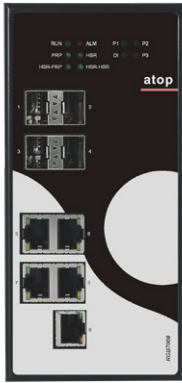


FEATURE HIGHLIGHTS



- Up to 4 x 10/100/1000 BASE T(X) RJ45 ports and 4 x 100/1G/2.5G/10G SFP ports
- Dedicated management port
- IEC61850-3 and IEEE1613 certification
- IEC62439-3 clause 4 (PRP) and clause 5 (HSR) compliant
- Up to 3 HSR or PRP instances (HSR mode support: Mode-H & Mode-U)
- IEEE1588 TC/BC hardware time stamp
- -40 to +75 operation temperature range
- Wide voltage input range support

PRODUCT DESCRIPTION

The RGB7000 series is engineered to ensure maximum system availability and data integrity for digital substations requiring zero-packet-lost redundancy. It supports PRP/HSR, ensuring seamless redundancy for substations and process automation systems. Time-critical applications benefit from its hardware-based IEEE 1588v2 PTP support. Certified for IEC 61850-3, it meets stringent substation requirements with a highly durable design.

This series offers four 10/100/1000 Ethernet ports and four 100/1G/2.5G/10G SFP slots, along with one specified management port. It supports various topologies, such as Redbox and Quadbox.



Versatile high performance: The RGB series supports up to 8 full gigabit ports. It also supports 4 RJ45 and 4 SFP fiber module slots, allowing you to use it in various environments.



Reliability and security: The RGB7000 series supports HSR/PRP, achieving zero packet loss network redundancy. It also supports different redundancy topologies like Redbox, Quadbox, and can handle up to 3 sets of HSR/PRP instances simultaneously. It also complies with IEC62443-4 secure functions.



High power and redundancy: The RGB7000 series supports dual power supplies and offers different voltage input combinations (DC, DC+AC/HV), making it suitable for digital power plants.

