

PACSystems™ Industrial PROFINET Managed Ethernet Switches

(IC086GLM064,IC086GLM082,IC086GLM104)



The PACSystems GLM series Industrial Ethernet Switches deliver high-quality Ethernet operation over a wide temperature range and can tolerate an extended power input range. These switches are ideal for harsh environments and mission-critical applications. They may be DIN-rail mounted or panel-mounted.

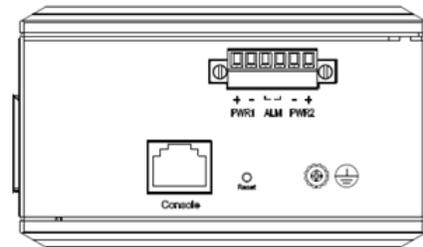
Applications Include

- Virtual LANs (VLANs)
- Access Control List Security (ACL)
- Failover Ring Protection
- Quality of Service (QoS) features
- Internet Group Management Protocol (IGMP)

For details, refer to the PACSystems Industrial PROFINET Managed Ethernet Switches User's Manual, GFK-3030.

Features

- PROFINET enabled
- Full Gigabit
- Managed
- VLAN Mirroring
- -40°C to +75°C (-40°F to +167°F)
- Provides Gigabit Copper ports plus SFP ports 100FX or 1000BaseF (SX/LX/LH)
- 9K Jumbo frames
- Dual 12VDC-58VDC power input, ground stud, alarm contact, reset pushbutton & RG45 port suitable for attaching a console
- L2 wire-speed switching engine
- 8K MAC forwarding addresses
- Network redundant LACP, Spanning Tree STP, RSTP & MSTP
- Port-based/tag-based VLAN, add/remove VLAN tags
- SPQ, WRR scheduling, 8 queues per port
- MRC capabilities
- MRP involving MRM
- MRP: Media Redundancy
- PNIO System Redundancy
- PROFINET GSD file, I/O parameters, I/O cyclic data, DCP, DHCP
- PROFINET Real-Time compatible
- Proficy Machine Edition (PME) device icons included
- Failover Ring and Chain (recovery time <20ms@256 switches)
- PROFINET MRP & Fast Failover Ring/Chain coexistence
- QoS
- Multicasting support IGMP v./v2/v3, proxy & snooping
- Multicast/Broadcast/Flooding Storm Control
- CLI, Web & SNMP v1/v2/v3 management



- Plug-and-play operation and 100% compatibility with the PROFINET standard v2.3
- Dual power input (12~58 VDC) & Reverse power protection
- DIN-Rail and wall mounting option
- MRPe: Media Redundancy extended

System Capabilities

Function	System Max Value
VLAN ID	4096
VLAN Limitation	1024
Privilege Level of User	15
RMON Statistic Entry	65535
RMON Alarm Entry	65
RMON Event Entry	65535
IPMC Profile	64
IPMC Rule / Address Entry	128
ACE	256
ICMP Type / Code	255
MAC-based VLAN Entry	256
IP subnet-based VLAN Entry	128
Protocol-based VLAN Group	125
Voice VLAN OUI	16
QCE	256
IP Interface (for management)	8
IP Route (for management)	32
Security Access Management	16
MVR VLAN	4
MAC Learning table address	8k
IGMP Group	256

Ordering Information

Catalog Number	Description
IC086GLM064	6 RJ45 port/4 SFP port 10/100/1000BaseT(X) Managed switch
IC086GLM082	8 RJ45 port/2 SFP port 10/100/1000BaseT(X) Managed switch
IC086GLM104	10 RJ45 port/4 SFP port 10/100/1000BaseT(X) Managed switch
Note: For Conformal Coat option, please consult the factory for price and availability.	

