



Masterclock 2016-2017 Product Catalog

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Online: <http://www.masterclock.com/request-quote/>

30-Day Satisfaction Guarantee & 5-Year Limited Warranty

Masterclock offers one of the industry's best warranties. Under this coverage, Masterclock warrants all electronic hardware products against defects in materials and workmanship for 5 years from the date of sale. Masterclock will also pay for transportation if a product is returned for repairs within the first year. If a customer is dissatisfied for any reason, products may be returned within the first 30 days for a full refund. For more information, visit: <http://www.masterclock.com/support/warranty>

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Masterclock®

Multi-Functional Master Clocks

GMR1000

The GMR1000 is a compact time and frequency generator/server that can reference a variety of timing sources and provide a range of outputs to meet customer needs. The base model includes both NTP client and server functionality compatible within IPv4/IPv6 networks and offering Secure-Socket-Host (SSH) encryption for secure communications. Properly configured and using standard NTP polling rates, the device can support and synchronize hundreds of thousands of NTP clients.

FEATURES

Standard Inputs/Reference Sources

- > NTP client via RJ45 10/100 Mb Ethernet
- > NMEA 0183 via RS232/422 or USB
- > NENA format 0,1,8 via RS232/422 or USB
- > Internal high-stability TCXO oscillator ± 3 sec./year
- > Configuration via USB or Ethernet

Input Options

- > GPS or GPS/GLONASS receiver
- > Time codes: IRIG-B0 (DCLS), IRIG-B1 (AM), SMPTE 12M, 309M, 24/25/30 fps and 29.97 drop frame
- > Internal high-stability OCXO oscillator ± 0.25 sec/year
- > VITC input
- > Synchronizing signals: PPS, PPM, PPH
- > IEEE 1588 Precision Time Protocol

Standard Outputs

- > NTP server with 10/100 Mb Ethernet
- > NMEA 0183 via RS232/422 or USB
- > NENA format 0,1,8 via RS232/422 or USB

Output Options

- > Time codes: IRIG-B0 (DCLS), IRIG-B1 (AM), SMPTE 12M, 309M, 24/25/30 fps NDF
- > 5V at 20mA Pulse Per Second (PPS)
- > Programmable Pulse Output (PPO)
- > 10MHz sine wave
- > IEEE 1588 Precision Time Protocol



Other Features

- > Internal TXCO maintains time during loss of external sync within ± 3 seconds/year
- > WinDiscovery configuration software included
- > Fully configurable offsets for time zone and DST
- > Programmable relay closure - one event per day with NO/NC dry contact relay
- > Relay alerts loss of sync by default
- > Telnet/SSH communication
- > SNMP with custom MIB
- > IPv4/IPv6 compatible

Other Options

- > DB9 breakout adapter
- > Six-digit display
- > DIN rail mount available

Power, Physical Dimensions, Operating Parameters

- > DC input (9-28 VDC)
- > Includes external 12 VDC wall mount power supply with locking DC plug
- > Size: 6.44 x 4.06 x 1.44 in (16.35 x 10.32 x 3.65 cm), Weight: 16 oz (453.6 g)
- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Compliance

- > FCC, ROHS, CE Marked, ANSI

Rack mountable with an RM4



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GMR5000

The GMR5000 is a 1U rack mount time and frequency generator/server that can reference a variety of timing sources and provide a range of outputs to meet customer needs. The base model includes both NTP client and server functionality compatible with IPv4/IPv6 networks and offering Secure-Socket-Host (SSH) encryption for secure communications. Properly configured and using standard NTP polling rates, the device can support and synchronize thousands of simultaneous NTP clients.



FEATURES

Standard Inputs

- > NTP client via RJ45 10/100 Mb Ethernet (dual-port)
- > NMEA 0183 via RS232/422 or USB
- > NENA format 0,1,8 via RS232/422 or USB
- > Internal high-stability TCXO oscillator ± 3 sec./year
- > Configuration via USB or Ethernet

Input Options

- > GPS or GPS/GLONASS receiver
- > Time codes: IRIG-B0 (DCLS), IRIG-B1 (AM), SMPTE 12M, 309M, 24/25/30 fps and 29.97 drop frame
- > High-Stability Oscillator Options:
 - Internal high-stability OCXO oscillator ± 0.25 sec/year
 - Rubidium Oscillator ± 1 mS/year
- > Synchronizing pulses: PPS (second), PPM (minute), PPH (hour)
- > 10 MHz Input (CMOS or Sinusoidal)
- > VITC input
- > Optical Fiber LAN
- > IEEE 1588 Precision Time Protocol

Power, Physical Dimensions, Operating Parameters

- > Universal AC input
- > Size: 18.9w x 1.750h x 5.174d in (48w x 4.445h x 13.14d cm)
- > Weight: 2.6 lb (1.2 kg)
- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)
- > Available with 1RU rack mount

Standard Outputs

- > NTP server via RJ45 10/100 Mb Ethernet (dual-port)
- > NMEA 0183 via RS232/422 or USB
- > NENA format 0,1,8 via RS232/422 or USB
- > Kinematics/Truetime serial protocol
- > 5V at 100mA Pulse Per Second (PPS)

Output Options

- > Time codes: IRIG-B0 (DCLS), IRIG-B1 (AM), SMPTE 12M, 309M, 24/25/30 fps NDF
- > 5V at 100mA Programmable Pulse Output (PPO)
- > Optical Fiber LAN
- > 10 MHz Output (Sinusoidal)
- > IEEE 1588 Precision Time Protocol

Other Features

- > 13-Digit display (Date/Time or Day of year/Time)
- > Programmable relay closure - one event per day with NO/NC dry contact relay
- > Relay alerts loss of sync by default
- > WinDiscovery configuration software included
- > Fully configurable offsets for time zone and DST
- > Telnet/SSH communication
- > IPv4/IPv6 compatible
- > SNMP with custom MIB

Compliance

- > FCC, CE Marked, ROHS, ANSI

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GPS and GPS+GLONASS

The GPS and GPS+GLONASS receiver options for the GMR Series of master clocks provide precision time reference based on satellite broadcasts, achieving Stratum 1 synchronization. PPS on-time output is locked to the top of each second. Two antenna options are available for both standard and mobile applications.

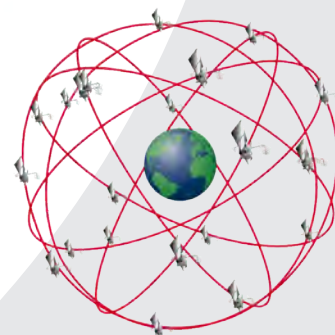
RECEIVER OPTIONS**FEATURES**

- > Stratum 1 synchronization via satellite constellations
- > Receive time signals from up to 24 satellites
- > Accurate reference to within ± 15 ns of UTC
- > PPS on-time output is locked to the top of each second
- > NMEA-0183 messages on serial port output
- > Provides most accurate external time source for GMR devices
- > Compact antenna designs for portable applications
- > Optional magnetic-mount or standard-mount antennas
- > Antenna cable lengths up to 500 ft (152 m) available
- > In-line surge arrestors and in-line GPS amplifiers available

	GPS Option	GPS+GNSS Option
Satellites	12-channel, up to 12 satellites simultaneously, parallel	32-channel, up to 24 satellites simultaneously, parallel
Frequency	L1, 1575 MHz	L1, 1575 MHz and 1598-1606 MHz
Antenna Connector	SMA female	SMA female
RF Bias to Antenna	5 V DC, center pin	5 V DC, center pin
PPS	50 ms, TTL level, on-time leading edge	50 ms, TTL level, on-time leading edge
Accuracy	± 60 ns of UTC	± 15 ns of UTC

ANTENNA OPTIONS

	Basic Antenna	Standard Antenna	High-Gain Antenna
Type	Active, External	Active, External	Active, External
Gain	28 ± 2 dB	28 ± 2 dB	40 ± 4 dB
Mount	Magnet/Adhesive	Outdoor, threaded pipe/mast. M24 x 1.5 internal thread - Mounting kit provided	Metal mounting kit provided, per user specifications
Operating Temp.	-40° to 85°C (up to 95% humidity)	-40° to 85°C (up to 95% humidity)	-40° to 85°C (up to 95% humidity)
Voltage	2.2-5 V	3-5 V	3.3-9 V
Polarization	Right hand circular	Right hand circular	Right hand circular
Impedance	50 Ω	50 Ω	50 Ω
Connector	SMA Female	SMA Female	SMA Female
Antenna Cable	Belden 8219 or equivalent	Belden 8219 or equivalent	Belden 8219 or equivalent
Weight	0.9 oz (26 g)	6.7 oz (190 g)	9.6 oz (272 g)
Dimensions	1.5 x 1.9 x .59 in (39 x 49 x 15mm)	3.7dia x 5.5h in (9.3dia x 14h cm)	3.2dia x 5.0h in (8.1dia x 12.6h cm)

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High Stability Oscillators

Masterclock offers three high-stability oscillator options for the GMR Series. When locked to GPS, the OCXO 10 MHz sine wave frequency will have the same long-term stability as an atomic clock. When not tied to GPS, a precision frequency 10 MHz reference output is available as a source for laboratory use or for an RF reference, including cellular applications. The HSO option is required for all 10 MHz signal outputs.

<i>Freq. = 10 MHz</i>		HSO-1 Standard	HSO-2	HSO-3 Available only in GMR5000
Oscillator Type		TCXO	OCXO	Rubidium
Freq. Stability - Aging/Day		$\leq \pm 0.0027 \text{ ppm}$ (or $2.7\text{E-}9/\text{day}$)	$\leq \pm 1\text{E-}9/\text{day}$	$\pm 4\text{E-}11/\text{day}$
Freq. Stability - Aging/Year		$\leq \pm 1.0 \text{ ppm}$ (or $1\text{E-}6/\text{year}$)	$\leq \pm 1\text{E-}7/\text{year}$	$\pm 1.5\text{E-}9/\text{year}$
Power Consumption		$\leq 0.021\text{W}$	$\leq 3.5\text{W}$ warm up, $\leq 1.5\text{W}$ steady state	$\leq 14\text{W}$ warm up, $\leq 8\text{W}$ steady state
ROHS Compliant		Yes	Yes	Yes
Short Term Stability (Allan Variance), $t=1\text{sec.}$		-	-	$\leq 5\text{E-}11$
Time Drift per Year (max)		$\pm 3 \text{ sec./year}$	$\pm 0.25 \text{ sec./year}$	$\pm .001 \text{ sec. / year}$
Phase Noise (dBc/Hz) @ 10 MHz	1 Hz	-	-	$\leq -65 \text{ dBc/Hz}$
	10 Hz	-	$\leq -110 \text{ dBc/Hz}$	$\leq -85 \text{ dBc/Hz}$
	100 Hz	$\leq -135 \text{ dBc/Hz}$	$\leq -130 \text{ dBc/Hz}$	$\leq -112 \text{ dBc/Hz}$
	1k Hz	$\leq -135 \text{ dBc/Hz}$	$\leq -145 \text{ dBc/Hz}$	$\leq -130 \text{ dBc/Hz}$
	10k Hz	$\leq -148 \text{ dBc/Hz}$	$\leq -155 \text{ dBc/Hz}$	$\leq -140 \text{ dBc/Hz}$

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Time Code Generator

The **Time Code Generator** option for the GMR Series generates SMPTE or IRIG-B time codes, as well as IRIG-A and IRIG-E waveforms. The TCG option is software controlled and locks to GPS satellites, Time Code Reader, NTP Client, and/or High-Stability Oscillator.

		SMPTE 12M	IRIG-B0 (DCLS, PWM)	IRIG-B1 (AM)	IRIG-A (DCLS)	IRIG-A (AM)	IRIG-E (DCLS)	IRIG-E (AM)
Rate		24, 25, 30 fps NDF and 29.97 DF	1kHz, 1mS	1kHz, 1mS	10kHz, 0.1mS	10kHz, 0.1mS	100Hz, 10mS	100Hz, 10mS
Output Level @ 50 Ω		4 Vpp (16 dBm)	4 Vp (25 dBm)	5 Vpp (18 dBm)	3 Vp (2.7 dBm)	4 Vpp (5.2 dBm)	3 Vp (2.7 dBm)	4 Vpp (5.2 dBm)
Mark to Space Ratio		N/A	N/A	3.3:1	N/A	3.3:1	N/A	3.3:1
Gain		1	1	1	1	1	1	1
Number of Inputs (SE: Single Ended - Unbalanced, Differential - Balanced)		1 SE, 1 DIFF	1 SE, 1 DIFF	1 SE, 1 DIFF	1 SE, 1 DIFF	1 SE, 1 DIFF	1 SE, 1 DIFF	1 SE, 1 DIFF
Type		NDF	DCLS	AM 1kHz	DCLS	AM 10kHz	DCLS	AM 100Hz
Encoding		None, Leitch Date, SMPTE 309M	None or IEEE 1344 year or IRIG STD 200-04					
IRIG Coded Expression IRIG STD 200-04	0 BCD _{TOY} , CF, SBS	N/A	B000	B120	A000	A130	E000	E110
	1 BCD _{TOY} , CF	N/A	B001	B121	A001	A131	E001	E111
	2 BCD _{TOY}	N/A	B002	B122	A002	A132	E002	E112
	3 BCD _{TOY} , SBS	N/A	B003	B123	A003	A133	E003	E113
	4 BCD _{TOY} , BCD _{YEAR} , CF, SBS (IEEE-1344 - 1995 Encoding)	N/A	B004	B124	A004	A134	E004	E114
	5 BCD _{TOY} , BCD _{YEAR} , CF	N/A	B005	B125	A005	A135	E005	E115
	6 BCD _{TOY} , BCD _{YEAR}	N/A	B006	B126	A006	A136	E006	E116
	7 BCD _{TOY} , BCD _{YEAR} , SBS	N/A	B007	B127	A007	A137	E007	E117

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Time Code Reader

The **Time Code Reader** option for the GMR Series automatically detects and locks to incoming time code using an automatic gain control circuit, reading and synchronizing to SMPTE or IRIG-B time code, as well as IRIG-A and IRIG-E waveforms.

