



Kronos Series 3R

19" Rackmount – Grandmaster Satellite Clock



Description

The Kronos Series 3R Satellite Clock, meticulously engineered for power systems applications, is an indispensable asset for ensuring synchronized operations within the power grid. Designed with a keen focus on precision and adaptability, this utility-grade timekeeping solution by NovaTech Automation delivers unmatched reliability to meet the stringent demands of electric utilities with a growing need for digital applications. With its robust design and advanced features, including IEEE1588-2008v.2 grandmaster functionality, the Kronos Series 3R sets the standard for accuracy and performance in critical time synchronization tasks.

Key Features

Ethernet Integration

- Supports browser-based configuration and SNMP
- Simultaneous support for multiple PTP profiles
- Synchronizes any Ethernet device over PTPv2 and/or NTP/SNTP in a simple or HSR/PRP network
- Syslog

Output Flexibility

- IEEE1588-2008v.2 (PTPv2)
- NTP and SNTP (with NTS)
- IRIG-B (unmodulated and modulated)
- Ethernet, twisted pair, coax, fiber
- PPS or PPM signals

Multi-Constellation Support

- Locks onto GNSS constellations: GPS, GLONASS, BeiDou, Galileo
- Assures fast lock and minimal time in holdover

High Precision

- Available with standard TCXO or optional OCXO
- Antenna cable-delay compensation for enhanced accuracy
- Accuracy 20ns (99%, clear sky)



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Technical Data

General Data

Unit Dimensions	19"W x 1.73"H x 7.7"D (483 x 44 x 155mm)
Mounting / Front Panel Height	19" Rack / 1 RU
Housing Material	Aluminum
Degree of Protection	IP40-rated enclosure protection
Weight	5.5 lb (2.5 kg)

Power Supply

Supply Voltage Range	LV: 24-48V dc +/-20% HV: 80-300V dc / 90-240V ac (50/60 Hz) +/-20%
Max Power Consumption	52VA
Redundant Power Supply	Optional

Indicators

LED	Locked (Green) Holdover (Yellow) Alarm (Red)
Display	Red Dot Matrix Display (5.0"x0.7"/127x18mm)

Environmental

Operating Temperature	-40°C to +70°C (-40°F to +158°F)
Storage Temperature	-40°C to +70°C (-40°F to +158°F)
Humidity	5% to 95%, non-condensing
Altitude	2000m

Unmodulated IRIG-B

Supported IRIG-B Protocols	B000/B002/B004/B006
Connector Type / Quantity	Pluggable compression screw terminal (twisted pair): up to 6 BNC female (coax): up to 12 ST (fiber): up to 6
Physical Performance (twisted pair, coax)	200 mA drive capability at 5V level Up to 160 ft. (50 m) cable 15 Ω output impedance Fully-isolated
Optical Performance (fiber)	820nm wavelength Optical power: -15.8 dBm into 50/125 µm fiber (-12 dBm into 62.5/125 µm fiber)

Modulated IRIG-B

Supported IRIG-B Protocols	B120/B122/B124/B126
Connector Type / Quantity	BNC female (coax): up to 6
Electrical Performance (twisted pair, coax)	5V pp (no load) / 3.2V pp (50 Ω load) output voltage 25 Ω output impedance



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Ethernet

Connector Type	1 RJ45 10/100/1000BaseT Ethernet Port 4 SFP slots (SFP transceivers optional)
Protocols	VLAN IEEE 802.1Q IEEE1588-2008V.2 (PTPv2) NTP/SNTP (with NTS) SNMP HSR/PRP (IEC 62439-3) MQTT HTTPS

GNSS Interface

GNSS Receiver	L1-C/A (1575.42 MHz) GPS signal
Multi-constellation 72-channel	E1-B/C (1575.42 MHz) Galileo L1OF (1602 MHz) GLONASS B1 (1561.098 MHz) BeiDou
	Note: TCXO supports GPS, Galileo, and GLONASS or BeiDou simultaneously OCXO supports GPS, and GLONASS or BeiDou simultaneously
Antenna Connector Type	TNC (female), 50 Ω / Optional F-type (female), 75 Ω
Antenna Type	Active
Holdover Oscillator	TCXO (standard): 0.1 ppm (approx. 8.64ms/24hrs) typical drift OCXO (optional): 1 ppb (approx. 8.64us/24hrs) typical drift
Tracking Sensitivity	-166dBm

Functional

PTP Profiles	UDP 802.3 IEEE C37.238-2011 (Power Profile) IEEE C37.238-2017 (Power Profile) IEC 61850-9-3 (Utility Profile) Telecom G.8265.1 Telecom G.8275.1 Telecom G.8275.2 Custom
Alarm Dry Contact	Type C / Breaking Capacity: 300mA @ 300V dc (resistive load)
Additional Features	Built-in SNMP agent, with trap generation User-configurable rules for daylight saving time (DST) Antenna cable open and short-circuit detection PPS/PPM signal Syslog