Specifications

Ethernet	
Operating Mode	Store and forward, L2 wire-speed/non-blocking switching engine
MAC addresses	8K
Jumbo frames	9K Bytes
Copper RJ45 Ports	
Speed	10/100/1000 Mbps
MDI/MDIX Auto-crossover	Support straight or cross-wired cables
Auto-negotiating	10/100/1000 Mbps speed auto-negotiation; full and half duplex
Ethernet isolation	1500 VRMS 1 minute
SFP (pluggable) ports	
Port types supported	<ul style="list-style-type: none"> SFP (pluggable) ports 100/1000BaseSFP slot Support 100/1000BaseT SFP transceiver IC086SFPnaa SFP must be used for all Hazardous Location installations
Fiber port connector	LC typically for fiber (depends on module)
Redundancy	
MRP	PROFINET Media Redundancy
PROFINET SYSTEM Redundancy	<ul style="list-style-type: none"> PROFINET SYSTEM Redundancy Single & multiple rings; dual-homing; ring-coupling Conforms to PROFINET v2.3 Type S-2 Systems Redundancy (CPU Redundancy)
Spanning Tree Protocol	IEEE 802.1D STP, IEEE 802.1w RSTP, IEEE 802.1s MSTP
Port Trunk with LACP	Static trunk or Dynamic via LACP (Link Aggregation Control Protocol)
Bridge, VLANs & Protocols	
Flow control	IEEE 802.3x (Full Duplex) and Back-Pressure (Half Duplex)
Max VLANs	4K
VLAN types	<ul style="list-style-type: none"> Port-based VLANs IEEE 802.1Q tag-based VLANs
Bridge, VLANs & Protocols	
Multicast protocols	<ul style="list-style-type: none"> IGMP v1, v2 & v3 with up to 512 multicast groups IGMP snooping and querying Immediate leave and leave proxy Throttling and filtering
GVRP (GARP Multicast Registration)	Yes
LLDP	IEEE 802.1ab Link Layer Discovery Protocol (LLDP)
PROFINET	PROFINET standard v2.3, GSDML v2.3
Traffic management & QoS	
QoS	IEEE 802.1p QoS

Number of queues per port	8
Scheduling schemes	SPQ, WRR
Traffic Shaper	Port-based shaping
Security	
Port security	<ul style="list-style-type: none"> IP and MAC-based access control IEEE802.1X authentication Network Access Control
Storm control	Multicast/Broadcast/Flooding Storm Control
Management	
User management interfaces	<ul style="list-style-type: none"> Cisco-line CLI (command line interface) Web-based Management SNMP v1, v2c, v3 Telnet (5 sessions)
PROFINET	PROFINET GSD file, PROFINET I/O parameters, I/O cyclic data
Management Security	<ul style="list-style-type: none"> HTTPs, SSH Radius Client for Management
Upgrade & Restore	<ul style="list-style-type: none"> TFTP/FTP for Configuration Import/Export TFTP/FTP for Firmware Upgrade
Diagnostic	<ul style="list-style-type: none"> Syslog Ethernet Copper connection diagnostic tool SFP with DDM (Digital Diagnostic Monitoring)
MIBs	<ul style="list-style-type: none"> RFC-1757 RMON 1,2,3,9; RFC-2674 Q-Bridge MIB RFC-1213 MIB-II; RFC-1493 Bridge MIB; RFC-2233 IF MIB
DHCP	Client
SNTP	Yes
System status	Device info/status; Ethernet port status
Power	
Power input	Redundant Input Terminals
Input voltage range	12-58VDC
Reverse power protection	Yes
Transient protection	>15,000 watts peak 14W indicators
Indicators	
Power status indication	Indication of power input status
Ethernet port indication	Link & Speed
Environmental & Compliances	
Operating temperature range	<ul style="list-style-type: none"> -40°C to +75°C (-40°F to +167°F) cold startup at -40°C
Storage temperature range	-40°C to +85°C
Humidity (non-condensing)	5 to 95% RH
Vibration, shock & freefall	IEC68-2-6, -27, -32
Regulatory	UL Listed, CE Mark, FCC, IC, UKCA, CMIM
Electrical safety	UL/CSA C22, EN61010-1, CE
EMC	FCC Part 15, CISPR 22 (EN55022) Class A IEC61000-4-2, -3, -4, -5, -6
MTBF	>25 years
Mechanical	
Ingress protection	IP30
Installation options	DIN-Rail or wall mounting

Switch Current Draw

The maximum current draw at 24VDC (nominal) for each of the devices is shown below:

Device	Max Current @ 24VDC (nominal)	Nominal Current @ 24VDC - Condition 1	Nominal Current @ 24VDC - Condition 2
IC086GLM064	580mA	307mA	315mA
IC086GLM082	521mA	296mA	298mA
IC086GLM104	709mA	394mA	405mA

Note: Each DC power input should be connected to a suitably-fused power supply.

Condition 1: 24VDC power input, 25 degrees C, 1m RJ45 cable for copper port, 10Km SFP module for fiber port. Traffic loading is 50% for each port (500Mbps, 64 bytes frames).