		SMPTE 12M	IRIG-B0 (DCLS, PWM)	IRIG-B1 (AM)	IRIG-A (DCLS)	IRIG-A (AM)	IRIG-E (DCLS)	IRIG-E (AM)
Rate		24, 25, 30 fps NDF and 29.97 DF	1kHz, 1mS	1kHz, 1mS	10kHz, 0.1mS	10kHz, 0.1mS	100Hz, 10mS	100Hz, 10mS
Input Level Range		0.2-18 Vpp (2 Vpp _{nom})	0.5-12 Vp (5Vpp _{nom})	0.5-8 Vpp (5 Vpp _{nom})	0.5-12 Vp (5 Vp _{nom})	0.5-8 Vpp (5 Vpp _{nom})	0.5-12 Vp (5 Vp _{nom})	0.5-8 Vpp (5 Vpp _{nom})
Input Impedance kΩ		>10 kΩ			>10 kΩ			
Mark to Space Ratio		N/A	N/A	3.3:1	N/A	3.3:1	N/A	3.3:1
Automatic Gain Adjust		Over input level range						
Number of Inputs (SE: Single Ended - Unbalanced, Differential - Balanced)		1 SE, 1 DIFF	1 SE, 1 DIFF	1 SE, 1 DIFF	1 SE, 1 DIFF	1 SE, 1 DIFF	1 SE, 1 DIFF	1 SE, 1 DIFF
Type		NDF	DCLS	AM 1kHz	DCLS	AM 10kHz	DCLS	AM 100Hz
Encoding		None, Leitch Date, SMPTE 309M	None or IEEE 1344 year or IRIG STD 200-04					
IRIG Coded Expression IRIG STD 200-04	0 BCD _{TOY} , CF, SBS	N/A	B000	B120	A000	A130	E000	E110
	1 BCD _{TOY} , CF	N/A	B001	B121	A001	A131	E001	E111
	2 BCD _{TOY}	N/A	B002	B122	A002	A132	E002	E112
	3 BCD _{TOY} , SBS	N/A	B003	B123	A003	A133	E003	E113
	4 BCD _{TOY} , BCD _{YEAR} , CF, SBS (IEEE-1344 - 1995 Encoding)	N/A	B004	B124	A004	A134	E004	E114
	5 BCD _{TOY} , BCD _{YEAR} , CF	N/A	B005	B125	A005	A135	E005	E115
	6 BCD _{TOY} , BCD _{YEAR}	N/A	B006	B126	A006	A136	E006	E116
	7 BCD _{TOY} , BCD _{YEAR} , SBS	N/A	B007	B127	A007	A137	E007	E117

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NTP100-OSC

FEATURES

- Compact NTP client / server
- Internal precision TXCO accurate of ± 3 seconds/year
- Optional OCXO accurate of ± 250 ms/year
- NTP output accuracy of ± 2 milliseconds
- 6-digit clock display (red)
- Adjustable time display brightness

SPECIFICATIONS

Holdover Accuracy

- > ± 3 seconds/year using standard internal precision TXCO temperature-compensated crystal oscillator
- > High-stability option with OCXO provides typical stability of 1 ppb/day (± 250 ms/year) after 30 days of aging
- > With loss of power, device reverts to an internal battery-backed real-time clock chip with accuracy of ± 1 min/year or < 165 ms per day

Connectors

- > RJ45 - 10/100MB Ethernet
- > DC input - 2.1 mm male
- > RS-232 - 9 pin male
- > USB for configuration

Physical Size

- > Size: 6.44 x 4.06 x 1.44 in (16.35 x 10.32 x 3.65 cm)
- > Weight: 16 oz (453.6 g)

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Options

- > High stability OCXO option provides typical holdover stability of 1 ppb/day (± 250 ms/year)
- > 1PPS output



Network Compatibility

- > Supports NTP, DHCPv4, DHCPv6 for automatic acquisition of network address, name servers, and timeserver configuration
- > Telnet/SSH communication
- > IPv4/IPv6 compatible
- > SNMP with custom MIB

Configuration

- > Configure devices through provided WinDiscovery software or Telnet/SSH
- > Configuration is saved to nonvolatile memory and survives power losses
- > Authenticated network messages prevent unauthorized tampering of clock configuration

Power Supply

- > DC input (9-28 VDC)
- > Power consumption: < 7.5 W
- > Includes external 12VDC wall mount power supply with locking DC plug

Compliance

- > FCC, ROHS, CE Marked, ANSI

Rack mountable with RM4



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NTP100-GPS

FEATURES

- Compact NTP client / server
- Synchronizes to GPS satellites for Stratum 1 accuracy
- NTP output accuracy of ± 2 milliseconds
- 6-digit clock display (red)
- Adjustable time display brightness
- NMEA 0183 via RS232 or Ethernet

SPECIFICATIONS

Holdover Accuracy

- > High-stability option with OXCO provides typical stability of 1 ppb/day (± 250 ms/year) after 30 days of aging
- > With loss of power, device reverts to an internal battery-backed real-time clock chip with accuracy of ± 1 min/year or < 165 ms per day

Connectors

- > RJ45 - 10/100MB Ethernet
- > DC input - 2.1 mm male jack
- > RS-232 - 9 pin male
- > Antenna - SMA
- > USB for configuration

Physical Size

- > Size: 6.44 x 4.06 x 1.44 in (16.35 x 10.32 x 3.65 cm)
- > Weight: 16 oz (453.6 g)

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Options

- > GNSS options for GPS and GLONASS tracking
- > High stability OCXO option provides typical holdover stability of 1 ppb/day (± 250 ms/year) in case of GPS loss
- > 1PPS output



Network Compatibility

- > Supports NTP, DHCPv4, DHCPv6 for automatic acquisition of network address, name servers, and timeserver configuration
- > Telnet/SSH communication
- > IPv4/IPv6 compatible
- > SNMP with custom MIB

Configuration

- > Configure devices through provided WinDiscovery software or Telnet/SSH
- > Configuration is saved to nonvolatile memory and survives power losses
- > Authenticated network messages prevent unauthorized tampering of clock configuration

Power Supply

- > DC input (9-28 VDC)
- > Power consumption: < 7.5 W
- > Includes external 12 VDC wall mount power supply with locking DC plug

Compliance

- > FCC, ROHS, CE Marked, ANSI

Antenna

- > Weather-proof, pre-amplified antenna included with 16 ft (5 m) of coaxial cable
- > Optional antenna kit is available with antenna, 50 ft (15 m) cable and antenna mounting bracket

Rack mountable with RM4



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NTP100-TC

FEATURES

- Compact NTP client / server
- Synchronize to existing IRIG or SMPTE time code source
- NTP output accuracy of ± 2 milliseconds
- Differential or single-ended time code input
- 6-digit clock display (red)
- Adjustable time display brightness



SPECIFICATIONS

Time Code Inputs

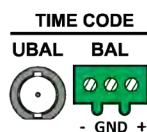
- > SMPTE (30/25/25 fps - non-drop frame only) to Leitch Date Encoding Standard
- > IRIG-B0 (DCLS/PWM), IEEE 1344 standard
- > IRIG-B1 (AM), IEEE 1344 standard

Holdover Accuracy

- > With loss of power, device reverts to an internal battery-backed real-time clock chip with accuracy of ± 1 min/year or < 165 ms per day

Connectors

- > RJ45 - 10/100MB Ethernet
- > DC input - 2.1 mm male jack
- > 3-pin terminal block (differential time code input)
- > BNC (single-ended time code input)
- > USB for configuration



Physical Size

- > Size: 6.44 x 4.06 x 1.44 in (16.35 x 10.32 x 3.65 cm)
- > Weight: 16 oz (453.6 g)

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Network Compatibility

- > Supports NTP, DHCPv4, DHCPv6 for automatic acquisition of network address, name servers, and timeserver configuration
- > Telnet/SSH communication
- > IPv4/IPv6 compatible
- > SNMP with custom MIB

Configuration

- > Configure devices through provided WinDiscovery software or Telnet
- > Configuration is saved to nonvolatile memory and survives power losses
- > Authenticated network messages prevent unauthorized tampering of clock configuration

Power Supply

- > DC input (9-28 VDC)
- > Power consumption: < 7.5 W
- > Includes external 12 VDC wall mount power supply with locking DC plug

Compliance

- > FCC, ROHS, CE Marked, ANSI

Rack mountable with RM4



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Masterclock®

Digital Analog Clocks

CLDNTD12



Seconds Display Available



The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features.



STANDARD FEATURES

- > 2.3 in (5.8 cm) 4-digit LED display of hours and minutes with simultaneous analog LED display of seconds available in red, green, blue, amber or white* (*center HH:MM digits only)
- > Syncs to any NTP source for accurate traceable time
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included - provides easy configuration of clocks and generators attached to network
- > Fully configurable network settings, including DHCP / BOOTP / STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12 or 24 hr format – hh:mm
- > Adjustable brightness levels
- > Visibility: 100 feet (30 meters)

Power

- > IEC AC Power - 90 to 264 vAc (47/63 Hz)
- > Optional PoE (Power over Ethernet IEEE802.3af)
- > Power consumption: < 10W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Size: 12w x 12h x 2.1d in (30.5w x 30.5h x 5.3d cm)
- > Weight: 5.5 lbs (2.5 kg)
- > Black powder-coated steel chassis

Connectors

- > Ethernet RJ45
- > USB connector for configuration
- > AC Power- IEC 60320-C7

Compliance

- > FCC
- > CE Marked
- > ROHS
- > ANSI

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CLDTCD12



Seconds Display Available



The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features.

Power

- > IEC AC Power - 90 to 264 vAc (47/63 Hz)
- > Power consumption: < 10W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

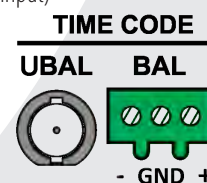
- > Size: 12w x 12h x 2.1d in (30.5w x 30.5h x 5.3d cm)
- > Weight: 5.5 lbs (2.5 kg)
- > Black powder-coated steel chassis

Connectors

- > 3-pin terminal block (differential time code input)
- > BNC (single-ended time code input)
- > AC Power - IEC 60320-C7
- > USB connector for configuration

Compliance

- > FCC
- > CE Marked
- > ROHS
- > ANSI



STANDARD FEATURES

- > 2.3 in (5.8 cm) 4-digit LED display of hours and minutes with simultaneous analog LED display of seconds available in red, green, blue, amber or white* (*center HH:MM digits only)
- > Syncs to IRIG B, SMPTE 12M, 309M, 24/25/30 fps (non-drop frame formats only)
- > Automatic time code type detection and input level control
- > WinDiscovery software utility included - provides easy configuration
- > Configures to time zone and daylight saving time parameters
- > Fully configurable network settings, including DHCP / BOOTP / STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Display time in 12 or 24 hr format - hh:mm
- > Adjustable brightness levels
- > Visibility: 100 feet (30 meters)

OPTIONS

- > VITC input

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FEATURES

- Syncs to any NTP source for accurate traceable time
- Complete flexibility in daylight savings time configurations
- Uses standard Ethernet wiring
- Fully configurable via supplied Windiscovery software
- Front indicator light provides synchronization status
- Microprocessor-controlled stepper motor with sweeping second hand for quiet operation
- Battery-backed real time clock chip in case of loss of synchronization or power



SPECIFICATIONS

Holdover Accuracy

- > With loss of power, device reverts to an internal battery-backed real-time clock chip with accuracy of $\pm 1\text{min/year}$ or $< 165\text{ms per day}$

Network Compatibility

- > Supports DHCPv4, DHCPv6 for automatic acquisition of network address, name servers, and timeserver configuration
- > Internet protocols: TELNET/SSH, SNMP
- > IPv4, IPv6 compliant

Connectors

- > Ethernet RJ45
- > IEC 320 AC input
- > USB port for configuration

Options

- > 12/24-hour face
- > 24-hour face
- > Face plate illumination
- > Dual face (CLKNTD12-DF)
- > Stainless steel case



Configuration

- > Configure devices through provided WinDiscovery software or Telnet/SSH
- > Configuration is saved to nonvolatile memory and survives power losses
- > Authenticated network messages prevent unauthorized tampering of clock configuration

Power

- > 90-265 VAC 50/60 Hz
- > IEC AC power connector and cord
- > PoE (Power over Ethernet) option available

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing at +25°C)

Physical

- > Weight: 7.6 lb (3.5 kg)
- > Size: 12.5 in (31.8cm) w, 4.25in (10.8cm) h
- > Black powder-coated steel chassis
- > Polycarbonate lens
- > Wall mount bracket provided

Compliance

- > FCC
- > CE Marked
- > ROHS
- > ANSI

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CLKNTD12-DF

FEATURES

- Syncs to any NTP source for accurate traceable time
- Complete flexibility in daylight saving time configurations
- Uses standard Ethernet wiring
- Fully configurable via supplied Windiscovery software
- Front indicator light provides synchronization status
- Microprocessor-controlled stepper motor with sweeping second hand for quiet operation
- Battery-backed real time clock chip in case of loss of synchronization or power

SPECIFICATIONS

Holdover Accuracy

- > With loss of power, device reverts to an internal battery-backed real-time clock chip with accuracy of $\pm 1\text{min/year}$ or $< 165\text{ms per day}$

Network Compatibility

- > Supports DHCPv4, DHCPv6 for automatic acquisition of network address, name servers, and timeserver configuration
- > Internet protocols: TELNET/SSH, SNMP
- > IPv4, IPv6 compliant

Connectors

- > Ethernet RJ45
- > IEC 320 AC input

Options

- > 12/24-hour face
- > 24-hour face
- > Face plate illumination
- > Stainless steel case



Configuration

- > Configure devices through provided WinDiscovery software or Telnet/SSH
- > Configuration is saved to nonvolatile memory and survives power losses
- > Authenticated network messages prevent unauthorized tampering of clock configuration

Power

- > 90-265 VAC 50/60 Hz
- > IEC AC power connector and cord
- > PoE (Power over Ethernet) option available

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Weight: 11 lb (5 kg)
- > Size: 12.5 in (31.8 cm) w, 6 in (15.2 cm) h
- > Black powder-coated steel chassis
- > Polycarbonate lens
- > Ceiling/wall mount bracket provided

Compliance

- > FCC
- > CE Marked
- > ROHS
- > ANSI

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FEATURES

- Syncs to any NTP source for accurate traceable time
- Complete flexibility in daylight saving time configurations
- Uses standard Ethernet wiring
- Fully configurable via supplied Windiscovery software
- Front indicator light provides synchronization status
- Microprocessor-controlled stepper motor with sweeping second hand for quiet operation
- Battery-backed real time clock chip in case of loss of synchronization or power



SPECIFICATIONS

Holdover Accuracy

- > With loss of power, device reverts to an internal battery-backed real-time clock chip with accuracy of $\pm 1\text{min/year}$ or $< 165\text{ms per day}$

Network Compatibility

- > Supports DHCPv4, DHCPv6 for automatic acquisition of network address, name servers, and timeserver configuration
- > Internet protocols: TELNET/SSH, SNMP
- > IPv4, IPv6 compliant

Connectors

- > Ethernet RJ45
- > IEC 320 AC input
- > USB port for configuration

Options

- > Face plate illumination
- > Stainless steel case
- > Dual face (CLKNTD15-DF)

