

# PACSystems\* High-Performance Industrial Ethernet Switches

Industrial Ethernet switches provide fast, seamless, and resilient connectivity

At Emerson, we've thought differently about what you need at the point of control and have engineered powerful, rugged, and compact devices that stand alone or play together. Ethernet provides fast, seamless, and resilient machine-to-machine connectivity to provide you with critical information; your people can now focus on using that information.

Ethernet switches designed for plant process areas must work in harsh environments subject to temperature extremes, humidity, and vibration.

By replacing proprietary networks with an Ethernet LAN and Emerson's PACSystems Ethernet switches, industrial companies can improve network reliability and simplify deployment.

## High performance & Connectivity

Our industrial-grade Managed Ethernet Switches, with redundant ring technology, reliably support the largest amounts of real-time data in the market. Managed switches protect your mission-critical applications from network interruptions or temporary malfunctions with Fast Network Recovery technology. PACSystems Ethernet switches offer one of the fastest recovery times in the industry.

## Rugged & Reliable

PACSystems Ethernet switches are uniquely designed with redundant power inputs, the broadest operating temperature



range available, and Fast Network Recovery technology to enable outstanding reliability and stability in harsh environments.

This superior, rugged design makes the PACSystems Ethernet Switch ideal for Pipeline, Transportation, Well2Tank, Water/Waste Water, and other demanding applications.

## Easy to Troubleshoot

The PACSystems Ethernet Switch includes a unique and comprehensive Network Management Tool, combined with three functions of Commander, Host View and Topology View. With the network management software, the network administrator can manage centralized configuration, visualize management, and complete network monitoring with an early warning system, helping to maintain a stable and reliable industrial network.

Unmanaged & Simple Managed Switch Specification



Part Number	IC086SLN050	IC086SLN080	IC086SLN042	IC086SLM042MM	IC086SLM042SS
Managed	No	No	No	Yes	Yes
10/100BaseT(X) Ports	5	8	4	4	4
100Base-FX Ports	-	-	2	2	2
Fiber Mode	-	-	Multi-Mode	Multi-Mode	Multi-Mode
Ethernet Standard	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3x for Flow control		IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX and 100Base-FX IEEE 802.3x for Flow control	IEEE 802.3: 10Base-T IEEE 802.3u: 100Base-TX and 100Base-FX IEEE 802.3x for Flow control IEEE 802.1D: STP IEEE 802.1w: RSTP IEEE 802.1AB: LLDP)	
MAC Table	2048	2048	2048	2048	2048
Processing	Store-and-Forward	Store-and-Forward	Store-and-Forward	Store-and-Forward	Store-and-Forward
Redundant Input Power	Yes	Yes	Yes	Yes	Yes
Power Consumption (Typ.)	3 Watts	4 Watts	7 Watts	7 Watts	7 Watts
Overload Current Protection	Yes	Yes	Yes	Yes	Yes
Reverse Polarity Protection	Yes	Yes	Yes	Yes	Yes
Enclosure	IP30	IP30	IP30	IP30	IP30
Dimensions (W x D x H in mm)	26.1 x 70 x 95	26.1 x 94.9 x 144.3	26.1 x 94.9 x 144.3	52 x 106.1 x 144.3	52 x 106.1 x 144.3
Weight	205g	391g	382g	670g	670g
Storage Temperature	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C
Operating Temperature	-40°C to +70°C	-40°C to +70°C	-40°C to +70°C	-40°C to +70°C	-40°C to +70°C
Operating Humidity	5% to 95% non-condensing	5% to 95% non-condensing	5% to 95% non-condensing	5% to 95% non-condensing	5% to 95% non-condensing
EMI	FCC Part 15, CISPR (EN55022) class A				
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11				
Shock	IEC60060-2-27				
Free Fall	IEC60068-2-32				
Vibration	IEC60068-2-6				
Safety	EN60950-1				