Condition 2: 24VDC power input, 25 degrees C, 1m RJ45 cable for copper port, 10Km SFP module for fiber port. Traffic loading 100% for each port (1Gbps, 64 bytes frames).

System Architecture Example

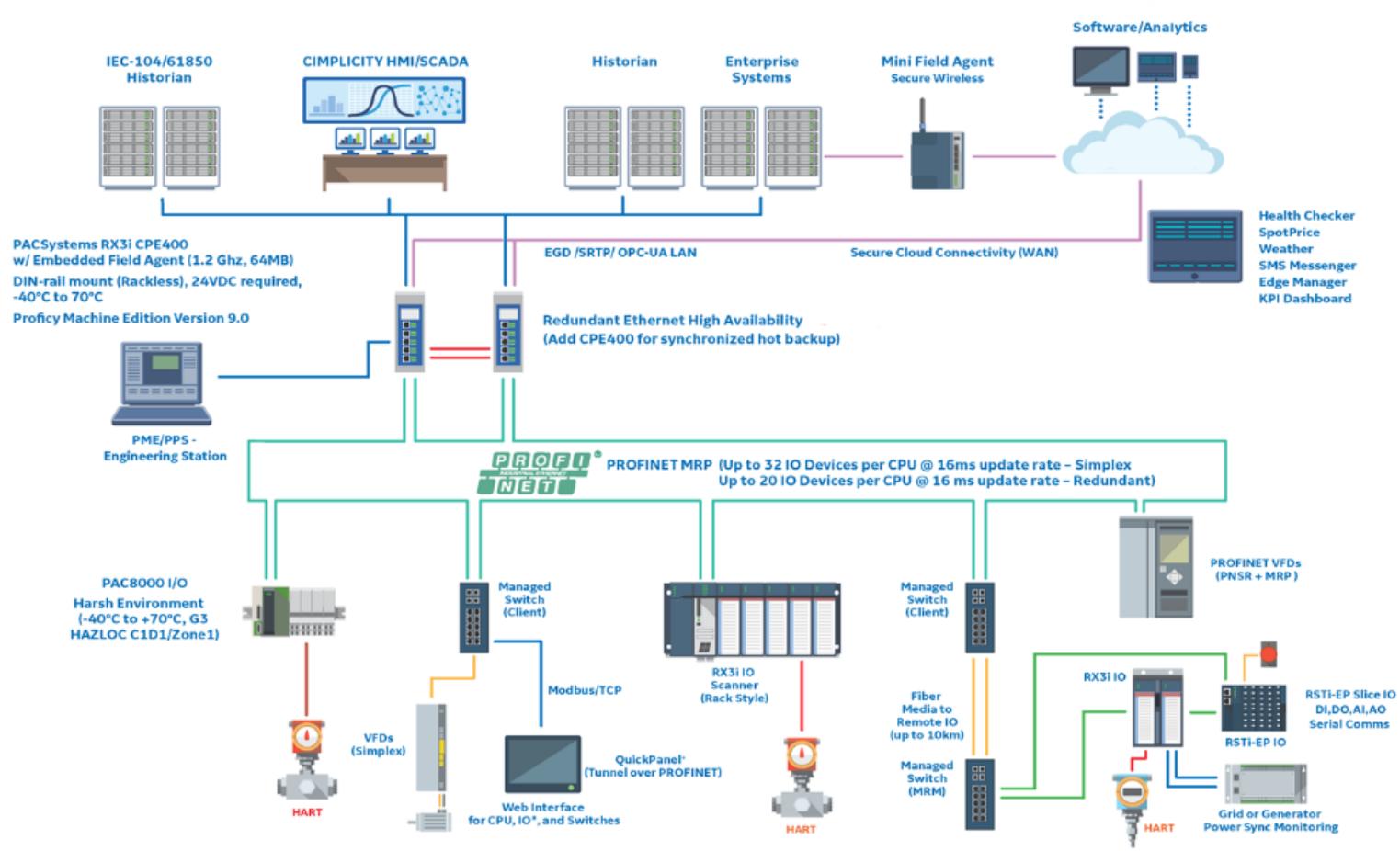


Figure 3.3 System Architecture – Water and Wastewater Small to Mid Size

Updates for this Revision

Upgrade Strategy

The software for the GLM switches is field upgradable for select models: GLM switches with FW 00.00.04, 00.00.05, v00.00.06, v00.00.07. These four models are eligible to receive the v00.00.08 upgrade kit, which can be obtained from Emerson's support site.

