Technical Data

TICRO 100

IEEE 1588/PTP Time Converter

Visit www.omicron-lab.com for more information.
Contact support@omicron-lab.com for technical support.

Technical data subject to change without notice.

1 Timing Performance

PTP Timestamping Resolution	8 ns
Supported timing protocol	PTP according to IEEE 1588–2008 (IEEE 1588 Version 2)

PTP (IEEE 1588) Features	• Default profile IEEE 1588-2008, Annex J
	  o End-to-end (multicast) and peer-to-peer delay mechanisms
	  o PTP over UDP/IPv4, UDP/IPv6 and Ethernet/IEEE 802.3 (IEEE 1588-2008 Annex D, E, and F)
	• Power profile IEEE C37.238-2011 IEEE Standard Profile for Use of IEEE 1588 Precision Time Protocol in Power System Applications

Holdover performance	Holdover drift in 24 hours at constant temperature, after 48 hours of operation: • Standard oscillator (OCXO-100): < 100 µs (measured values < 12µs) • High precision oscillator (OCXO-25): < 25 µs (measured values < 4 µs)

2 Time Code and Frequency Outputs

WARNING:
All inputs and outputs of the *TICRO 100* are electrically connected to the SELV (safety extra low voltage) insulation group of the device. It is strongly forbidden to connect none-SELV compliant voltages to all inputs and outputs.

2.1 Electrical Specifications

10 MHz	• BNC connector • Sinusoidal • 50 Ω output impedance • 4 dBm (1 Vpp) ±2 dBm at 50 Ω load • Short circuit protected • Ground connected to housing
Out 1, Out 2	• BNC connector • 50 Ω output impedance • Unmodulated (digital) time codes: 2.5 V at 50 Ω load, 5 V at open circuit, TTL compatible • Modulated IRIG-B: 3 V amplitude (peak) at 50 Ω load, 6 V amplitude at open circuit • Short circuit protected • Ground connected to housing
Out 3	• Screw terminal • Optocoupler Darlington output • Maximum collector-emitter voltage: 30 V • Maximum current: 100 mA • Pulse delays ton < 3 µs (at all load impedances) toff < 20µs (at 30 VDC, load impedance < 1 kΩ) • Supports digital (unmodulated) time codes
Out 4, Out 5	• Fiber optical output • ST connector • Wavelength 820 nm • Compatible with 50/125 µm, 62.5/125 µm, 100/140 µm fibers and 200µm plastic-clad silica (PCS) fibers • Support digital (unmodulated) time codes

2.2 Supported Time Codes

IRIG-B	• TAI, UTC or local time base • Unmodulated (IRIG-B00x) or 1kHz Modulation (IRIG-B12x) • Coded expressions: Control functions, Straight binary seconds, BCD YEAR
DCF77	• Unmodulated DCF77 time code • CET / CEST time base
PPX	• TAI, UTC or local time base • 1, 10, 100, 1000 PPS, 1 PPM, 1 PPH or custom period • Custom period between 1s and 1 day • Custom pulse width (>10ns) • Falling or rising edge • Can be combined with Trigger
Trigger	• TAI, UTC or local time base • Absolute trigger date and time programmable with 1s resolution • Can be combined with PPX

3 Networking and Management

Management	• Web Interface (HTTP/HTTPS) • TFTP, FTP, and SSH access • Automated configuration via SSH, SOAP and XML files • Fail-safe software upgrade in the field • Email notifications • Syslog (local and remote)
Networking	• Twisted pair (10BaseT/100BaseTX, RJ45) and optical Ethernet (100BaseFX, LC, multimode) connectors. One interface useable at a time. • Supports IPv4 and IPv6 • Power over Ethernet according to IEEE 802.3af • DHCP • Zeroconf (MDNS/DNS-SD)
USB	• USB 2.0 (Type B) • USB network gadget (RNDIS) • Allows network connection to the TICRO 100 and devices attached to TICRO 100's Ethernet interface (with USB only IPv4 is supported @ the moment)

4 Other

Power Supply

Power over Ethernet	• Max. power consumption 13W • Powered Device (PD) class 3 according to IEEE 802.3af • Operates as PSE (power sourcing equipment) according to IEEE 802.3af when powered via front or back panel DC input. Capable of supplying a class 1 PD (up to 4W).
Front panel DC input	• 18-57 V DC • power consumption <15W • Terminal block, maximum conductor cross section 1.5 mm² WARNING: Product safety according to IEC 61010-1 and IEC 60255-27 only achieved by using an external power supply unit that complies with the SELV standard.
Back panel DC input	• 18-57 V DC, power consumption <15W • power consumption <15W • barrel connector • WARNING: Back panel DC input does not fulfil the surge requirements of IEC 60255-27. Use the front panel DC input if compliance with IEC 60255 is required. WARNING: Product safety according to IEC 61010-1 only achieved by using an external power supply unit that complies with the SELV standard.

EMC

This Product adheres to the electromagnetic compatibility (EMC) directive 2004/108/EC (CE conform).

