FloBoss™ S600+ Flow Computer

The FloBoss™ S600+ Flow Computer (S600+) is a panel-mount fiscal flow computer designed specifically for hydrocarbon liquid and gas measurement where versatility and accuracy are high priorities. The FloBoss S600+ builds on the success of its predecessor, the S600, which has been the market-leading panel-mount flow computer from Emerson Process Management.

The standard features of the S600+ make it ideal for the following applications:

- Fiscal flow measurement
- Custody transfer
- Pipeline measurement
- Batch loading
- Meter proving applications
- Single or multi-stream measurement
- Flow control

The S600+ supports multi-stream (up to ten with optional expansion modules), multi-station (up to two) applications that are configured for simultaneous metering of gas, wet gas, crude oil, refined products, LPG, NGLs, etc. The S600+ can accommodate both a liquid and a gas station simultaneously.

Supported flow meters or primary elements include turbine, ultrasonic, Coriolis, positive displacement, orifice, Venturi, Annubar, V-Cone®, and Rosemount conditioning orifice plate.

The S600+ supports an unprecedented number of global measurement standards including those covered by AGA, ISO, GPA, and GERG for gas applications, and API, ASTM, GPA, and NORSOK for liquid applications.

The S600+ uses distributed processing to achieve maximum performance. The S600+ contains a more powerful main processor than the original S600. The new CPU incorporates a hardware floating point processor and performs faster calculations than before, minimizing uncertainty and maximizing control.

Each additional expansion module utilizes local processors. The local processors convert inputs from field instrumentation into engineering units and drive output signals for process control. Background checks are performed continuously and locally in each module to assure operational validity.

All metering calculations are performed using 64-bit (double) precision floating point numbers for the highest accuracy and API compliance. Cumulative totals are stored in three separate memory locations (Tri-reg format) for maximum integrity. The LogiCalc user language allows double precision mathematical functions to be performed on database objects.

Data logging and archiving capabilities have been significantly increased, and include an extended historian. A typical archive for a ten-stream application would include 333 days of monthly, weekly, daily and hourly reports; plus 50,000 events and 50,000 alarms. Support for FLOWCAL CFX files has been added for enhanced data integrity.

The S600+ includes an eight-line LCD display and a 29-key keypad. The display and keypad on the S600+ enable you to review or modify system parameters without the need for a PC. The display supports both English and Russian character sets.

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Compatibility

The S600+ is fully backwards-compatible with the previous S600 model. The device utilizes existing configurations and tools that you are familiar with. This saves you time otherwise spent on learning and configuring with new tools, and helps to preserve your previous capital investments. You can easily convert existing S600 units to S600+ units, bringing all the benefits of the new product to your existing installation.

The S600+ has been designed to safeguard the future supply and support of the S600 family for many years to come. Investing in the new S600+ is low risk because the metrological calculations and code utilized in the S600+ has already been field proven in the S600. The S600+ provides increased processing power and memory. This allows Energy and Transportation Solutions to continue to add new features and functionality to the S600+, and ensures that users continue to benefit from their investment.

Communications

The S600+ offers multiple communication options that allow you to interface to a variety of devices (including intelligent primary elements such as USM and Coriolis meters, for which the S600+ has many embedded drivers). The S600+ can be connected to serial and network printers. The increased communication capability of the S600+ enables you to maximize the benefits that are being increasingly realized with these intelligent meters.

Additionally, you can use the same communication ports to access the process data that is calculated and stored by the S600+. Available communication interfaces include the following:

- Two independent Ethernet 10/100baseT ports.
- HART® communication is facilitated using an optional 12-channel HART module, supporting point-to-point and multi-drop architectures (up to 50 transmitters).
- An embedded web server allows remote access to the flow computer. This allows for remote diagnostics, report access, and configuration. Security is provided by way of user name and password protection with a detailed event log for audit purposes. Compatible with Windows® Internet Explorer® version 5 or greater (version 9 or greater must use compatibility mode) and Microsoft® Edge™ browser.
- Two configurable EIA-232 (RS-232) serial ports for connection to a printer or RTU.
- Seven EIA-422/485 (RS-422/RS-485) serial ports (up to 57600 bps baud) for connection to intelligent meters, Modbus SCADA data networks, or a DCS Supervisory System.
- USB 2.0 port for downloading reports and alarm/event logs.
- One dedicated configuration port for connection to the Config600™ configuration software.