Previous versions of the GLM switches with firmware versions: FW v00.00.01 to v00.00.03 are not field upgradable and must be returned under RMA to Emerson. To return the GLM switches, please contact Customer Care and request an RMA at the Customer Center using the links provided at the end of this document. Please include the Catalog number, model number, and serial numbers with the request.

Upgrade Kits

Firmware upgrade kit v00.00.08 (Part Numbers: GLM064_v00.00.08 for IC086GLM064, GLM082_v00.00.08 for IC086GLM082 and GLM104_v00.00.08 for IC086GLM104) are at the firmware upgrade kit web page:

https://emerson-mas.my.site.com/communities/en_US/Download/PACSystems-Industrial-PROFINET-Managed-Ethernet-Switch-IC086GLMxxx-Firmware-Upgrade-Kits

Device	Upgrade Kit Part Number
IC086GLM064-ACAD	GLM064_v00.00.08
IC086GLM082-ACAD	GLM082_v00.00.08
IC086GLM104-ACAD	GLM104_v00.00.08

Compliance Updates

The product's labels have been updated to show compliance with new certifications. For updated certifications, please refer to

https://emerson-mas.force.com/communities/en_US/Article/Certifications-and-Agency-Approvals-Landing-Page.

Release History

Catalog Number	Firmware Version	Date	Comments
IC086GLM064-ACAD IC086GLM082-ACAD IC086GLM104-ACAD	V00.00.08	Dec-2023	Updated to address the web-server connectivity issues.
IC086GLM064-ACAC IC086GLM082-ACAC IC086GLM104-ACAC	V00.00.07	Jan-2023	The product's labels have been updated to show compliance with new certifications. For updated certifications, please refer to https://emerson-mas.force.com/communities/en_US/Article/Certifications-and-Agency-Approvals-Landing-Page .
IC086GLM064-ABAC IC086GLM082-ABAC IC086GLM104-ABAC	V00.00.07	July-2022	Updated browser compatibilities.
IC086GLM064-ABAC IC086GLM082-ABAC IC086GLM104-ABAC	V00.00.07	Jan-2020	Following Emerson's acquisition of this product, changes have been made to apply appropriate branding and registration of the product with required certification agencies. No changes to the material, process, form, fit, or functionality. Issue Fixes: Fixed RSTI-EP I/O node loss due to CRC errors
IC086GLM064-AAAB IC086GLM082-AAAB IC086GLM104-AAAB	V00.00.06	Aug-2019	This is the initial release of the Industrial PROFINET Managed Ethernet switches in the Americas. However, FW v00.00.06 replaces switches with FW v00.00.05 which was available to select customers

Functional Compatibility

Subject	Description
PLC CPU Firmware Version Requirements	None
Programmer Version Requirements	PME 9.50 SIM 14 or later (GSDML file is included in PME install)
GSDML Version Requirements	GSDML-V2.3-EMR-GLM064-20200124.xml GSDML-V2.3-EMR-GLM082-20200124.xml GSDML-V2.3-EMR-GLM104-20200124.xml
RX3i PROFINET Controller Requirements	None
PLC CPU Firmware Version Requirements	CPE400/CPL410 FW Revision >9.80 for PNSR System with the switches when CPE400/CPL410 PROFINET used in MRC
PROFINET IO requirement	GLM Support a minimum update rate of >16ms, keeping the IO update rate below this is not recommended.
Browser Compatibility	Firefox: 31.0 (or later) Internet Explorer: 8.0.7601.17514 (or later) Opera: 23.0.1522.75 (or later) Safari: 7.0.5 (or later) Google Chrome:103.0.5060.114 (or later) Microsoft Edge:102.0.1245.44 (or later)

Problems Resolved by New Firmware – ACAD (v00.00.08)

Subject	Description
Web server connectivity issues	Firmware updated to fix web server connectivity issues

New Features and Enhancements in this Release – ACAD (v00.00.08)

N/A

Restrictions and Open Issues – Related to ACAD (v00.00.08)

Subject	ID code	Description
Webpage opening with NOT SECURE in https mode	DE10768	While webpage is opened in HTTPS Mode, IC086GLMXXX Switches shows that the website is not secure.
Webpage repeatedly requests login information.	DE10767	While opening the webpage, the IC086GLM064, IC086GLM082 and IC086GLM104 repeatedly requests the username password .
CPE400 & CPL410 PNC loss of packets thru slave	DE5588	CPE400 & CPL410 primary and secondary PNCs do not pass packets through the slave switch. The CPUs experience PNSR packet loss and are not able to work when configured as MRC with the GLM switch acting as MRM in a PROFINET ring. CPE400/CPL410 must be upgraded to FW >9.80.