Configuration

- > Configure devices through provided WinDiscovery software or Telnet/SSH
- > Configuration is saved to nonvolatile memory and survives power losses
- > Authenticated network messages prevent unauthorized tampering of clock configuration

Power

- > 90-265 VAC 50/60 Hz
- > IEC AC power connector and cord
- > PoE (Power over Ethernet) option available

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Weight: 7.0 lb (3.18 kg)
- > Size: 14.9 in (37.85 cm) w, 4.08 in (10.35 cm) h
- > Black powder-coated steel chassis
- > Polycarbonate lens
- > Wall mount bracket provided

Compliance

- > FCC
- > CE Marked
- > ROHS
- > ANSI

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CLKNTD15-DF

FEATURES

- Syncs to any NTP source for accurate traceable time
- Complete flexibility in daylight saving time configurations
- Uses standard Ethernet wiring
- Fully configurable via supplied Windiscovery software
- Front indicator light provides synchronization status
- Microprocessor-controlled stepper motor with sweeping second hand for quiet operation
- Battery-backed real time clock chip in case of loss of synchronization or power



SPECIFICATIONS

Holdover Accuracy

- > With loss of power, device reverts to an internal battery-backed real-time clock chip with accuracy of $\pm 1\text{min/year}$ or $< 165\text{ms per day}$

Network Compatibility

- > Supports DHCPv4, DHCPv6 for automatic acquisition of network address, name servers, and timeserver configuration
- > Internet protocols: TELNET/SSH, SNMP
- > IPv4, IPv6 compliant

Connectors

- > Ethernet RJ45
- > IEC 320 AC input

Options

- > Stainless steel case



Configuration

- > Configure devices through provided WinDiscovery software or Telnet/SSH
- > Configuration is saved to nonvolatile memory and survives power losses
- > Authenticated network messages prevent unauthorized tampering of clock configuration

Power

- > 90-265 VAC 50/60 Hz
- > IEC AC power connector and cord
- > PoE (Power over Ethernet) option available

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Weight: 11 lb (5 kg)
- > Size: 14.9 in (37.85 cm) w, 6 in (15.2 cm) h
- > Black powder-coated steel chassis
- > Polycarbonate lens
- > Ceiling/wall mount bracket provided

Compliance

- > FCC
- > CE Marked
- > ROHS
- > ANSI

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- Battery-backed real time clock chip in case of loss of synchronization or power



SPECIFICATIONS

Holdover Accuracy

- > With loss of power, device reverts to an internal battery-backed real-time clock chip with accuracy of $\pm 1\text{min/year}$ or $< 165\text{ms per day}$

Network Compatibility

- > Supports DHCPv4, DHCPv6 for automatic acquisition of network address, name servers, and timeserver configuration
- > Internet protocols: TELNET/SSH, SNMP
- > IPv4, IPv6 compliant

Connectors

- > Ethernet RJ45
- > IEC 320 AC input
- > USB port for configuration

Options

- > Face plate illumination
- > Stainless steel case

Configuration

- > Configure devices through provided WinDiscovery software or Telnet/SSH
- > Configuration is saved to nonvolatile memory and survives power losses
- > Authenticated network messages prevent unauthorized tampering of clock configuration

Power

- > 90-265 VAC 50/60 Hz
- > IEC AC power connector and cord
- > PoE (Power over Ethernet) option available

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing at +25°C)

Physical

- > Weight: 11.4 lb (5.1 kg)
- > Size: 18 in (45.7 cm) w, 5 in (12.7 cm) h
- > Black powder-coated steel chassis
- > Polycarbonate lens
- > Wall mount bracket provided

Compliance

- > FCC
- > CE Marked
- > ROHS
- > ANSI

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NTP Driven Clocks

NTD200



STANDARD FEATURES

- > 0.6 in (1.5 cm) 6-digit LED display available in red, green, or amber
- > Syncs to any NTP source for accurate traceable time
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included - provides easy configuration of clocks and generators attached to network
- > Fully configurable network settings, including DHCP and STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12 or 24 hr format – hh:mm:ss
- > Display date – mm:dd:yy, dd:mm:yy or yy:mm:dd – configurable
- > Adjustable brightness levels
- > Visibility: 30 feet (9 meters)
- > Dry contact relay option
- > PM indicator

SPECIFICATIONS

Connectors

- > Ethernet RJ45
- > USB for configuration
- > DC input

Power

- > DC (9–28 VDC)
- > Power consumption < 6W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Size: 6.44w x 1.44h x 4.06d in (16.35w x 3.65h x 10.32d cm)
- > Weight: 16 oz (453.6 g)

Compliance

- > FCC
- > CE Marked
- > ROHS
- > ANSI

The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

Rack mountable with an RM4



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NTDS16



STANDARD FEATURES

- > 1 in (2.5 cm) 6-digit LED display available in red, green, blue or amber
- > Syncs to any NTP source for accurate traceable time
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included – provides easy configuration of clocks and generators attached to network
- > Fully configurable network settings, including DHCP / BOOTP / STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm:ss
- > Display time & date or UTC & local time
- > Display date – mm:dd:yy, dd:mm:yy or yy:mm:dd
- > Configurable to alternate showing date and time automatically
- > Adjustable brightness levels
- > Visibility: 50 feet (15 meters)
- > Dry contact relay option
- > PM indicator

OPTIONS

- > Surface mount (desktop version)
- > Rack mount (NTDS16-RM)



SPECIFICATIONS

Connectors

- > Ethernet RJ45
- > DC input
- > IEC C5 A/C Power
- > USB for configuration

Power

- > Choice of – IEC AC, POE (Power over Ethernet IEEE802.3af) or DC (24VDC)
- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption < 8W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Surface mount (desktop version)
 - Size: 10.7w x 1.7h x 3.5d in (27.2w x 4.31h x 8.9d cm)
 - Weight: 1.0 lbs (0.45 kg)
- > Rack-mount
 - Size: 16.9w x 1.7h x 3.5d in (43w x 4.31h x 8.9d cm)
 - Weight: 1.73 lb (0.78 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI

The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

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NTDS19



STANDARD FEATURES

- > 1 in (2.5 cm) 9-digit LED display available in red, green, blue or amber
- > Syncs to any NTP source for accurate traceable time
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included – provides easy configuration of clocks and generators attached to network
- > Fully configurable network settings, including DHCP / BOOTP / STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm:ss with three-digit day of year
- > Display date – mm:dd:yy, dd:mm:yy or yy:mm:dd
- > Configurable to alternate showing date and time automatically
- > Adjustable brightness levels
- > Visibility: 50 feet (15 meters)
- > Dry contact relay option
- > PM indicator

OPTIONS

- > Surface mount (desktop version)
- > Rack mount (NTDS19-RM)



SPECIFICATIONS

Connectors

- > Ethernet RJ45
- > DC input
- > IEC C5 A/C Power
- > USB for configuration

Power

- > Choice of – IEC AC, POE (Power over Ethernet IEEE802.3af) or DC (24 VDC)
- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption <15W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Surface mount (desktop version)
 - Size: 10.9w x 1.75h x 4.5d in (27.64w x 4.5h x 11.4d cm)
 - Weight: 1.0 lbs (0.5 kg)
- > Rack-mount
 - Size: 16.9w x 1.7h x 3.5d in (43w x 4.31h x 8.9d cm)
 - Weight: 1.73 lb (0.78 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI



The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

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NTDS112



STANDARD FEATURES

- > 1 in (2.5 cm) 12-digit LED display colors available in red, green, blue or amber
- > Syncs to any NTP source for accurate traceable time
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included - provides easy configuration of clocks and generators attached to network
- > Fully configurable network settings, including DHCP/BOOTP/STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm:ss
- > Display date – mm:dd:yy, dd:mm:yy or yy:mm:dd
- > Display time & date or UTC & local time
- > Configurable to alternate showing date and time automatically
- > Adjustable brightness levels
- > Visibility: 50 feet (15 meters)
- > Dry contact relay option
- > PM indicator

OPTIONS

- > Surface mount (desktop version)
- > Rack mount (NTDS112 -RM)

SPECIFICATIONS

Connectors

- > Ethernet RJ45
- > IEC AC Power
- > DC Input
- > USB for configuration

Power

- > Choice of – IEC AC, POE (Power over Ethernet IEEE802.3af) or DC (24 VDC)
- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption < 8W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Surface mount (desktop version)
 - Size: 17w x 1.75h x 4.5d in (43.2w x 4.5h x 11.4d cm)
 - Weight: 2.0 lbs (0.9 kg)
- > Rack-mount
 - Size: 16.9w x 1.7h x 3.5d in (43w x 4.31h x 8.9d cm)
 - Weight: 1.73 lb (0.78 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI

The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

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NTP Driven Clocks

NTDS24



STANDARD FEATURES

- > 2.3 in (5.8 cm) 6-digit LED display available in red, green, blue, amber or white
- > Syncs to any NTP source for accurate traceable time
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included – provides easy configuration of clocks and generators attached to network
- > Fully configurable network settings, including DHCP / BOOTP / STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm
- > Display date – mm:dd
- > Configurable to alternate showing date and time automatically
- > Adjustable brightness levels
- > Wall-mount bracket
- > Visibility: 100 feet (30 meters)
- > Dry contact relay option
- > PM indicator

OPTIONS

- > Tilt-wall bracket
- > Flush-mount bracket
- > Stainless steel case



SPECIFICATIONS

Connectors

- > Ethernet RJ45
- > DC input
- > USB for configuration

Power

- > Choice of – POE (Power over Ethernet IEEE802.3af) or DC (24 VDC)
- > Power consumption < 8W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Size: 10.1w x 3.8h x 1.75d in (25.7w x 9.7h x 4.5d cm)
- > Weight: 2.0 lbs (0.9 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI



The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

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NTDS24-DF



STANDARD FEATURES

- > 2.3 in (5.8 cm) 4-digit LED display available in red, green, blue, amber, or white
- > Syncs to any NTP source for accurate traceable time
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > WinDiscovery software utility included - provides easy configuration of clocks and generators attached to network
- > Fully configurable network settings, including DHCP / BOOTP / STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Configures to time zone and daylight saving time parameters
- > Display time in 12 or 24 hr format – hh:mm
- > Display date – mm:dd
- > Configurable to alternate showing date and time automatically
- > Adjustable brightness levels
- > Visibility: 100 feet (30 meters)
- > Dry contact relay option
- > PM indicator

OPTIONS

- > Side wall-mount bracket

SPECIFICATIONS

Connectors

- > Ethernet RJ45
- > DC input
- > USB for configuration

Power

- > Choice of – POE (Power over Ethernet IEEE802.3af) or DC (24 VDC)
- > Power consumption < 15W

Physical

- > Black powder-coated steel chassis
- > Size: 10.3w x 7h x 3.5d in (25.9w x 17.8h x 8.4d cm)
- > Weight: 4.0 lbs (1.8 kg)

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Compliance

- > FCC, ROHS, CE Marked, ANSI



The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

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NTP Driven Clocks

NTDS26



STANDARD FEATURES

- > 2.3 in (5.8 cm) 6-digit LED display available in red, green, blue, amber or white
- > Syncs to any NTP source for accurate traceable time
- > Configures to time zone and daylight saving time parameters
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > WinDiscovery software utility included - provides easy configuration of clocks and generators attached to network
- > Fully configurable network settings, including DHCP / BOOTP / STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm:ss
- > Display date – mm:dd:yy, dd:mm:yy or yy:mm:dd
- > Configurable to alternate showing date and time automatically
- > Adjustable brightness levels
- > Visibility: 100 feet (30 meters)
- > Wall-mount bracket
- > Dry contact relay option
- > PM indicator

OPTIONS

- > Rack-mount (2U) bracket
- > Tilt-wall bracket
- > Flush-mount bracket
- > Stainless steel case

SPECIFICATIONS

Connectors

- > Ethernet RJ45
- > DC input
- > IEC A/C Power
- > USB for configuration

Power

- > Choice of – IEC AC, POE (Power over Ethernet IEEE802.3af) or DC (24 VDC)
- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption < 15W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Size: 17w x 3.5h x3d in (43.2w x 8.9h x 7.6d cm)
- > Weight: 8.0 lbs (3.63 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI

The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

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phone (international):
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NTP Driven Clocks

NTDS26-DF



STANDARD FEATURES

- > 2.3 in (5.8 cm) 6-digit LED display available in red, green, blue, amber or white
- > Syncs to any NTP source for accurate traceable time
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight savings time parameters
- > WinDiscovery software utility included - provides easy configuration of clocks and generators attached to network
- > Fully configurable network settings, including DHCP / BOOTP / STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm:ss
- > Display date – mm:dd:yy, dd:mm:yy or yy:mm:dd
- > Configurable to alternate showing date and time automatically
- > Adjustable brightness levels
- > Visibility: 100 feet (30 meters)
- > Dry contact relay option
- > PM indicator

OPTIONS

- > Side wall-mount bracket

SPECIFICATIONS

Connectors

- > Ethernet RJ45
- > IEC AC Power
- > DC input
- > USB for configuration

Power

- > Choice of – IEC AC, POE (Power over Ethernet IEEE802.3af) or DC (24 VDC)
- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption < 15W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Size: 15.25w x 7h x 3.5d in (38.7w x 18h x 9d cm)
- > Weight: 6 lbs (2.72 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI

The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

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NTP Driven Clocks

NTDS29



STANDARD FEATURES

- > 1.8 in (4.6 cm) 9-digit LED display available in red
- > Syncs to any NTP source for accurate traceable time
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included - provides easy configuration of clocks and generators attached to network
- > Fully configurable network settings, including DHCP / BOOTP / STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm:ss with three-digit day of year
- > Display date – mm:dd:yy, dd:mm:yy or yy:mm:dd
- > Configurable to alternate showing date and time automatically
- > Adjustable brightness levels
- > Visibility: 100 feet (30 meters)
- > Wall-mount bracket
- > Dry contact relay option
- > PM indicator

OPTIONS

- > Tilt-wall bracket
- > Rack-mount bracket (2U)

SPECIFICATIONS

Connectors

- > Ethernet RJ45
- > IEC AC Power
- > DC input
- > USB for configuration

Power

- > Choice of – IEC AC, POE (Power over Ethernet IEEE802.3af) or DC (24 VDC)
- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption < 15W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Size: 19w x 3.5h x 3d in (48.3w x 8.9h x 7.6d cm)
- > Weight: 5.0 lbs (2.3 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI

The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

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phone (international):
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email:
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NTP Driven Clocks

NTDS44



STANDARD FEATURES

- > 4 in (10.2 cm) 4-digit LED display available in red, green, blue, amber or white
- > Syncs to any NTP source for accurate traceable time
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included - provides easy configuration of clocks and generators attached to network
- > Fully configurable network settings, including DHCP / BOOTP / STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm
- > Display date – mm:dd
- > Configurable to alternate showing date and time automatically
- > Adjustable brightness levels
- > Visibility: 200 feet (60 meters)
- > Wall-mount bracket
- > Dry contact relay option
- > PM indicator

