

# SWCED-2112

## 10 GIGABIT CE 2.0 CARRIER ETHERNET SWITCH



### Ruggedized DIN format

### 10 GigaBit Carrier Ethernet Switch

#### 10 GE

Carrier Ethernet

#### DIN

Ruggedized

#### 4X SFP

#### 8X GE

#### HIGHER RESILIENCY

**SWCED** is a DIN-rail ruggedized 10 Gigabit Carrier Ethernet switch that complies with the MEF CE 2.0 standard with Layer 2 and 3 switching functions.

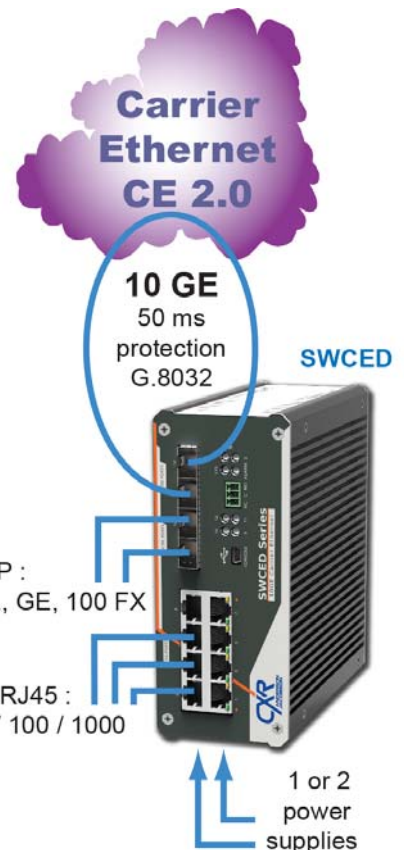
**SWCED** provides two 10GE SFP+ interfaces, two multi-standard SFP interfaces for 2.5GbE / GbE / 100FX speeds, and eight GigaBit Ethernet RJ45 ports. It is a ruggedized product with a robust DIN-rail aluminum design and extended operating temperature range that suits most stringent integration requirements of the Carrier, Transportation, Defense, and Utility infrastructures.

**SWCED** enables CE 2.0 managed services including EVC, E-LINE / E-LAN / E-TREE at a UNI / NNI Carrier Ethernet network access with guaranteed service availability and resiliency.

**SWCED** helps industry networks to extend to higher 10GbE bandwidth within an affordable 'Pay-as-you-grow' approach that best preserves long term investments and reduces OPEX costs. It builds resilient Rings at Gigabit, 2.5GbE and 10GbE speeds and delivers high speed Ethernet connectivity to Control centers, hospitalities, video-surveillance systems, Transportation sites, water and electric utilities, etc.

**SWCED** provide scalable 10GbE bandwidth and multiservice backbone services to large industry infrastructures and Smart Cities with a broad range of OAM and performance monitoring, security and ACL/QCL traffic filtering functionalities.

**SWCED** is a best choice networking and communication equipment for Mission Critical Networks thanks to its resilient and ruggedized design and extended operating temperature range.



## 10GE Carrier Ethernet Switch

### CE 2.0 CARRIER ETHERNET SERVICES

**SWCED** provides managed services at the UNI / NNI Ethernet network provider to deliver **EVC / E-LINE / E-LAN / E-TREE** services according to the **MEF CE 2.0 standard**.

SWCED is based on a **Service Aware architecture** with hardware processing of real time functions such as switching, service mapping, CoS, G8032, OAM. This carrier grade architecture guaranties best performance whatever the traffic load and SLA requirements.

SWCED distinguishes from other existing products from its **ruggedized and compact DIN-rail form factor** and integration, its CE 2.0 carrier class, its **two redundant power supplies**, its very low per port power consumption, its **extended operating temperature range** and its **cost effectiveness**.

### MANAGEMENT

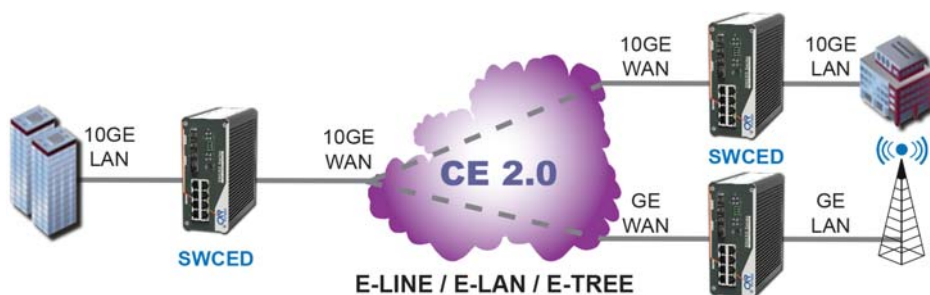
SWCED offers many management protocols and interfaces including a user-friendly **web interface** with **help pages**. System operation is secured by strong authentication and encryption protocols such as **HTTPS** and **SNMP v3**. The product embeds a **dual IP stack** with versions v4 and v6. The Command Line Interface is based on industry standards and enables batch configuration script.

