

Industrial and Industrial Hardened Managed PLUS non-PoE and PoE switch range

1. General

- 1.1.1. Industrial and Industrial Hardened PLUS Managed non-PoE and PoE switch range Hardware and Firmware shall be developed and manufactured in the UK.
- 1.1.2. All equipment and materials used shall be standard components that are regularly manufactured and used in the manufacturer's system.
- 1.1.3. All systems and components shall have been thoroughly tested and proven in actual use.
- 1.1.4. All systems and components shall be provided with a standard one-year warranty – additional options are available.
- 1.1.5. Users, Installers and Distributors of AMG products shall have access to our Website for technical assistance on a 24-hour basis. The website enable downloads of software updates, datasheets and manuals.

2. System Overview

- 2.1.1. Industrial and Industrial Hardened PLUS Managed non-PoE and PoE switch range offers connectivity via RJ45 copper ports and SFP fibre ports.
- 2.1.2. Industrial Managed PLUS non-PoE and PoE switch range can operate in temperature conditions from -10°C to +60°C.
- 2.1.3. Industrial Hardened Managed PLUS non-PoE and PoE switch range can operate in challenging network environments, with Industrial Hardened options able to operate in extreme temperature conditions from -40°C to +75°C.

3. Interfaces

3.1. Copper and Fibre connectivity

- 3.1.1. Industrial and Industrial Hardened Managed PLUS non-PoE and PoE switch range shall utilize RJ45 copper and SFP fibre ports.
 - 3.1.1.1. AMG9xM2P-4xx-1S-xxxx is equipped with 4 copper ports and 1 SFP fibre port.
 - 3.1.1.2. AMG9xM2P-4xx-2S-xxxx is equipped with 4 copper ports and 2 SFP fibre port.
 - 3.1.1.3. AMG9xM2P-8xx-2S-xxxx is equipped with 8 copper ports and 2 SFP fibre port.
 - 3.1.1.4. AMG9xM2P-12xx-3S-xxxx is equipped with 12 copper ports and 3 SFP fibre port.
 - 3.1.1.5. AMG9xM2P-16xx-4S-xxxx is equipped with 16 copper ports and 4 SFP fibre port.
- 3.1.2. Industrial and Industrial Hardened Managed PLUS non-PoE and PoE switch range shall support standard Ethernet cable as well as Multi-mode or Single-mode fibre cable with the use of SFP.

- 3.1.3. AMG9xM2P-xFx-xS-xxxx shall support 10/100BaseTx on each copper RJ45 port.
- 3.1.4. AMG9xM2P-xGx-xS-xxxx shall support 10/100/1000BaseTx on each copper RJ45 port.
- 3.1.5. Industrial and Industrial Hardened Managed PLUS non-PoE and PoE switch range shall support 100/1000BaseFx on each SFP port.
- 3.1.6. Industrial Hardened LITE Managed non-PoE and PoE switch range shall support auto negotiation of the transmission rate on Copper and SFP ports.
- 3.1.7. Industrial and Industrial Hardened Managed PLUS non-PoE and PoE switch range shall support Store and Forward architecture.

3.2. Power over Ethernet

- 3.2.1. Industrial and Industrial Hardened Managed PLUS PoE switch range shall offer the option of PoE (802.3af) or PoE+ (802.3at) or PoE 60W or PoE 90W.
 - 3.2.1.1. AMG9xM2P-xxH-xS-xxxx shall support PoE (802.3af) and PoE+ (802.3at) per each copper port.
 - 3.2.1.2. AMG9xM2P-xxU-xS-xxxx shall support PoE 60W per each copper port.
 - 3.2.1.3. AMG9xM2P-xxNxxxx-xS-xxxx shall support PoE 90W per each copper port.
- 3.2.2. Industrial and Industrial Hardened Managed PLUS PoE switch range shall offer different PoE budget depends on number of copper ports on a switch.
 - 3.2.2.1. AMG9xM2P-xxx-xS-P120 shall offer PoE budget max 120W.
 - 3.2.2.2. AMG9xM2P-xxx-xS-P240 shall offer PoE budget max 240W.
 - 3.2.2.3. AMG9xM2P-xxx-xS-P360 shall offer PoE budget max 360W.
 - 3.2.2.4. AMG9xM2P-xxx-xS-P480 shall offer PoE budget max 480W.
 - 3.2.2.5. AMG9xM2P-xxx-xS-P720 shall offer PoE budget max 720W.
 - 3.2.2.6. AMG9xM2P-xxx-xS-P960 shall offer PoE budget max 960W.
 - 3.2.2.7. AMG9xM2P-xxx-xS-P1200 shall offer PoE budget max 1200W.