OPTIONS

- > Tilt-wall bracket
- > Flush-mount bracket
- > Stainless steel case

SPECIFICATIONS

Connectors

- > Ethernet RJ45
- > DC Input
- > USB for configuration

Power

- > Choice of – POE (Power over Ethernet IEEE802.3af) or DC (24 VDC)
- > Power consumption < 8W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Size: 16.3w x 6.9h x 2.3d in (41.4w x 17.5h x 5.8d cm)
- > Weight: 4.0 lbs (1.8 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI

The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

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MADE IN THE USA

phone (USA and Canada):
1-800-940-2248

phone (international):
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email:
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NTP Driven Clocks

NTDS44-DF



STANDARD FEATURES

- > 4 in (10.2 cm) 4-digit LED display available in red, green, blue, amber or white
- > Syncs to any NTP source for accurate traceable time
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included – provides easy configuration of clocks and generators attached to network
- > Fully configurable network settings, including DHCP / BOOTP / STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12 or 24 hr format – hh:mm
- > Display date – mm:dd
- > Adjustable brightness levels
- > Visibility: 200 feet (60 meters)
- > Dry contact relay option
- > PM indicator

OPTIONS

- > Side wall-mount bracket
- > Stainless steel case



SPECIFICATIONS

Connectors

- > Ethernet RJ45
- > DC Input
- > USB for configuration

Power

- > Choice of – POE (Power over Ethernet IEEE802.3af) or DC (24 VDC)
- > Power consumption < 8W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Size: 15.75w x 9.5h x 3.5d in (40w x 24h x 9d cm)
- > Weight: 8.6 lbs (3.9 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI



The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

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1-800-940--2248

phone (international):
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email:
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NTDS46



STANDARD FEATURES

- > 4 in (10.2 cm) 6-digit LED display available in red, green, blue, amber or white
- > Syncs to any NTP source for accurate traceable time
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included - provides easy configuration of clocks and generators attached to network
- > Fully configurable network settings, including DHCP / BOOTP / STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm:ss
- > Display date – mm:dd:yy, dd:mm:yy or yy:mm:dd – configurable
- > Configurable to alternate showing date and time automatically
- > Adjustable brightness levels
- > Visibility: 200 ft (60 m)
- > Wall-mount bracket
- > Dry contact relay option
- > PM Indicator

OPTIONS

- > Tilt-wall bracket
- > Flush-mount bracket
- > 2.3 inch (5.8 cm) LEDs seconds
- > Stainless steel case

SPECIFICATIONS

Connectors

- > Ethernet RJ45
- > IEC AC Power
- > DC Input
- > USB for configuration

Power

- > Choice of – IEC AC, POE (Power over Ethernet IEEE802.3af) or DC (24 VDC)
- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption < 15W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Size: 25w x 7h x 2.1d in (63.5w x 17.8h x 5.3d cm)
- > Weight: 10 lbs (4.5 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI

The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

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phone (international):
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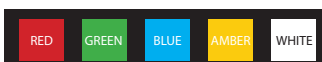
NTP Driven Clocks

NTDS46-12AL



The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

STANDARD FEATURES



- > 4 in (10.2 cm) 6-digit top display with 2.3 inch (5.8 cm) 12-digit bottom alphanumeric display
- > Top/Bottom LED display available in red, green, blue, amber or white
- > Syncs to any NTP source for accurate traceable time
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included - provides easy configuration of clocks and generators attached to network
- > Fully configurable network settings, including DHCP / BOOTP / STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm:ss
- > Display date – mm:dd:yy, dd:mm:yy or yy:mm:dd – configurable
- > 3 programmable messages
- > Alpha line can be static or scrolling up to 300 characters
- > Adjustable brightness levels – visibility: 200 feet (60 meters)
- > Wall-mount bracket
- > Dry contact relay option
- > PM indicator

SPECIFICATIONS

Connectors

- > DC Input
- > IEC AC Power
- > USB for configuration

Power

- > Choice of – IEC AC or DC (24 VDC)
- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption > 15W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Size: 25.5w x 10.1h x 2.8d in (64.8w x 25.7h x 7.1d cm)
- > Weight: 11 lbs (5.0 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI

OPTIONS

- > Stainless steel case



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phone (international):
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NTDS4626



STANDARD FEATURES



- > 4 in (10.2 cm) 6-digits on the top row and 2.3 inch (5.8 cm) 6-digits on the bottom row - LED display available in red, green, blue, amber or white
- > Syncs to any NTP source for accurate traceable time
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included - provides easy configuration of clocks and generators attached to network
- > Fully configurable network settings, including DHCP/BOOTP/STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format - hh:mm:ss
- > Display date - mm:dd:yy, dd:mm:yy or yy:mm:dd - configurable
- > Adjustable brightness levels
- > Visibility: 200 feet (60 meters)
- > Wall-mount bracket
- > Dry contact relay option
- > PM Indicator

SPECIFICATIONS

Connectors

- > Ethernet RJ45
- > IEC AC Power
- > DC Input
- > USB for configuration

Power

- > Choice of - IEC AC, POE (Power over Ethernet IEEE802.3af) or DC (24 VDC)
- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption < 15W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Size: 25.5w x 10.1h x 2.8d in (64.8w x 25.7h x 7.1d cm)
- > Weight: 11 lbs (5.0 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI

The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

OPTIONS

- > Stainless steel case



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MADE IN THE USA

phone (USA and Canada):
1-800-940-2248

phone (international):
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email:
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online:
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NTP Driven Clocks

NTDS4626-3AL



STANDARD FEATURES



- > 4 in (10.2 cm) 6-digits on top row and 2.3 inch (5.8 cm) 6-digits on bottom row with 2.3 in (5.8 cm) 3-digit alphanumeric display LED display
- > Syncs to any NTP source for accurate traceable time
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included – provides easy configuration of clocks and generators attached to network
- > Fully configurable network settings, including DHCP/BOOTP/STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm:ss
- > Display date – mm:dd:yy, dd:mm:yy or yy:mm:dd – configurable
- > Dual time display
- > Alpha-numeric characters available in : English, Spanish, French, German, Russian, Italian, Portuguese, Slovenian, and Dutch
- > Adjustable brightness levels
- > Visibility: 200 feet (60 meters)
- > Wall-mount bracket
- > Dry contact relay option
- > PM Indicator

SPECIFICATIONS

Connectors

- > Ethernet RJ45
- > IEC AC Power
- > DC Input
- > USB for configuration

Power

- > Choice of – IEC AC, POE (Power over Ethernet IEEE802.3af) or DC (24 VDC)
- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption <15w

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Size: 25.5w x 10.1h x 2.8d in (64.8w x 25.7h x 7.1d cm)
- > Weight: 11 lbs (5.0 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI

The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

OPTIONS

- > Stainless steel case



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NTDS46-DF



STANDARD FEATURES

- > 4 in (10.2 cm), 6 digit LED display available in red, green, blue, amber or white
- > Syncs to external or internal NTP source for accurate traceable time
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included - provides easy configuration of clocks and generators attached to network
- > Fully configurable network settings, including DHCP / BOOTP / STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm:ss
- > Display date – mm:dd:yy, dd:mm:yy or yy:mm:dd – configurable
- > Configurable to alternate showing date and time automatically
- > Adjustable brightness levels
- > Visibility: 200 ft (60 m)
- > Dry contact relay option
- > PM Indicator

OPTIONS

- > Side wall-mount bracket
- > Stainless steel case



SPECIFICATIONS

Connectors

- > Ethernet RJ45
- > IEC AC Power
- > DC Input
- > USB for configuration

Power

- > Choice of – IEC AC, POE (Power over Ethernet IEEE802.3af) or DC (24 VDC)
- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption <15W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Size: 25w x 6.8h x 3.3d in (63.3w x 17.4h x 8.4d cm)
- > Weight: 11.2lbs (5.1 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI

The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

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phone (international):
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NTP Driven Clocks

NTDS49



STANDARD FEATURES

- > 4 in (10.2 cm) 9-digit LED display available in red or blue
- > Syncs to any NTP source for accurate traceable time
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included – provides easy configuration of clocks and generators attached to network
- > Fully configurable network settings, including DHCP / BOOTP / STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm:ss with three digit Day of Year
- > Display date – mm:dd:yy, dd:mm:yy or yy:mm:dd – configurable
- > Configurable to alternate showing date and time automatically
- > Adjustable brightness levels
- > Visibility: 200 feet (60 meters)
- > Wall-mount bracket
- > Dry contact relay option
- > PM Indicator

OPTIONS

- > Tilt-wall bracket

SPECIFICATIONS

Connectors

- > Ethernet RJ45
- > IEC AC Power
- > DC Input
- > USB for configuration

Power

- > Choice of – IEC AC, POE (Power over Ethernet IEEE802.3af) or DC (24 VDC)
- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption < 15W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Size: 42w x 6.5h x 2.3d in (106.7w x 16.5h x 5.8d cm)
- > Weight: 9.0 lbs (4.0 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI

The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

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phone (USA and Canada):
1-800-940-2248

phone (international):
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email:
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NTDS84



STANDARD FEATURES

- > 7 in (18 cm) 4-digit LED display available in red, green, blue, or amber
- > Syncs to any NTP source for accurate traceable time
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included – provides easy configuration of clocks and generators attached to network
- > Fully configurable network settings, including DHCP/BOOTP/STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm
- > Display date – mm:dd
- > Configurable to alternate showing date and time automatically
- > Adjustable brightness levels
- > Visibility: 350 feet (100 meters)
- > Wall-mount bracket
- > Dry contact relay option
- > PM Indicator

OPTIONS

- > Tilt-wall bracket

SPECIFICATIONS

Connectors

- > Ethernet RJ45
- > IEC AC Power
- > DC Input
- > USB for configuration

Power

- > Choice of – IEC AC, POE (Power over Ethernet IEEE802.3af) or DC (24 VDC)
- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption < 15W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Size: 23.5w x 9.75h x 2.8d in (60w x 25h x 7d cm)
- > Weight: 8.0 lbs (3.6 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI



The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

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1-800-940-2248

phone (international):
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NTP Driven Clocks

NTDS84-DF



The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.



STANDARD FEATURES

- > 7 in (18 cm) 4-digit LED display available in red, green, blue or amber
- > Syncs to any NTP source for accurate traceable time
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included – provides easy configuration of clocks and generators attached to network
- > Fully configurable network settings, including DHCP/BOOTP/STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm
- > Display date – mm:dd
- > Configurable to alternate showing date and time automatically
- > Adjustable brightness levels
- > Visibility: 350 feet (100 meters)
- > Dry contact relay option
- > PM Indicator

OPTIONS

- > Side wall-mount bracket

SPECIFICATIONS

Connectors

- > Ethernet RJ45
- > IEC AC Power
- > DC Input
- > USB for configuration

Power

- > Choice of – IEC AC, POE (Power over Ethernet IEEE802.3af) or DC (24 VDC)
- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption < 15W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Size: 26w x 10h x 4.5d in (66w x 25.4h x 11.4d cm)
- > Weight: 11.7 lbs (5.3 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI

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NTP Driven Clocks

NTDS86



STANDARD FEATURES

- > 7 in (18 cm) 6-digit LED display available in red, green, blue or amber
- > Syncs to any NTP source for accurate traceable time
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included - provides easy configuration of clocks and generators attached to network
- > Fully configurable network settings, including DHCP/BOOTP/STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm:ss
- > Display date – mm:dd:yy, dd:mm:yy or yy:mm:dd
- > Configurable to alternate showing date and time automatically
- > Adjustable brightness levels
- > Visibility: 350 feet (100 meters)
- > Wall-mount bracket
- > Dry contact relay option
- > PM indicator

OPTIONS

- > Tilt-wall bracket
- > Stainless steel case

SPECIFICATIONS

Connectors

- > Ethernet RJ45
- > IEC AC Power
- > DC Input
- > USB for configuration

Power

- > Choice of – IEC AC, POE (Power over Ethernet IEEE802.3af) or DC (24 VDC)
- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption < 15W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Size: 37.3w x 9.75h x 2.63d in (94.7w x 24.8h x 6.68d cm)
- > Weight: 12.0 lbs (5.4 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI

The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

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NTP Driven Clocks

NTDS86-DF



STANDARD FEATURES

- > 7 in (18 cm) 6-digit LED display available in red, green, blue or amber
- > Syncs to any NTP source for accurate traceable time
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included – provides easy configuration of clocks and generators attached to network
- > Fully configurable network settings, including DHCP/BOOTP/STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12 or 24 hr format – hh:mm:ss
- > Display date – mm:dd:yy, dd:mm:yy or yy:mm:dd
- > Configurable to alternate showing date and time automatically
- > Adjustable brightness levels
- > Visibility: 350 feet (100 meters)
- > Dry contact relay option
- > PM Indicator

OPTIONS

- > Side wall-mount bracket

SPECIFICATIONS

Connectors

- > Ethernet RJ45
- > IEC AC Power
- > USB for configuration

Power

- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption < 15W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Size: 38w x 10h x 4.5d in (96.5w x 25.4h x 11.4d cm)
- > Weight: 20.0 lbs (9.1 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI

The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

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NTP Driven Clocks

NTDS8646



The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.



