



Grid Solutions

TELECOM PRODUCT SOLUTIONS

# Packetcom Switches

Modular and Compact access and aggregation platform for operational communication networks.

## MAIN FEATURES

- Supports up to 16x10/100 and 2x100/1000 SFP ports in compact version
- Supports up to 28x 10/100/1000 SFP ports in high-density modular version
- Advanced Ethernet switching and IP routing feature-set
- Application-aware firewall per port
- Integrated VPN agent for inter-site connectivity or remote user access
- Wide range of power input options AC/DC
- Fit to harsh industrial environment
- Multi-Mode or Single Mode SFPs
- PoE: Power over Ethernet
- RS-232 ports with protocol gateway functionality
- Optional cellular 2G/3G modem with 2 SIM cards for operator redundancy in compact version
- Industrial service management tool (iSIM) supported by **Sentinel**

## Ethernet and IP Aggregation in power utilities

The industrial **Packetcom** switches combine a ruggedised Ethernet platform with a unique strong packet processing application-aware engine to fit the mission critical industrial applications.

### RUGGEDISED SYSTEM

The **Packetcom** is designed for harsh industrial applications with an extended temperature range (-40° to +75° fanless and high EMI immunity operation temperature according to IEC 61850-3, IEEE1613 and EN50121-4, as well as facilitated installation through DIN-rail mount.

### NETWORK RESILIENCY

In addition of RSTP and MSTP, the **Packetcom** family support ethernet rings according to the ITU-T G.8032 standard ensuring fast failure detection and switchover regardless of the scale of the network. Traffic isolation and load balancing is fully available with VLAN ,Super VLAN and LAG, accompanied by high QOS capabilities.

### APPLICATION-AWARE SECURITY

The industrial **Packetcom-M and-C** switches combine a ruggedized Ethernet platform with an integrated "application-aware" firewall on each port providing a network-based distributed security. The switch can provide both intensive connection security (IPSec tunnels) and secure remote user access (using SSH).

### UTILITY INFRASTRUCTURE

National utility infrastructure topologies are usually characterized with remote distributed sites connected to the SCADA control center. **Packetcom** acting as a secure gateway for ethernet, IP and Serial services is an optimized platform for servicing these needs over the network core.



Packetcom-M



Packetcom-C

## SMART GRID INFRASTRUCTURE

The **Packetcom-C** switch is designed to optimize the network infrastructure of a distributed application environment such as the Smart Grid. It is a natural fit for installation at the MV/LV. Transformation Sites acting as the secure access point for the Distributed Automation control at these remote sites.

**Packetcom-C & M** provides distributed network security from the substation, enabling only authorized traffic to access the network according to the user defined access rules and secured interconnection of remote sites over public networks using Layer-2 or Layer-3 VPN with encryption L-2/3/4 ACL MAC/IP filtering per port