3.3. Console port

- 3.3.1. Industrial and Industrial Hardened Managed PLUS PoE switch range shall offer access to management via console port.
- 3.3.2. Industrial and Industrial Hardened Managed PLUS PoE switch range shall support connection to RS-232 management console speed 115200.
- 3.3.3. Console connections are provide using supplied AMG RJ45 to DB9 Adaptor.

3.4. Indicators

- 3.4.1. Industrial and Industrial Hardened Managed PLUS non-PoE and PoE switch range shall have the following indicators.

LED's	Status	Meaning
Power	Green	Power applied (OK)
	Off	No Power
Copper Port(s) Link Act	Green on	Link (highest speed)
	Green Blink	Copper port Data activity

	Off	No Copper port Data activity
Fibre Port(s) Link Act	Green on	Link
	Green Blink	Fibre link Data activity
	Off	No Fibre link Data activity
PoE port	Amber On	PoE Device connected
	Off	No PoE Device connected

4. Advanced Management

- 4.1.1. Industrial and Industrial Hardened Managed PLUS non-PoE and PoE switch range shall support management access via web GUI or CLI (console, Telnet, SSH).
- 4.1.2. Industrial and Industrial Hardened Managed PLUS non-PoE and PoE switch range shall support Jumbo frames >9k.
- 4.1.3. Industrial and Industrial Hardened Managed PLUS non-PoE and PoE switch range shall support IEEE 802.1d STP, IEEE 802.1w RSTP and IEEE 802.1s MSTP.
- 4.1.4. Industrial and Industrial Hardened Managed PLUS non-PoE and PoE switch range shall support G.8032 Ethernet Ring Protection Switching (ERPS).
- 4.1.5. Industrial and Industrial Hardened Managed PLUS non-PoE and PoE switch range shall support Ethernet port control and management, IEEE 802.1D Transparent bridging, IEEE 802.3x Flow control.
- 4.1.6. Industrial and Industrial Hardened Managed PLUS non-PoE and PoE switch range shall support IGMP v1/v2/v3.
- 4.1.7. Industrial and Industrial Hardened Managed PLUS non-PoE and PoE switch range shall support Simple Network Time Protocol (SNTP) client.
- 4.1.8. Industrial and Industrial Hardened Managed PLUS non-PoE and PoE switch range shall support SSH and Telnet client for IPv4.
- 4.1.9. Industrial and Industrial Hardened Managed PLUS non-PoE and PoE switch range shall support IEEE 802.1q Tag VLAN.
- 4.1.10. Industrial and Industrial Hardened Managed PLUS non-PoE and PoE switch range shall support GUI SW upgrade by SFTP, TFTP.
- 4.1.11. Industrial and Industrial Hardened Managed PLUS non-PoE and PoE switch range shall support DHCP client and DHCP server for IPv4.
- 4.1.12. Industrial and Industrial Hardened Managed PLUS non-PoE and PoE switch range shall support SNMP v1/v2c/v3.
- 4.1.13. Industrial and Industrial Hardened Managed PLUS non-PoE and PoE switch range shall support Link Layer Discovery Protocol (LLDP) v1/v2.
- 4.1.14. Industrial and Industrial Hardened Managed PLUS non-PoE and PoE switch range shall support IEEE 802.1x Port security and Radius client for IPv4.
- 4.1.15. Industrial and Industrial Hardened Managed PLUS non-PoE and PoE switch range shall support IEEE 802.1p QoS.

5. Power Supply

- 5.1.1. Industrial and Industrial Hardened Managed PLUS non-PoE and PoE switch range shall require an external CE approved PSU.

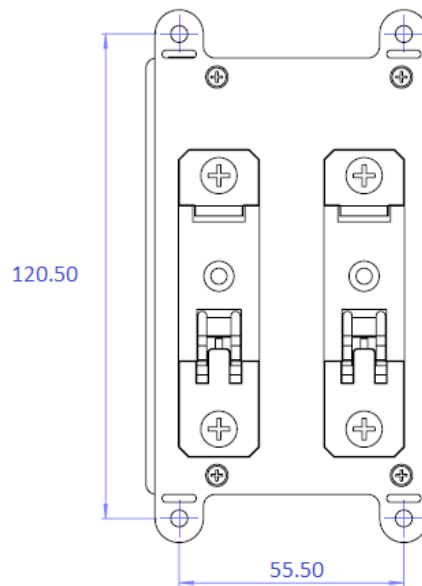
- 5.1.2. Industrial and Industrial Hardened Managed PLUS non-PoE switch range shall have a 12 – 24V DC operating voltage range (specific PSU used dependant on model).
- 5.1.3. Industrial and Industrial Hardened Managed PLUS PoE switch range shall support have a 48 – 56V DC operating voltage range (specific PSU used dependant on model).
- 5.1.4. Industrial and Industrial Hardened Managed PLUS non-PoE and PoE switch range shall automatically detect the power available.
- 5.1.5. Industrial and Industrial Hardened Managed PLUS non-PoE and PoE switch range shall support redundant PSUs. The switch has to 2 power input.
- 5.1.6. Industrial and Industrial Hardened Managed PLUS non-PoE and PoE switch range shall consume a supply current determined by the model and whether PoE is utilized.
- 5.1.7. Industrial and Industrial Hardened Managed PLUS non-PoE and PoE switch range shall use screw terminals, and be detachable.

