Kronos Series 2 Satellite Clock

Introducing the Kronos Series 2 Satellite Clock, specifically designed for protection, automation, and control applications in power systems. Key features include high precision, multi-constellation support, output flexibility, and ethernet integration. Kronos is backed by the same NovaTech Automation sales and support policies as Orion and Bitronics products.

Kronos Series 2R Rack Mount

High Precision
The Master Clock achieves 60 ns (99%) maximum time deviation, and includes a digital temperature-compensated backup oscillator. Antenna cable-delay compensation further enhances accuracy.

Multi-Constellation Support
Kronos is more than just a GPS clock; it can lock onto any of the GNSS constellations: GPS, GLONASS, BeiDou or Galileo. This means more assurance of a fast lock and less time in holdover.

Output Flexibility
- Unmodulated IRIG-B over twisted pair, coax, or fiber
- Modulated IRIG-B over coax
- PPS or PPM signals
- NTP/SNTP on single or dual Ethernet

Ethernet Integration
Kronos supports browser-based configuration and SNMP is available for integration into the IT environment. NTP/SNTP can synchronize any Ethernet device not supporting twisted pair or coax. Port bonding is available on the Kronos Series 2R.

Two Models Available

	Kronos Series 2P	Kronos Series 2R
Mounting	Panel	19” rack
Front panel height	1 RU	1 RU
Isolated unmodulated outputs	Up to 2	Up to 6
Amplitude modulated outputs	Up to 2	Up to 6
Optical fiber outputs	Up to 2	Up to 6
Ethernet ports	1	1 or 2
NTP/SNTP	Yes	Yes
IRIG-B with IEEE C37.118 extensions	B000/B002/B004/B006, B120/B122/B124/B126	B000/B002/B004/B006, B120/B122/B124/B126
PPS signal	Yes	Yes
PPM signal	Yes	Yes
Alarm dry contact	Yes	Yes
Redundant power supply	No	Yes
Operating voltages	18-72V dc 80-300V dc / 86-264V ac (50/60 Hz)	
Max power consumption	7 VA	10 VA
Unit dimensions	10.6”W x 1.73”H x 5.54”D (269 x 44 x 141mm)	19”W x 1.73”H x 5.54”D (483 x 44 x 141mm)
Unit weight	3.1 lb (1.4kg)	5.1 lb (2.3kg)

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Specifications

GNSS Receiver
Multi-constellation 72-channel GPS, GLONASS, BeiDou, Galileo receiver

- L1-C/A (1575.42 MHz) GPS signal
- E1-B/C (1575.42 MHz) Galileo
- L1OF (1602 MHz) GLONASS
- B1 (1561.098 MHz) BeiDou
- Active antenna
- -166dBm tracking sensitivity (GPS signal)
- Single-satellite operation supported
- 60ns time pulse accuracy (99%)
- BNC coaxial connector (female)

Backup Oscillator
Digital temperature compensated crystal oscillator

- 0.1 ppm typical drift
- User-defined out-of-bounds alarm

Dot Matrix Display

- 5.0" x 0.7" (127 x 18mm) "hyper red" (630nm) LED
- User-configurable content: date, time and/or time zone / offset
- Clear text alarm messages

Daylight Savings Time

- Pre-defined DST rules for North America, Brazil, Europe
- Custom rules

Type Tests

- **IEC 61000-4-2**: Electrostatic discharge immunity test
- **IEC 61000-4-3**: Radiated, radio-frequency, electromagnetic field immunity test
- **IEC 61000-4-4**: Electrical fast transient/burst immunity test
- **IEC 61000-4-5**: Surge immunity test
- **IEC 61000-4-6**: Immunity to conducted disturbances, induced by radio-frequency fields
- **IEC 61000-4-11**: Voltage dips, short interruptions and voltage variations immunity tests
- **IEC 60255-5**: Insulation coordination for measuring relays and protection equipment

Alarm Dry Contact

- Normally closed, Type B
- Breaking capacity: 300 mA @ 300 Vdc (resistive load)

Outputs

Isolated unmodulated

- 200 mA drive capability at 5V level
- Up to 160 ft. (50 m) cable
- 15 Ω output impedance
- Fully-isolated (2.5kV ac, 1 minute)

Fiber optic

- 820nm wavelength
- Optical power:
  -15.8 dBm into 50/125 µm fiber
  (-12 dBm into 62.5/125 µm fiber)
- ST connectors

Amplitude modulated

- IRIG-B122/124/126 encoding
- 5V pp (no load) / 3.2V pp (50 Ω load) output voltage
- 25 Ω output impedance
- BNC connectors

Ethernet

- 10/100 Mbps port(s) for config, monitoring and time-based protocols
- VLAN IEEE 802.1Q support
- Embedded NTP/SNTP server, configurable access restrictions
- SNMP agent
- RJ45 connector(s)

Bonding / Link Aggregation

- None: two distinct IP addresses, one for each network interface
- Round-robin: alternate network packets over both interfaces
- Active-backup
- Broadcast: all packets are sent over both interfaces

Power Supply

- Operating voltages: 18–72V dc or 80–300V dc /85–264V ac (50/60 Hz)
- Less than 7 VA (2P) / 10 VA (2R) power consumption

Environmental

- -40° to +85°C (-40° to +185°F)
- 5% to 95%, non-condensing
- IP40-rated enclosure protection

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WORLDWIDE HASSLE-FREE 10 TEN YEAR WARRANTY