Export Information

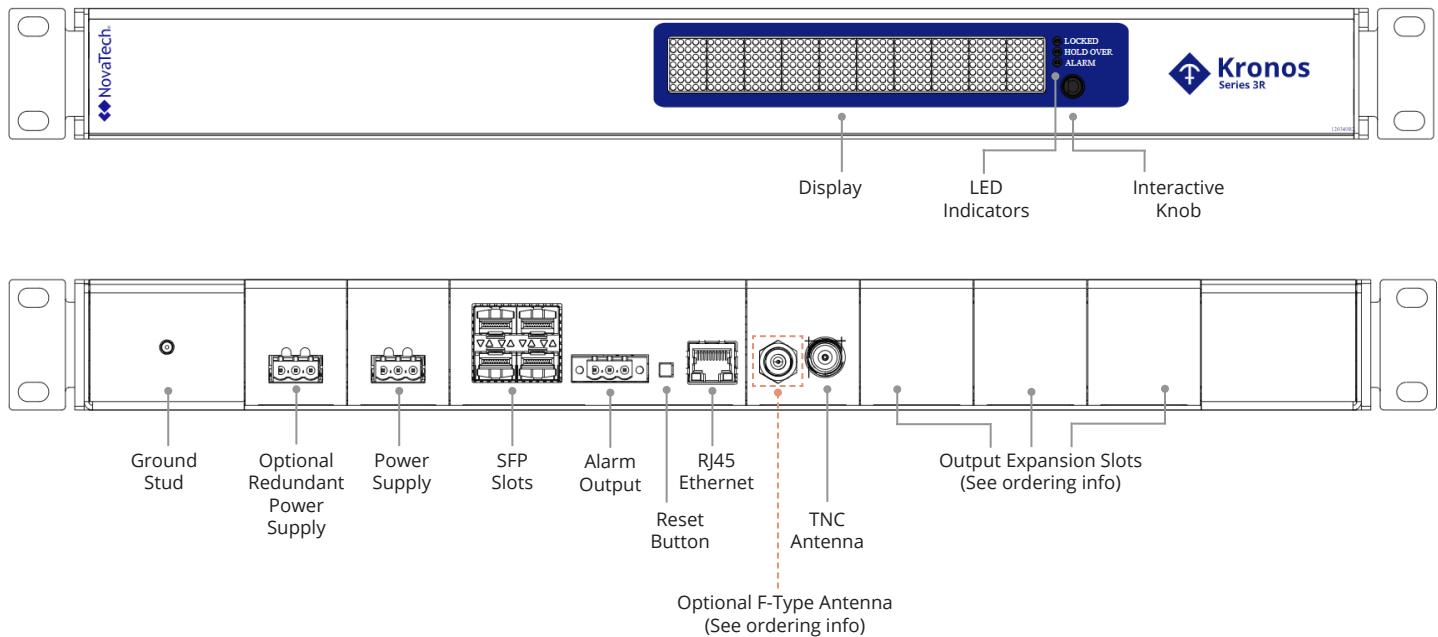
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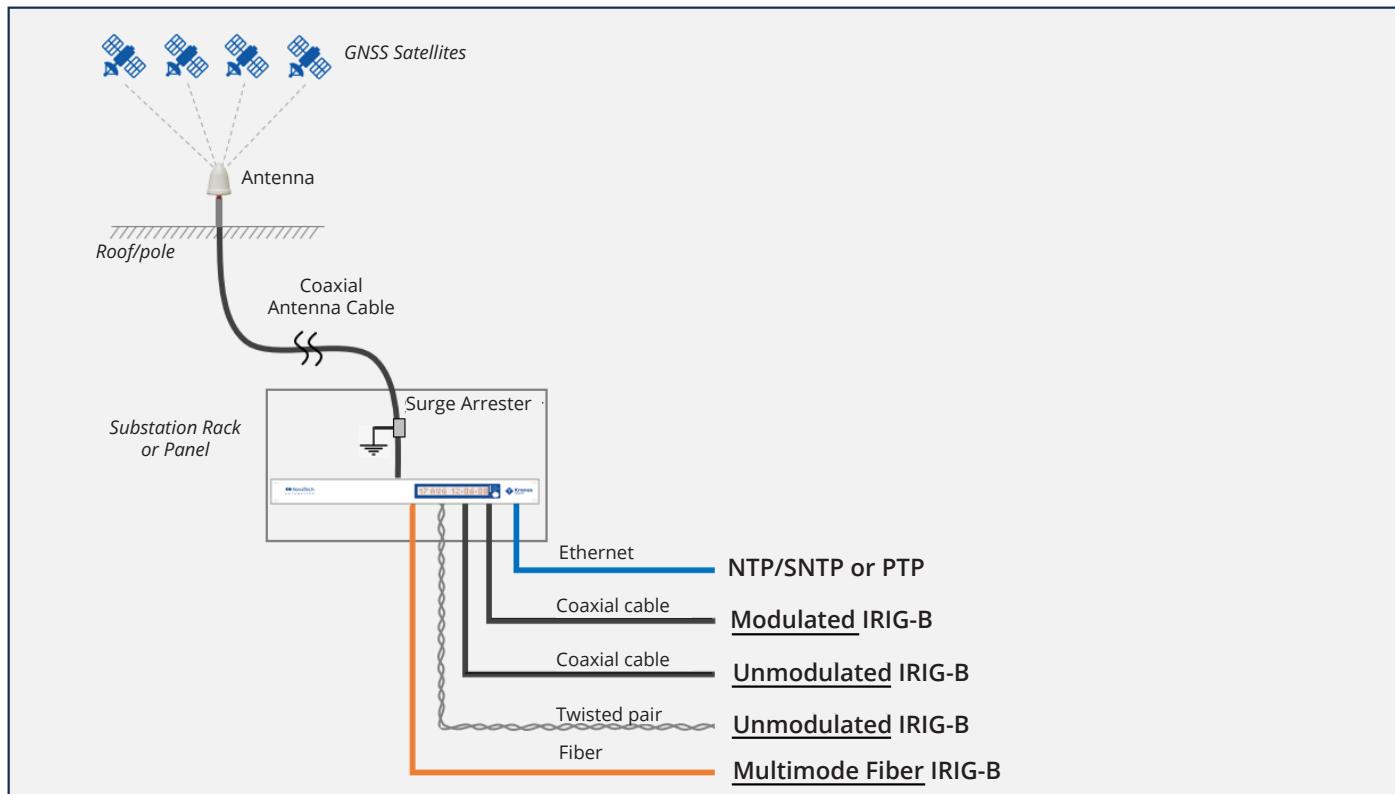
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Product Diagram