Inputs/Outputs

The S600+ is supplied with one I/O (P144) module with one Pulse Mezzanine (P148) module. This provides multiple digital, analog, and pulse inputs and outputs. You can add two additional expansion modules to the S600+. The following expansion modules are available:

- I/O (P144) module – Provides additional analog and digital I/O.
- Prover (P154) module – Provides I/O for applications with a prover.
- HART (P188) module – Provides I/O for applications with HART transmitters.
- Pulse Mezzanine (P148) module – Provides pulse input capability.

  Note: The Pulse Mezzanine module is installed as a daughterboard on an P144 or P154 module, and does not use an additional module slot.

Configuration

Configuration of the S600+ is done through the same Windows-based intelligent set-up tool as the S600 (Config600 Lite, Config600 Lite+, or Config600 Pro). You can create or edit configuration files using Config600 Lite+ and Config600 Pro (refer to Specification Sheet Config600). The S600+ provides the following functions through the Config600 configuration tool:

- Stream and station totalization.
- Batch totalization and retro-calculation.
- 3-term PID control with optional secondary control.
- Flow balancing.
- Flow scheduling.

- Automatic proving sequence, including control of two provers by a single S600+.
- Support for Modbus/TCP or Modbus over Ethernet (10/100 Mbit/s full duplex).
- Sampler control.
- Station densitometer.
- Station gas chromatograph.
- Comprehensive maintenance mode.
- Coriolis meter interface.
- Ultrasonic meter interface.

The S600+ can store up to 20 different user configurations which minimizes downtime in the event a replacement is required.

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CPU Module			
Processor	ColdFire® MPC8313 333 MHz with integral floating point processor		
Operating System	Linux		
Memory	Flash	256 MB	
	DRAM	128 MB	
	SRAM (battery backed)	4 MB	
		Battery Type	Lithium, 3 V, 1400 mAh (CR12600SE)
		Battery Life (typical)	5 to 7 years
		Hold-up Time (without power)	18 months
		Battery Backup Hold Time (after the battery has failed its load test)	3 months at 20 °C
Data Logging	The S600+ supports up to 333 days of reports from a 10 stream application, where monthly, weekly, daily, and hourly reports are each archived as standard individual reports. Example: 11 months of monthly, weekly, daily, and hourly reports; plus 50,000 events and 50,000 alarms. **Note:** Should additional data archiving be required, the individual hourly reports can be stored within their respective daily reports.		
FlowCal CFX files	Common exchange file format (CFX) files direct from S600+ via webserver for Gas Ultrasonic, Liquid Ultrasonic, Liquid Coriolis, or Liquid Turbines (gas records type 2, liquid records type 12)		
Form C Watchdog Relay	Contact Form	Change-over contacts	
	Max Current	1 A	
	Max Voltage	50 Vdc	
	Maximum Power	30 VA	
	Control	Released on de-power, watchdog restart, or software-controlled	
Clock	Type	Battery-backed calendar clock	
	Clock Accuracy	0.5 seconds per day	

Calculations	
Gas	AGA3 (Volume and Mass) (1992, 2012), AGA5 (1981) AGA7 (1996) AGA8 (1994, 2017) Supports AGA8 2017 Part 1 and Part 2 (GERG 2008) **Note:** AGA8 part 2 / GERG provides support for the following pure gases: Nitrogen, Carbon Dioxide, Hydrogen, Oxygen, Carbon Monoxide, Water Vapor, Hydrogen Sulfide, Helium, Argon AGA10 (2003) Supports AGA6 Gas Master Metering (2013) Supports AGA9, using AGA7 to correct to base conditions Supports AGA11, using AGA8 to correct to base conditions ISO 5167 (1991, 1998 (Amendment 1), 2003) ISO 6976 (1983, 1995, 2016) ISO12213 – 2 & 3 (1997) API 21.1 (1993) **Note**: This is an information document, not a calculation standard) GPA 2172/ASTM D3588 (1996, 2000, 2003, 2009) GPA 2145 (1996, 2000, 2003, 2016) Ethylene IUPAC (1988). Ethylene NBS 1045 (1981) & Ethylene API 11.3.2.1 (1985) NX 19 NX 19 Mod S-GERG (TM-5) (1988) M-GERG (1988) VDI/VDE 2040 GRI (1991) GOST 30319 (2015), PTZ Annubar V-Cone (McCrometer 2.3, 3.0 (2001)) Steam & Water IAPWS-IF97/2007 – regions 1, 2, 4, & 5; IFC-67 – regions 1 & 2