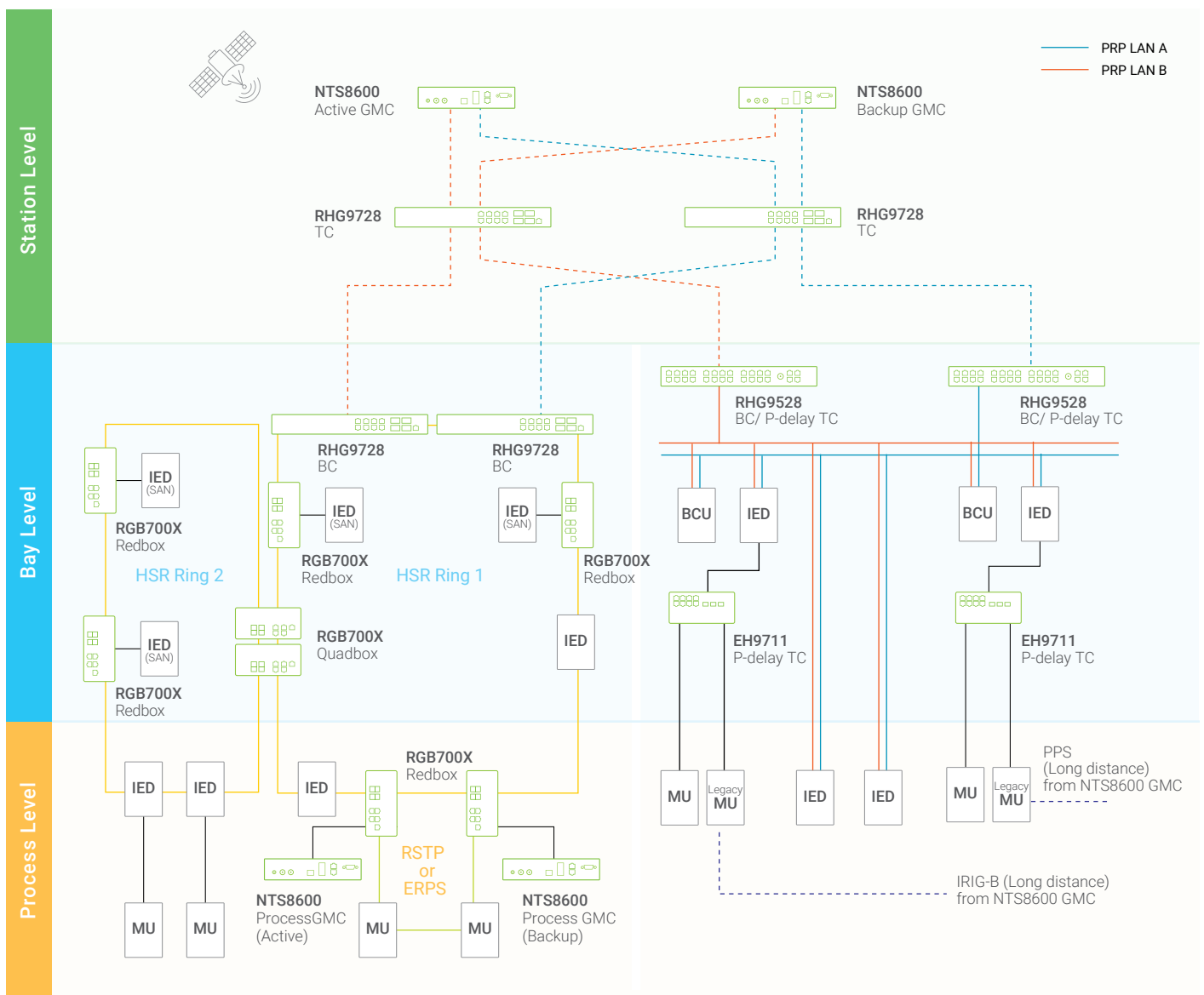


Industry-specific features: The RGB7000 series complies with the IEC61850-3 and IEEE1613 regulations for power substations, making it suitable for harsh environments. It also features IEEE1588 hardware support for TC/BC, enabling high-precision timing applications. Additionally, it operates reliably in extreme temperatures ranging from -40 to +75 degrees Celsius.

APPLICATION CASES

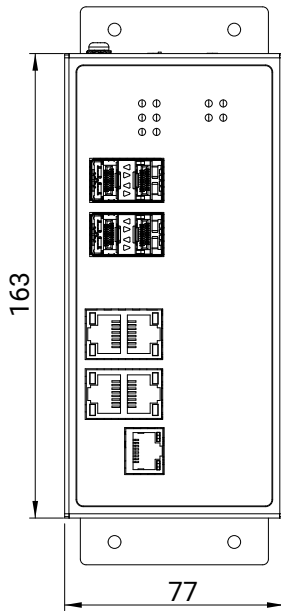
In modern substation topologies, network redundancy plays a crucial role in ensuring reliable communication and continuous operation. The IEC 61850 Standard adopts High-availability Seamless Redundancy (HSR) and Parallel Redundancy Protocol (PRP) to achieve this, and redundancy boxes, or “redboxes,” are key components in implementing these protocols, particularly for integrating non-HSR/PRP devices into redundant networks.

The RGB7000 series act as an intermediary, connecting single-attached nodes (SANs) to HSR rings or PRP networks, thereby extending redundancy benefits to all equipment. In more complex setups, quadboxes—consisting of four interconnected redboxes—can be employed to create robust, fault-tolerant network architectures. These configurations enhance system resilience by providing multiple paths for data transmission, minimizing downtime, and ensuring seamless communication even in the event of network or device failures.

