximum power reduction for ongoing operation cost savings.

Easy Debugging and Troubleshooting

Ping, Traceroute, SNMP, RMON, Web based real time Switch ports monitoring with WEBUI and CLI can easily troubleshoot any problem in network with various show and debug commands.

Longer Distance Coverage

State of art quality switches that can serve real time high-speed performance which covers longer physical distance up to 250 meters with copper pairs compared to other brands.

Warranty

The switches come with up to 3-years extended warranty.

Software

The COMMANDO SoldierOS L2+ Software Feature Set switches provides advanced L2 switching and security features along with Static and Default routing up to 512 static route entries, ACLs (MAC/IP/Port) based IPV4 and IPV6, L4/L3/L2 QoS, Spanning Tree Protocol (IEEE802.1D STP, IEEE802.1w RSTP, IEEE802.1s MSTP) SNMP v1/v2c/v3, IGMP and MLD snooping, QinQ and selective QinQ, VLAN mapping, Voice VLAN, GVRP, Advanced multicast filtering, and IGMP snooping that optimize voice and video applications, DHCP Server, DHCP Client, DHCP Snooping, DHCP Snooping option82, DHCP Relay, RADIUS/TACACS+ authentication, SSH 2.0, Port isolation, Port security, MAC address learning limit, IP Source guard, Dynamic ARP inspection, preventing man-in-the-middle attacks and ARP DoS attacks, IP/Port/MAC binding.

Management is made easy via a web-based Graphical User Interface (GUI) access via HTTP/HTTPS or industry-standard Command Line Interface (CLI) via Console/Telnet with administration traffic protected via SSL or SSH encryption. This CLI is well known and understood by all professionals in networking field. SNMP (v1/v2c/v3) and RMON support enables the switch to be polled for valuable status information and allows it to send traps when abnormal events occur.

It provides a complete set of security features including L4/L3/L2 multi-layer Access Control Lists and 802.1x user authentication via TACACS+ and RADIUS servers. This ensures the network is protected from unauthorized access. It also offers extensive VLAN support including GVRP and 802.1Q VLAN to enhance security and performance. A robust set of L4/L3/L2 based QoS/CoS solutions help ensure that critical network services such as VoIP and video conferencing are served with priority. Bandwidth Control can be flexibly set for each port using predefined thresholds to assure a committed level of service for end users. For advanced applications, flow-based bandwidth control allows easy fine-tuning of service types based on specific IPV4/IPV6 addresses or protocols that provides Security, Performance & Availability.

Access control lists (ACLs) perform operation of filtering (IPv4/IPv6) Packet/MAC/port-based filtering to control the movement of segments/packets/frames through a network. ACL filtering provides security by limiting the access of traffic into a network, restricting user and device access to a network, and preventing traffic from leaving a network. Time range-based ACL, VLAN-based ACL, Bidirectional ACL. Packet filtering at Layer 4 through layer 2 Traffic classification based on source IPv4/IPv6 addresses and source MAC addresses, destination MAC addresses.

L4/L3/L2 Quality of service (QoS) refers to any technology that manages data traffic to reduce packet loss, latency, and jitter on the network. QoS controls and manages network resources by

setting priorities for specific types of data on the network.

Static routing is a form of routing that occurs when these switches uses a manually configured 512 IPV4 static routing entries. Static routing has three primary uses:

- Ease of routing table maintenance in smaller networks with little growth or change. Routing to and from connected networks.
- A network accessed by a single route, and the router has only one neighbor.
- Single default route to represent a path to any network.

It provides CLI/WEB GUI based PoE/PoE+ scheduling Premium feature without any license requirement. PoE/PoE+ Scheduling is a feature which allows you to specify the amount of time that power is delivered to a PoE/PoE+ port automatically. This can be used to save power when devices are not in use, or as a security feature to prevent wireless access from being available outside of business hours. It is possible to set a schedule PoE/PoE+ at a start time, an end time and which ports the PoE/PoE+ schedule applies to. The PoE/PoE+ device turn ON and OFF as per the PoE/PoE+ schedule time.

Software Highlights

- DHCP Server for multiple IPv4 DHCP pools with inbuilt DHCP server can be set. DHCP pools and interface for individual VLANs. It also supports IPv4/ IPv6 DHCP Client, IPv4/ IPv6 DHCP Relay Option 82, IPv4/ IPv6 DHCP Snooping.
- Intelligent PoE/PoE+ with Automated Scheduling to automate the PoE/PoE+ requirements in networks. Advanced per port PoE/PoE+ controls for remote power management to automate ON/OFF of PoE/PoE+ capable devices on particular specified timing per port basis with auto ON/OFF PoE/PoE+ as per Scheduled time which makes them intelligent.
- Dual Image can be configured with one image is set as start-up image, and the other is set as the backup image. After you upgrade a firmware, the switch will automatically map the firmware file to the backup image.
- Watchdog function ensures high availability which is used to protect a system from specific software or hardware failures that may cause the system to stop responding and self-recover from hanged state.

Layer 3 Features

- Static ARP as manually added IP network address to the hardware MAC address of a device as well dynamic ARP entries.

- **Static Route, Default route and Dynamic connected route learning** up to 512 route entries are supported.
- **Access Control List Access Control Lists (ACLs)** can be used to deny and allow packets and provides flexible access control based on Standard IPv4, IPV6, MAC based, Management and also Port based Filtering.
- **Comprehensive IPv6** supporting management, IPv6 ready QoS and ACL, ensuring investment protection and a smooth migration to IPv6-based network.
- **QoS Features** like Scheduling Mode namely WRR, SP which are Based on Port based on 802.1p DSCP (DiffServ), COS and DSCP.

Advanced L2/L2+ Switching

- **Auto Port Configuration**, Auto-Negotiation for port speed and duplex mode. Flow Control for IEEE802.3x full-duplex and half-duplex backpressure.
- **Rate Limit** enable to slow down traffic on a port to keep it from exceeding the limit set.
- **Link Aggregation** with LAG static and IEEE802.3ad Link Aggregation Control Protocol (LACP) increases bandwidth by automatically aggregating several physical links together as a logical trunk and providing load balancing and fault tolerance for uplink connections. Up to 8 maximum aggregation groups.
- **Link Layer Discovery Protocol (LLDP) neighbor** discovery protocol that allows devices to advertise device information to their directly connected peers/neighbors.
- **Unidirectional Link Detection protocol (UDLD)** that detects and disables one-way connections before they create undesired situation such as network failure, Spanning Tree loops and broadcast storm.
- **Spanning Tree Protocol (STP)** eliminates Layer 2 loops in a network by selectively blocking specific links. STP also enables link redundancy. Support IEEE 802.1D (STP), from which IEEE 802.1W (RSTP) and IEEE 802.1s (MSTP 64 instance).
- **Loopback Detection** also has BPDU Filter, BPDU Guard.
- **IGMP Snooping** listening to Internet Group Management Protocol network traffic to control delivery of IP multicast. Network switches with IGMP snooping listen in on the IGMP conversation between hosts and layer 3 devices and maintain a map of which links need which IP multicast transmission.
- **Static MAC address**, MAC Configuration for MAC binding, MAC Address Filtering.
- **4094 VLAN Configuration** with advanced VLAN support for better network segmentation,

VLAN Based on 802.1Q, MAC-Based VLAN, IP-Based VLAN, Protocol-Based VLAN, Voice VLAN, Guest VLAN, Private VLAN - Support 1:1 VLAN Mapping basic QinQ, Surveillance VLAN.