Full Managed Switch Specification



Part Number	IC086SLM080	IC086SLM082	IC086SLM162
10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX	8	8	16
100/1000Base-X SFP Port	-	2	-
Gigabit Combo Port with 10/100/1000Base-T(X) and 100/1000Base-X SFP ports	-	-	2
Ethernet Standard	IEEE 802.3: 10Base-T IEEE 802.3u: 100Base-TX and 100Base-FX IEEE 802.3ad: LACP IEEE 802.3x: flow control IEEE 802.1D: STP IEEE 802.1p: COS IEEE 802.1Q: VLAN tagging IEEE 802.1w: RSTP IEEE 802.1s: MSTP IEEE 802.1x: Authentication	IEEE 802.3: 10Base-T IEEE 802.3u: 100Base-TX and 100Base-FX IEEE 802.3z 1000Base-X IEEE 802.3x: flow control IEEE 802.3ad: LACP IEEE 802.1D: STP IEEE 802.1p: COS IEEE 802.1Q: VLAN tagging IEEE 802.1W: RSTP IEEE 802.1s: MSTP IEEE 802.1X: Authentication IEEE 802.1AB: LLDP	IEEE 802.3: 10Base-T IEEE 802.3u: 100Base-TX and 100Base-FX IEEE 802.3z 1000Base-X IEEE 802.3x: flow control IEEE 802.3ad: LACP IEEE 802.1D: STP IEEE 802.1p: COS IEEE 802.1Q: VLAN tagging IEEE 802.1W: RSTP IEEE 802.1s: MSTP IEEE 802.1X: Authentication IEEE 802.1AB: LLDP
MAC Table	8192	8192	8192
Processing	Store-and-Forward	Store-and-Forward	Store-and-Forward
Security Feature	Enable/Disable ports, MAC based ports security, Port-based network access control(802.1x), support Q-in-Q VLAN for performance & security to expand the VLAN space. VLAN top segregate and secure network traffic, RADIUS centralized password management, SNMP v 1/v2c/v3 encrypted authentication and access security	Enable/Disable ports, MAC based ports security, Port-based network access control(802.1x), support Q-in-Q VLAN for performance & security to expand the VLAN space. VLAN top segregate and secure network traffic, RADIUS centralized password management, SNMP v 1/v2c/v3 encrypted authentication and access security	Enable/Disable ports, MAC based ports security, Port-based network access control(802.1x), support Q-in-Q VLAN for performance & security to expand the VLAN space. VLAN to segregate and secure network traffic, RADIUS centralized password management, SNMP v 1/v2c/v3 encrypted authentication and access security

Full Managed Switch Specification (Continued)



Part Number	IC086SLM080	IC086SLM082	IC086SLM162
Software Feature	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring with recovery time less than 10ms over 250 units. TOS/ Diffserv supported. Quality of Service (802.1p) for real-time traffic. VLAN (802.1Q) with VLAN tagging and GVRP supported. IGMP Snooping for multicast filtering. Port configuration, status, statistics, monitoring, security. SNTP for synchronizing of clocks over network. Support 1588 PTP Client (Precision Time Protocol) clock synchronization. DHCP Server / Client support. Port Trunk support. MVR (Multicast VLAN Registration) support.	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring with recovery time less than 10ms over 250 units. TOS/ Diffserv supported. Quality of Service (802.1p) for real-time traffic. VLAN (802.1Q) with VLAN tagging and GVRP supported. IGMP v2/v3 (IGMP snooping support) for multicast filtering. Port configuration, status, statistics, monitoring, security. SNTP for synchronizing of clocks over network. Support 1588 PTP Client (Precision Time Protocol) clock synchronization. DHCP Server / Client support. Port Trunk support. MVR (Multicast VLAN Registration) support.	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring with recovery time less than 10ms over 250 units. TOS/ Diffserv supported. Quality of Service (802.1p) for real-time traffic. VLAN (802.1Q) with VLAN tagging and GVRP supported. IGMP v2/v3 (IGMP snooping support) for multicast filtering. Port configuration, status, statistics, monitoring, security. SNTP for synchronizing of clocks over network. Support 1588 PTP Client (Precision Time Protocol) clock synchronization. DHCP Server / Client support. Port Trunk support. MVR (Multicast VLAN Registration) support.
Network Redundancy	STP, RSTP, MSTP	STP, RSTP, MSTP	STP, RSTP, MSTP
QoS	Yes	Yes	Yes
Warning/ Monitoring	Relay output for fault event alarming. Syslog server / client to record and view events. Include SMTP for event warning notification via email. Event selection support.	Relay output for fault event alarming. Syslog server / client to record and view events. Include SMTP for event warning notification via email. Event selection support.	Relay output for fault event alarming. Syslog server / client to record and view events. Include SMTP for event warning notification via email. Event selection support.
Redundant Input Power	Triple DC inputs. 12~48VDC on 7-pin terminal block, 12~45VDC on power jack	Triple DC inputs. 12~48VDC on 7-pin terminal block, 12~45VDC on power jack	Dual DC inputs. 12~48 VDC on 6-pin terminal block
Power Consumption (Typ.)	5 Watts	9 Watts	12 Watts
Overload Current Protection	Yes	Yes	Yes
Reverse Polarity Protection	Yes	Yes	Yes
IP degree	IP30	IP30	IP30
Dimension (W x D x H in mm)	52 x 106.1 x 144.3	52 x 106.1 x 144.3	96.4 x 108.5 x 154
Weight	710g	730g	1220g
Storage Temp	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C
Operation Temp	-40°C to +70°C	-40°C to +70°C	-40°C to +70°C