STANDARD FEATURES

- > 7 in (18 cm) 6-digit LED top display with 4" (10.2cm) 6-digit bottom display available in red, green, blue or amber
- > Syncs to any NTP source for accurate traceable time
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included - provides easy configuration of clocks and generators attached to network
- > Fully configurable network settings, including DHCP / BOOTP / STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm:ss
- > Display date – mm:dd:yy, dd:mm:yy or yy:mm:dd – configurable
- > Adjustable brightness levels
- > Visibility: 350 ft (100 m)
- > Stainless steel chassis
- > Wall-mount bracket
- > Dry contact relay option
- > PM indicator

SPECIFICATIONS

Connectors

- > Ethernet RJ45
- > IEC AC Power
- > USB for configuration

Power

- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption < 15W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Stainless steel chassis
- > Size: 39.4w x 15h x 2.63d in (100w x 38h x 6.7d cm)
- > Weight: 24 lbs (11 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI

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FEATURES

- Generates SMPTE, EBU or IRIG-B time codes
- Synchronizes to GPS satellites for Stratum 1 accuracy
- -11.5 to +12 hour time zone offsets in 30-minute increments
- NMEA/Kinematics/Truetime serial protocol output
- Wide DC power supply input range: 12 to 48 VDC
- Switch-selectable time zone and DST
- Switch selectable format and baud rate

SPECIFICATIONS

Time Reference Accuracy

- > SMPTE output accuracy of ± 20 microseconds
- > IRIG-B0 (DCLS/PWM) output accuracy of ± 90 microseconds
- > IRIG-B1 (AM) output accuracy of ± 1.4 milliseconds
- > PPS output accuracy of ± 60 nanoseconds

Holdover Accuracy

- > With loss of power, device reverts to an internal battery-backed real-time clock chip with accuracy of ± 1 min/year or < 165 ms per day

Outputs

- > SMPTE 30, 25, 24fps (non drop frame only)
- > IRIG-B0 (DCLS/PWM): unmodulated, single ended - 5 V
- > IRIG-B1 (AM): 1 kHz modulated, level - 5 Vpp
- > Date encoded references (IRIG 1344 and SMPTE Leitch date format or 309M)
- > PPS
 - 5 V-TTL
 - Pulse width configurable via switch from ~ 200 ms to ~ 1 ms
- > Serial output via RS-232/RS-485
 - NMEA/Kinematics/Truetime protocol

Connectors

- > Output: 9-pin removable terminal block
- > Power plug: 3-pin removable terminal block
- > Antenna: SMA female



Physical

- > Size: 5.4d x 4.06w x 1.44h in (13.8d x 10.32w x 3.65h cm)
- > Weight: 12.8 oz (362.9 g)

Power Supply

- > DC input (12-48 VDC)
- > 12 VDC external wall mount supplied (UL, CE listed)

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Compliance

- > FCC
- > CE Marked
- > ROHS
- > ANSI

Antenna Options

- > Basic antenna package includes magnetic GPS antenna and 15 ft (5 m) of cable
- > Standard antenna package includes outdoor GPS antenna, mounting kit, and 50 ft (15 m) of cable

Rack mountable with RM4



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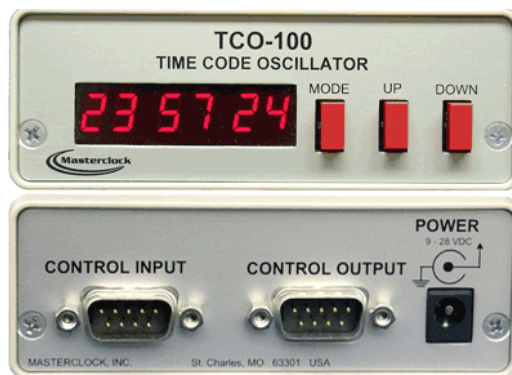
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TCO100

FEATURES

- Generates SMPTE, EBU, 30, 25 and 24 fps or IRIG-B time codes
- Functions as a backup time code source for master clock systems
- Can be connected to a GPS500 master clock generator to automatically synchronize to GPS atomic clock time
- Automatic daylight saving time adjustments
- -11.5 to +12 hour selectable time zone offsets
- 6-digit red LED time or date display on front panel
- Front panel date and time set mode switches



Rack mountable with RM4



SPECIFICATIONS

Time Code Outputs

- > SMPTE (30/25/24 fps - non-drop frame only) to Leitch Date Encoding Standard
- > IRIG-B pulse width coded (unmodulated) DC, IEEE 1344 standard
- > IRIG-B(1) 1 kHz Amplitude Modulated, IEEE 1344 standard

Holdover Accuracy

- > With loss of power, device reverts to an internal battery-backed real-time clock chip with accuracy of $\pm 1\text{min/year}$ or $< 165\text{ms per day}$

Connectors

- > Time Code output: DB-9 male (supplied with DB-9 to BNC adapter)
- > RS-232, PPS pulse: DB-9 male
- > 2.1 mm male power connector

Power

- > DC input (9-28 VDC)
- > Power consumption: $< 2\text{W}$
- > Includes wall-mount 12 VDC power supply - UL and CE listed

Physical

- > Size: 1.5 x 4.1 x 5.5 in (3.8 x 10.4 x 14 cm)
- > Weight: 16 oz. (454 g)

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Compliance

- > FCC, ROHS, CE Marked, ANSI

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Time Code Driven Clocks

CLKTCD12

FEATURES

- Syncs to SMPTE, EBU and IRIG-B time codes
- Complete flexibility in daylight saving time and time zone configurations
- Front indicator light provides synchronization status
- Microprocessor-controlled stepper motor with sweeping second hand for quiet operation
- Battery-backed real time clock chip in case of loss of synchronization or power



SPECIFICATIONS

Time Code Inputs

- > SMPTE (30/25/25 fps - non-drop frame only) to Leitch Date Encoding Standard
- > IRIG-B pulse width coded (unmodulated) DC, IEEE 1344 standard
- > IRIG-B(1) 1 kHz Amplitude Modulated, IEEE 1344 standard

Holdover Accuracy

- > With loss of power, device reverts to an internal battery-backed real-time clock chip with accuracy of ± 1 min/year or < 165 ms per day

Connectors

- > BNC female
- > Optional twisted pair to BNC adapter available
- > IEC 320 AC input
- > USB port for configuration

Options

- > 12/24-hour face
- > 24-hour face
- > Face plate illumination
- > Dual face (CLKTCD12-DF)
- > Stainless steel case



Physical

- > Size: 12.5 in (31.8 cm) w, 4.25 in (10.8 cm) h
- > Weight: 7.6 lbs (3.45kg)
- > Black powder-coated steel chassis
- > Polycarbonate lens
- > Wall mount bracket provided

Configuration

- > Configure devices through provided Windiscovery software or Telnet/SSH
- > Configuration is saved to nonvolatile memory and survives power losses
- > Authenticated network messages prevent unauthorized tampering of clock configuration

Power

- > 90-265 VAC 50/60 Hz
- > IEC AC power connector and cord

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing at +25°C)

Compliance

- > FCC, CE Marked, ROHS, ANSI

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Time Code Driven Clocks

CLKTCD15

FEATURES

- Syncs to SMPTE, EBU and IRIG-B time codes
- Complete flexibility in daylight saving time and time zone configurations
- Front indicator light provides synchronization status
- Microprocessor-controlled stepper motor with sweeping second hand for quiet operation
- Battery-backed real time clock chip in case of loss of synchronization or power



SPECIFICATIONS

Time Code Inputs

- > SMPTE (30/25/25 fps - non-drop frame only) to Leitch Date Encoding Standard
- > IRIG-B pulse width coded (unmodulated) DC, IEEE 1344 standard
- > IRIG-B(1) 1 kHz Amplitude Modulated, IEEE 1344 standard

Holdover Accuracy

- > With loss of power, device reverts to an internal battery-backed real-time clock chip with accuracy of ± 1 min/year or < 165 ms per day

Connectors

- > BNC female
- > Optional twisted pair to BNC adapter available
- > IEC 320 AC input
- > USB port for configuration

Options

- > Face plate illumination
- > Stainless steel case

Physical

- > Size: 14.9 in (37.85 cm) w, 4.25 in (10.8 cm) h
- > Weight: 9.6 lbs (4.35 kg)
- > Black powder-coated steel chassis
- > Polycarbonate lens
- > Wall mount bracket provided

Configuration

- > Configure devices through provided Windiscovery software or Telnet/SSH
- > Configuration is saved to nonvolatile memory and survives power losses
- > Authenticated network messages prevent unauthorized tampering of clock configuration

Power

- > 90-265 VAC 50/60 Hz
- > IEC AC power connector and cord

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Compliance

- > FCC, CE Marked, ROHS, ANSI

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FEATURES

- Syncs to SMPTE, EBU and IRIG-B time codes
- Complete flexibility in daylight saving time and time zone configurations
- Front indicator light provides synchronization status
- Microprocessor-controlled stepper motor with sweeping second hand for quiet operation
- Battery-backed real time clock chip in case of loss of synchronization or power



SPECIFICATIONS

Time Code Inputs

- > SMPTE (30/25/25 fps - non-drop frame only) to Leitch Date Encoding Standard
- > IRIG-B pulse width coded (unmodulated) DC, IEEE 1344 standard
- > IRIG-B(1) 1 kHz Amplitude Modulated, IEEE 1344 standard

Holdover Accuracy

- > With loss of power, device reverts to an internal battery-backed real-time clock chip with accuracy of $\pm 1\text{min/year}$ or $< 165\text{ms per day}$

Connectors

- > BNC female
- > Optional twisted pair to BNC adapter available
- > IEC 320 AC input
- > USB port for configuration

Options

- > Face plate illumination
- > Stainless steel case

Physical

- > Size: 18 in (45 cm) w, 4.25 in (10.8 cm) h
- > Weight: 11.4 lbs (5.1 kg)
- > Black powder-coated steel chassis
- > Polycarbonate lens
- > Wall mount bracket provided

Configuration

- > Configure devices through provided Windiscovery software or Telnet/SSH
- > Configuration is saved to nonvolatile memory and survives power losses
- > Authenticated network messages prevent unauthorized tampering of clock configuration

Power

- > 90-265 VAC 50/60 Hz
- > IEC AC power connector and cord

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Compliance

- > FCC, CE Marked, ROHS, ANSI

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Time Code Driven Clocks

TCD200



STANDARD FEATURES

- > 0.6 in (1.5 cm) 6-digit LED display - available in red, green or amber
- > Syncs to IRIG-B, SMPTE and EBU (24 fps film and non-drop frame)
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included - provides easy configuration of clocks
- > Fully configurable network settings, including DHCP/BOOTP/Static IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12 or 24 hr format - hh:mm:ss
- > Display date - mm:dd:yy, dd:mm:yy or yy:mm:dd - configurable
- > Display input vs clock mode (dumb display)
- > Adjustable brightness levels
- > Visibility: 30 feet (9 meters)

SPECIFICATIONS

Connectors

- > BNC female
- > 3-pin terminal block
- > 2.1 mm female DC power plug

Power

- > DC (9-28 VDC)
- > Power consumption: < 6W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: up to 90% (non-condensing)

Physical

- > Size: 4.2w x 1.5h x 5.5d in (10.6w x 3.8h x 14d cm)
- > Weight: 16 oz (454 g)

Compliance

- > FCC
- > CE Marked
- > ROHS
- > ANSI



The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

Rack mountable with RM4



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TCDS16



STANDARD FEATURES

- > 1 in (2.5 cm) 6-digit LED display available in red, green, blue or amber
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included – provides easy configuration of clocks
- > Fully configurable network settings, including DHCP / BOOTP / STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm:ss
- > Display time & date or UTC & local time
- > Display date – mm:dd:yy, dd:mm:yy or yy:mm:dd
- > Configurable to alternate showing date and time automatically
- > Adjustable brightness levels
- > Visibility: 50 feet (15 meters)
- > Dry contact relay option
- > PM indicator

OPTIONS

- > Surface mount (desktop version)
- > Rack mount (NTDS16-RM)



SPECIFICATIONS

Connectors

- > BNC female
- > 3-pin terminal block
- > USB for configuration
- > DC input – 2.1 mm female
- > IEC C5 A/C Power

Power

- > Choice of – IEC AC or DC (24 VDC)
- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption: < 6W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Surface mount (desktop version)
 - Size: 10.7w x 1.7h x 3.5d in (27.2w x 4.31h x 8.9d cm)
 - Weight: 1.0 lbs (0.45 kg)
- > Rack-mount
 - Size: 16.9w x 1.7h x 3.5d in (43w x 4.31h x 8.9d cm)
 - Weight: 1.73 lb (0.78 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI

The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

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Time Code Driven Clocks

TCDS19



STANDARD FEATURES

- > 1 in (2.5 cm) 9-digit LED display available in red, green, blue or amber
- > Syncs to IRIG B, SMPTE 12M, 309M, 24/25/30 fps (non drop frame formats only)
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included - provides easy configuration of clocks
- > Fully configurable network settings, including DHCP / BOOTP / STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm:ss with three-digit day of year
- > Display date – mm:dd:yy, dd:mm:yy or yy:mm:dd
- > Configurable to alternate showing date and time automatically
- > Adjustable brightness levels
- > Visibility: 50 feet (15 meters)
- > Dry contact relay option
- > PM indicator

OPTIONS

- > Surface mount (desktop version)
- > Rack mount (NTDS19-RM)



SPECIFICATIONS

Connectors

- > BNC female
- > 3-pin terminal block
- > USB - for configuration
- > DC input - 2.1 mm female DC power plug
- > IEC C5 A/C Power

Power

- > Choice of – IEC AC or DC (24 VDC)
- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption: < 15W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Surface mount (desktop version)
 - Size: 10.9w x 1.75h x 4.5d in (27.64w x 4.5h x 11.4d cm)
 - Weight: 1.0 lbs (0.5 kg)
- > Rack-mount
 - Size: 16.9w x 1.7h x 3.5d in (43w x 4.31h x 8.9d cm)
 - Weight: 1.73 lb (0.78 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI



The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

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TCDS112



STANDARD FEATURES

- > 1 inch (2.5 cm) 12-digit LED display available in red, green, blue or amber
- > IRIG-B, SMPTE 12M, 309M, 24/25/30 fps (non drop frame formats only)
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included - provides easy configuration of clocks
- > Fully configurable network settings, including DHCP / BOOTP / STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm:ss
- > Display date – mm:dd:yy, dd:mm:yy or yy:mm:dd
- > Configurable to alternate showing date and time automatically
- > Adjustable brightness levels
- > Visibility: 50 feet (15 meters)
- > Dry contact relay option
- > PM indicator

OPTIONS

- > Surface mount (desktop version)
- > Rack-mount (TCDS112 -RM)

SPECIFICATIONS

Connectors

- > BNC female
- > 3-pin terminal block
- > USB for configuration
- > DC input - 2.1 mm female
- > IEC C5 A/C Power

Power

- > Choice of – IEC AC or DC (24VDC)
- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption < 8W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Surface mount (desktop version)
 - Size: 17w x 1.75h x 4.5d in (43.2w x 4.5h x 11.4d cm)
 - Weight: 2.0 lbs (0.9 kg)
- > Rack-mount
 - Size: 16.9w x 1.7h x 3.5d in (43w x 4.31h x 8.9d cm)
 - Weight: 1.73 lb (0.78 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI



The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

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Time Code Driven Clocks

TCDS24



STANDARD FEATURES

- > 2.3 inch (5.8 cm) 4-digit LED display available in red, green, blue, amber or white
- > Syncs to IRIG B, SMPTE 12M, 309M, 24/25/30 fps (non drop frame formats only)
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included - provides easy configuration of clocks
- > Fully configurable network settings, including DHCP / BOOTP / STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm:ss
- > Display date – mm:dd:yy, dd:mm:yy or yy:mm:dd
- > Configurable to alternate showing date and time automatically
- > Adjustable brightness levels
- > Visibility: 100 feet (30 meters)
- > Wall-mount bracket
- > Dry contact relay option
- > PM indicator