Secure Networking

- MAC address limiting to enhanced Security. Port Security ensures access to switch ports based on MAC address to limit the total number of devices from using a switch port and protects against MAC flooding attacks, SYN Flood, ICMP Flood attack and prevention of DOS, BPDU Guard and Root Guard which avoid accidental network topology loops and prevent illegal edge devices become root to cause unnecessary flapping.
- IEEE 802.1X Port-based Access Control ensures all users are authorized before being granted access to the network. User authentication is carried out using any standard-based RADIUS server. 802.1x - RADIUS, AAA - MAC-based 802.1X authentication also Support 802.1x surveillance VLAN, Port Security, Protected Port and also Prevent ARP Spoofing.
- L4/L3/L2 Access Control Lists (ACLs) for granular network access control including 802.1x port authentication. IP, MAC, Ports based Access Control Lists (ACL, L4 to L2) feature restricts access to sensitive network resources by denying packets based on source and destination MAC address, IP address, TCP/UDP ports and even VLAN ID.
- DHCP Snooping feature ensures IP address allocation integrity by only allowing DHCP messages from trusted DHCP servers and dropping malformed DHCP messages with a port or MAC address mismatch. With DHCP Snooping binding and option82 enabled, it can combine dot1x and ARP.
- IP-MAC-Port-VID Binding, Port Security, Storm control which protect against broadcast storms.
- ARP attacks prevention prevent typical DoS attacks can protect these attacks more easily ever than before.

Multicast

- IGMP Snooping (v1, v2, v3) transmits data on demand on data link layer by analyzing IGMP packets between the IGMP querier and the users, to build and maintain Layer 2 multicast forwarding table.
- Snooping Multicast Listener Discovery (MLD) snooping (v1/v2) constrains the flooding of IPv6 multicast traffic on VLANs. MLD snooping performs the same function as IGMP snooping with the only difference being that MLD snooping is for IPv6 and IGMP snooping for IPv4

environments.

- **Multicast VLAN Registration (MVR)** is designed for distribution of multicast traffic on a dedicated multicast VLAN across segregated access networks, while allowing subscribers who are on different VLANs to join and leave the multicast groups carried in the Multicast VLAN. Multicast VLAN registration (MVR) enables more efficient distribution of IPTV multicast streams across an Ethernet ring-based Layer 2 network.

QoS features

- **Advanced QoS (Quality of Service)** for traffic prioritization including port based, 802.1p and L4/L3/L2 DSCP based.
- **L4/L3/L2 QoS** optimize voice and video applications with ACL based, VLAN ID based IP precedence, COS and DSCP. Policy Based on Port & VLAN, Remark DSCP, COS/ 802.1p, Precedence, COS for SP, WRR for Scheduling and matching the IP fragmentation of message.

User friendly Maintenance Management

- **With Zero Touch Provisioning** with simple, secure, unified plug and play.
- **CLI / Web GUI / SNMP Management** with industry standard CLI and Web GUI based device-management tool that provides the ability to provision the device, to simplify device deployment and manageability, and to enhance the user experience. It comes with the software Image 0 can also have Image 1 simultaneously, so there is no need to enable anything or install any license on the device. Then Web GUI can be used to build configurations, and to monitor and troubleshoot the device without having CLI expertise.
- Support multi-user management at the same time.
- With RADIUS and TACACS+ server authentication can be performed locally or on a RADIUS/TACACS+ server can also control access to your network through Switch by using authentication methods such as 802.1X, MAC Based and Web Based.
- Configuration Download/Upload Upgrade Firmware by HTTP and TFTP.

Debugging and troubleshooting feature

- **PING, TRACEROUTE, SNMP, RMON, Web based real time** ports monitoring with WEB GUI can

easily troubleshoot any problem in network with Ping, trace route, various show, debug command and WEB GUI based real time status of device.

- Cable Diagnostics by WEB GUI as well as CLI.
- Maintenance & Operation Management via TFTP/FTP, CLI, Telnet, Console, Web GUI /SSL (IPv4/IPv6), SSH (IPv4/IPv6).
- Port Mirroring for network monitoring. Port mirroring is used on a network device to send a copy of network packets seen on one switch port, multiple other ports, or on to network monitoring connection on another port on the switch.
- SNMP v1/v2c/v3, management station, can monitor the performance of network devices. With SNMP, network managers can view or modify network device information, and troubleshoot according to notifications sent by those devices in a timely manner. Public and Private Management Information Base (MIB) interface
- RMON (Remote Network Monitoring) together with the SNMP system allows the network manager to monitor remote network devices efficiently. RMON reduces traffic flow between the NMS and managed devices, which is convenient to manage large networks.

Software Licensing and Upgrades

- Free Software Upgrades and patching supports with enhanced functionality, which provides fixes for critical bugs and security vulnerabilities between regular maintenance releases. This free software upgrades and licenses support lets you add patches, new features, protocols, and functionality without having to spend a single. This reduces TCO.
- Protected Ports ensure no exchange of unicast, broadcast, or multicast traffic between the protected ports on the switch, thereby improving the security of your converged network.
- Dynamic VLAN Assignment (RADIUS/TACACS+) for IP phones and PCs can authenticate on the same port but under different VLAN assignment policies. Users are free to move around and enjoy the same level of network access regardless of their physical location on the network.
- Port Mirroring and Cable Test for many-to-one port mirroring for better and quicker network diagnostics and troubleshooting. Cable test easily identifies bad Ethernet cables.
- Firmware updates and backup procedure by uploading/downloading file to PC/TFTP/FTP.

Table 1. COMMANDO SoldierOS SoldierOS L2+ Software at a Glance

Ethernet Protocols (IEEE)	L2 Switching Features	Quality of Service (QoS)	Security	Management
802.3i 802.3u 802.3ab 802.3z 802.3av 802.3ad 802.3x 802.1p 802.1q 802.1v 802.1d 802.1s 802.1w 802.1x 802.3x	Link Aggregation, LACP, Spanning Tree Protocols, Multicasting, VLANs, ACL, Voice VLAN, GVRP, Port isolation, Port security, MAC address learning limit, DHCP Server, IP Source guard, Dynamic ARP inspection, IP /Port/MAC binding	L2, L3, L4, ingress/ Egress	Access Control List (ACL), 802.1x authentication AAA / RADIUS/TACACS+	Web GUI management mode, Support Command Line Interface (CLI) through console port, Telnet, SNMP v1/v2c/v3 and RMON

Table 2. Performance of COMMANDO SoldierOS L2+ Software Feature Set

VLAN	4094
MAC Table entries	8000
ACL	1500
Multicast Group	512
Jumbo Frame	10000
Multicast IGMP Group	16

Multiple User Account	8
Static Route	512
MSTP	16
Aggregation Trunks/Ports Per Trunk	8/8
TACACS+/RADIUS Servers	8