### INTEGRATION

SWCED is a **DIN-rail ruggedized product**. It comes with a choice of **one or two 24 - 48 Vdc power converters** with **fault tolerance and redundancy**. It can be installed in a non temperature controlled environment such as a street cabinet.

SWCED is an industry grade product that combines high performance Carrier Ethernet processing and **severe industry robustness and reliability**. It works over an extended temperature range from -20 to +70 °C.

SWCED preserves the environment and natural resources through a choice of recyclable materials and an extremely low per port power consumption.

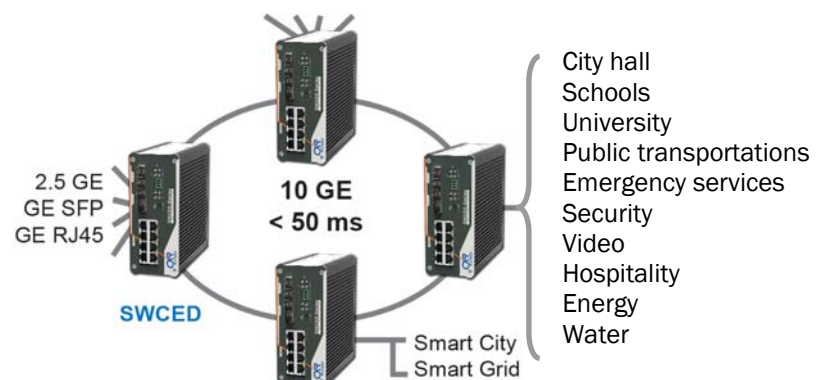


### SCALABLE ETHERNET COMMUNICATIONS FOR INDUSTRY INFRASTRUCTURES

**SWCED** supports very high speed backbone communications for large infrastructures such as Smart Cities, Public Transportation (railway, road) and Transport / Distribution Utility (electricity, oil and gas, water). It comes with a very cost effective approach for best flexibility and scalability to suit current requirements and anticipate future developments. Its SFP optical ports can be set to 1xGbE and 2.5 GbE speeds. Two 10GbE interfaces can be activated when higher bandwidth capacity is required.

Increasing speed is not enough to Mission Critical Networks. Communication network must provide continuous control and monitoring of performance, services availability, latency, traffic load with reactivity and accuracy but no application traffic disruption.

A Carrier Class equipment with compliance to the Metro Ethernet Forum CE2.0 is a guaranty for such long lasting performance and precise network monitoring.



# Specifications

## 10GBE CE 2.0 SERVICE AWARE SWITCH

SWCED distinguishes from other products by its combined addition of a newer generation Ethernet switching solution dedicated to 10GE Carrier Ethernet Services, and extensive software features according to Ethernet industry and MEF CE 2.0 standards. A number of hardware accelerators perform real time critical functions for wire-speed switching, SLA controls and OAM test and maintenance which guaranty minimum latency whatever equipment settings and network load and type of traffics. SWCE exceeds MEF CE 2.0 specifications. Each EVC virtual connection can be assigned specific QoS and resources.

SWCED embeds all standard Ethernet protocols, VLAN, Provider VLAN, QOS, IGMP, RSTP, MSTP, GVRP, EVC, ERPS G.8032, etc. It has many security functions including Access Control List and authentication protocols - 802.1X, Radius, TACACS.

SWCED is offered to Ethernet network operators and industrial infrastructure managers with the most attractive price strategy. It is a flexible equipment with hardware options and software licenses that enable users to invest only for today requirements in a scalable and future-proof solution that can evolve in speed and features. This Pay-as-you-grow approach best preserves investments and future developments.