Installation in Hazardous Locations

The following information is for products bearing the UL marking for Hazardous Areas:

CLASS 1 DIVISION 2 GROUPS ABCD

- This equipment is an open-type device and is meant to be installed in an enclosure suitable for the environment that is only accessible with the use of a tool.
- Suitable for use in Class I, Division 2, Groups A, B, C, and D Hazardous Locations, or nonhazardous locations only.

WARNING

EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

⚠ WARNING

WHEN IN HAZARDOUS LOCATIONS, TURN OFF POWER BEFORE REPLACING OR WIRING MODULES.

⚠ WARNING

EXPLOSIVE HAZARD – DO NOT CONNECT OR DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS.

Product Documentation

In addition to these manuals, datasheets and product update documents describe individual modules and product revisions. The most recent PACSystems documentation is available on the Emerson support site. Please see the links provided at the end of this document.

PACSystems Manuals

<i>PACSystems RX3i and RSTi-EP CPU Reference Manual</i>	GFK-2222
<i>PACSystems RX3i and RSTi-EP CPU Programmer's Reference Manual</i>	GFK-2950
<i>PACSystems RX3i and RSTi-EP TCP/IP Ethernet Communications User Manual</i>	GFK-2224
<i>PACSystems TCP/IP Ethernet Communications Station Manager User Manual</i>	GFK-2225
<i>PACSystems Memory Xchange Modules User's Manual</i>	GFK-2300
<i>PACSystems Hot Standby CPU Redundancy User Manual</i>	GFK-2308
<i>Proficy Machine Edition Logic Developer Getting Started</i>	GFK-1918
<i>Proficy Process Systems Getting Started Guide</i>	GFK-2487
<i>PACSystems RXi, RX3i, RX7i, and RSTi-EP Controller Secure Deployment Guide</i>	GFK-2830
<i>PACSystems RX3i Systems Manual</i>	GFK-2314
<i>PACSystems RX3i Ethernet Network Interface Unit User's Manual</i>	GFK-2439
<i>PACSystems RX3i PROFINET Scanner Manual</i>	GFK-2737
<i>PACSystems RX3i & RSTi-EP PROFINET I/O Controller Manual</i>	GFK-2571
<i>PACSystems Industrial PROFINET Managed Ethernet Switches User's Manual</i>	GFK-3030
<i>PACSystems Industrial PROFINET Managed Ethernet Switches CLI Command Reference Guide</i>	GFK-3061
<i>PACSystems Industrial PROFINET Managed Ethernet Switches Web Configuration Tool Guide</i>	GFK-3062
<i>PACSystems Industrial PROFINET Managed Ethernet Switches Secure Deployment Guide (SDG)</i>	GFK-3063
<i>PACSystems Industrial PROFINET Managed Ethernet Switches MRP Application Guide</i>	GFK-2070
<i>PACSystems Industrial PROFINET Managed Ethernet Switches Installation & Maintenance Requirements</i>	GFK-3098

General Contact Information

Home link: <http://www.emerson.com/industrial-automation-controls>

Knowledge Base: <https://www.emerson.com/iac-support>

Technical Support

Americas

Phone: 1-888-565-4155
1-434-214-8532 (If toll-free option is unavailable)

Customer Care (Quotes/Orders>Returns): customercare.mas@emerson.com

Technical Support: support.mas@emerson.com

Europe

Phone: +800-4444-8001
+420-225-379-328 (If toll-free option is unavailable)
+39-0362-228-5555 (from Italy - if toll-free 800 option is unavailable or dialing from a mobile telephone)

Customer Care (Quotes/Orders>Returns): customercare.emea.mas@emerson.com

Technical Support: support.mas.emea@emerson.com

Asia

Phone: +86-400-842-8599
+65-3157-9591 (All other Countries)

Customer Care (Quotes/Orders>Returns): customercare.cn.mas@emerson.com

Technical Support: support.mas.apac@emerson.com

Any escalation request should be sent to: mas.sfdcescalation@emerson.com

Note: If the product is purchased through an Authorized Channel Partner, please contact the seller directly for any support.

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