Software Features

L3 Features

- Static ARP up to 1K
- Supports Gratuitous ARP
- IPv6 Neighbor Discovery (ND)
- Static Routing
  - Max. 512 IPv4 entries
  - Max. 512 IPv6 entries
  - Supports Default Routing

L2 Switching Features

Basic L2 Switching Features

- MAC Address Table with 8K.
- 802.3x Flow Control when using full duplex
- Back Pressure when using half-duplex
- HOL Blocking Prevention
- Jumbo Frame Up to 10,000 bytes
- ERPS (Ethernet Ring Protection Switching)
- Port Mirroring Supports One-to-One, Many-to-One, Supports Mirroring for Tx/Rx/Both, Supports 4 mirroring groups
- Flow Mirroring supports One-to-One, Many-to-One, Supports Mirroring for Rx, Supports 4 mirroring groups
- RSPAN mirroring
- Loopback Detection
- L2 Protocol Tunneling

Link Aggregation

- Support static link aggregation
- Support 802.3ad LACP

- Up to 8 aggregation groups, containing 8 ports per group

Spanning Tree Protocol (STP)

- IEEE 802.1D Spanning Tree Protocol
- IEEE 802.1s Multiple Spanning Tree Protocol
- IEEE 802.1w Rapid Spanning Tree Protocol
- STP Security: Loop back detection, TC Protect, BPDU Filter/Protect, Root Protect

Multicast

- Support IGMP Snooping V1/V2/V3, up to 512 groups
- Support multicast VLANs, IGMP Immediate Leave, Unknown IGMP Throttling, IGMP Filtering, Static Multicast IP
- L2 Multicast Filtering Forwards all groups, forwards all unregistered groups, Filters all unregistered groups
- MLD Snooping, MLD v1/v2 Snooping
- PIM Snooping

VLAN

- Support IEEE802.1Q with 4K VLAN groups and 4K VIDs
- Support Port VLAN, Protocol VLAN and MAC-based VLAN
- Support GARP/GVRP feature

Quality of Service (QoS)

- Support 802.1p CoS/DSCP priority
- Support 8 physical queues per port.
- Queue scheduling: SP, WRR, SP+WRR
- Port/Flow- based Rate Limiting
- Voice VLAN assure voice applications have excellent performance

Advanced Security

- IP-MAC-Port-VID Binding
- Static/Dynamic Port Security (MAC-based)
- DoS defend feature
- Dynamic ARP Inspection

802.1x authentication

- Support 802.1x port/MAC based authentication
- Support Radius authentication and accountability
- Guest VLAN
- RADIUS/TACACS+

Access Control List (ACL)

- L2~L4 package filtering based on source and destination MAC address, IP address, TCP/UDP ports, 802.1p, DSCP, protocol and VLAN ID.
- Time based ACL
- Support Broadcast, Multicast and Unknown unicast Storm Control
- Secure Web management through HTTPS and SSLv2/v3/TLSv1
- Secure remote command line interface (CLI) management with SSH v1/V2

Management

- Support Web GUI management mode
- Support Command Line Interface (CLI) through console port, telnet management mode
- SNMP v1/v2c/v3
- RMON (1, 2, 3, 9 groups)
- DHCP Server
- DHCP/BOOTP Client
- DHCP Snooping
- DHCP Option 82
- CPU Monitoring
- Port Mirroring (Many to One)
- Cable Diagnostics feature
- Ping/Tracert feature
- SNTP
- System Log

Ethernet Protocols

- IEEE 802.3i 10BASE-T
- IEEE 802.3u 100BASE-TX/FX
- IEEE 802.3ab 1000BASE-T
- IEEE 802.3z 1000BASE-X
- IEEE 802.3av GVRP
- IEEE 802.3ad Link Aggregation
- IEEE 802.3x Flow control
- IEEE 802.1p QoS
- IEEE 802.1q VLANs / VLAN tagging
- IEEE 802.1v Protocol VLAN
- IEEE 802.1d Spanning Tree Protocol (STP)

- IEEE 802.1s Multiple Spanning Tree (MSTP)
- IEEE 802.1w Rapid Spanning Tree (RSTP)
- IEEE 802.1x Network Login Security
- IEEE 802.3x flow control for Full Duplex mode and back pressure for Half Duplex mode

MIBs

- Ethernet-like MIB (RFC 3635)
- Interface Group MIB (RFC 2863)
- RMON (RFC 2819)
- Bridge MIB (RFC 1493)
- Bridge MIB Extension (RFC 2674)

Table 3. Key software function of COMMANDO SoldierOS L2+ Software Feature

KEY SOFTWARE FUNCTION	
FEATURES	PROTOCOLS
IEEE Standards	IEEE 802.3x (Full Duplex), Back-Pressure (Half-duplex) IEEE 802.3,IEEE 802.3u,IEEE 802.3ab,IEEE 802.3z IEEE 802.3ad IEEE 802.3q, IEEE 802.3q/p IEEE 802.1w, IEEE 802.1d ,IEEE 802.1S
MAC Address	8000 MAC addresses table entries Jumbo Frame 10000 bytes with automatic MAC address learning and aging
Energy Efficient Ethernet	EEE (802.3az)
VLAN	Up to 4094 VLAN Port-based VLAN up to 8 groups IEEE 802.1Q Tagged-based MAC-based VLAN up to 256

	Voice VLAN static up to 256 QoS for each Voice VLAN Data Voice VLAN OUI Mode (Auto/Manual) maximum 16 OUI Multicast VLAN Registration (MVR) IPV4 Based
Surveillance VLAN	OUI Mode (Auto/Manual) maximum 16 OUI
Stacked VLAN	QinQ (IEEE 802.1ad)
GARP VLAN Registration Protocol (GVRP)	GVRP As per IEEE 802.1Q specification
Spanning Tree	IEEE 802.1D (STP) IEEE 802.1w (RSTP) IEEE 802.1s (MSTP) maximum 64 instances Auto Edge Port BPDU Filtering BPDU Guard Self-Loop Detection UDLD
Link Aggregation	IEEE 802.3ad LACP Max 8 Aggregation Groups trunk Maximum 8 ports per Trunk Static Trunk Aggregation and Dynamic Aggregation Traffic Load Balancing
Port Mirror	Many-to-one port mirroring
Port flow control	Half duplex based back pressure control Full duplex based on PAUSE frames

Line Rate	Support Port based Input / Output Bandwidth Management
IP Binding	Support Static ARP
DHCP	DHCP Server, DHCP Client mode
DNS	DNS Client mode
Static Routing	Support Static routing
IGMP Snooping	IGMP v1/v2 IGMP v3 Basic (BISS) IGMP v2/v3 Querier
MLD Snooping	MLD v1/v2
IPv6	IPv6 Host - Auto Configuration, Static IPv6 Address and Prefix Length, Static IPv6 Default Gateway, IPv6 Neighbor Discovery (ND), IPv6 Duplicate Address Detection, ICMPv6 IPv6 Application Supported - HTTP/HTTPS, TELNET, SSH, SNMP, TFTP, Syslog, PING, DHCPv6
Multicast	Multicast Groups up to 256 Immediate Leave Static/Forbidden Router Port Static/Forbidden Forward Port Filtering up to 256 profiles Throttling
Storm suppression	Storm Control Broadcast Unknown Multicast Unknown Unicast