6. Environmental

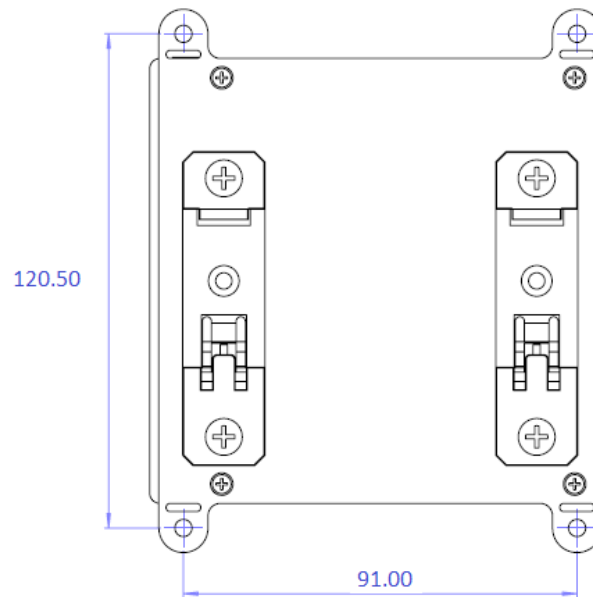
- 6.1.1. Industrial and Industrial Hardened Managed PLUS non-PoE and PoE switch range shall be capable of being Panel or DIN Rail mounted.
- 6.1.2. Industrial Managed PLUS non-PoE and PoE switch range shall be capable of operating in temperature as low -60°C and high as +60°C.
- 6.1.3. Industrial Hardened Managed PLUS non-PoE and PoE switch range shall be capable of operating in temperature as low as -40°C and as high as +75°C.
- 6.1.4. Industrial and Industrial Hardened Managed PLUS non-PoE and PoE switch range shall operate in ambient relative humidity up to 95% non-condensing.

7. Dimensions

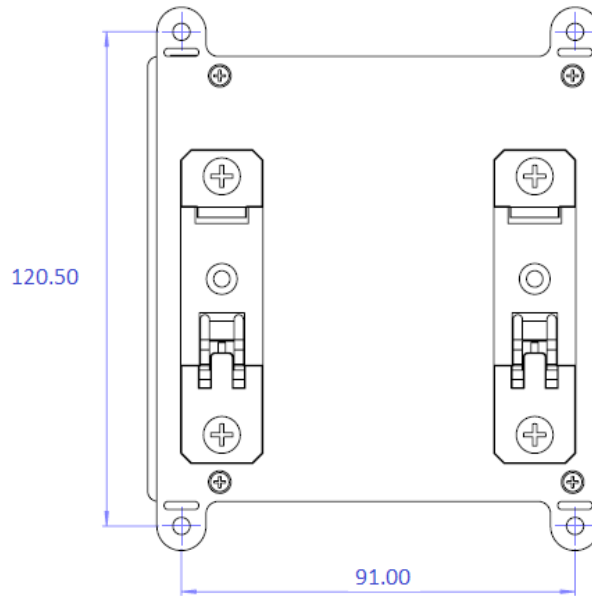
- 7.1.1. AMG9xM2P-4xx-1S-xxxx dimensions are 70.8mm (W) x 121mm (H) x 95.5mm (D, including 8mm DIN Rail brackets). Distance between horizontal fixing points is 55.5mm and distance between vertical fixing points is 120.5mm.



