

> Mechanical characteristics						
Boxes	SYNAPS version	Size W x H x D (mm)	Available customer space (min) W x H x D (mm)	Materials	Protection rating	CdA
High Box 	SYNAPS SHIELD	300 x 400 x 150*	107 x 160 x 115 130 x 160 x 115	Poly-carbonate	IP65 / IK10	0.132
Box 	SYNAPS GUARD	200 x 300 x 150*	60 x 200 x 88	Poly-carbonate	IP65 / IK10	0.066
* H with cable glands: + 35 mm / P with locks: + 20 mm						
Weight (kg)	SYNAPS SHIELD			SYNAPS GUARD		
	6.3 kg			3.6 kg		
Installation	Wall or post mounting Battery already installed in the cabinet Plug and play product					
> Electrical input characteristics						
	SYNAPS SHIELD			SYNAPS GUARD		
AC network voltage	175 V to 265 V AC single-phase			99 to 265 V AC		
DC network voltage	-			140 to 375 V DC		
Frequency	45 Hz to 65 Hz					
Class	1					
Inrush current	25 A, limited by NTC					
Neutral system	TT, TN			TT, TN, IT		
Protection against	primary short-circuit and differential mode shock waves					
Primary current @ 99 V AC	-			1.5 A		
Primary current @ 175 V AC	1.3 A			-		
Primary current @ 265 V AC	0.7 A			0.38 A		
Upstream circuit breaker to be provided	D curve					
Lightning arrestor	Type 2 / 10 kA					
> Electrical output characteristics						
PoE						
	SYNAPS SHIELD			SYNAPS GUARD		
PoE ports	5 PoE / PoE+ / passif PoE ports including 2 HiPoE ports			2 PoE / PoE+ ports		
PoE/PoE+	IEEE 802.3af/at - 15 W / 30 W per port; Mode B			IEEE 802.3af/at - 15 W / 30 W per port; Mode B		
HiPoE	IEEE 802.3bt - 15 W / 30 W / 60 W / 90 W per port; power supply over 4 PoE pairs (4PPoE)			-		
Passif PoE	PoE 55 V : all PoE ports PoE 12V / PoE 24V : Combo port			-		
PoE budget	Per port PoE function configuration					

Operating output		
	SYNAPS SHIELD	SYNAPS GUARD
DC output	12 V DC or 24 V DC	55 V DC
Max. available power at DC output	12 V DC : 60 W 24 V DC : 96 W	55 W
Power		
	SYNAPS SHIELD	SYNAPS GUARD
Maximum power	150 W	55 W
Backup duration	SYNAPS SHIELD	SYNAPS GUARD
Operating power	Autonomy expressed in hours and minutes	
5 W	7h11	5h01
10 W	4h24	3h04
15 W	3h10	2h12
20 W	2h28	1h42
25 W	2h02	1h23
30 W	1h43	1h10
35 W	1h29	1h00
40 W	1h19	0h53
45 W	1h11	0h47
50 W	1h04	0h43
55 W	0h58	0h39
60 W	0h54	-
70 W	0h46	-
80 W	0h41	-
90 W	0h36	-
100 W	0h33	-
110 W	0h30	-
120 W	0h27	-
130 W	0h25	-
140 W	0h23	-
150 W	0h22	-
Connections		
	SYNAPS SHIELD	SYNAPS GUARD
Mains	3 (2+PE) Screw terminals on the lightning arrester (230 V AC power supply)	
PoE/PoE+/HiPoE ports	4 RJ45 ports (100 Mbps) : Ethernet cable Category 5 or more, shielded, straight or twisted cables	2 RJ45 ports (100 Mbps) : Ethernet cable Category 5 or more, shielded or unshielded, straight or twisted cables
Ethernet port	-	1 RJ45 port (1 Gbps): Ethernet cable Category 5 or more, shielded or unshielded, straight or twisted cables
Combo port	1 Combo port	-
	RJ45 port: Ethernet cable Category 5e or more, shielded, straight or twisted cables (1 Gbps) SFP port: SFP module 1 Gbps transceiver	
DC Output	1 DC output: Screw terminal with plug-in connector with polarizing slot	-
Digital Input	Screw terminal with plug-in connector with polarizing slot (1 input)	-
Dry Contact	Screw terminal with plug-in connector with polarizing slot (open collector: 50 mA @ 60 V DC)	-
Cable cross-section	Max. 2.5 mm ² (Mains, digital input and dry contact)	0.75...2.5 mm ²
Cable feedthrough	Via 8 watertight cable glands	Via 4 watertight cable glands