Full Managed Switch Specification (Continued)



Part Number	IC086SLM080	IC086SLM082	IC086SLM162
Operation Humidity	5% to 95% non-condensing	5% to 95% non-condensing	5% to 95% non-condensing
EMI	FCC Part 15, CISPR (EN55022) class A	FCC Part 15, CISPR (EN55022) class A	FCC Part 15, CISPR (EN55022) class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27	IEC60068-2-27	IEC60068-2-27
free fall	IEC60068-2-32	IEC60068-2-32	IEC60068-2-32
Vibration	IEC60068-2-6	IEC60068-2-6	IEC60068-2-6
Safety	EN60950-1	EN60950-1	EN60950-1

Combo Gigabit Switch & Layer 3 Switch Specification



Part Number	IC086SLM084 (COMBO)	IC086SLM244 (Layer 3)
10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX	-	24
10000Base-X SFP Port	-	4
Gigabit Combo Port with 10/100/1000Base-T(X) and 100/1000Base-X SFP ports	8	-
1000Base-X SFP Port	4	-
Ethernet Standards	IEEE 802.3: 10Base-T IEEE 802.3u: 100Base-TX and 100Base-FX IEEE 802.3z: 1000Base-X IEEE 802.3ab: 1000Base-T IEEE 802.3x : flow control IEEE 802.3ad: LACP IEEE 802.1D: STP IEEE 802.1p: COS IEEE 802.1Q: VLAN tagging IEEE 802.1W: RSTP IEEE 802.1s: MSTP IEEE 802.1x : Authentication IEEE 802.1AB: LLDP	IEEE 802.3 : 10Base-T IEEE 802.3u :100Base-TX and 100Base-FX IEEE 802.3ab : 1000Base-T IEEE 802.z :1000Base-X IEEE 802.3ae : 10Gigabit Ethernet IEEE 802.3x :Flow control IEEE 802.3ad : LACP IEEE 802.1p :COS IEEE 802.1Q for VLAN Tagging IEEE 802.1w :RSTP IEEE 802.1s : MSTP IEEE 802.1x : Authentication IEEE 802.1AB: LLDP
MAC Table	8192	8192
Processing	Store-and-Forward	Store-and-Forward
Jumbo Frame	9.6K	9.6K
Security Feature	Device blinding security feature. Enable/Disable ports. MAC basedports security. Port-based network access control(802.1x). VLAN to segregate and secure network traffic. RADIUS centralized password management. SNMP v3 encrypted authentication and access security.	Device Binding security feature. Enable/disable ports, MAC based port security. Port based network access control (802.1x). Single 802.1x and Multiple 802.1x MAC-based authentication. QoS assignment. Guest VLAN. MAC address limit TACACS+. VLAN (802.1Q ) to segregate and secure network traffic. Radius centralized password management. SNMPv3 encrypted authentication and access security. Web and CLI authentication and authorization. Authorization (15 levels). IP source guard.