Liquid	API CH 11.1 – 2004 / ASTM D 1250-04 / IP 200/04 and Addendum 1 2007 API CH 11.1 – Addendum 2 2019 ASTM D 1250-1980 and API MPMS Chapter 11.1 – 1980 (Tables 5, 5A, 5B, 5D, 6, 6A, 6B, 6C, 6D, 23, 23A, 23B, 23D, 23E, 24, 24A, 24B, 24C, 24D, 24E, 53, 53A, 53B, 54, 54A, 54B, 54C, 54D, 59A, 59B, 60A, 60B) ASTM/API 1952 (lookup tables for table 5, 6, 23 and 24) – available but also superseded by GPA 8217 / API CH 11.2.4. ASTM/API 1952 (algorithm support for tables 23, 24, 53, and 54) API 11.2.1(1984), API 11.2.1M (1984) API 11.2.2 (1986), API 11.2.2M (1986) API 11.2.4 API 12.2.1 (1995) **Note:** This is an information document, not a calculation standard API 12.2.2 API 12.2.3 API 2540 (1980) API 21.2 (1998) **Note:** This is an information document, not a calculation standard API 4.8 (1995) **Note:** This is an information document, not a calculation standard ASTM D1555 (1995) ASTM D1555M (200, 2004, 2008) GPA TP15 (1998, 2003) GPA TP16 (1991)– superseded by GPA 8217 / API CH 11.2.4 GPA TP25 (1988), GPA TP27 (2007) – available but also superseded by GPA 8217 / API CH 11.2.4 GPA 8217 (API Ch 11.2.4) GPA 8117 Propylene API 11.3.3.2 (1974) Ethylene IUPAC (1988) Ethylene NBS1045 (1981) ISO 91/1 (IP2) ISO 91/2 (IP3) IP200 (1960) STO 5.9 08 B1, B2, B3 (2008) NORSOK I-105 Annex D (water in oil) (1998) Downer 1979 calculation of CPL ISO 17089-1 Annex E (ultrasonic meters, correction of meter geometry) (2010) NPD (1991) Densitometer algorithms: Solartron, Micro Motion, Sarasota, PEEK
Prover	Compact, uni-directional, bi-directional, master meter, dual chronometry Support for NORSOK statistical evaluation of repeatability Support for 1, 2, or 4 sphere switches Supports AGA6 Gas Master Metering Each S600+ can support up to two provers (not simultaneously) **Note:** Master meter (MM) proving in Liquid Application support for MM volume vs Stream volume, MM mass vs Stream mass, and MM volume vs Stream mass. Master meter (MM) proving in Gas Application support for MM volume vs Stream volume only.

Communications		
Configuration Port (located on the bottom of the front panel)	Connector	6-pin RJ12
	Communication Standard	RS232D
	Signals Supplied	Tx, Rx, CTS, GND
	Baud Rate	2400, 4800, 9600, 19200, 38400, 57600
	Format	Config600 Protocol
Ethernet (NTWK1, NTWK2)	Speed	10 or 100 Mb/s, full Duplex
	Media Connectivity	10 or 100baseT, twisted pair utilizing standard RJ45
	Protocol	Modbus/TCP or Modbus over Ethernet Master, slave, and peer-to-peer Support for gas chromatographs, ultrasonic (Emerson Rosemount, Instromet, Caldon, and Sick), and Coriolis (Micro Motion)
	Network printers	Can support multiple printers for separate reports, alarms, and events
RS232 (COM3, COM4)	Connector	FCC-68 RJ45
	Communication Standard	RS232D
	Signals Supplied	Tx, Rx, RTS, CTS, DTR, DSR, GND, DCD
	Baud Rate	2400, 4800, 9600, 19200, 38400, 57600
	Format	Software configurable
	Data Protocol	ASCII, MODBUS (ASCII, RTU) Master, slave, and peer-to-peer Support for printers, gas chromatographs, ultrasonic (Emerson Rosemount, Instromet, Caldon, and Sick), and Coriolis (Micro Motion)
RS422/RS485 (COM5, COM6, COM7)	Connector	Standard screw terminals, 3.5 mm pitch
	Communication Standard	Point-to-point RS422
		Multi-drop RS422 or RS485
	Signals Supplied	Tx+, Tx-, Rx+, Rx-, common shield
	Termination Resistor	Jumper-selectable
	Baud Rate	2400, 4800, 9600, 19200, 38400, 57600
	Format	Software controlled on each channel
	Data Protocol	ASCII, MODBUS (ASCII, RTU)
RS485 (COM9, COM10, COM11, COM12)	Connector	Standard screw terminals, 3.5 mm pitch
	Communication Standard	Multi-master 2-wire RS485
	Signals Supplied	Tx, Rx, common shield