OPTIONS

- > Wall-mount bracket

SPECIFICATIONS

Connectors

- > BNC female
- > 2.1 mm female power plug

Power

- > Choice of – IEC AC or DC (24 VDC)
- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption < 5W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Size: 10.1w x 3.8h x 1.75d in (25.7w x 9.7h x 4.5d cm)
- > Weight: 2.0 lbs (0.9 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI



The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

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phone (USA and Canada):
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Time Code Driven Clocks

TCDS26



STANDARD FEATURES

- > 2.3 in (5.8 cm) 6-digit LED display available in red, green, blue, amber or white
- > Syncs to IRIG B, SMPTE 12M, 309M, 24/25/30 fps (non drop frame formats only)
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included - provides easy configuration of clocks
- > Fully configurable network settings, including DHCP / BOOTP / STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm:ss
- > Display date – mm:dd:yy, dd:mm:yy or yy:mm:dd
- > Configurable to alternate showing date and time automatically
- > Adjustable brightness levels
- > Visibility: 100 feet (30 meters)
- > Wall-mount bracket
- > Dry contact relay option
- > PM indicator

OPTIONS

- > Rack-mount (2U) bracket
- > Tilt-wall bracket
- > Flush-mount bracket

SPECIFICATIONS

Connectors

- > BNC female
- > 3-pin terminal block
- > USB for configuration
- > DC input - 2.1 mm female
- > IEC Std A/C Power

Power

- > Choice of – IEC AC or DC (24VDC)
- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption <15W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Size: 17w x 3.5h x3d in (43.2w x 8.9h x 7.6d cm)
- > Weight: 8.0 lbs (3.63 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI

The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

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MADE IN THE USA

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phone (international):
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email:
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TCDS26-DF



STANDARD FEATURES

- > 2.3 in (5.68 cm), 6-digit LEDs available in red, green, blue, amber or white
- > Syncs to IRIG B, SMPTE 12M, 309M, 24/25/30 fps (non drop frame formats only)
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included - provides easy configuration of clocks
- > Fully configurable network settings, including DHCP / BOOTP / STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm:ss
- > Display date – mm:dd:yy, dd:mm:yy or yy:mm:dd
- > Configurable to alternate showing date and time automatically
- > Custom colors and logos available (special orders)
- > Adjustable brightness levels
- > Visibility: 100 feet (30 meters)
- > Dry contact relay option
- > PM indicator

OPTIONS

- > Side wall-mount bracket

SPECIFICATIONS

Connectors

- > BNC female
- > 3-pin terminal block
- > USB for configuration
- > DC input - 2.1 mm female
- > IEC Std A/C Power

Power

- > Choice of – IEC AC or DC (24 VDC)
- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption < 15W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Size: 15.25w x 7h x 3.5d in (38.7w x 18h x 9d cm)
- > Weight: 6 lbs (2.72 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI

The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

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phone (international):
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TCDS29



STANDARD FEATURES

- > 1.8 in (4.6 cm) 9-digit LED display available in red
- > IRIG-B, SMPTE 12M, 309M, 24/25/30 fps (non drop frame formats only)
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included - provides easy configuration of clocks
- > Fully configurable network settings, including DHCP / BOOTP / STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm:ss with three-digit day of year
- > Display date – mm:dd:yy, dd:mm:yy or yy:mm:dd
- > Configurable to alternate showing date and time automatically
- > Adjustable brightness levels
- > Visibility: 100 feet (30 meters)
- > Wall-mount bracket
- > Dry contact relay option
- > PM indicator

OPTIONS

- > Tilt-wall bracket
- > Rack-mount bracket (2U)

SPECIFICATIONS

Connectors

- > BNC female
- > 3-pin terminal block
- > USB for configuration
- > DC input - 2.1 mm female
- > IEC Std A/C Power

Power

- > Choice of – IEC AC or DC (24VDC)
- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption <15W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Size: 19w x 3.5h x 3d in (48.3w x 8.9h x 7.6d cm)
- > Weight: 5.0 lbs (2.3 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI

The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

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1-800-940-2248

phone (international):
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TCDS44



STANDARD FEATURES

- > 4 in (10.2 cm) 4-digit LED – display colors available in red, green, blue, amber or white
- > IRIG-B, SMPTE 12M, 309M, 24/25/30 fps (non drop frame formats only)
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included – provides easy configuration of clocks
- > Fully configurable network settings, including DHCP / BOOTP / STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm:ss with three digit Day of Year
- > Display date – mm:dd:yy, dd:mm:yy or yy:mm:dd – configurable
- > Configurable to alternate showing date and time automatically
- > Adjustable brightness levels
- > Visibility: 200 feet (60 meters)
- > Wall-mount bracket
- > Dry contact relay option
- > PM Indicator

OPTIONS

- > Wall-mount bracket

SPECIFICATIONS

Connectors

- > BNC female
- > DC input

Power

- > Choice of – IEC AC or DC (24 VDC)
- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption < 10W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Size: 16.3w x 6.9h x 2.3d in (41.4w x 17.5h x 5.8d cm)
- > Weight: 4 lbs (1.8 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI

The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

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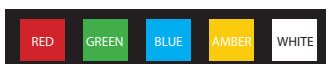
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TCDS46



STANDARD FEATURES

- > 4 in (10.2 cm) 6-digit LED display available in red, green, blue, amber or white
- > IRIG B, SMPTE 12M, 309M, 24/25/30 fps - Non Drop Frame Formats Only
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included - provides easy configuration of clocks
- > Fully configurable network settings, including DHCP / BOOTP / STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm:ss
- > Display date – mm:dd:yy, dd:mm:yy or yy:mm:dd – configurable
- > Configurable to alternate showing date and time automatically
- > Adjustable brightness levels
- > Visibility: 200 ft (60 m)
- > Wall-mount bracket
- > Dry contact relay option
- > PM Indicator

OPTIONS

- > Tilt-wall bracket
- > Flush-mount bracket
- > 2.3 inch (5.8 cm) LEDs seconds

SPECIFICATIONS

Connectors

- > BNC female
- > 3-pin terminal block
- > USB for configuration
- > DC input - 2.1 mm female
- > IEC Std A/C Power

Power

- > Choice of – IEC AC or DC (24 VDC)
- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption < 15W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Size: 25w x 7h x 2.1d in (63.5w x 17.8h x 5.3d cm)
- > Weight: 10 lbs (4.5 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI

The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

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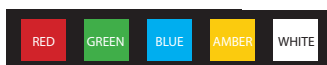
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Time Code Driven Clocks

TCDS46-DF



STANDARD FEATURES

- > 4 in (10.2 cm), 6-digit LED display available in red, green, blue, amber or white
- > IRIG-B, SMPTE 12M, 309M, 24/25/30 fps (non drop frame formats only)
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included - provides easy configuration of clocks
- > Fully configurable network settings, including DHCP / BOOTP / STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm:ss
- > Display date – mm:dd:yy, dd:mm:yy or yy:mm:dd – configurable
- > Configurable to alternate showing date and time automatically
- > Adjustable brightness levels
- > Visibility: 200 ft (60 m)
- > Dry contact relay option
- > PM Indicator

OPTIONS

- > Side wall-mount bracket



SPECIFICATIONS

Connectors

- > BNC female
- > 3-pin terminal block
- > USB for configuration
- > DC input - 2.1 mm female
- > IEC Std A/C Power

Power

- > Choice of – IEC AC or DC (24VDC)
- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption < 15W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Size: 25w x 6.8h x 3.3d in (63.3w x 17.4h x 8.4d cm)
- > Weight: 11.2lbs (5.1 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI



The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

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1-800-940-2248

phone (international):
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TCDS49



STANDARD FEATURES

- > 4 in (10.2 cm) 9-digit LED display available in red or blue
- > IRIG-B, SMPTE 12M, 309M, 24/25/30 fps (non drop frame formats only)
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included - provides easy configuration of clocks
- > Fully configurable network settings, including DHCP / BOOTP / STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm:ss with three digit Day of Year
- > Display date – mm:dd:yy, dd:mm:yy or yy:mm:dd – configurable
- > Configurable to alternate showing date and time automatically
- > Adjustable brightness levels
- > Visibility: 200 feet (60 meters)
- > Wall-mount bracket
- > Dry contact relay option
- > PM Indicator

OPTIONS

- > Tilt-wall Bracket

SPECIFICATIONS

Connectors

- > BNC female
- > 3-pin terminal block
- > USB - for configuration
- > DC input - 2.1 mm female
- > IEC Std A/C Power

Power

- > Choice of – IEC AC or DC (24 VDC)
- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption < 15W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Size: 42w x 6.5h x 2.3d in (106.7w x 16.5h x 5.8d cm)
- > Weight: 9.0 lbs (4.0 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI



The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

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phone (USA and Canada):
1-800-940-2248

phone (international):
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email:
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TCDS84



STANDARD FEATURES

- > 7 in (18 cm) 4-digit LED display available in red, green, blue, or amber
- > IRIG-B, SMPTE 12M, 309M, 24/25/30 fps (non drop frame formats only)
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included – provides easy configuration of clocks
- > Fully configurable network settings, including DHCP/BOOTP/STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm
- > Display date – mm:dd
- > Configurable to alternate showing date and time automatically
- > Adjustable brightness levels
- > Visibility: 350 feet (100 meters)
- > Wall-mount bracket
- > Dry contact relay option
- > PM Indicator

OPTIONS

- > Tilt-wall bracket

SPECIFICATIONS

Connectors

- > BNC female
- > 3-pin terminal block
- > USB for configuration
- > DC input – 2.1 mm female
- > IEC Std A/C Power

Power

- > Choice of – IEC AC or DC (24VDC)
- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption < 30W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Size: 23.5w x 9.75h x 2.8d in (60w x 25h x 7d cm)
- > Weight: 8.0 lbs (3.6 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI



The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

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1-800-940-2248

phone (international):
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TCDS86



STANDARD FEATURES

- > 7 in (18 cm) 6-digit LED display available in red, green, blue, or amber
- > IRIG-B, SMPTE 12M, 309M, 24/25/30 fps (non drop frame formats only)
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included - provides easy configuration of clocks
- > Fully configurable network settings, including DHCP/BOOTP/STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm:ss
- > Display date – mm:dd:yy, dd:mm:yy or yy:mm:dd
- > Configurable to alternate showing date and time automatically
- > Adjustable brightness levels
- > Visibility: 350 feet (100 meters)
- > Wall-mount bracket
- > Dry contact relay option
- > PM Indicator

OPTIONS

- > Tilt-wall bracket

SPECIFICATIONS

Connectors

- > BNC female
- > 3-pin terminal block
- > USB for configuration
- > DC input - 2.1 mm female
- > IEC Std A/C Power

Power

- > Choice of – IEC AC or DC (24 VDC)
- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption < 30W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Size: 37.3w x 9.75h x 2.63d in (94.7w x 24.8h x 6.68d cm)
- > Weight: 12.0 lbs (5.4 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI



The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

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MADE IN THE USA

phone (USA and Canada):
1-800-940-2248

phone (international):
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TCDS8646



STANDARD FEATURES

- > 7 in (18 cm) 6-digit LED top display with 4 inch (10.2 cm) 6-digit bottom display available in red, green, blue or amber
- > IRIG-B, SMPTE 12M, 309M, 24/25/30 fps (non drop frame formats only)
- > Retains time and date during loss of power and/or reference using a battery backed real-time clock (RTC) chip and maintenance-free rechargeable battery
- > Configures to time zone and daylight saving time parameters
- > WinDiscovery software utility included - provides easy configuration of clocks
- > Fully configurable network settings, including DHCP / BOOTP / STATIC IP
- > Configuration is saved to non-volatile memory and survives power losses
- > Password protection prevents unauthorized clock configuration tampering
- > Display time in 12- or 24-hr format – hh:mm:ss
- > Display date – mm:dd:yy, dd:mm:yy or yy:mm:dd – configurable
- > Adjustable brightness levels
- > Visibility: 350 ft (100 m)
- > Wall-mount bracket
- > Dry contact relay option
- > PM indicator

SPECIFICATIONS

Connectors

- > BNC female
- > 3-pin terminal block
- > USB for configuration
- > IEC Std A/C Power

Power

- > International IEC AC 90-240v, 50/60 Hz
- > Power consumption < 15W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Stainless steel chassis
- > Size: 39.4w x 15h x 2.63d in (100w x 38h x 6.7d cm)
- > Weight: 24 lbs (11 kg)

Compliance

- > FCC, ROHS, CE Marked, ANSI



The optional **RC600** (above) is a remote control that adds both count-down and count-up timer control features to our NTDS and TCDS clocks. Uses WinDiscovery software.

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phone (international):
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Multifunctional Digital Clocks

MDN19



SPECIFICATIONS

Standard Features

- > 1 in (2.5 cm) red LEDs
- > Supports CS5, CS3, IRIG-B1, NTP
- > Countdown abilities for up to 100 days (via CS3 & CS5)
- > Fully configurable via supplied Windiscovery software, Telnet or SSH
- > Configurable to time zone and daylight saving time offsets
- > Configuration is saved to non-volatile memory and survives power losses
- > Display time in 12 or 24 hr format – hh:mm:ss
- > Display hundredths of second
- > Adjustable brightness levels
- > Visibility: 50 feet (15 meters)
- > Dry contact relay option
- > PM indicator

Holdover Accuracy

- > With loss of power, device reverts to an internal battery-backed real-time clock chip with accuracy of ± 1 min/year or < 165 ms per day

Network Compatibility

- > Supports NTP, DHCPv4, DHCPv6 for automatic acquisition of network address, name servers, and timeserver configuration
- > Supported network protocols: Telnet/SSH
- > SNMP with custom MIB
- > IPv4, IPv6 compliant

Connectors

- > RJ45 for TCP/IP, IRIG-CS-3 or IRIG-CS-5246
- > BNC for IRIG-B1 or IRIG-CS-3
- > USB for configuration
- > IEC AC Power

Power

- > International 115/230, 50/60 Hz
- > Power consumption: < 15 W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Size: 10.7w x 1.72h x 4.34d in (27.2w x 4.37h x 11d cm)
- > Weight: 1 lb (0.45 kg)

Compliance

- > FCC
- > CE Marked
- > ROHS
- > ANSI

Generate CS5 Ethernet-based event code from an ASCII RS422 input with optional **CS5-LAN**.

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phone (international):
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Multifunctional Digital Clocks

MDN29



Generate CS5 Ethernet-based event code from an ASCII RS422 input with optional **CS5-LAN**.