## Combo Gigabit Switch &amp; Layer 3 Switch Specification (Continued)



Part Number	IC086SLM084 (COMBO)	IC086SLM244 (Layer 3)
Software Feature	STP/RSTP/MSTP (IEEE 802.1D/w/s). Redundant Ring with recovery time less than 30ms over 250 units. TOS/Diffserv supported. Quality of Service (802.1p) for real-time traffic. VLAN (802.1Q) with VLAN tagging and GVRP supported. IGMP Snooping. IP-based bandwidth management. Application-based QoS management. DOS/DDOS auto prevention. Port configuration, status, statistics, monitoring, security. DHCP Client/Server.	Hardware routing, RIP and static routing. IEEE 1588v2 clock synchronization. IEEE 802.1D Bridge, auto MAC address learning/aging and MAC address (static). Multiple Registration Protocol (MRP). Multiple VLAN Registration Protocol (MVRP). MSTP (RSTP/STP compatible). Redundant Ring with recovery time less than 30ms over 250 units. TOS/Diffserv supported. Quality of Service (802.1p) for real-time traffic. VLAN (802.1Q) with VLAN tagging and GVRP supported. Voice VLAN. IGMP v2/v3 Snooping. IP-based bandwidth management. Application-based QoS management. DOS/DDOS auto prevention. Port configuration, status, statistics, monitoring, security. DHCP Server/Client/snooping. DHCP Relay. Modbus TCP. DNS client proxy. ARP inspection. SMTP Client.
Network Redundancy	STP, RSTP, MSTP	MSTP (RSTP/STP compatible)
QoS	Yes	Yes
Warning/ Monitoring	Relay output for fault event alarming. Syslog server / client to record and view events. Include SMTP for event warning notification via email. Event selection support.	Relay output for fault event alarming. Syslog server / client to record and view events. Include SMTP for event warning notification via email. Event selection support.
Redundant Input Power	Dual DC inputs. 12 to 48 VDC on 6-pin terminal block	Dual 110/220VDC/AC (88 to 264VAC / 100 to 370VDC) power inputs at terminal block
Power Consumption (Typ.)	22 W	30 W
Overload Current Protection	Yes	Yes
Reverse Polarity Protection	Yes	Yes
IP degree	IP30	IP30
Dimension (W x D x H mm)	96.4 x 108.5 x 154	443.7 x 325 x 44
Weight (g)	1420g	4250g
Storage Temp	-40°C to +85°C	-40°C to +85°C
Operation Temp	-40°C to +70°C	-40°C to +85°C
Operation Humidity	5% to 95% non-condensing	5% to 95% non-condensing
Power Automation	No	IEC 61850-3, IEEE 1613
EMI	FCC Part 15, CISPR (EN55022) class A	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)

Combo Gigabit Switch & Layer 3 Switch Specification (Continued)



Part Number	IC086SLM084 (COMBO)	IC086SLM244 (Layer 3)
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27	
Free Fall	IEC60068-2-32	
Safety	EN60950-1	

Accessories

Part Number	IC086SFP1MM	IC086SFP1SS	IC086SFP2MM	IC086SFP2SS
Speed	100Mbps	1000Mbps	1000Mbps	1000Mbps
Fiber Mode	Multi-Mode	Single-Mode	Multi-Mode	Single-Mode
Typical Distance	2 km	30 km	550 m	10 km
Operating Temperature	40°C to +85°C	40°C to +85°C	40°C to +85°C	40°C to +85°C
Wavelength	1310 nm	1310 nm	850 nm	1310 nm
Optical Output Power 9/125µm fiber (Max. TX)	-	-8 dBm	-	-3 dBm
Optical Output Power 9/125µm fiber (Min. TX)	-	-15 dBm	-	-9.5 dBm
Optical Output Power 62.5/125µm fiber (Max. TX)	-14 dBm	-	-4 dBm	-
Optical Output Power 62.5/125µm fiber (Min. TX)	-20 dBm	-	-9.5 dBm	-
Optical Output Power 50/125µm fiber (Max. TX)	-14 dBm	-	-4 dBm	-
Optical Output Power 50/125µm fiber (Min. TX)	-23.5 dBm	-	-9.5 dBm	-
Optical Input Power-minimum (Sensitivity)	-31 dBm	-34 dBm	-18 dBm	-20 dBm
Optical Input Powermaximum (Saturation)	-8 dBm	0 dBm	0 dBm	-3 dBm
Link Budget	7.5 dB	19 dB	8.5 dB	10.5 dB

**United States Office**

Emerson Automation Solutions  
Intelligent Platforms, LLC  
2500 Austin Dr  
Charlottesville, VA  
T: +49 821 50340

**Germany Office**

Emerson Automation Solutions  
ICC Intelligent Platforms  
GmbH  
Memminger Straße 14  
Augsburg, DE 86159  
T: +49 821 50340

**China Office:**

Emerson Automation Solutions Intelligent  
Platforms (Shanghai) Co., Ltd  
No.1277, Xin Jin Qiao Road, Pudong,  
Shanghai, China, 201206  
F: +86 21 28929001  
T: +86 21 28929000

**Brazil Office:**

Emerson Automation Solutions  
Rua Irmã Gabriela, 51 – Cidade Monções  
São Paulo – SP, 04571-130  
T: +55 11 3797-6342 ; +55 11 3797-6340 ; +55 (11) 96386-1647  
E: mas.latam.customercare@emerson.com

**Singapore Office**

Emerson Automation Solutions Intelligent  
Platforms Asia Pacific Pte. Ltd.  
1 Pandan Crescent,  
Singapore, 128461  
F: +65 67708056  
T: +65 97937472

**India Office**

Emerson Automation Solutions  
Intelligent Platforms Pvt. Ltd.,  
Building No.8, Ground Floor Velankani Tech Park, No.43  
Electronics City Phase I, Hosur Road  
Bangalore-560100  
T: +91-80-42515300

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