Application Diagram





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Ordering Information

Output Expansion Cards

Card P/N	-1	-2	-4	-A	-F
Type	Unmodulated	Unmodulated	Unmodulated	Modulated	Multimode Fiber
Connectors	1 BNC + Compression screw terminal	Compression screw terminal	4 BNC	2 BNC	2 ST
IRIG Formats	B000/2/4/6	B000/2/4/6	B000/2/4/6	B120/2/4/6	B000/2/4/6
Output Power	1 x 200mA	2 x 200mA	4 x 200mA	2 x 200mA	-15.8dBm in 50/125µm fiber
Diagram					

Model Builder (Excluding Accessories)

Model	Power Supply 1	Power Supply 2	Oscillator	Antenna Connector	Expansion Card 1	Expansion Card 2	Expansion Card 3	Description
Kronos 3R	-	-	-	-	[]	-	-	Rack mount satellite clock, includes 1 RJ45, 4 SFP Slots, 10' coax cable and surge arrestor
	HV	HV	-	-	-	-	-	80-300V dc/85-264V ac Power Supply
	LV	LV	-	-	-	-	-	18-60V dc Power Supply
	XX	-	-	-	-	-	-	No Redundant Power Supply
		TCXO	-	-	-	-	-	Standard Temperature Compensated Oscillator
		OCXO	-	-	-	-	-	Optional Oven-Controlled Oscillator
		[]	-	-	-	-	-	Standard TNC connector [no digits added to Model #]
		[F75]	-	-	-	-	-	Dual antenna connectors (TNC and F-type, available to use either)
			A	A	A	-	-	Dual Modulated Output Card
			1	1	1	-	-	Single Unmodulated Output Card
			2	2	2	-	-	Dual Unmodulated Output Card
			4	4	4	-	-	Quad Unmodulated Output Card
			F	F	F	-	-	Dual Fiber Output Card
			X	X	X	-	-	Empty Expansion Slot (note: Must fill in order)



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Ordering Information

Accessories (Append to Model #)

Optional SFP Transceivers up to 4 total X represents quantity for each type[bracketed items only inserted if at least 1 is selected]								Antenna	Antenna Cable	Antenna Mount	Description
[]	-	[]	-	[]	-	[]	-	-	-	-	-
[MM1X]	-	-	-	-	-	-	-	-	-	-	SFP-MM01, Multimode, LC, 550m, 850nm, 1Gbps
		[SM1X]	-	-	-	-	-	-	-	-	SFP-SM01, Single Mode, LC, 10km, 1310nm, 1Gbps
			[SM4X]	-	-	-	-	-	-	-	SFP-SM04, Single Mode, LC, 40km, 1310nm, 1Gbps
				[RJ1X]	-	-	-	-	-	-	SFP-RJ01, RJ45, 100m, 1Gbps
					AU	-	-	-	-	-	Universal Antenna
					XX	-	-	-	-	-	No Antenna
						C015	-	-	-	-	Antenna Cable 15' (4.5m) – RG58
						C030	-	-	-	-	Antenna Cable 30' (9m) – RG58
						C050	-	-	-	-	Antenna Cable 50' (15m) – RG58
						C080	-	-	-	-	Antenna Cable 80' (25m) – RG58
						C200	-	-	-	-	Antenna Cable 200' (60m) – LMR400
						XXXX	-	-	-	-	No Antenna Cable
							MT				Antenna Mount for Universal Antenna (AU)
							XX				No Antenna Mount