- SCADE-Aware firewall
- L2/L3 VPN with IPsec
- 802.1x
- RADIUS/TACACS

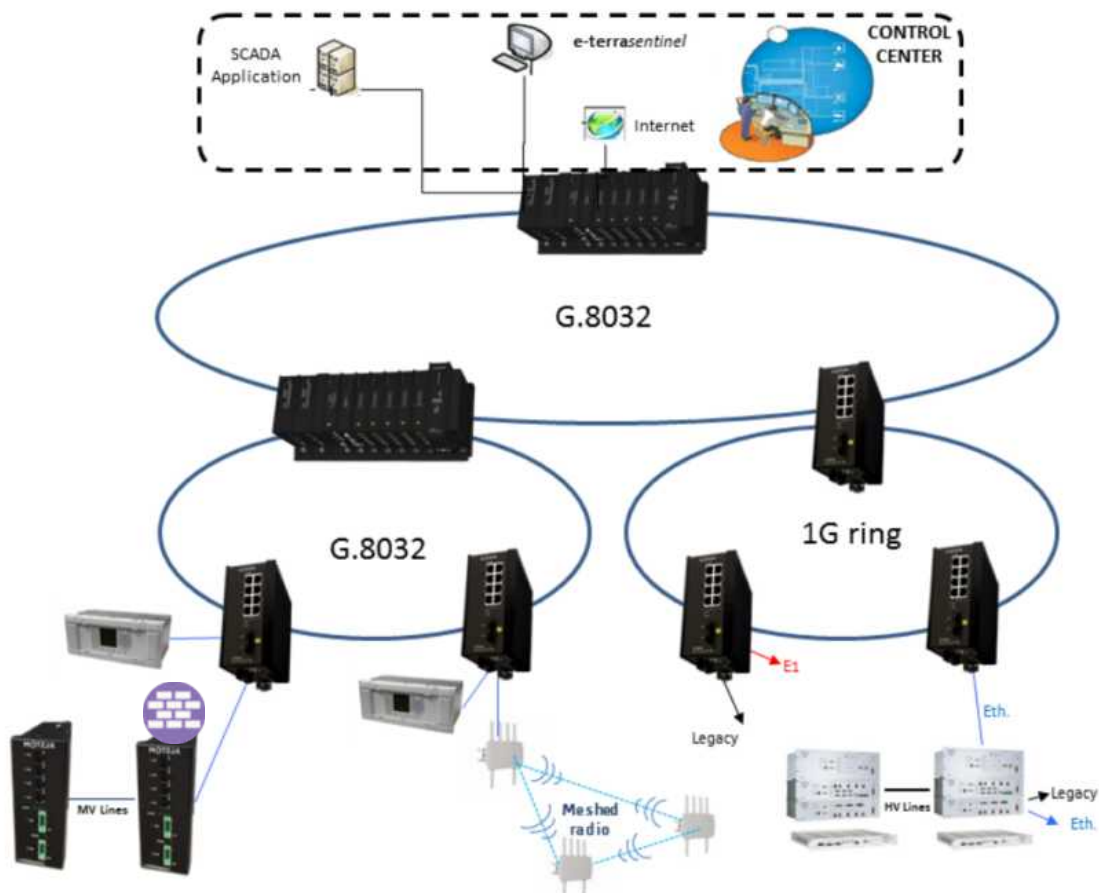
## MULTI-SERVICE INTERFACES

The **Packetcom** switches support both Ethernet and RS-232 serial interfaces with important operating modes for the transmission of the serial data-streams:

- Transparent tunneling of the traffic between the 2 remote serial ports
- Service translation gateway connecting the serial end-devices to an Ethernet-based SCADA management system

## SERVICE MANAGEMENT TOOL

The iSIM presents the network topology in a graphical map view enabling the monitoring and provisioning of service connections between the industrial end-devices with detailed security rules.



## TECHNICAL SPECIFICATIONS

### NETWORKING

#### ADVANCED LAYER 2 FEATURE-SET

ITU-T G.8032v2 Ethernet ring (<50mS recovery)  
 IEEE 802.1s MSTP  
 IEEE 802.1w RSTP, enhanced RSTP  
 IEEE 802.3ad LAG with LACP  
 IEEE 802.1q VLAN segregation  
 VLAN tagging according to L2-L4 headers  
 IEEE 802.1p per port queues  
 802.1x Port based network access control  
 DHCP Client, Server and Relay  
 QOS Priorization, shaping, Scheduling  
 OAM EFM IEEE 802.3ah  
 OAM CFM ITU-T Y.1731/IEEE 802.1ag  
 1588v2 PTP Transparent Clock  
 Jumbo frames supported

#### LAYER 3 FEATURE-SET

Static routing  
 OSPF, RIPv2 Routing  
 DSCP to 802.1p QoS mapping  
 VRRP redundancy scheme

#### MULTICAST

L2 Multicast with guaranteed QoS  
 IGMP Snooping for traffic optimization

#### SCADA PROTOCOL HANDLING

Transparent tunneling serial streams  
 SCADA Serial to Ethernet Gateway

- Modbus RTU – Modbus TCP
- IEC 101 – IEC104
- DNP3 IP – SNP3 RTU

Terminal Server

#### MULTI-SERVICE UPLINKS

2G/3G cellular modem - 2 SIM cards

#### SYSTEM PERFORMANCE

Line rate L2/L3 switching throughput  
 Switching latency <10Sec  
 16K MAC addresses  
 4K VLANs

### SECURITY

#### ACCESS CONTROL

Enable/Disable port  
 Port lock-down after a physical failure  
 Port access filter per MAC / IP addresses  
 IEEE 802.1x port-based authentication  
 Protect against DoS attacks

#### SERVICE VALIDATION

Egress filtering per VLAN  
 Application-aware firewall on each port analyzing industrial protocols  
 Traffic activity recording for Trail audit