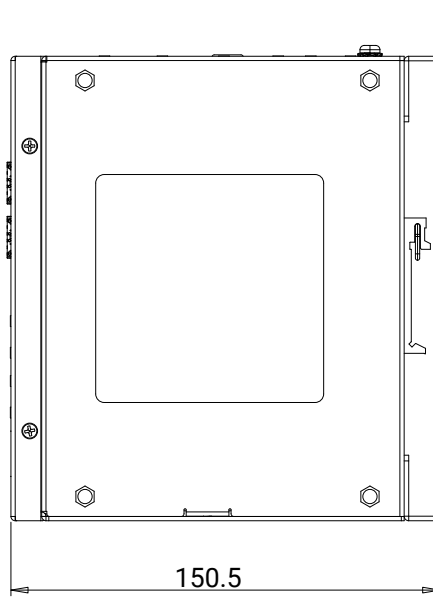


DIMENSIONS & LAYOUT

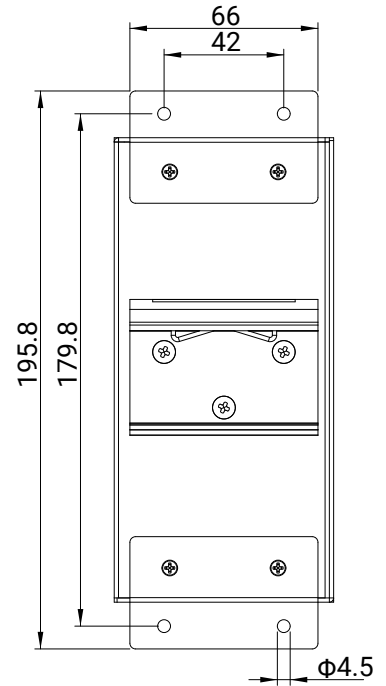
Front View



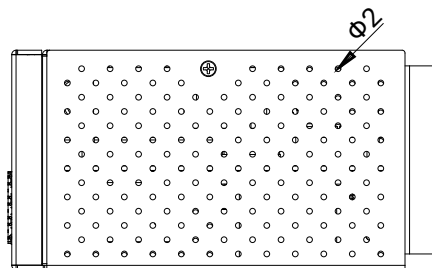
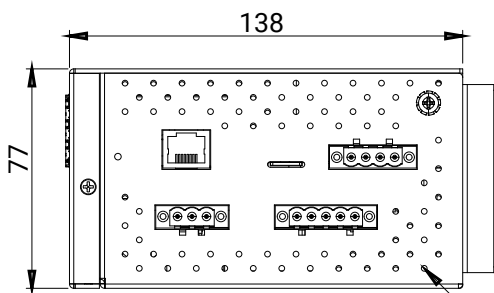
Side View



Rear View



Top & Bottom View



unit: mm

SPECIFICATIONS

Technical Specifications		
Model Name	RGB7004 / RGB7008	
Switch Properties		
VLAN Table	4096	
VLAN ID Range	1~4094	
MAC table	16K	
Ethernet		
Standards	IEEE 802.3 for 10BASE-T IEEE 802.3u for 100BASE-T(X) IEEE 802.3ab for 1000BASE-T IEEE 802.3z for 1000BASE-X IEEE 802.3x full-duplex flow control & half-duplex backpressure IEEE 802.1Qbb priority-based flow control IEEE 802.1Q VLAN Tag (4K VLANs) IEEE 802.1p Quality of Service IEEE 802.1x Network Access Control IEEE 802.3az Energy Efficient Ethernet	
Protocols	IPv4/IPv6, SNMPv1/v2/v3, ICMP, Telnet, SSH, SMTP, RMON, HTTP, HTTPS, LLDP, 802.1x, Radius, TACACS+, QoS, ACL, IEEE1588, VLAN, Mirror, SD card backup, Port mirror	
Redundancy	HSR, PRP, RSTP, ERPS	
Time Synchronization	Network Synchronization	NTP Server/Client, SNTP
	Precision Network Synchronization	IEEE 1588 hardware-based TC (E2E/P2P), BC 802.1AS
Automation Profiles	Modbus/TCP device status registers provided	
SNMP MIB	MIB II, IF-MIB, SNMPv2 MIB, BRIDGE-MIB, RMON MIB Group 1,2,3,9, RFC 1157, RFC 1213, RFC 1215, RFC 1493, RFC 1643, RFC 1757, RFC 2011, RFC 2012, RFC 2013, RFC 2233, RFC 2571, RFC 2742, RFC 2819, RFC 2863, RFC 3411, RFC 3412, RFC 3413, RFC 3414, RFC 3415,	
Power		
Rated supply voltage	12-48 VDC 110-300 VDC 110-240 VAC	
Input supply voltage	9.6-57.6 VDC 88-330 VDC 88-264 VAC	
Power Consumption (System)	14.92W @12VDC 13.63@240VAC 13.20W@300VDC	
Connector	5-Pin 5.08mm Lockable Terminal Block	
Reverse Polarity Protection	Yes	
Interfaces		
RJ45 Ports	Up to 4 10/100/1000BASE-T(X) auto negotiation speed	

Fiber Optics Ports	4 x 100/1G/2.5G/10G BASE-X SFP
LED Indicators	Run, ALM, P1, P2, P3, DI, PRP, HSR, HSR-HSR, HSR-PRP
Console	RS232 (RJ45 connector)
Relay Output	2 relay outputs with current carrying capacity of 1A @ 24 VDC
Button	Reset Button
Physical Characteristics	
Housing	IP30 aluminum housing
Dimension (W x H x D)	77 x 167 x 138
Weight	1 kg (without DIN Rail)
Installation	DIN-Rail , Wall mount (optional kit)
Environmental Limits	
Operating Temperature	-40°C to +75°C (-40°F to +167°F)
Storage Temperature	-40°C to +85°C (-40°F to +185°F)
Ambient Relative Humidity	5% to 95%, 55°C (Non-condensing)