	Storm Suppression of Broadcast type Storm suppression based on bandwidth tuning and storm filtering
Access Control List (ACL)	Access Rules Maximum 1500 ACL Type-L2/L3/L4 ACL IPv4-based Up to 1500 ACL IPv6-based
Security	AAA (Authentication, Authorization and Accounting) TACACS+ (Terminal Access Controller Access Control Server) Maximum up to 8 servers. RADIUS (Remote Authentication Dial-In User Service) Maximum up to 8 servers. Authentication Manager - IEEE 802.1X, MAC Auth, Web Auth, Guest VLAN, Port-based, Host-based. Port Security Using Dynamic Lock maximum 256 Protected Port (Port Isolation) Black Hole MAC CPU Defense Engine DoS Prevention DHCP Snooping (with Option 82) Dynamic ARP Inspection IP Source Guard maximum 256 IP/MAC/Port Binding (IMPB)
QoS Features	802.1p port queue priority algorithm that support 4 different priorities per port

	Queue Scheduling- WRR, WFQ, Strict Priority, Hybrid (WRR+SP or WFQ+SP) WRR (Weighted Round Robin) Weighted priority rotation Algorithm, WRR, SP, WFQ, 3 priority scheduling models Class of Service - Port-based, 802.1p, IP TOS Precedence, IP DSCP, trusted QoS Support based on port, MAC, 802.1Q, DSCP classification Rate Limit - Port-based (Ingress/Egress)
Account Manager	Local Authentication Multiple User Account Up to 8 Multilevel Security Password Recovery Procedures
System maintenance	Upgrade firmware feature via TFTP/FTP/HTTP. Support Upload/Download Configuration files through WEB Support Multi-user management WEBUI/ CLI based Restore Factory Configuration
Line Management	Console Telnet (RFC854) SSH v1/v2
Management and Maintenance	Management by CLI- Console, Telnet (RFC854) up to 3 sessions Management by Web GUI - HTTP, HTTPS Management Based on Remote Configuration

	and Maintenance Using Telnet, SNMP v1/v2c/v3, SSH v1/v2, RMON v1/v2 Software Reset to default setting
Management Access	Management VLAN
File Management	Firmware Upgrade/Backup Dual Images Configuration Download/Backup Multiple Configurations Upload/Download using TFTP (RFC783) HTTP (Hyper Text Transfer Protocol) UART (Universal Asynchronous Receiver/Transmitter)
Time Management	Locally using sync with PC option. NTP (Network Time Protocol)
Port Management	Friendly Port Name (Port Description) Error Disabled Recovery
Secure Sockets Layer (SSL)	Secure Sockets Layer (SSL)- SSLv2, SSLv3 Transport Layer Security (TLS)- TLSv1
Neighbor Discovery	IEEE 802.1AB Link Layer Discovery Protocol (LLDP) ANSI/TIA-1057 LLDP Media Endpoint Discovery (LLDP-MED)
Remote Monitoring Management	RMON Up to 32 entries / type
MIB	Ethernet-like MIB (RFC 3635) Interface Group MIB (RFC 2863)

	RMON (RFC 2819) Bridge MIB (RFC 1493) Bridge MIB Extension (RFC 2674) SNMP-Community-MIB SNMPv3
Diagnostics	Mirroring Port-based (Many to One) Up to 32 entries / type Syslog (RFC3164) with Local RAM, Local Flash, Remote Server up to maximum 8. System Diagnostics with CPU Utilization, Memory Utilization, Port Utilization Port Diagnostics with Cable Test, Fiber Module Status Network Diagnostics with Ping Test, Traceroute

Convergence Time

By default, RSTP used for all COMMANDO SoldierOS and it takes less than 10 seconds for entire network to converge. RSTP converges faster because it uses a handshake mechanism based on point-to-point links instead of the timer-based process used by STP.

IP multicast snooping and IGMP automatically prevent flooding of IP multicast traffic.

IEEE 802.1AB Link Layer Discovery Protocol (LLDP) facilitates easy mapping using network management applications with LLDP automated device discovery protocol

LLDP-MED (Media Endpoint Discovery) defines a standard extension of LLDP that stores values for parameters such as QoS and VLAN to automatically configure network devices such as IP phones.

STP/RSTP/MSTP for loop free network, IEEE 802.1s Multiple Spanning Tree provides high link availability by allowing multiple spanning trees; provides legacy support for IEEE 802.1d and IEEE 802.1w

IEEE 802.3ad Link Aggregation Control Protocol (LACP) and port trunking support up to 8 static, dynamic, or distributed trunks with each trunk having up to eight links (ports) per static trunk. Lag links provides easy-to-configure link redundancy of active and standby links.

Security

The AAA feature allows you to verify the identity of, grant access to, and track the actions of users. The COMMANDO Soldier IE2000 Series Managed Switches support Remote Access Dial-In User Service (RADIUS) or Terminal Access Controller Access-Control System Plus (TACACS+) protocols.

Based on the user ID and password combination that you provide, the COMMANDO Soldier IE2000 Series Managed Switches perform local authentication or authorization using the local database or remote authentication or authorization using one or more AAA servers. A pre-shared secret key provides security for communication between the COMMANDO Soldier IE2000 Series Managed Switches and AAA servers. You can configure a common secret key for all AAA servers or for only a specific AAA server.

COMMANDO Soldier IE2000 Series Managed Switches Multiple user authentication methods

- Uses an IEEE 802.1X supplicant on the client in conjunction with a RADIUS server to authenticate in accordance with industry standards
- Supports web-based authentication
- Supports MAC-based authentication
- Multiple IEEE 802.1X users per port provides authentication of multiple devices on a single port that prevents a user from piggy backing on another user's IEEE 802.1X authentication
- Concurrent IEEE 802.1X, Web and MAC authentication schemes per port switch port will accept up to 8 sessions of IEEE 802.1X, Web and MAC authentications
- Access control lists (ACLs) provide IP Layer 3 filtering based on source and destination IP address or subnet or source and destination TCP/UDP port number

- Source-port filtering allows only specified ports to communicate with each other
- RADIUS/TACACS+ eases switch management security administration by using a password authentication server
- Secure shell encrypts all transmitted data for secure remote CLI access over IP networks
- Secure Sockets Layer (SSL) encrypts all HTTP traffic, allowing secure access to the browser-based management GUI in the switch
- Port security allows access only to specified MAC addresses, which can be learned or specified by the administrator
- MAC address lockout prevents particular configured MAC addresses from connecting to the network
- Secure FTP allows secure file transfer to and from the switch; protects against unwanted file downloads or unauthorized copying of a switch configuration file
- Switch management logon security helps secure switch CLI logon by optionally requiring either RADIUS or TACACS+ authentication
- Custom banner displays security policy when users log in to the switch
- STP BPDU port protection blocks Bridge Protocol Data Units (BPDUs) on ports that do not require BPDUs, preventing forged BPDU attacks
- DHCP protection blocks DHCP packets from unauthorized DHCP servers, preventing denial-of-service attacks
- Dynamic ARP protection blocks ARP broadcasts from unauthorized hosts, preventing eavesdropping or theft of network data
- Dynamic IP lockdown works with DHCP protection to block traffic from unauthorized hosts, preventing IP source address spoofing
- STP root guard protects the root bridge from malicious attacks or configuration mistakes
- Identity-driven ACL enables implementation of a highly granular and flexible access security policy and VLAN assignment specific to each authenticated network user

- Per-port broadcast throttling configures broadcast control selectively on heavy traffic port uplinks
- Monitor and diagnostics digital optical monitoring of SFP and 1000BASE-T transceivers allow detailed monitoring of the transceiver settings and parameters

Effective Management

COMMANDO SoldierOS offers network monitoring for users to observe traffic behavior with Port Mirroring, Loop Prevention and DHCP snooping features, can identify and even locate connection problems on your business network.