	Baud Rate	2400, 4800, 9600, 19200, 38400, 57600	
	Format	Software controlled on each channel	
	Data Protocol	ASCII, MODBUS (ASCII, RTU)	
USB	Connector	USB-A	
	Protocol	USB 2.0 Extract reports to USB flash drive (VFAT32 format)	
Inputs and Outputs			
Analog Inputs	Type	1 to 5 V, 0 to 5 V, 4 to 20 mA, or 0 to 20 mA, opto-isolated. Two groups of 5 single-ended voltage or current inputs with each group sharing a common return; channels 11 and 12 are current input only.	
	Signal Level	0 to 5 V or 0 to 22 mA	
	Scan Rate	All channels can be acquired in less than 1 second	
	Resolution	24 bits, auto-zero, auto-calibrate	
	Conversion Time	Less than 100 ms per channel	
	Series Mode Rejection	>100 dB at 50 Hz and 60 Hz	
	Voltage Common Mode Range	±50 V as a group relative to computer ground	
	Common Mode Rejection	>100 dB at 50 Hz and 60 Hz	
	Input Impedance	>10 MΩ (voltage mode), approx 250 Ω (current mode)	
	Calibration Period	2 years to 0.005% of voltage 5 years to 0.01% of voltage	
	A/D Converter Inputs - Voltage Mode	Type of Inputs	Single-ended voltage inputs
		Input Range	0 to 5 V
		Accuracy	±0.005% of FSD at 23°C (73°F)
		Ambient Temperature Effect	± 7 ppm/°C (± 4 ppm/°F) from 23°C (73°F) in the range 0 to 45°C (32 to 113°F)
	A/D Converter Inputs - Current Mode	Type of Inputs	Single-ended current inputs
		Input Range	0 to 22 mA
		Accuracy	± 0.02% of FSD at 23°C (73°F)
		Ambient Temperature Effect	± 10 ppm/°C (± 5.5 ppm/°F) from 23 °C in the range 0 to 45 °C (32 to 113 °F)
Frequency/Density Inputs	Type	dc coupled, opto-isolated	
	Signal Level	3 V min pk-pk	
	Maximum Input Voltage	12 V pk-pk	
	Current Limit	Internally limited to 3 mA	

	Frequency Range	0 to 10 kHz
	Accuracy	20 ppm
	Resolution	5 nanoseconds
Pulse Inputs – Flow	Type	Dual pulse or single pulse train, opto-isolated
	Signal Level	±3.5 V to ±24 V, minimum 5 mA
	Frequency Range	1Hz to 10 kHz
	Security Monitoring	IP 252/76 (ISO 6551), level A or B
Digital Status Inputs	Type	16 opto-isolated inputs, arranged in 4 groups of 4 with common positive connection to allow simple interface to open collector outputs
	Max Input Voltage	30 V
	Min Input On Voltage	12 V
	Max Input Off Voltage	3 V
	Input Impedance	2 to 2.5 kΩ typical
	Protection	Reverse voltage protection
PRT (RTD) Inputs	Type	4-wire only connection using Pt 100 transducers, opto-isolated
	PRT (RTD) Resistance	100 Ω [Pt 100 to IEC 60751/DIN 43760 (Europe 0.00385), IPTS68 (American 0.00392), Callendar-Van Dusen]
	Excitation Current	1 mA nominal
	Measuring Range	60 to 216 Ω (–100°C to +300°C) (–148°F to +572°F)
	Resolution	0.01°C (0.018°F)
	Accuracy	–100°C to 200°C (–148°F to 392°F) ± 0.01% 200°C to 300°C (392°F to 572°F) ± 0.02%
	PRT (RTD) Cables	Core resistance up to 600 Ω
	Barriers	9 V, 100 Ω are satisfactory
	Security	Continuous cable/PRT (RTD) integrity tests for earths/ground faults and open circuits
Analog Outputs	Type	4 to 20 mA outputs, opto-isolated
	Resolution	12-bit minimum
	Accuracy	± 0.1% at 23°C (73°F)
	Ambient Temperature Effect	20 ppm/°C (11ppm/°F) from 23°C (73°F)
	Load Loop Resistance	650 Ω maximum when powered by 15 V local isolated source 470 Ω – 1000 Ω when powered from 24 V external supply
	Maximum External Supply	32 V

