

# PACSystems™ Industrial PROFINET Managed Ethernet Switches

Important Product Information (IPI)

IC086GLM064-ABAC

IC086GLM082-ABAC

IC086GLM104-ABAC



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.

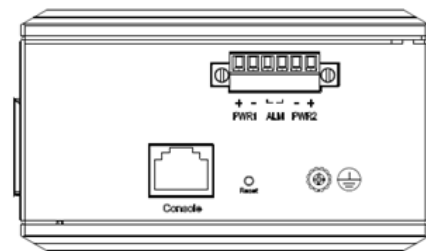
## Applications Include

- 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
<b>Note:</b> 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"> <li>SFP (pluggable) ports 100/1000BaseSFP slot</li> <li>Support 100/1000BaseT SFP transceiver</li> <li>IC086SFPnaa SFP must be used for all Hazardous Location installations</li> </ul>
Fiber port connector	LC typically for fiber (depends on module)
Redundancy	
MRP	PROFINET Media Redundancy
PROFINET SYSTEM Redundancy	<ul style="list-style-type: none"> <li>PROFINET SYSTEM Redundancy</li> <li>Single &amp; multiple rings; dual-homing; ring-coupling</li> <li>Conforms to PROFINET v2.3 Type S-2 Systems Redundancy (CPU Redundancy)</li> </ul>
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"> <li>Port-based VLANs</li> <li>IEEE 802.1Q tag-based VLANs</li> </ul>
Multicast protocols	<ul style="list-style-type: none"> <li>IGMP v1, v2 &amp; v3 with up to 512 multicast groups</li> </ul>

	<ul style="list-style-type: none"> <li>• IGMP snooping and querying</li> <li>• Immediate leave and leave proxy</li> <li>• Throttling and filtering</li> </ul>
GVRP (GARP Multicast Registration)	Yes
LLDP	IEEE 802.1ab Link Layer Discovery Protocol (LLDP)
PROFINET	PROFINET standard v2.3, GSDML v2.3
<b>Traffic management &amp; QoS</b>	
QoS	IEEE 802.1p QoS
Number of queues per port	8
Scheduling schemes	SPQ, WRR
Traffic Shaper	Port-based shaping

<b>Security</b>	
Port security	<ul style="list-style-type: none"> <li>• IP and MAC-based access control</li> <li>• IEEE802.1X authentication Network Access Control</li> </ul>
Storm control	Multicast/Broadcast/Flooding Storm Control
<b>Management</b>	
User management interfaces	<ul style="list-style-type: none"> <li>• Cisco-line CLI (command line interface)</li> <li>• Web-based Management</li> <li>• SNMP v1, v2c, v3</li> <li>• Telnet (5 sessions)</li> </ul>
PROFINET	PROFINET GSD file, PROFINET I/O parameters, I/O cyclic data
Management Security	<ul style="list-style-type: none"> <li>• HTTPs, SSH</li> <li>• Radius Client for Management</li> </ul>
Upgrade & Restore	<ul style="list-style-type: none"> <li>• TFTP/FTP for Configuration Import/Export</li> <li>• TFTP/FTP for Firmware Upgrade</li> </ul>
Diagnostic	<ul style="list-style-type: none"> <li>• Syslog</li> <li>• Ethernet Copper connection diagnostic tool</li> <li>• SFP with DDM (Digital Diagnostic Monitoring)</li> </ul>
MIBs	<ul style="list-style-type: none"> <li>• RFC-1757 RMON 1,2,3,9; RFC-2674 Q-Bridge MIB</li> <li>• RFC-1213 MIB-II; RFC-1493 Bridge MIB; RFC-2233 IF MIB</li> </ul>
DHCP	Client
SNTP	Yes
System status	Device info/status; Ethernet port status
<b>Power</b>	
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"> <li>-40°C to +75°C (-40°F to +167°F)</li> <li>cold startup at -40°C</li> </ul>
Storage temperature range	-40°C to +85°C
Humidity (non-condensing)	5 to 95% RH
Vibration, shock & freefall	IEC68-2-6, -27, -32
Certification compliance	CE/FCC/UL
Electrical safety	UL/CSA C22, EN61010-1, CE
EMC	<ul style="list-style-type: none"> <li>FCC Part 15, CISPR 22 (EN55022)</li> <li>Class A IEC61000-4-2, -3, -4, -5, -6</li> </ul>
RoHS and WEEE	RoHS (Pb free) and WEEE compliant
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 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