SPECIFICATIONS

Standard Features

- > 2.3 in (5.8 cm) LED digits available in red, green, blue, amber
- > Supports CS5, CS3, IRIG-B1, NTP
- > Countdown abilities for up to 100 days (via CS3 & CS5)
- > Fully configurable via supplied Windiscovery software, Telnet or SSH
- > Configurable to time zone and daylight saving time offsets
- > Configuration is saved to non-volatile memory and survives power losses
- > Display time in 12 or 24 hr format – hh:mm:ss
- > Display hundredths of second
- > Adjustable brightness levels
- > Visibility: 100 feet (30 meters)
- > Dry contact relay option
- > PM indicator

Holdover Accuracy

- > With loss of power, device reverts to an internal battery-backed real-time clock chip with accuracy of ± 1 min/year or < 165 ms per day

Network Compatibility

- > Supports NTP, DHCPv4, DHCPv6 for automatic acquisition of network address, name servers, and timeserver configuration
- > Supported network protocols: Telnet/SSH
- > SNMP with custom MIB
- > IPv4, IPv6 compliant

Connectors

- > RJ45 for TCP/IP, IRIG-CS-3 or IRIG-CS-5246
- > BNC for IRIG-B1 or IRIG-CS-3
- > USB for configuration
- > IEC AC Power

Power

- > International 115/230, 50/60 Hz
- > Power consumption < 15 W

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Size: 22.25w x 3.6h x 2.25d in (56.5w x 9.14h x 5.7d cm)
- > Weight: 4.6 lb (2.08 kg)

Compliance

- > FCC
- > CE Marked
- > ROHS
- > ANSI

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Multifunctional Digital Clocks

MDN49



Generate CS5 Ethernet-based event code from an ASCII RS422 input with optional **CS5-LAN**.



SPECIFICATIONS

Standard Features

- > 4 in (10.2 cm) LED digits available in red or blue
- > Supports CS5, CS3, IRIG-B1, NTP
- > Countdown abilities for up to 100 days (via CS3 & CS5)
- > Fully configurable via supplied Windiscovery software, Telnet or SSH
- > Configurable to time zone and daylight saving time offsets
- > Configuration is saved to non-volatile memory and survives power losses
- > Display time in 12 or 24 hr format – hh:mm:ss
- > Display hundredths of second
- > Adjustable brightness levels
- > Visibility: 200 feet (60 meters)
- > Dry contact relay option
- > PM indicator

Holdover Accuracy

- > With loss of power, device reverts to an internal battery-backed real-time clock chip with accuracy of $\pm 1\text{min/year}$ or $< 165\text{ms per day}$

Network Compatibility

- > Supports NTP, DHCPv4, DHCPv6 for automatic acquisition of network address, name servers, and timeserver configuration
- > Supported network protocols: Telnet/SSH
- > SNMP with custom MIB

Connectors

- > RJ45 for TCP/IP, IRIG-CS-3 or IRIG-CS-5246
- > BNC for IRIG-B1 or IRIG-CS-3
- > USB for configuration
- > IEC AC Power

Power

- > International 115/230, 50/60 Hz
- > Power consumption $< 15\text{W}$

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Black powder-coated steel chassis
- > Size: 41.7w x 6.5h x 2.8d in (106w x 16.5h x 5.8d cm)
- > Weight: 8.17 lb (3.71 kg)

Compliance

- > FCC
- > CE Marked
- > ROHS
- > ANSI

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FEATURES

- Count-up or count-down up to 99 hours
- Reference time from NTP, IRIG-B or SMPTE (30/25/24 fps non drop frame)
- Generate NTP or SMPTE (30/25/24 fps non drop frame)
- Control an unlimited number of Ethernet clocks and devices simultaneously
- Control an unlimited number of TCDS clocks via SMPTE BNC output
- Real time clock chip retains time during loss of power or time reference
- Modes include count-down, count-up, count to time, and clock
- 6-digit LED display



SPECIFICATIONS

Connectors

- > RJ45 - 10/100MB Ethernet
- > BNC for time code in/out
- > USB for configuration
- > DC input - 2.1 mm male jack

Interface

- > Network or direct com to NTDS via RJ45
- > Time code in and out via BNC connectors
- > Illuminated buttons for Mode Select (count-up, count-down, clock) and Action (start, pause, reset)

Network Compatability

- > Supports NTP, DHCPv4, DHCPv6 for automatic acquisition of network address, name servers, and timeserver configuration
- > Telnet/SSH communication
- > IPv4/IPv6 compatible
- > SNMP with custom MIB

Configuration

- > Configure devices through provided WinDiscovery software or Telnet/SSH
- > Configuration is saved to nonvolatile memory and survives power losses
- > Authenticated network messages prevent unauthorized tampering of clock configuration

Power

- > DC input (115-230, 50/60 Hz)
- > 12 VDC external wall mount supplied - UL, CE listed
- > PoE input (48 VDC, IEEE 802.3af) option

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Physical

- > Size: 6.82w x 5.24h x 2.37d in (17.32w x 13.31h x 6.02 cm)
- > Weight: 2 lbs (0.9 kg)
- > Black powder coated steel chassis
- > Rubber feet for tabletop use

Compliance

- > FCC, ROHS, CE Marked, ANSI

Options

- > Flush-mount version

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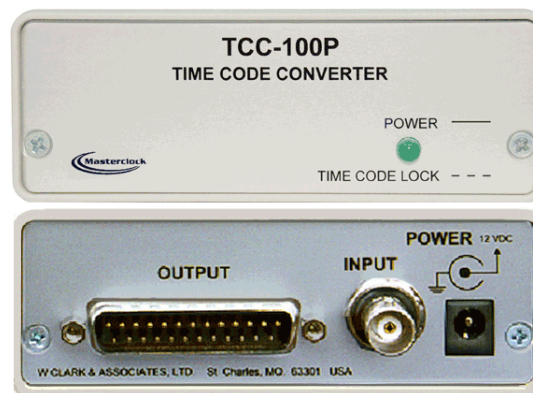
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TCC100

FEATURES

- Converts SMPTE (30/25/24 fps non drop frame) and IRIG-B to parallel BCD
- Automatic time code level gain control
- Compatible with GPS500 Time Code Generator and TCR1000 Time Code Reader PCI



Rack mountable with RM4



SPECIFICATIONS

Input

- > Format: SMPTE - 24 - 25 or 30 fps or IRIG-B time code
- > Level: Range -20dB and +20dB (0 db/600 Ω) automatic level set
- > Impedance: > 10 K ohm
- > Connector: BNC

Output

- > Format: Parallel BCD
- > Level: TTL (5 VDC)
- > Impedance: High
- > Connector: DB-25

Output Accuracy

- > Latency from incoming time code: < 100 μ sec

Power

- > Input voltage: 12 VDC
- > Power connector: 2.1 mm male jack
- > Includes wall-mount 12 VDC power supply - UL and CE listed
- > Power consumption: < 2W

Physical

- > Size: 1.5 x 4.1 x 5.5 in (3.8 x 10.4 x 14 cm)
- > Weight: 17 oz. (480 g)

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Compliance

- > FCC, ROHS, CE Marked, ANSI

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TCC500

FEATURES

- Converts SMPTE (30, 25, and 24 frames/second) and IRIG-B to parallel BCD with 8-digit or one millisecond resolution - hh:mm:ss.ms (frames)
- Automatic time code level gain control
- Compatible with GPS500 Time Code Generator and TCR1000 Time Code Reader PCI
- Rack-mountable with RM4



Rack mountable with RM4



SPECIFICATIONS

Input

- > Format: SMPTE - 24 - 25 or 30 fps or IRIG-B time code
- > Level: Range -20dB and +20dB (0 db/600 Ω) automatic level set
- > Impedance: > 10 K ohm
- > Connector: BNC

Output

- > Format: Parallel BCD
- > Level: TTL (5 VDC)
- > Impedance: High
- > Connector: DB-37

Output Accuracy

- > Latency from incoming time code: < 100 μ sec

Power

- > Power connector: 2.1 mm male jack
- > Includes wall-mount 24 VDC power supply - UL and CE listed
- > Power consumption: < 2W

Physical

- > Size: 1.5 x 4.1 x 5.5 in (3.8 x 10.4 x 14 cm)
- > Weight: 17 oz. (480 g)

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Compliance

- > FCC, ROHS, CE Marked, ANSI

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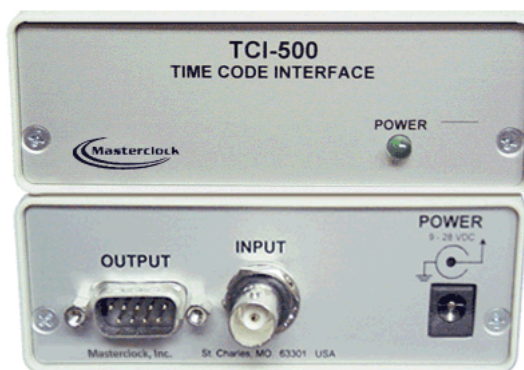
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FEATURES

- Reads and converts from/to: SMPTE, EBU, IRIG-B
- Automatic daylight saving time adjustments
- -11.5 to +12 hour selectable time zone offsets
- Time mark pulse output (ttl level) at 1 per: sec, min, hour or day
- Dry contact closure at 1 per: minute, hour or day



Rack mountable with RM4



SPECIFICATIONS

Supported Time Codes

- > SMPTE (30fps, 25fps, and 24 fps) - non-drop frame only
- > IRIG-B (B0, unmodulated/pulse width modulated/dc level shift)
- > IRIG-B (B1, 1kHz Amplitude Modulated)

Power

- > Input voltage: 12 VDC
- > Input power connector: 2 mm male jack
- > Includes wall-mount 24 VDC power supply - UL and CE listed
- > Power consumption: < 2W

Compliance

- > FCC, ROHS, CE Marked, ANSI

Physical

- > Size: 1.5 x 4.1 x 5.5 in (3.8 x 10.4 x 14 cm)
- > Weight: 17 oz. (480 g)

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

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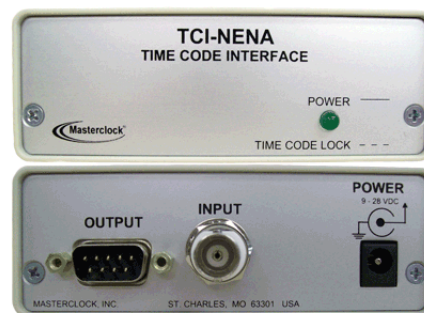
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TCI-NENA

FEATURES

- Generates signals for NENA/PSAP equipment
- Operate from IRIG-B or SMPTE time code inputs
- All time code outputs support signature control
- All time code outputs encode NENA extensions
- Supports NENA-defined ASCII outputs at 9600, 4800, 2400, and 1200 baud
- Performs time zone and daylight saving time adjustments in display, serial, and time code outputs
- Provides dry contact closure alarm for time code or power loss



Rack mountable with RM4



SPECIFICATIONS

Supported Time Codes

- > SMPTE (30fps, 25fps, and 24 fps) - non-drop frame only
- > IRIG-B (B0, unmodulated/pulse width modulated/dc level shift)
- > IRIG-B (B1, 1kHz Amplitude Modulated)

I/O Connections

- > 2.1 mm male DC power connector
- > Time code input: BNC socket
- > RS-232, pulse, contact closure and time code output: DB-9 male
- > Optional DB-9 to BNC adapter

Power

- > Input voltage: 12 VDC
- > Input power connector: 2.1 mm male jack
- > Includes wall-mount 12 VDC power supply - UL and CE listed
- > Power consumption: < 2W

Physical

- > Size: 1.5 x 4.1 x 5.5 in (3.8 x 10.4 x 14 cm)
- > Weight: 16 oz. (454 g)

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Compliance

- > FCC, ROHS, CE Marked, ANSI

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TCS-100

FEATURES

- Accepts SMPTE / EBU or IRIG-B (modulated and unmodulated time code)
- Automatically determines time type and switches to the alternate source if time code is lost or if a problem is detected in the primary time code source
- Front panel switches allow manual selection of source A or B or automatic mode.
- "Good" - "Fail" indication and selection status of each time code source and the changeover unit is shown with front panel LEDs
- An auxiliary A/B source can be switched along with the TC. This auxiliary switching is a relay contact and can be used to switch any low level control or signal source
- Internal alarms sound (can be disabled with jumpers) upon loss or failure of a source of TC or switcher unit.
- A relay contact closure is provided for an external alarm
- Alarm can be reset from front panel.
- Status and other system information is provided via a simplex (one way) RS-232, 9600 BAUD



Rack mountable with RM4



SPECIFICATIONS

Supported Time Codes

- > SMPTE (30fps, 25fps, and 24 fps) - non-drop frame only
- > IRIG-B (B0, unmodulated/pulse width modulated/dc level shift)
- > IRIG-B (B1, 1kHz Amplitude Modulated)

I/O Connections

- > Time code inputs: isolated BNC, unbalanced
- > Time code output: isolated BNC, unbalanced
- > Balanced input and output connections via DB-9
- > Auxiliary switching via DB-9
- > External alarm via DB-9
- > DC input via 2.1mm power connector

Power

- > DC input (9 - 28 VDC)
- > Includes wall-mount 24VDC power supply - UL and CE listed
- > Power consumption: < 6W

Physical

- > Size: 1.5 x 4.1 x 5.5 in (3.8 x 10.4 x 14 cm)
- > Weight: 16 oz. (454 g)

Case

- > Case cover: off-white aluminum
- > Front/rear panel: clear anodized aluminum

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Compliance

- > FCC, ROHS, CE Marked, ANSI

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CS5-LAN

FEATURES

- Accepts standard RS-422 CS5 signal and converts to UDP/NTP network protocol
- Generates a CS5 Ethernet-based (LAN) event code output from a CS5 asynchronous ASCII RS422 input
- WinDiscovery software utility included - provides easy configuration of CS5-LAN Injector to network
- Status lights indicates RS-422 input / LAN multicasting
- Requires the use of CAT5 spare pair (pins 7 & 8 of RJ-45) for CS5 input
- Reset button for quick default to factory settings
- Configuration is saved to non-volatile memory and survives power losses



Rack mountable with RM4



SPECIFICATIONS

Connectors

- > Ethernet - RJ45 CS5 Output
- > 2 mm threaded locking power jack
- > USB port for PC configuration

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing at +25°C)

Compliance

- > FCC
- > CE Marked
- > ROHS
- > ANSI

Physical

- > Size: 6.44w x 4.06h x 1.44d in (16.4w x 10.32h x 3.65d cm)
- > Weight: 16 oz (454 g)

Power Supply

- > 12 VCD external wall mount
- > Power consumption < 10W

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FEATURES

- 1 or 2 inputs: 1 input driving 12 outputs or 2 inputs each driving 6 outputs
- Output banks are selectable AC or DC coupled
- Universal worldwide AC power
- Dual isolated output banks
- Green power LED on front panel
- Steel chassis in rust resistant black powder coat
- Adjustable gain control