SWCED brings the complementary benefits from a industry grade and cost effective Carrier Ethernet equipment:

- Controlled and determinist performance
- Best bandwidth and resource allocation
- Multiservice secure network architecture
- 99.999% availability
- Reduced Time-To-Service
- Scalable and future-proof network
- Lower cost of provisioning, deployment, support and maintenance and best customer experience and satisfaction
- Fault and Performance monitoring with end to end OAM functions
- Sustainable solutions and technical skills thanks to widely adopted and Metro Ethernet Forum supported standards

## PROTOCOLS

### Layer 2 Switching

- VLAN: translation, MAC based, protocol based, IP address based, VLAN trunking, GVRP and MVRP registration, Private VLAN, Voice VLAN
- Provider Bridge 802.1ad, native or translated
- EVC, MEF Layer 3 traffic classification, 4 K EV services
- E-LINE (EPL, EVPL)
- E-LAN (EP-LAN, EVPLAN)
- E-TREE
- EVC classification of L3 flows (SIP, IP Prot, S-Dport)
- RSTP, STP
- Link Aggregation, LACP
- IGMP v2 Snooping, MLD v1 Snooping, IGMP filtering
- LLDP
- DHCP Snooping

### Layer 3 Switching

- DHCP option 82 relay
- UPNP
- IP v4 unicast static routing with hardware accelerator
- VLAN routing

### Ring Protection

- Port protection: 1+1, 1:1, 1:N
- G. 8031
- G. 8032

### QoS

- Traffic Classes : 8 priority levels
- Per port and per user priority
- QCL, QoS Control List
- DSCP classification, translation
- Rate limiting
- Storm control, UC / BC / unknown
- Service policing, bandwidth profiles
- WRED

### Security

- 802.1X, per port, simple or multiple authentication
- MAC address authentication
- VLAN assignment, QoS assignment
- Guest VLAN
- Radius AAA, TACACS AAA
- IP / MAC binding
- WEB and CLI interface authentication
- ACL and QCL for traffic filtering
- ARP inspection
- IP source guard

## Specifications

### Ethernet interfaces

- 2x SFP+ ports, 10 GigaBit and GE rates
- 2x SFP ports, 2.5 GE, GE and 100FX rates
- 8x RJ45 ports, 10 / 100 / 1,000 Mbps
- MDI/MDIX automatic detection
- 802.1x Authentication
- 802.3X flow control
- DDMI management on SFP ports
- VeriPhy function for live Ethernet cable diagnostic
- Ethernet MAC address memory : 32 K
- Ethernet frame buffer : 32 Mb
- EEE: Green Ethernet
- Statistics : transmitted frames and interface diagnostics
- Max frame size : 4,776 bytes

### Management

- USB: local console port
- TCP-IP protocols : Telnet, http, ssh, https,
- IP v4 / v6 dual-stack
- Web interface, intuitive menus and on-line help pages
- CLI command line: ssh, USB port
- Snmp : v1/v2/v3
- Diagnostics : ping, traceroute
- Port Mirroring
- Syslog
- LLDP
- Statistics, RMON
- NTP client
- 2x banks of firmware
- Alarm relay

### Maintenance

- Link OAM: hardware based, 4K services, Loopback
- OAM: Y1731, 802.1ag, 802.3ah

### Light indicators

- Power
- Link / Activity for each Ethernet port

### Power supply

- -D model : 24-48 Vdc
- -2D model : 2x 24-48 Vdc power inputs and converters
- Power input range : 20 to 60 Vdc
- Max power consumption : 40 W
- Typical power consumption : 21 W

### Environmental

- DIN-rail aluminum enclosure
- Protection Class : IP-40
- Dimensions : 153x158x65 mm (DxHxW)
- Weight : 1.9 kg
- Operating temperature range : -20 to +70 °C
- CE compliance : EN60950, EN55022, EN55024
- Industry EMI : EN-50121-4, IEC-61850
- MTBF : 380.000 hours

## Product References

Reference	Description
SWCED-2112-R-D	Ethernet Switch, 24-48 Vdc power supply
SWCED-2112-R-2D	Ethernet Switch, two redundant 24-48 Vdc power supplies
SWCE-L10	Option, 10 GigaBit activation license
SWCE-LCE	Option, MEF CE 2.0 EVC service license
SFP-10G-SR-MM	SFP+ 10GE LC/PC, multi-mode, 850 nm, 300 m
SFP-10G-LM-SM10	SFP+ 10GE LC/PC, single-mode, 1310 nm, 10 km
SFP-10G-ER-SM40	SFP+ 10GE LC/PC, single-mode, 1550 nm, 40 km
SFP-10G-ZR-SM80	SFP+ 10GE LC/PC, single-mode, 1550 nm, 80 km



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