REGULATORY APPROVALS

Regulatory Approvals				
Safety	UL/EN/IEC (CB) 62368-1			
EMI	FCC	FCC Part 15, Subpart B, Class A		
	CE	EN 55032:2015/A11:2020 Class A EN 61000-6-4: 2007 + A1: 2011 EN 61000-3-2: 2014, Class A EN 61000-3-3: 2013		
EMS	CE	EN 55035 :2017/A11:2020 EN 61000-6-2 2005		
Substation	IEC61850-3 / IEEE1613			
Test	Item	Value	Level	
IEC 61000-4-2	ESD	Contact Discharge	±8KV	4
		Air Discharge	±15KV	4
IEC 61000-4-3	RS	Enclosure Port	10(V/m), 80-1000MHz, 80% AM, 1~3GHz	3
IEC 61000-4-4	EFT	AC Power Port	±4.0kV @2.5kHz	4
		DC Power Port	±4.0kV @2.5kHz	4
		Signal Port	±2.0KV @2.5kHz	4

IEC 61000-4-5	Surge	AC Power Port	Line-to-Line $\pm 2.0\text{kV}$	4
		AC Power Port	Line-to-Earth $\pm 4.0\text{kV}$	4
		DC Power Port	Line-to-Line $\pm 1.0\text{kV}$	3
		DC Power Port	Line-to-Earth $\pm 2.0\text{kV}$	3
		Signal Port	Line-to-Earth $\pm 4.0\text{kV}$	4
IEC 61000-4-6	CS	AC Power Port	10V rms 0.15-80MHz, 80% AM	3
		DC Power Port	10V rms 0.15-80MHz, 80% AM	3
		Signal Port	10V rms 0.15-80MHz, 80% AM	3
IEC 61000-4-8	PFMF	(Enclosure)	100A/m continuous, 1000A/m (3s)	5
IEC 61000-4-10	Damped Osc. Magnetic Field	(Enclosure)	100A/m, 100kHz, 1MHz	5
IEC 61000-4-11	DIP	AC Power Port	Drop 70% 3 times/s (1 period) Drop 40% 3 times/1ms (50 period) Drop 100% 3 times/50m(5-50per.)	-
IEC 61000-4-12	Damped Oscillatory	AC Power Port	2.5kV common, 1kV diff. mode	3
		Signal Port	2.5kV common, 1kV diff. mode	3
Shock Drop Vibration	MIL-STD-810G Method 516.5 MIL-STD-810F Method 516.5 MIL-STD-810F Method 514.5 C-1 & C-2			
RoHS2	Yes			
MTBF	219,000 hours			
Warranty	5 years			

ORDERING INFORMATION

Ordering information					
Model name	Part Number	Redundancy RJ45 (10/100/1G)	Redundancy SFP (100/1G/2.5G/10G)	Ethernet Management Port RJ45 (10/100/1G)	Input Power
RGB7004-DC	1P1RGB70040001G	2	2	1	2 x 12-48VDC
RGB7004-HV	1P1RGB70040002G	2	2	1	2 x 12-48VDC + 110-300 VDC/ 110-240 VAC
RGB7008-DC	1P1RGB70080001G	4	4	1	2 x 12-48VDC
RGB7008-HV	1P1RGB70080002G	4	4	1	2 x 12-48VDC + 110-300 VDC/ 110-240 VAC

Optional Accessories		
Model name	Part Number	Description
WMK-450-Black	70100000000050G	SECC wall mount kit
CBL-RJ45(8P)-DB9(F)-90-C	50891971G	RJ45 to DB9 Female Cross Over Console Cable, 90cm
SDR-75-24	50500752240001G	75W/3.2A DIN-Rail 24VDC power supply 88~264VAC / 124~370VDC input
SDR-240-48	50502401480001G	240W/5A DIN-Rail 48VDC power supply 88~264VAC / 124~370VDC input
AXGD-5854-0513	522AXGD5854001G	SFP Transceiver, 1250Mbps, 850nm, Multi-mode, 550m, 3.3V, -40 to +85°C, DDMI
AXGD-1354-0523	522AXGD1354001G	SFP Transceiver, 1250Mbps, 1310nm, Multi-mode, 2km, 3.3V, -40 to +85°C, DDMI
AXGD-1354-0533	522AXGD1354011G	SFP Transceiver, 1250Mbps, 1310nm, Single-mode, 10km, 3.3V, -40 to +85°C, DDMI
AXGD-3354-0593	522AXGD3354001G	SFP Transceiver, 1250Mbps, 1310nm, Single-mode, 40km, 3.3V, -40 to +85°C, DDMI