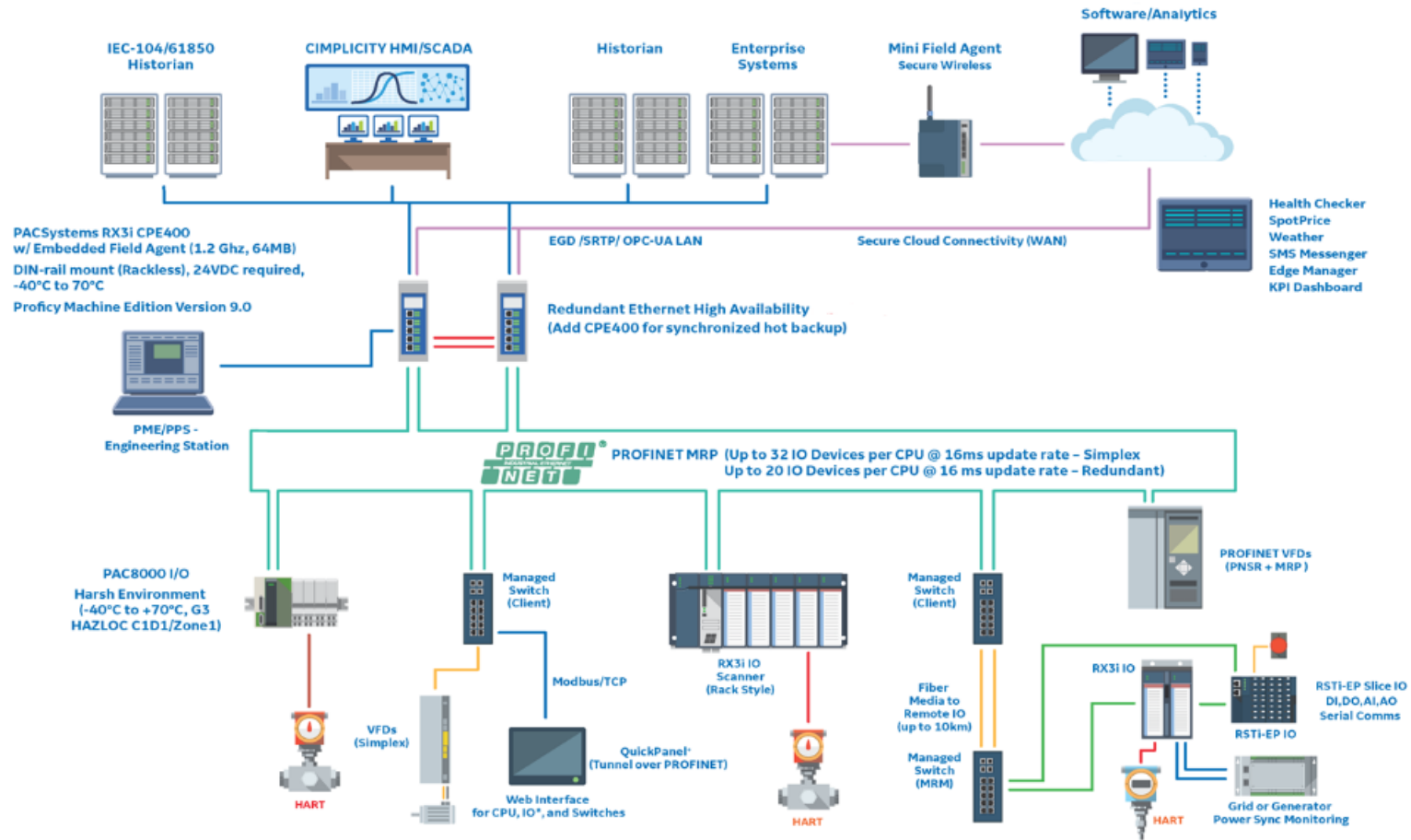


Figure 3.3 System Architecture – Water and Wastewater Small to Mid Size

## Updates for this Revision

<b>Upgrade Strategy</b>	<p>Software is field upgradable (ONLY for GLM switches with FW 00.00.04, 00.00.05, and v00.00.06) with a firmware v00.00.07 upgrade kit obtained from Emerson's support site. There are 3 individual kits; one for each of the switches.</p> <p>There are previous versions of the FW in the field on a limited number of switches. GLM switches with FW v00.00.01 to v00.00.03 are not field upgradable and must be returned under RMA to Emerson. Please contact Customer Care and request an RMA at the Customer Center using the links provided at the end of this document.</p> <p>Must include the Catalog, model, and serial numbers with the request.</p>
<b>Upgrade Kits</b>	<p>v00.00.07 firmware upgrade kit (Part Numbers: GLM064-ABAC_v00.00.07B04 for IC086GLM064, GLM082-ABAC_v00.00.07B04 for IC086GLM082 and GLM104-ABAC_v00.00.07B04 for IC086GLM104) are at the product landing page.</p> <p>The product may be upgraded in the field using the Web firmware upgrade kit, which can be downloaded from <a href="https://www.emerson.com/Industrial-Automation-Controls/support">https://www.emerson.com/Industrial-Automation-Controls/support</a>.</p>

Device	Upgrade Kit Part Number
IC086GLM064-ABAC	GLM064-ABAC_v00.00.07B04
IC086GLM082-ABAC	GLM082-ABAC_v00.00.07B04
IC086GLM104-ABAC	GLM104-ABAC_v00.00.07B04



## Release History

Catalog Number	Firmware Version	Date	Comments
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-GE-GLM064-20181123.xml GSDML-V2.3-GE-GLM082-20181123.xml GSDML-V2.3-GE-GLM104-20181123.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	<ul style="list-style-type: none"> <li>• Firefox: 31.0 (or later)</li> <li>• Internet Explorer: 8.0.7601.17514 (or later)</li> <li>• Opera: 23.0.1522.75 (or later)</li> <li>• Safari: 7.0.5 (or later)</li> <li>• Google Chrome: 103.0.5060.114 (or later)</li> <li>• Microsoft Edge: 102.0.1245.44 (or later)</li> </ul>

## Problems Resolved by New Firmware – AB (v00.00.07)

Subject	Description
Browser compatibility	Firmware updated to include TLS1.2 support.