- Administrators can designate the priority of the traffic based on Port Priority, 802.1P and DSCP Priority, to ensure that voice and video are always clear, smooth and lag-free.
- Voice VLAN, port-based VLAN and 802.1Q-based VLAN functions. COMMANDO is an upgrade from the plug-and-play Unmanaged Switch, delivering great value while empowering your network and similarly delivering great value to the end user.
- RMON provide advanced monitoring and reporting capabilities for statistics, history, alarms, and events.
- Troubleshooting ingress and egress port monitoring enable more efficient problem solving.
- Unidirectional Link Detection (UDLD) monitors the link between two switches and blocks the ports on both ends of the link if the link goes down at any point between the two devices.

Table 4. Physical ports

Model	Max Power Budget (Watt)	Total physical slots (Ports) on device
IE2000-8G+4CF	-	12
IE2000-24G+8CF	-	32
IE2000-8GP+4CF	All ports up to 30W	12
IE2000-24GP+8CF	All ports up to 30W	32

PoE/PoE+ Flexibility

The COMMANDO Solider IE2000 Series Industrial Ethernet Managed Switches models are available with 8 & 24 Gigabit Ethernet ports of auto-sensing IEEE 802.3af/at. By default, the switches automatically detect IEEE 802.3af/at devices so they automatically receive PoE/PoE+ power.

Table 5. LED Indication

LED Indication on Switch	LED Status
Power	**Green OFF:** No power on the switch. **Green ON:** The switch powered on
Link/Act	**LINK/ACT bi-color LED** **OFF:** Port disconnected or link fail. **Green ON:** 1000Mbps connected. **Amber ON:** 10/100Mbps connected. **Green Flashing:** 1000Mbps connected and Data in transit **Amber Flashing:** 10/100Mbps connected and Data in transit
System	**Green OFF:** The system is starting, please wait **Green ON:** The system is up and running
PoE	**OFF:** PoE/PoE+ power is not provided on port **Blue ON:** PoE/PoE+ power is provided on port
PoE MAX	**PoE MAX OFF:** PoE Power budget is available in switch **Red ON:** PoE Power budget is reached to 95%

Power Budget According to Cable Length

Ideally, shorter cables would use less power because of less power degradation over their length This is not the case with most devices as they will use the same amount of power across the cable regardless of whether it is 10 or 100 meters in length. These switches analyze the length of the Ethernet cable connected and adjusts the power usage accordingly, rather than keeping the power consumption in a conventional solution.

Table 6. Cable Length Supported

Connection Cable Type	Category and Speed	Maximum Cable Distance Supported
Unshielded Twisted Pair cable	**10/100Base-TX:** UTP category 5/5e/6 cables (Maximum 100m) **1000Base-T:** UTP Category 5/5e/6 cable (Maximum 100m)	100M
Shielded Twisted Pair cable	**10/100Base-TX:** STP category 5/5e/6 cables (Maximum 250m) **1000Base-T:** UTP Category 5/5e/6 cable (Maximum 100m)	250M/ 100M
Optical Fiber Cable	550M~20KM depending on SFP	20KM

Hardware

COMMANDO Soldier IE2000 Series Managed Switches Industrial-grade Ethernet Switches are specifically designed to connect devices in network environments that are subject to extreme operating temperatures of -40°C to 80°C with Vibration and Shock resistant having up to 4.1 Mbit SRAM Packet Buffer memory with Packet length of 10K bytes. L2 MAC Function with 8K entries for MAC address learning with the 4-way hash L2 table and searching with two hash algorithms. Independent 512 entry L2/IP Multicast table for multicast function, 2-hash algorithm selection for L2 table searching/learning. Aging timer ranges from 0.2s to 1600000s. It has a 4K-entry VLAN table and provides a 64-entry filtering database for 802.1Q port-based, protocol- and-port-based, 802.1Q-based, IP-subnet-based, and ACL Rules-based VLAN operation to separate logical connectivity from physical connectivity with IVL (Independent VLAN Learning), SVL (Shared VLAN Learning), and IVL/SVL (both Independent and Shared VLAN Learning) for flexible network topology architecture. The mode used depends on the FID (Filtering Identifier) setting. It also has a 1.5K Access Control List (ACL) that parses various protocol packet types and performs configurable actions like Permit/Drop, redirect, and traffic policing.

It has per-port ingress/egress bandwidth control and per- queue egress bandwidth control. It has 8 physical queues in each port. It also has three types of packet scheduling, SP (Strict Priority), WFQ (Weighted Fair Queuing), and WRR (Weighted Round Robin). Each queue provides a leaky bucket (LB) to shape the incoming traffic into the average rate behavior. Port-based 802.1X and MAC-based 802.1X authentication prevent unauthorized users. It also has port isolation to enhance port security.

It has 4-set port mirror configuration to mirror ingress and egress traffic for network management purposes, complete MIB counter support reflects the switch status in real time. Link aggregation static and dynamic to increase link redundancy and increase linear bandwidth.

It supports VLAN Function with IVL, SVL, and IVL/SVL, IEEE 802.1Q VLAN with 4K-entry VLAN Table, Port-based VLAN, Port-and-protocol-based VLAN, ACL-based VLAN. Limited learned L2 MAC entry on each port and each VLAN. Supports flexible Q-in-Q and VLAN Tag function.

It Supports up to 64 spanning tree instances for MSTP (IEEE 802.1s), RSTP, and STP with Automatic loop detection and isolation (RLPP/RLDP). L3 Unicast Routing with 512 next hop MAC. IEEE 802.3az Energy Efficient Ethernet (EEE). IGMPv1/2/3 and MLDv1/2 snooping. It also Supports Reserved Multicast Addresses processing and L2 Miscellaneous Functions like Supports broadcast, multicast, unknown- multicast, and unknown-unicast packet suppression control, IEEE

802.1x, Port Mirroring with 4-sets of port mirrors, Flow-based mirror function, RSPAN function for remote mirroring.

It supports Link Aggregation (IEEE 802.3ad) for 8 groups of link aggregators with up to 8 ports per-group, Port isolation function to enhance port security. It also has Attack Prevention, Land attack, Blat attack, TCP control flag attack, Ping attack, Packet length attack.