> Functional characteristics		
Operation	Operates in power-saving mode when the backup is charged.	
Network filtering	Filters out power grid disturbances.	
Cooling	Without fan.	
Autonometer	Informs of the percentage of the remaining autonomy.	
Restart function	Allows manual remote control of the on/off function per PoE port / DC output.	
DAM function	Allows the monitoring of the connected products with an automatic reboot in the event of a fault. Configurable per port.	
Protections		
	SYNAPS SHIELD	SYNAPS GUARD
Primary	Against atmospheric or industrial overvoltage on primary (10kA lightning arrester).	
Output	Against too high currents on the auxiliary output (50 mA). Against overcurrent and short circuits on the output by disconnecting the PoE port.	Against user output overvoltages (deregulation or connection error) and by cutting with cyclical restarting if output voltage > Un +10%. Against overloads by limiting the power supply to Pn + 10%. Against output short-circuits by disconnecting the power supply with cyclical restart.
> Lithium LFP Smart Backup		
Latest generation Lithium LiFePO4 Technology (no risk of thermal runaway).		
Lead-free, cadmium-free, 100% recyclable.		
Storage: 9 months without recharging.		
10 year service life.		
Advanced management settings, cell balancing, overcurrent and overvoltage protection.		
> Signaling		
	SYNAPS SHIELD	SYNAPS GUARD
Ports	1 LED indicates the PoE activity on the corresponding port 1 LED indicates the data transmission activity on the corresponding port	
Lightning arrester	1 LED indicates the operation of the lightning arrester	-
> Environmental specifications		
Temperature		
	SYNAPS SHIELD	SYNAPS GUARD
Storage	-20°C ... +45°C	
Operating	-10°C ... +50°C at 120 W nominal power in backup and normal mode	-10°C ... +50°C in backup and normal mode
	-10°C ... +45°C at 150 W nominal power in backup and normal mode	-5°C ... +50°C in battery charge mode
Altitude		
Above 2,000 m, the temperature decreases by 5% every 1,000 m		
Humidity		
From 0 to 100% condensing		
MTBF		
Without battery: 200 000 h at 25 °C product external environment, rated mains voltage, 75% load. With battery: 100 000 h at 25 °C product external environment, rated mains voltage, 75% load.		

> Switch properties (SYNAPS SHIELD)		
Switch	Layer 2	
Queues per port	4	
Max. number of VLANs	4094	
VLAN ID range	VID 1 to 4094	
Max. number of IGMP groups (multicast)	1024	
Number of MAC addresses	Up to 8000 MAC addresses	
Max. length Jumbo Frame	10 kB	
Packet buffer memory	1 Mbit	
Communication		
Communication speed	PoE ports	10 / 100 Mbps
	Combo ports	100 / 1000 Mbps
Application layer protocols	HTTP, HTTPS, SNMP (v1, v2c, v3),	
Network layer protocols	IPv4, ICMP	
Management (Web, SNMP)		
Web GUI interface / Web server	Built-in switch configuration utility for browser-based device configuration (HTTPS). Supports configuration, system dashboard, maintenance and monitoring; Visualisation of the operating states	
Firmware update	Upgrade via web browser (HTTPS)	
SNMP	SNMP v1, v2c , v3	
Alarm management	SNMP trap sending	
> Switching characteristics (SYNAPS SHIELD)		
The configuration of the switch functions is done via the embedded website.		
Switch Layer 2		
VLAN	Supports up to 4K VLANs simultaneously (out of 4094 VLAN IDs); Port-based VLAN; 802.1Q tag-based VLAN	
IGMP v1/v2 Snooping	IGMP limits bandwidth-intensive multicast traffic to only the requesters; it supports 1024 multicast groups (source-specific multicasting is also supported)	
Uplink	Uplink mode limits the sending of multicast traffic on the combo port	
Log/SysLog	Records events locally and sends them to one or two specific servers	
NTP	Allows the switch clock to be synchronised with the network clock	
Spanning Tree Protocol (STP)	Standard Spanning Tree (STP) IEEE 802.1D	
	Rapid Spanning Tree (RSTP) IEEE 802.1w	
Security		
Website	HTTPS (HTTP operation possible) Management administrator account vs. user account	
HTTPS	Authentication and encryption with a root certificate (CA) Allows secure access to the switch management webserver	
SNMP	SNMP V3 with data encryption	
Protocol for securing exchanges	TLS (Transport Layer Security, versions 1.0 to 1.3) SSL not supported (banned by RFC 7568)	
Quality of Service		
Hardware Priority Queue	Supports 4 hardware queues	
Scheduling	Strict priority and weighted round-robin (WRR)	
	Queue assignment based on DSCP and class of service (802.1p/ CoS)	
Classification	Port based; 802.1p VLAN priority based; IPv4 precedence/ type of service (ToS) / DSCP based	
Green Ethernet		
Link detection	Compliant IEEE802.3az Energy Efficient Ethernet Task Force. Automatically turns off power on Gigabit Ethernet RJ45 port when detecting link down or Idle of client. Active mode is resumed without loss of any packets when the switch detects the link up.	
Cable length detection	Adjusts the signal strength based on the cable length. Reduces the power consumption for shorter cables.	
Eco Mode	Shifts automatically to power-saving mode.	

> Standards	
IEEE Standards	
IEEE 802.1D	Standard Spanning Tree
IEEE 802.1w	Rapid Spanning Tree (RSTP)
IEEE 802.1Q	VLAN
IEEE 802.3i	10BaseT
IEEE 802.3u	100BaseT(X) and 100BaseFX
IEEE 802.3ab	1000BaseT(X)
IEEE 802.3z	1000BaseX
IEEE 802.3x	Flow Control
IEEE 802.3af	PoE
IEEE 802.3at	PoE+
IEEE 802.3bt	HiPoE (type 1 à 4)
IEEE 802.3az	Energy Efficient Ethernet
Electrical and safety standards	
Safety	EN 62368-1 (2020), EN 62368-3 (2020)
EMC - Immunity	EN 61000-6-1 (2007), EN 61000-6-2 (2019)
EMC - Emissions	EN 61000-6-3 (2007), EN 61000-6-4 (2019)
	EN 61000-3-2 (2019) (class A)
	EN 55032 (2015) (class A)
Other standards	
Transport approval	UN 38.3



*SLAT reserves the right to modify the characteristics of its products without prior notice.