## New Features and Enhancements in this Release – AB (v00.00.07)

Subject	Description
Updates to the browser compatibility	<p>Updates to browsers:</p> <ol style="list-style-type: none"> <li>1) Firefox: 31.0 (or later)</li> <li>2) Internet Explorer: 8.0.7601.17514 (or later)</li> <li>3) Opera: 23.0.1522.75 (or later)</li> <li>4) Safari: 7.0.5 (or later)</li> <li>5) Google Chrome:103.0.5060.114 (or later)</li> <li>6) Microsoft Edge:102.0.1245.44 (or later)</li> </ol>

## Restrictions and Open Issues – Related to AB (v00.00.07)

Subject	ID code	Description
CPE400 & CPL410 PNC loss of packets thru slave	<b>DE5588</b>	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.

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#### **WARNING**

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

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#### **WARNING**

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

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## 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 &amp; 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 &amp; Maintenance Requirements</i>	GFK-3098

# General Contact Information

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

Knowledge Base: <https://www.emerson.com/industrial-automation-controls/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](mailto:customercare.mas@emerson.com)  
Technical Support: [support.mas@emerson.com](mailto:support.mas@emerson.com)

### Europe

Phone: +800-4444-8001  
+420-225-379-328 (If toll-free option is unavailable)

Customer Care (Quotes/Orders>Returns): [customercare.emea.mas@emerson.com](mailto:customercare.emea.mas@emerson.com)  
Technical Support: [support.mas.emea@emerson.com](mailto:support.mas.emea@emerson.com)

### Asia

Phone: +86-400-842-8599  
+65-6955-9413 (All other Countries)

Customer Care (Quotes/Orders>Returns): [customercare.cn.mas@emerson.com](mailto:customercare.cn.mas@emerson.com)  
Technical Support: [support.mas.apac@emerson.com](mailto:support.mas.apac@emerson.com)

Any escalation request should be sent to: [mas.sfdcescalation@emerson.com](mailto: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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