SPECIFICATIONS

Inputs

- > RF
 - Frequency 0 Hz – 20 MHz
 - Level 1 V rms [15 dBm max]
 - Impedance 50 Ω
 - Isolation A to B >85 dB
- > Pulse /DC IRIG Time Code
 - Frequency 1PPS to 10 MPPS
 - Level 0-7V p-p
 - Duty Cycle 0 to 100%
 - Impedance 50 Ω
- > AM IRIG Time Code
 - Frequency 1 PPS to 10 MPPS
 - Level 0-6 V p-p
 - Modulation Frequency Up to 1 MHz
 - Code Format Any IRIG format, IEEE 1344, NASA 36, 2137, XR3
 - Impedance 50 Ω

Physical

- > Weight: 1.0 lb (0.5 kg)
- > Size: 16.9w x 1.7h x 4.5d in (43w x 4.31h x 11.5d cm)

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Outputs

- > RF
 - Frequency 0 Hz – 20 MHz
 - Level 1 V rms [15 dBm max]
 - Gain 0 dB to 12 dB trimable
 - Harmonic <-40 dBc
 - Non-harmonic <-80 dBc
 - Non-harmonic <-80 dBc
 - Load Impedance 50 Ω
- > Pulse /DC IRIG Time Code
 - Duty Cycle 0 to 100%
 - Rise Time < 20 ns
 - Fall Time < 20 ns
 - Skew < +2 ns
 - Load Impedance 50 Ω
- > AM IRIG Time Code
 - Frequency 1 PPS to 10 MPPS
 - Modulation Frequency Up to 1 MHz
 - Code Format Any IRIG format, IEEE 1344, NASA 36, 2137, XR3
 - Load Impedance 50 Ω

Compliance

- > FCC, CE Marked, ROHS, ANSI

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Distribution Amplifiers

DA232



FEATURES

- 1 inputs: 1:8 output standard
- Up to 16 output option
- Chassis is steel with rust resistant powder coat
- Universal worldwide AC power
- Green power LED on front panel

SPECIFICATIONS

Physical

- > Weight: 2.49 lb (0.95 kg)
- > Size: 16.9w x 1.75h x 4.5d in (43w x 4.3h x 11.5d cm)

Power

- > IEC 320-C5 AC connector
- > 110-220 VAC, 50/60 Hz
- > Power consumption: < 5 watts

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Inputs - 1

- > Bi-directional

Outputs - 16

- > Output 1- RS232 level transmit and receive
- > Output 2-16 – transmit only
- > 120 Kbps

Compliance

- > FCC
- > CE Marked
- > ROHS
- > ANSI

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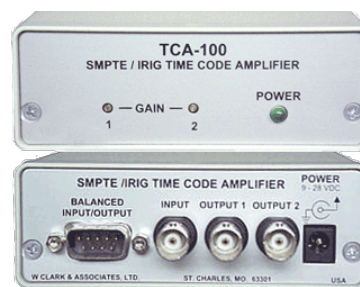
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FEATURES

- Works with SMPTE, EBU and IRIG time codes
- Transformer outputs for superior isolation
- BNC I/O connectors for ease of connection
- Balanced I/O available via DB-9 connector
- Two separate and isolated output channels



Rack mountable with RM4



SPECIFICATIONS

Output Level

- > Up to 14 V PP (with 600Ω load)
- > Each channel is individually adjustable with a front panel accessible level control

Output Options

Each output channel can be jumpered to provide:

- > isolated balanced to ground
- > single ended grounded
- > transformer isolated differential

Input Level

- > 2-14 Vpp range of input for rated output

Frequency Response

- > 100 Hz to 8 kHz \pm 1dB

I/O Connectors

- > Balanced input via isolated BNC or 2 pins of DB-9 male connector
- > Transformer isolated, balanced output via isolated BNC or separate DB-9 connector pins
- > 2 mm male power plug

Physical

- > Weight: 16 oz (435 g)
- > Size: 4.2w x 1.5h x 5.5d in (10.6w x 3.8h x 14d cm)

Operating Parameters

- > Temperature: 0 to 60°C
- > Humidity: Up to 90% (non-condensing)

Power

- > Input voltage: 12-28 VDC,
- > Power consumption: < 1W
- > External wall mount 120 or 220 VAC power supply

Compliance

- > FCC
- > CE Marked
- > ROHS
- > ANSI

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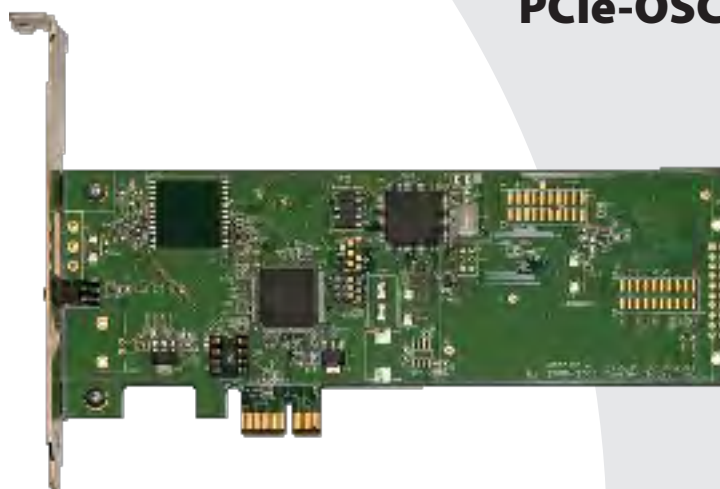
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PCIe-OSC

FEATURES

- Provides millisecond accuracy to Windows applications
- Microsecond accuracy achievable through API development
- Fully configurable time zone and daylight saving time offsets
- PCIe revision 2.0 – slot compatible X1 through X16
- LED status indicator



SPECIFICATIONS

Time Generation Accuracy

- > Internal battery-backed real-time clock chip provides accuracy of ± 1 min/year

Software

- > Runs under Windows Server 2003/2008 R2/2012 R2, Win XP 32 bit, Win 7/8/10 32 & 64 bit
- > API software development kit and documentation is provided for designers

Physical

- > Length: 6.6 in (167.6 mm), Height: 2.712 in (68.8 mm)
- > Low profile card and bracket standard
- > Full height bracket included

Operating Parameters

- > Temperature: 0 to 60 °C

Compliance

- > FCC, CE Marked, ROHS, ANSI

High-stability Oscillator Options

- > HSO-1 with TCXO provides accuracy of ± 3 seconds/year
- > HSO-2 with OCXO provides typical stability of ± 250 ms/year after 30 days of aging

Freq = 10 Mhz	HSO-1	HSO-2
Oscillator Type	TCXO	OCXO
Freq. Stability	$\pm 2.5 \times 10^{-6}$	$\pm 5 \times 10^{-9}$
Aging Stability per yr	$\pm 1 \times 10^{-6}$	$\pm 1 \times 10^{-8}$
Drift per year	± 3 seconds	± 0.3 seconds

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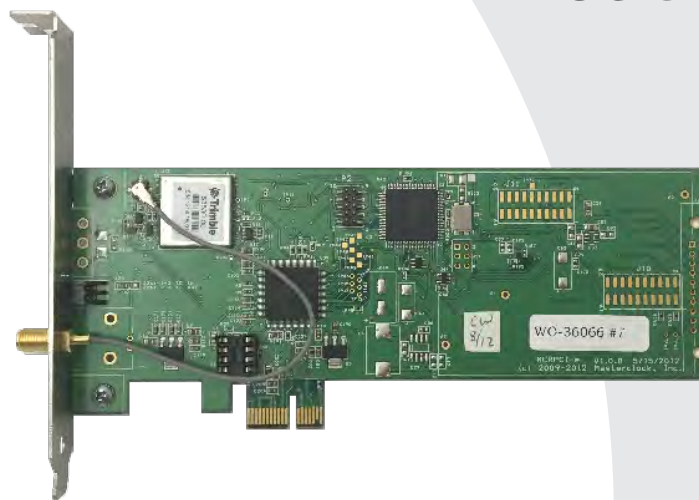
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PCIe-GPS

FEATURES

- Synchronizes PC to ± 2 milliseconds of GPS reference
- Provides millisecond accuracy to Windows applications
- Microsecond accuracy achievable through API development
- Fully configurable time zone and daylight saving time offsets
- PCIe revision 2.0 – slot compatible X1 through X16
- LED status indicator



SPECIFICATIONS

Holdover Accuracy

- > With loss of power or time reference synchronization, device reverts to an internal battery-backed real-time clock chip with accuracy of ± 1 min/year

Software

- > Runs under Windows Server 2003/2008 R2/2012 R2, Win XP 32 bit, Win 7/8/10 32 & 64 bit
- > API software development kit and documentation is provided for designers

Physical

- > Length: 6.6 in (167.6 mm), Height: 2.712 in (68.8 mm)
- > Low profile card and bracket standard
- > Full height bracket included

Operating Parameters

- > Temperature: 0 to 60 °C

Compliance

- > FCC, CE Marked, ROHS, ANSI

Antenna Options

- > Basic antenna package includes magnetic GPS antenna and 15 ft (5 m) of cable
- > Standard antenna package includes outdoor GPS antenna, mounting kit, and 50 ft (15 m) of cable

High-stability Oscillator Options

- > HSO-1 with TCXO provides accuracy of ± 3 seconds/year
- > HSO-2 with OCXO provides typical stability of ± 250 ms/year after 30 days of aging

Freq = 10 Mhz	HSO-1	HSO-2
Oscillator Type	TCXO	OCXO
Freq. Stability	$\pm 2.5 \times 10^{-6}$	$\pm 5 \times 10^{-9}$
Aging Stability per yr	$\pm 1 \times 10^{-6}$	$\pm 1 \times 10^{-8}$
Drift per year	± 3 seconds	± 0.3 seconds

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PCIe-TCR

FEATURES

- Synchronizes PC to ± 2 milliseconds of time code reference
- References IRIG-B, SMPTE, EBU time codes
- Automatic time code detection
- Balanced and unbalanced time code inputs
- Provides millisecond accuracy to Windows applications
- Microsecond accuracy achievable through API development
- Fully configurable time zone and daylight saving time offsets
- PCIe revision 2.0 – slot compatible X1 through X16
- LED status indicator



SPECIFICATIONS

Time Code Inputs

- > SMPTE (30/25/25 fps - non-drop frame only) to Leitch Date Encoding Standard
- > IRIG-B pulse width coded (unmodulated) DC, IEEE 1344 standard
- > IRIG-B(1) 1 kHz Amplitude Modulated, IEEE 1344 standard

Holdover Accuracy

- > With loss of power or time reference synchronization, device reverts to an internal battery-backed real-time clock chip with accuracy of ± 1 min/year

Software

- > Runs under Windows Server 2003/2008 R2/2012 R2, Win XP 32 bit, Win 7/8/10 32 & 64 bit
- > API software development kit and documentation is provided for designers

Physical

- > Length: 6.6 in (167.6 mm), Height: 2.712 in (68.8 mm)
- > Low profile card and bracket standard
- > Full height bracket included

Operating Parameters

- > Temperature: 0 to 60 °C

Compliance

- > FCC, CE Marked, ROHS, ANSI

High-stability Oscillator Options

- > HSO-1 with TCXO provides accuracy of ± 3 seconds/year
- > HSO-2 with OCXO provides typical stability of ± 250 ms/year after 30 days of aging

Freq = 10 Mhz	HSO-1	HSO-2
Oscillator Type	TCXO	OCXO
Freq. Stability	$\pm 2.5 \times 10^{-6}$	$\pm 5 \times 10^{-9}$
Aging Stability per yr	$\pm 1 \times 10^{-6}$	$\pm 1 \times 10^{-8}$
Drift per year	± 3 seconds	± 0.3 seconds

MASTERCLOCK, INC.
5-YEAR LIMITED PARTS & LABOR WARRANTY
MADE IN THE USA

phone (USA and Canada):
1-800-940-2248

phone (international):
+1-636-724-3666

email:
sales@masterclock.com

online:
www.masterclock.com

FEATURES

- Accurate clock reference for PCs
- Provides millisecond accuracy to Windows applications
- Microsecond accuracy achievable through API development
- Real time clock chip & oscillator with temperature compensation
- Time in hours, minutes, seconds, milliseconds



SPECIFICATIONS

Time Generation Accuracy

- > Internal battery-backed real-time clock chip provides accuracy of $\pm 1\text{min/year}$

Configuration and Software

- > MCRSET utility for configuration and status
- > MCRSYNC service automatically keeps PC clock synchronized
- > DLL with documented API
- > Software runs as a service under Windows XP/7/Server 2003 and 2008
- > Automatic port and interrupt selection

Physical

- > Half-height card
- > Length: 6.6 in (167.6 mm)
- > Height: 2.5 in (63.6 mm)

Operating Temperatures

- > Temperature: 0 to 60°C

Compliance

- > FCC, CE Marked, ROHS, ANSI

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TCR1000**FEATURES**

- Universal voltage time code reader plug-in style card for both 3.3V and 5V PCI busses
- Provides accurate time to PCs and servers for precise synchronization in embedded system
- References time codes IRIG-B, IRIG-B1, SMPTE 12M, 309M, 24/25/30 fps (non-drop frame formats only)
- Allows millisecond synchronization accuracy
- Microsecond accuracy achievable through API development
- Fully configurable time zone and daylight saving time offsets
- Detects time code type and sets time code level automatically
- LED status indicator

SPECIFICATIONS**Time Code Inputs**

- > SMPTE (30/25/25 fps - non-drop frame only) to Leitch Date Encoding Standard
- > IRIG-B pulse width coded (unmodulated) DC, IEEE 1344 Standard
- > IRIG-B(1) 1 kHz Amplitude Modulated, IEEE 1344 Standard

Holdover Accuracy

- > With loss of power or time reference synchronization, device reverts to an internal battery-backed real-time clock chip with accuracy of ± 1 min/year or < 165 ms per day

Connectors

- > BNC connector for time code input
- > Optional 3 pin positive locking, right angle pin header for time code input

Physical

- > Half- height card
- > Length: 6.6 in (167.6 mm)
- > Height: 2.5 in (63.6 mm)

Compliance

- > FCC, CE Marked, ROHS, ANSI

**Configuration and Software**

- > MCRSET utility for configuration and status
- > MCRSYNC service automatically keeps PC clock synchronized
- > DLL with documented API
- > Software runs as a service under Windows XP/7/Server 2003 and 2008

Options

- > TCRSync-NTP software provides NTP reference for heterogeneous operating systems on an Ethernet LAN

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