General	• Radiated emissions according to EN 61326-1, CISPR 11, IEC 60255-25, EN 55022, class A, 30 MHz - 6 GHz • Radiated emissions according to FCC part 15 class A, 30 MHz - 6 GHz • Radiated immunity according to EN 61326-1, EN 61000-4-3, IEC 60255-22-3: 80 MHz – 3 GHz, AM 1 kHz, m=0.8, 10 V/m • ESD according to EN 61326-1, EN 61000-4-2, IEC 60255-22-2: contact discharge ±6 kV, air discharge ±8 kV
Front panel DC input	• Conducted immunity continuous wave according to EN 61326-1, EN 61000-4-6, IEC 60255-22-6, 150 kHz - 80 MHz, AM 1 kHz, m=0.8, 10V, spot measurements at 27 MHz, 68 MHz • EFT (Burst) according to EN 61326-1, EN 61000-4-4, IEC 60255-22-4: 5/50 ns, 5 kHz, 1 minute, ±2 kV • Surge according to EN 61326-1, EN 61000-4-5, IEC 60255-22-5: Line-Line ±1 kV, Line-PE ±2 kV • ESD according to EN 61326-1, EN 61000-4-2, IEC 60255-22-2: contact discharge ±6 kV

Back panel DC input	• Conducted immunity continuous wave according to EN 61326-1, EN 61000-4-6, IEC 60255-22-6, 150 kHz - 80 MHz, AM 1 kHz, m=0.8, 10V, spot measurements at 27 MHz, 68 MHz • EFT (Burst) according to EN 61326-1, EN 61000-4-4, IEC 60255-22-4: 5/50 ns, 5 kHz, 1 minute, ±2 kV • Surge according to EN 55024, EN 61000-4-5: Line-PE ±0.5 kV • ESD according to EN 61326-1, EN 61000-4-2, IEC 60255-22-2: contact discharge ±6 kV
Ethernet port (RJ45)	• Conducted emission according to EN 55022, IEC 60255-25, 150 kHz – 30 MHz, class A • Conducted immunity continuous wave according to EN 61326-1, EN 61000-4-6, IEC 60255-22-6, 150 kHz - 80 MHz, AM 1 kHz, m=0.8, 10V, spot measurements at 27 MHz, 68 MHz • EFT (Burst) according to EN 61326-1, EN 61000-4-4, IEC 60255-22-4: 5/50 ns, 5 kHz, 1 minute, ±4 kV • Surge according to EN 61326-1, EN 61000-4-5, IEC 60255-22-5: Line-PE ±1 kV • ESD according to EN 61326-1, EN 61000-4-2, IEC 60255-22-2: contact discharge ±6 kV
Ethernet port (Fiber)	• ESD according to EN 61326-1, EN 61000-4-2, IEC 60255-22-2: contact discharge ±6 kV
10 MHz, Out 1, Out 2, Out 3	• Conducted immunity continuous wave according to EN 61326-1, EN 61000-4-6, IEC 60255-22-6, 150 kHz - 80 MHz, AM 1 kHz, m=0.8, 10V, spot measurements at 27 MHz, 68 MHz • EFT (Burst) according to EN 61326-1, EN 61000-4-4, IEC 60255-22-4: 5/50 ns, 5 kHz, 1 minute, ±4 kV • ESD according to EN 61326-1, EN 61000-4-2, IEC 60255-22-2: contact discharge ±6 kV
Out 4, Out 5	• ESD according to EN 61326-1, EN 61000-4-2, IEC 60255-22-2: contact discharge ±6 kV
USB port	• Conducted immunity continuous wave according to EN 61326-1, EN 61000-4-6, IEC 60255-22-6, 150 kHz - 80 MHz, AM 1 kHz, m=0.8, 10V, spot measurements at 27 MHz, 68 MHz • EFT (Burst) according to EN 61326-1, EN 61000-4-4, EN 55024: 5/50 ns, 5 kHz, 1 minute, ±1 kV • ESD according to EN 61326-1, EN 61000-4-2, IEC 60255-22-2: contact discharge ±6 kV

WARNING:
The back panel DC input does not fulfil the surge requirements of IEC 60255-22-5.
Use the front panel DC input, when compliance with IEC 60255-22-5 is required.

WARNING:
The USB port does not fulfil the burst requirements of IEC 60255-22-5.

Safety

- IEC 60950
- IEC 61010
- IEC 60255

Environmental

Operating temperature range	-20°C … +50°C (-4°F … + 122°F)
Storage temperature range	-40°C … +85°C (-40°F … +185°F)
Climate	Tested according to IEC 60068-2-30, Test Db, damp heat, cyclic (6 cycles, 55°C)
Vibration	Tested according to IEC 60068-2-6 and IEC 60255-21-1 (class 1). • Response: frequency range 10…150 Hz, 0.5 g, 1 sweep cycle per axis • Endurance: frequency range 10…150 Hz, 1 g, 20 sweep cycles per axis
Shock	Tested according to IEC 60068-2-27 and IEC 60255-21-2 (class 1) • Response: 5 g/11 ms, half-sinusoid, 3 pulses in each direction, 6 directions • Withstand: 15 g/11 ms, half-sinusoid, 3 pulses in each direction, 6 directions • Bump test: 10 g/16 ms, half-sinusoid, 1000 pulses in each direction, 6 directions

Mechanical

Housing type:	IP40 according to IEC 60529
Dimensions	H x W x D: 54.6 x 171.6 x 121 mm / 2.15” x 6.75” x 4.76” (without accessories)
Weight	<750 g / <1.65 lbs