It supports Access Control List (ACL) Function with 1.5K-entry for ingress and egress ACL table and L4/L3/L2 format (e.g., DMAC, SMAC, and Ether-Type), IPv6 Parsing and Per-flow traffic policing with 16-entry VID range checking. It also supports 8-entry IPv4 or 2-entry IPv6 range checking. 256 leaky buckets for flow traffic policing.

It supports QoS Functions with 8 physical queues per port, Strict Priority (SP) and Weighted Fair Queue (WFQ), Weighted Round Robin (WRR) packet scheduling, QoS remarking for 802.1p and DSCP (includes IPv4/IPv6) also Supports average packet rate control leaky bucket per queue, in 16Kbps steps up to 1Gbps maximum. Ingress port bandwidth control, in 16Kbps steps up to 1Gbps maximum. Egress port bandwidth control, in 16Kbps steps up to 1Gbps maximum.

It supports MIB Functions with 256 32-bit packet-based or 1K 64-bit byte-based log counters to enhance MIB counter log counters to enhance MIB count functionality. It also supports Ethernet-like MIB (RFC 3635), Interface Group MIB (RFC 2863), RMON (RFC 2819), Bridge MIB (RFC 1493), Bridge MIB Extension (RFC 2674).

It has Hardware watchdog support which guard against certain types of system hangs. Watchdog timer is used to escape from if something goes wrong. Based on the situation, the Switches can automatically reset itself, or recover from the failure and generate an error message in the console logs. Long life electrolytic capacitance. High Quality PCB Circuit Board and PCB Surface Treatment Using Gold Sinking Process. Rack mount design, Mounts in an EIA-standard 19-inch telco rack or equipment cabinet (Rack-mounting kit available), horizontal surface mounting, wall mounting with durable robust metal body. Bilateral heat dissipation. Power and ports status/ activity indicator LED lights. RJ45 Gold plated with 3U thickness.

It also supports has IEEE 802.3az Energy Efficient Ethernet (EEE) for 100Base-TX in full duplex operation and supports 10Base-Te for 10Base-T in full/half duplex. The Energy Efficient Ethernet (EEE) operational mode combines the IEEE 802.3 Media Access Control (MAC) Sub-layer with a family of Physical Layers defined to support operation in Low Power Idle (LPI) Mode. When Low Power Idle Mode is enabled, systems on both sides of the link can disable portions of the functionality and save power during periods of low link utilization. 10Mbps PHY with reduced

transmit amplitude requirements in EEE operational mode. This new PHY is fully interoperable with legacy 10Base-T PHYs over 100m of Class-D (Category 5) or better cabling.

Hardware Highlights

Solid performance with non-blocking architecture

- CPU Dual Core having frequency 500 MHz along with CPU Memory DRAM of 1GB, Flash memory of 256 MB and Packet Buffer memory of up to 4.1MB.
- All ports capable of Gigabit Ethernet speed. Full speed of data transferring with (Auto-Negotiation/Auto MDI/MDIX)
- Solid performance with non-blocking architecture, 8000 entries MAC Address Table with 4-way hashing algorithm
- 4094 VLANs can be created
- 1500 ACL entries
- Up to 512 static routes
- Independent 512 entry L2/IP Multicast table for multicast function.
- Maximum packet length 10000 bytes.
- Jumbo frames of 10000 bytes.
- 2-hash algorithm selection for L2 table searching/learning with Aging timer range from 0.2s to 1600000s.
- L2/L3/L4 QoS optimize voice and video applications with 256 leaky buckets for flow traffic policing.
- Switching Capacity: up to 56 Gbps
- Forwarding Capacity: Up to 41.66 Mpps
- Store-and-forward Switching Scheme.
- VLAN L3 Interface: 16
- Port Queues: 8
- PoE/PoE+ Budget for all ports on switch.

Physical Ports and Networking Interfaces

- Up to 24 x 10/100/1000 Mbps switch models with fixed uplinks ports 4CF or 8CF.
- Management Interface: RJ45 Console port and Mini USB Console port
- LED Indicators: Power, Link/Act, PoE Max.
- DC input power

IEEE 802.3af/at Compliant Power over Ethernet

- 8 & 24 ports PoE/PoE+ Switch models with 30W (PoE/PoE+) available on all ports. PoE/PoE+ power supply transmission is more reliable due to design of robust network transformer which uses high current. All PoE/PoE+ ports are IEEE 802.3af-compliant PoE, IEEE802.3at-compliant PoE+. Each port delivers 15.4 W PoE or 30 W PoE+ power capacity with backward compatibility.
- PD detection will automatic and provide required power for PoE/PoE+ devices.

Extra Long operational life

- High Quality PCB Circuit Board and PCB Surface Treatment Using Gold Sinking Process.
- Support temperature range -40° C to 80° C
- Surge protection up to ±6KV to designed to automatically protect Switches from surge events by limiting transient voltages and diverting surge currents.
- Long life electrolytic capacitance to increase the operational life of switches. RJ45 Gold plated with 15U thickness.
- Rack and wall mount design enables to mount the switch in an EIA-standard 19-inch telco rack or equipment cabinet along with Rack-mounting kit available with the device. It enables horizontal surface mounting, wall mounting with durable robust metal body.

Green Energy and Silent operation

- Comply with IEEE 802.3az (Energy-Efficient Ethernet) standard, reduces power consumption up to 58% and reduce the noise pollution. Energy Efficient Ethernet (EEE) on the RJ-45 ports and low-power operations for industry best-in-class power management and power consumption capabilities. The ports support reduced power modes so that ports not in use can move into a lower power utilization state.
- Small form-factor, fan-less design for silent operation. Perfect for noise sensitive environments.
- Temperature Control fan to optimize cooling and noise with bilateral heat dissipation.

Ethernet Protocols

- Supports wide range of IEEE 802.3i, 10BASE-T IEEE 802.3u, 100BASE-TX/FX IEEE 802.3ab, 1000BASE-T IEEE 802.3z, 1000BASE-X, IEEE 802.3av, GVRP, IEEE 802.3ad, Link Aggregation, IEEE 802.3x, Flow control, IEEE 802.1p, QoS IEEE 802.1q, VLANs / VLAN tagging IEEE 802.1v Protocol, IEEE 802.1d Spanning Tree Protocol (STP), IEEE 802.1s

Multiple Spanning Tree (MSTP), IEEE 802.1w Rapid Spanning Tree (RSTP), IEEE 802.1x Network Login Security, IEEE802.3af, IEEE802.3at.

Highly reliable and Enterprise design

- High Quality as for all Mean Time Before Failure of system, MTBF > 200,000 hours
- Stability: 64bit packet, time delay < 10us, packet loss rate: 0
- Restorability of Network shaking or device breakdown, restart(recovery) time < 60 sec.
- RoHS Compliant with most of the packaging material can be recycled and reused.