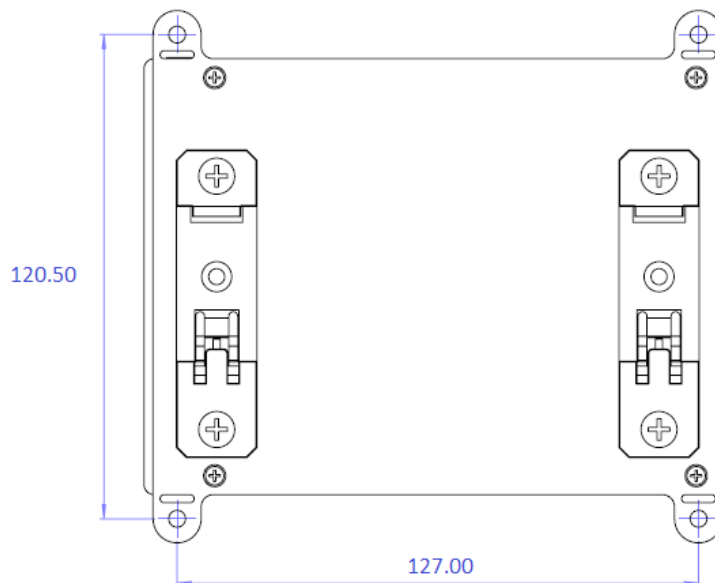
- 7.1.2. AMG9xM2P-4xx-2S-xxxx dimensions are 106.5mm (W) x 121mm (H) x 95.5mm (D, including 8mm DIN Rail brackets). Distance between horizontal fixing points is 91.0mm and distance between vertical fixing points is 120.5mm.



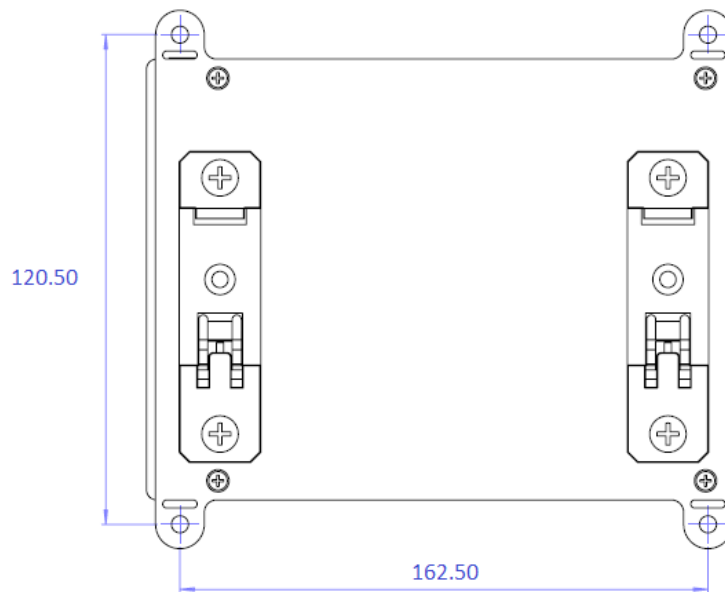
- 7.1.3. AMG9xM2P-8xx-2S-xxxx dimensions are 106.5mm (W) x 121mm (H) x 95.5mm (D, including 8mm DIN Rail brackets). Distance between horizontal fixing points is 91.0mm and distance between vertical fixing points is 120.5mm.



- 7.1.4. AMG9xM2P-12xx-3S-xxxx dimensions are 142mm (W) x 121mm (H) x 95.5mm (D, including 8mm DIN Rail brackets). Distance between horizontal fixing points is 127.0mm and distance between vertical fixing points is 120.5mm.



- 7.1.5. AMG9xM2P-16xx-4S-xxxx dimensions are 177.5mm (W) x 121mm (H) x 95.5mm (D, including 8mm DIN Rail brackets). Distance between horizontal fixing points is 162.5mm and distance between vertical fixing points is 120.5mm.



8. Specification Summary

Technology	Standards	Explanation
Technology	IEEE 802.3i	10Base-T
	IEEE 802.3u	100Base-TX, 100Base-FX
	IEEE 802.3z	1000Base-X
	IEEE 802.3af	Power over Ethernet
	IEEE 802.3at	Power over Ethernet
	IEEE 802.3x	Flow Control and Back pressure
	IEEE 802.1d	STP (Spanning Tree Protocol)
	IEEE 802.1w	RSTP (Rapid Spanning Tree Protocol)
	IEEE 802.1s	MSTP (Multiple Spanning Tree Protocol)
	G.8032	ERPS (Ethernet Ring Protection Switching)
	IEEE 802.1Q	Virtual LANs (VLAN)
	IEEE 802.1X	Network Authentication
	RFC 1112,2236,3376	IGMP snooping v1/v2/v3
	RFC 2131	DHCP client
	RFC 3736	DHCP server / Relay for IPv4
		SSH client for IPv4
		LLDP v1/v2 (Link Layer Discovery Protocol)
		Telnet client for IPv4
	IEEE 802.1x	Port Security authentication
		RADIUS client for IPv4
	Syslog client / email	
Power		Redundant PSU support
		Power Fail Alarm output
		Reverse Polarity protection
	PoE	Max PoE Budget up to 1200W