	Output Form	Controlled active current sink to ground return of local floating supply
	Number of Field Connections	3 terminals per channel
	Update Time	Less than one second
Digital Outputs	Type	3 groups of 4 with common negative, opto-isolated
	Frequency Range	0 to 0.5 Hz
	Max Output Saturation Voltage	1.5 V @ 100 mA
	Low current Saturation Voltage	600 mV @ 1 mA to suit TTL style input, with 4.7 kΩ pull-up to 5 V
	Max Output Standoff Voltage	42 V (limited by transorb)
	Max Output Current	100 mA
	Reset/Power on State	All digital outputs OFF
Pulse Outputs	Type	Opto-isolated open-collectors
	Frequency Range	0 to 100 Hz
	Max Output Current	100 mA
	Max Output Saturation Voltage	1.5 V @ 100 mA
	Low Current Saturation Voltage	600 mV @ 1 mA to suit TTL style input
	Max Output Standoff Voltage	42 V (limited by transorb)
Raw Pulse Outputs	Type	Digital ground-referenced open-collector
	Gating	Software controlled
	Max Output Saturation	1.5 V
	Max Output Standoff Voltage	26 V (limited by transorb)
	Max Output Current	100 mA
	Frequency Range	0 to 10 kHz
	Minimum On Period	100 µs (microseconds)
	Use	To bus together several streams to a common prover computer

Expansion Modules			
The FloBoss S600+ is supplied with one I/O (P144) module and one Pulse Mezzanine (P148) module as standard. Two additional module slots are available. Optional modules include the following:			
I/O (P144) Module (1 standard, additional modules are optional)	Provides the S600+ with additional analog and digital I/O		
	Analog Inputs	Quantity	12
	Analog Outputs	Quantity	4
	Digital Inputs	Quantity	16
	Digital Outputs	Quantity	12
	Pulse Inputs – Flow (Pulse Mezzanine module)	Quantity	2 dual pulse or 4 single pulses
	Frequency Density Inputs	Quantity	3
	PRT (RTD) Inputs	Quantity	3
	Pulse Outputs	Quantity	5
	Raw Pulse Output	Quantity	1, raw pulse output for proving, 0 to 10 kHz
Pulse Mezzanine (P148) Module (integrated part of P144 or P154)	Provides S600+ with pulse input capability.		
	Quantity	2 dual pulse or 4 single pulses **Note:** The Pulse Mezzanine module is installed as a daughter board on an I/O (P144) or Prover (P154) module and does not use an additional module slot.	
Prover (P154) Module (optional)	Provides the S600+ with an interface to a prover		
	Prover Types	Compact, uni-directional, bi-directional, master meter, dual chronometry. Up to 4 sphere switches.	
	Digital Inputs	Quantity	32
	Digital Outputs	Quantity	12
	Pulse Inputs – Flow (Pulse Mezzanine module)	Quantity	2 dual pulse or 4 single pulses
	Frequency Density Inputs	Quantity	2
	Pulse Outputs	Quantity	4
	Raw Pulse Input	Quantity	3
	Phase Loop Lock Input	Quantity	1
	Switch Detect	Quantity	4
HART (P188) Module (optional)	Provides the S600+ with an interface to HART transmitters		
	Quantity	12 channels. Each channel can be configured for point-point or multi-drop communications. In multi-drop mode, each channel can support up to 8 transmitters.	