Table 7. COMMANDO Soldier IE2000 Series Managed Switches Hardware Specifications

Hardware Parameter	Hardware Specification
CPU Frequency	Dual Core 500 MHz
CPU Memory DRAM (GB)	1GB
Flash	256 MB
Packet Buffer memory	4.1MB
	8/24 * 10/100/1000 Base-T
	4CF Combo 2 *1GE Copper and 2* 1G SFP fixed uplinks 8CF Combo 4 *1GE Copper or 4* 1G SFP fixed uplinks
PoE standards supported	IEEE802.3af/IEEE802.3at power on switch ports.
Console Port	1 x RJ45 Console port 1 x Mini USB Console port
Reset Button	1
DC input power from UPS	1
Enclosure Type (Rack-mountable)	Desktop and Rack/Wall-mountable - 1U

Max PoE+/PoE++ Output Power (single port)	30W
PoE Pin-out	1/2(+),3/6(-); Customized 4/5(+),7/8(-)
Switching Capacity	24Gbps~56Gbps
Forwarding Mode	Store and forward
MAC Address Table Size	8000 entries, Support auto-update, two-way learning
Jumbo frames (Bytes)	10000
VLAN IDs	4094
ACL	1500
Link Aggregation	8
Maximum packet length	10000 bytes
Total number of IPv4 routes (ARP plus learned routes)	512
	10M:14880 pps/port
	100M:148809 pps/port
	1000M:1488095 pps/port
Operation Temperature	-40° C to 80° C
Storage Temperature	-40° C to 85°C
Operating Humidity (relative, noncondensing)	10% to 90% (non-condensing)
Storage Humidity	5% to 90%(non-condensing)
Dimensions	4.4 x 29.0 x 20.0 cm/1.7 x 11.4 x 7.9 inches 4.4 x 44.4 x 30.0 cm /1.7 x 17.5 x 11.8 inches

Input Power Supply	DC: 12~48 DC input power and current depending on models
Lightning Protection	±6KV
Weight	<5.2Kg
LED Indicator	Power, System, Link/Act
Energy Saving	EEE Compliant with IEEE802.3az
	IEEE 802.3at, Power Over Ethernet Plus
	IEEE 802.3u, 100BASE-TX
	IEEE 802.3ab, 1000 BASE-T
	IEEE 802.3z, 1000 BASE-X
	IEEE 802.3ad, Static or Dynamic Link Aggregation
	IEEE 802.3x, Full-Duplex Flow Control
	IEEE 802.3az, EEE (Energy Efficient Ethernet)
	IEEE 802.1q, VLAN
	IEEE 802.1p, QoS/CoS
	IEEE 802.1d, STP (Spanning Tree Protocol)
	IEEE 802.1w, Rapid Spanning Tree Protocol
	Port-based VLANs
	Maximum 4094 VLANs
	VLANs based on IEEE 802.1q
	Support Rapid Spanning Tree Protocol (Default Setting)
	Support Spanning Tree Protocol, Support Multiple spanning Tree
	Support 8 aggregation groups, and a maximum of 8 ports in

Link Aggregation	each aggregation group
	Static aggregation and LACP
	Support bi-direction port mirroring
	RSPAN function for remote mirroring
Port Isolation	Isolation between downlink ports without influence the communication between downlink and uplink ports
	Back-pressure traffic control under Half-Duplex mode
	IEEE 802.3x traffic control under Full-Duplex mode
Port Rate Restriction	Port-based ingress or egress rate limiting
DHCP	DHCP Server, DHCP Client, DHCP Snooping
Storm Suppression	Support the suppression of broadcast storm based on forwarding rate
Multicast Control	Support IGMPv1/2/3 and MLDv1/2 Snooping;
	Attack Prevention (Land attack/Blat attack/Ping attack/TCP control flag attack)
	MAC & Port based Security
	IP, MAC, Port based ACL, VLAN ACL
	ARP binding
	TCP/UDP port-based Security
	802.1p (Port Queuing Priority)
	WRR (Weighted Round Robin)
	Cos/Tos, QOS
	PoE /PoE+ (IEEE 802.3af/IEEE 802.3at)

PoE	Intelligent restart for PoE/PoE+ Scheduling
	Timed restart as per Scheduled time
	10/100Base-TX: UTP category 5/5e/6 cables (Maximum 100m) 10/100Base-TX: STP category 5/5e/6 cables (Maximum 250m)
	1000Base-T: UTP Category 5/5e/6 cable (Maximum 100m)
	1000Base-SX: Fiber with 850nm wavelength, supports a max transmission distance of 550m
	1000Base-LX/LH: Fiber with 1310nm / 1550nm wavelength, supports a max transmission distance of 20km
Network Cable Deployment	Support Auto-MDIX function, automatically identify straight forward cable and cross-over cable
Negotiation Pattern	Support port auto-negotiation function (automatically negotiate transmission rate and Duplex modes)
	Detect the connectivity of network cables
	Uploading or downloading of the configuration data
	Uploading of firmware upgrade patch
	Support system logs
	WEB-based reset to factory defaults
	WEB-based management
	CLI Management (Command Line Interface)
	Telnet
	SNMP

Table 8. Hardware specifications

Product Code	Ports	Main Interface	Uplink Interfaces
IE2000-8G+4CF	8 x 10/100/1000Mbps Ethernet ports 2 x 10/100/1000Mbps Ethernet + 2 x 1G SFP Uplink ports	8 GE	2 GE and 2 SFP
IE2000-24G+8CF	24 x 10/100/1000Mbps Ethernet ports 4 x 10/100/1000Mbps Ethernet / 4 x 1G SFP Combo Uplink ports	24 GE	4 GE or 4 SFP Combo
IE2000-8GP+4CF	8 x 10/100/1000Mbps Ethernet PoE+ ports 2 x 10/100/1000Mbps Ethernet + 2 x 1G SFP Uplink ports	8GE	2 GE and 2SFP
IE2000-24GP+8CF	24 x 10/100/1000Mbps Ethernet PoE+ ports 4 x 10/100/1000Mbps Ethernet / 4 x 1G SFP Combo Uplink ports	24 GE	4 GE or 4 SFP Combo

COMMANDO Solider IE2000 Series Industrial Ethernet, Managed Switches protect from power surges through their inline power supply automatically and have in build Surge protection of ±6KV. With this feature protect on cost and the impact to your business by losing these network devices and thus the users/servers connected to them.

Table 9. Power specifications

Product Code	PoE+ (IEEE 802.3at) Ports	PoE (IEEE 802.3af) Ports	Power Input
IE2000-8G+4CF	-	-	DC: 12~48V, 1A
IE2000-24G+8CF	-	-	DC: 12~48V, 2A
IE2000-8GP+4CF	All ports up to 30 W	All ports up to 15.4W	DC: 48V, 5A
IE2000-24GP+8CF	All ports up to 30 W	All ports up to 15.4W	DC: 48V, 16A

Bandwidth Specifications

COMMANDO Soldier IE2000 Series Managed Switches use Store-and-forward switching which means that the LAN switch copies each complete frame into the switch memory buffers and computes a cyclic redundancy check (CRC) for errors. The switching capacity (backplane bandwidth) of a switch refers to the maximum amount of data that can be transmitted between a switch interface processor or interface card and a data bus. The switching capacity indicates the total data exchange capability of the switch,up to 56Gbps. The Forwarding Rate is a measure of how many packets per second the switch can process for certain sized packets. Forwarding rate, refers to the number of network packets that can be processed by switch. The Forwarding rate is measured in million packets per second (Mpps).