#### INDUSTRIAL VPN NETWORK

Remote access using SSH tunnel  
 Layer 2 GRE Transparent Ethernet Bridging  
 Layer 3 GRE DM-VPN  
 IPSec encryption  
 User policy for traffic type  
 IKE, AES or 3DES encryption  
 Dynamic key exchange  
 NAT traversal

#### REMOTE ACCESS AGENT

Remote access using reverse SSH tunnel  
 Limited access authorizations per user  
 Local and remote user authentication and authorizations  
 Traffic activity log for Trail audit

## TECHNICAL SPECIFICATIONS

**INTERFACES PACKETCOM-C**

2 x 100/1000 SFP ports  
 8 or 16 x 10/100BaseT ports  
 Optionally 8 of them PoE, 30w max per port  
 Optional 8x100FX SFP ports  
 Up to 4x RS-232 ports  
 Optional 2G/3G cellular modem

**INTERFACES PACKETCOM-M**

4 x 10/100/(1000) base TX module w/wo POE  
 4 x SFP module with 100/1000 optional Copper and Optic SFPs  
 4xRS-232 serial module  
 2xRS-232+2xRS485 serial module

**PHYSICAL DESIGN**

DIN rail mounting, optional wall mount  
 Rugged enclosure - IP 30 rated, No fans  
 Operating temperature: -40 to 75°C  
 Storage temperature: -40 to 85°C  
 Operating Humidity: 5%-95%

**Packetcom-C**

Dimensions - 148\*95\*123 (HxWxD) [mm]  
 Weight - 1.4 kg (DC) - 1.8 kg (AC)  
 DC power supply 24, 48, 110, 220 V with 2 power inputs  
 AC power supply 90-250 V

**packetcom-M**

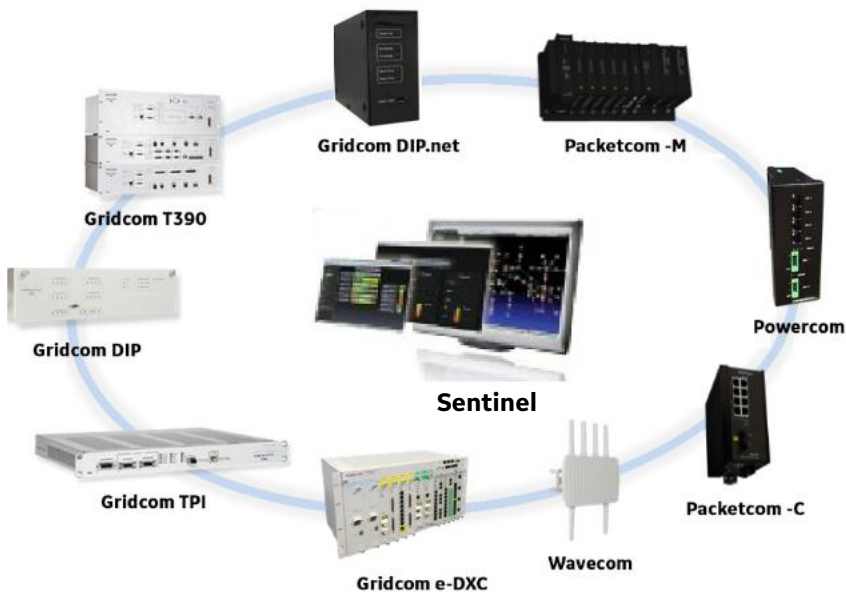
Dimensions - 145\*380\*139 (HxWxD) [mm]  
 Weight - 2.5 kg - 4 kg (configuration dependant)  
 2xDC power supply units 24, 48, 110 V with 2 power inputs per unit  
 IEC 61850-3/IEEE1613 EMI  
 EN50121-4 Vibration and shock resistance

**MANAGEMENT TOOLS**

Command-Line interface over local console or over remote SSH  
 SNMPv1/v2/v3  
 Local and remote user authentication (RADIUS, TACACS)  
 EMS graphical tool  
 iSIM network management tool  
 Network elements auto-discovery  
 Wizard for Ethernet ring configuration  
 End-to-End service groups provisioning  
 Security rules planning per service group  
 Network performance & diagnostics tools

**LOCAL OPERATION**

RS-232 console port  
 Local USB port for emergency boot  
 Discrete inputs for user-defined triggers  
 Discrete outputs reporting system alarms  
 Failsafe output relay reporting critical alarm



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