	Modes	Supports dual master (primary or secondary), read only (cannot be used to change constants on the HART device). Does not support burst mode.
	Max. Number of HART Transmitters	50
	HART Compatibility	Version 4, 5, and 6 devices are fully supported
		Version 7 devices with wired outputs that comply with version 5 are also supported
Power		
Supply Voltage	20 to 32 Vdc, 30 Vdc nominal, 48 W maximum	
	Typical	18 W with 1 I/O module
		24 W with 2 I/O modules
		36 W with 3 I/O modules
Protection	2.5 A anti-surge slow blow fuse	
Inrush Current	Thermistor protection providing 6 A at 25°C	
Supply Isolation	Three-way, galvanically isolated from input to computer, supply and ground, 50 V	
Hold-up Period	> 10 ms after power fail flag	
Maximum Input Ripple	2 V pk-pk	
Input Power Fail Flag	17 to19 Vdc	
Power Outputs	24 Vdc, 500 mA 15 Vdc, 100 mA 50 Vdc isolation The outputs are isolated from the supply voltage and from the computer.	
Physical		
Enclosure	Type	Painted, welded steel outer case with plastic front panel
	Classification	IP50 from front panel
Dimensions	Case	84.5 mm W by 270 mm H by 303.8 mm D (3.327 in. W by 10.63 in. H by 11.94 in. D)
	Display Keypad Molding	85 mm W by 269 mm H by 28 mm D (3.35 in. W by 10.59 in. H by 1.10 in. D)
	Panel Cutout	66 mm W by 150 mm H (2.6 in. W by 5.9 in. H) with ±1 mm tolerance
	Pitch Between Cases	110 mm (4.33 in.) giving 25 mm (0.98 in.) air gap
	Max Panel Thickness	10 mm (0.39 in.)
Weight	4.3 kg (9.48 lb) approximate with a single I/O module configuration	
Circuit Boards	Eurocard-compatible, slide in and out from the rear	
Access	Allow 300 mm (11.81 in.) clearance directly behind case for maintenance	

Display-Keypad	Graphics Display	LCD 128 x 64 pixel (8 lines of 20 alpha-characters) with LED backlight, using a Toshiba T6963 LCD controller
	Keyboard	29 self-colored silicon rubber keys with tactile feel
	Alarm/Status	3 color LED (green, amber, red)
	Configuration Port	RJ12 connector for the Config600 package on the bottom of the front panel molding
	Languages	The display supports English and Russian character sets
Environmental		
Operating Temperature	−10 °C to 55 °C (14 °F to 131 °F)	
Storage Temperature	−40 °C to 70 °C (−40 °F to 158 °F)	
Relative Humidity	90% non-condensing	
Conformal Coating	All circuit boards are conformal coated.	
Safety Classification	For use in a classified safe electrical area	
Approvals		
Approval Standards	CE	EMC Directive 2014/30/EU
EMC Standards	IEC 61000-4-2 (Electrostatic Discharge) IEC 61000-4-3 (Radiated Immunity) IEC 61000-4-4 (Fast Transients) IEC 61000-4-5 (Surges) IEC 61000-4-6 (Conducted RF) IEC 61000-4-8 (Power Frequency Magnetic Field) IEC 61000-4-29 (Voltage Dips, Interrupts & Tolerance) IEC 55022 (Radiated Emissions)	
	UKCA	EMC Directive 2016
Metrology Standards	NMi	MID M1/E2 (Gas) of European Directive 2014/32/EU in accordance with WELMEC 8.8 EN 12405-1:2005+A2:2010 Certified by NMi Certain B.V. per certification number TC8219 MID M1/E2 (Liquid) of European Directive 2014/32/EU in accordance with WELMEC 8.8 OIML R117-1, Ed 2007 Certified by NMi Certain B.V. per certification number TC8218
	INMETRO	INMETRO, Portaria Inmetro/Dimel n.º 188, de 30 de setembro de 2016 INMETRO, Portaria Inmetro/Dimel nº 109, de 14 de junho de 2019
Miscellaneous Approvals	Customs Union	EAC EAC Russia/Kazakhstan: Certificate of Conformity (EMC) TR CU 020 (EMC) Exp: 5-30-2026 EAC Ukraine: Metrology Pattern Approval UA-M-1-116-2013 Exp: 1/1/2100 EAC Kazakhstan: Metrology Pattern Approval 972 Exp: 3/31/2026 EAC Russia: Metrology Pattern Approval 64224-16 Exp: 6/16/2026

RoHS2	RoHS2 EU Directive 2011/65/EU
RoHS (China)	

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