Table 10. Bandwidth specifications

Product Code	Switching Capacity (Gbps)	Packet Filtering Forwarding Rates (64-byte packet size Mpps)	Mean time between failures MTBF (hours)
IE2000-8G+4CF	24	17.85	319919
IE2000-24G+8CF	56	41.66	301516
IE2000-8GP+4CF	24	17.85	319919
IE2000-24GP+8CF	56	41.66	215915

Environmental Properties and Specifications

Environmental properties include those physical properties which relate to the environment. Moisture, heat conductivity, the physical effect of heat, Altitude, Humidity and electrical properties depend on the environmental conditions surrounding the device.

Table 11. Environmental properties

Property	Description
Operation Temperature	-40° C to 80° C

Operating temperature and altitudes:	-40° C to 80° C , up to 5000 feet (1500m) -40° C to 80° C , up to 10,000 feet (3000m) Minimum ambient temperature for cold start is 32°F (0°C) Short-term* exceptional conditions: -40°C to +80°C, up to 5000 feet (1500m) -40°C to +80°C, up to 10,000 feet (3000m) Not more than following in one-year period: 96 consecutive hours, or 360 hours total, or 15 days
Storage Temperature	-40° to 85°C
Operating Humidity (relative, noncondensing)	10% to 90% (non-condensing)
Storage Humidity	5% to 90%(non-condensing)
Altitude	0 to 13,123 ft (0 to 4000m)

Weight and Dimension

COMMANDO Solider IE2000 Series Industrial Ethernet, Managed Switches offers best in class from package dimensions to weight, destination, value, and shipment type.

COMMANDO Solider IE2000 Series Industrial Ethernet, Managed Switches Model Dimensions specifications are suitable for Industry standard Desktop and Rack/Wall mounting. Industry Standard Desktop and Rack/Wall mounted describes a unit of electronic equipment that is housed in a metal framework called an equipment rack. Usually, an equipment rack contains multiple "bays," each designed to hold a unit of equipment of standard dimensions.

Table 12. Weight and Dimension

Product Code	Weight & Dimension		
	Kg	Centimeters (H x D x W)	Inches (H x D x W)
IE2000-8G+4CF	2.3 Kg	4.4 x 29.0 x 20.0	1.7 x 11.4 x 7.9
IE2000-24G+8CF	4.4 Kg	4.4 x 44.4 x 30.0	1.7 x 17.5 x 11.8
IE2000-8GP+4CF	2.8 Kg	4.4 x 29.0 x 20.0	1.7 x 11.4 x 7.9

IE2000-24GP+8CF	5.2Kg	4.4 x 44.4 x 30.0	1.7 x 17.5 x 11.8

SFP ports specifications

It has 1G/1GE Gigabit Ethernet fiber-based or Gigabit Ethernet copper based Small Form-Factor Pluggable with granular port densities that fit diverse campus needs. The SFP transceiver is a compact, hot-swappable device that plugs into a physical port of a network device. SFP optics are used in communication networks and have a transmitting side (Tx) and a receiving side (Rx). The different SFP transceivers work with different wavelengths at an appointed distance. 1G fiber solution or 1GE copper fixed uplinks.

Table 13. SFP specifications

PRODUCT CODE	SUPPORTING SFP
SFP-SM-1G	COMMANDO LightningFIBER 1000BASE-LX/LH, SFP, 1310nm, 20km, SMF, DDM, Multi-vendor Compatible
SFP-MM-1G	COMMANDO LightningFIBER 1000BASE-SX, SFP, 850nm, 550m, MMF, DDM, Multi-vendor Compatible
SFP-UTP-1G	COMMANDO LightningCOPPER 1000BASE-T Copper RJ-45, SFP, 100m, CAT5/6, Multi-vendor Compatible

Power Supply Specifications

Power supply is a king of all electronic devices without the power supply switch cannot work. Following rating power input required to make switch work.

Table 14. Power supply specifications

Power supply rated maximum	48V DC
Input-voltage range	DC: 12~48V, Ampere depend on model specifications

Included in the bundle/box

All COMMANDO Solider IE2000 Series Industrial Ethernet Managed Switches are made available for use globally along with accessories in the bundle to facilitate or enhance operations.

The switch box comes included with the following accessories:

1x COMMANDO Solider IE2000 Series Managed Industrial Switch
1x Power cable
1x Console cable
1x Grounding Cable
1x Rack/Wall mountable kit

Support and Warranty

- Same-day assistance.
- Comprehensive 24-hour support using common communication/chat platforms, Email and Telephone.
- Provide FAQs and troubleshooting help online (self-service) through cloud-based solutions.
- Highly technical and trained representatives to resolve issues.
- One-year default warranty with option of warranty extension up to 5 years

Table 15. Warranty and Support

Warranty and Support	
Products covered	COMMANDO Soldier IE2000 Series Managed Industrial Switches
Warranty duration	One Year RTB (Return To Base) replacement warranty – optionally extendable up to 5 years.
Hardware replacement	COMMANDO, its resellers or its service center will use commercially reasonable efforts to replace the product subject to stock availability. Otherwise, a replacement will be arranged within 15 working days after receipt of the Return Materials Authorization (RMA) request.
End-of-life policy	In case of discontinuation of the product, support is limited to 3 years from announcement date.
Effective date	Hardware warranty commences from the date of shipment to customer (and in case of resale by a COMMANDO reseller, not more than 90 days after original shipment by COMMANDO).
Support duration	Lifetime support.
COMMANDO Care	COMMANDO will provide 24x7 support for basic configuration, diagnosis, and troubleshooting of device-level problems for up to one year from the date of shipment of the originally purchased product. This support does not include solution or network-level support beyond the specific device under consideration.
Online Portal Access	Warranty allows guest access to commandonetworks.com for all available technical queries.

Ordering Information

Table 16 lists ordering information for the COMMANDO Solider IE2000 Series Industrial Ethernet, Managed Switches. To place an order, please contact your local reseller/distributor or COMMANDO Sales Representative at www.commandonetworks.com/rfq

Table 16. COMMANDO Solider IE2000 Series Industrial Ethernet, Managed Switches Ordering Information

Ordering Information - SOLDIER IE2000 Series Managed Industrial Switches	
Product Code	Description
IE2000-8G+4CF	COMMANDO Soldier IE2000 8GE, 2GE+2SFP Uplinks, Managed Industrial Switch
IE2000-24G+8CF	COMMANDO Soldier IE2000 24GE, 4GE/4SFP Uplinks, Managed Industrial Switch
IE2000-8GP+4CF	COMMANDO Soldier IE2000 8GE PoE+, 2GE+2SFP Uplinks, Managed Industrial Switch
IE2000-24GP+8CF	COMMANDO Soldier IE2000 24GE PoE+, 4GE/4SFP Uplinks, Managed Industrial Switch

Document History

Release	What's new	Date
Release 1	First Release	January 4, 2021
Release 2	Addition of more models	June 25, 2021
Release 3	Software Upgrade	September 18, 2023