

# microSync<sup>XS</sup> 200



## Product Highlights

- | A powerful and ultra-compact Stratum 1 NTP/PTP time server
- | 1U chassis, specially constructed for installation in a 19" rack
- | Engineered to order with a L1 Multi-GNSS 72 channel GNS receiver-clock
- | OLED display for fast set-up and status monitoring
- | Different oscillator options for advanced holdover performance

## microSync<sup>XS</sup>: Compact, Powerful, and Cost-Effective

Meinberg's microSync<sup>XS</sup> joins the microSync series with the most compact and cost-efficient microSync<sup>XS</sup> to date—but with an impressive feature set to boast.

Like the larger microSync<sup>RX</sup> and microSync<sup>HR</sup>, the microSync<sup>XS</sup> features two PTP-capable network ports operable either in timeTransmitter (Master) or timeReceiver (Slave) mode, allowing it to operate as a high-accuracy grandmaster, boundary clock, or ordinary clock. With full support for practically every published PTP profile, the microSync<sup>XS</sup> is particularly ideal as an ultra-compact PTP Grandmaster solution. It also serves as a powerful NTP server and programmable clock signal generator, capable of producing pulse-per-second, 10 MHz frequency, 48 kHz word clock, DCLS timecode and more via three programmable pulse outputs. The microSync<sup>XS</sup>200 also has an OLED display with a rotary controller for initial network configuration and local status monitoring.

Equipped with a full version of the powerful, synchronization-centric meinbergOS operating system, the microSync<sup>XS</sup> offers up all the security and flexibility that the microSync family is known for. These include the new features introduced in the latest meinbergOS versions, specifically LDAP, TACACS+, and RADIUS authentication, native PRP for NTP and PTP traffic, industry-specific network functionality such as IEC 61850 MMS support, detailed analysis features for GNSS reception and clock performance, and also a fully integrated version of Meinberg's PTP monitoring solution, **PTP Track Hound**.

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## Monitoring & Alarms

|                              |                                                                                                                                    |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>Supported Protocols</b>   | SNMP v1, SNMP v2, SNMP v3                                                                                                          |
| <b>Notification Channels</b> | Email (SMTP), syslog                                                                                                               |
| <b>Log Access</b>            | Logs can be viewed and downloaded in the Web Interface, downloaded via the FTP service, or accessed via the command line interface |

## NTP Support

|                          |                                                                                                                          |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------|
| <b>NTP Protocols</b>     | NTP v2 (RFC 1119), NTP v3 (RFC 1305), NTP v4 (RFC 5905), SNTP v3 (RFC 1769), SNTP v4 (RFC 2030)                          |
| <b>Security Features</b> | Symmetric key-based authentication using MD5, SHA-1, or AES-128-CMAC hashes<br>NTP v4 Autokey (private/public key pairs) |

## Management Interfaces

|                       |                                                                                                                                             |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Network</b>        | Web Interface (HTTP/HTTPS TLS v1.3)<br>SSH v2 (command line interface)<br>Telnet (command line interface)<br>REST API (HTTP/HTTPS TLS v1.3) |
| <b>Serial Console</b> | Micro USB connector for serial terminal access                                                                                              |
| <b>Local</b>          | Optional OLED display with a rotary controller                                                                                              |

## PTP (IEEE 1588) Support

|                                  |                                                                                                                                                                                                                                                                           |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PTP Versions</b>              | PTPv2 (IEEE 1588-2008)                                                                                                                                                                                                                                                    |
| <b>IEEE 1588-2008 Profiles</b>   | <b>Default Profiles</b> <ul style="list-style-type: none"> <li>- Default E2E IEEE 1588-2008 Profile</li> <li>- Default P2P IEEE 1588-2008 Profile</li> </ul>                                                                                                              |
|                                  | <b>Power Profiles</b> <ul style="list-style-type: none"> <li>- IEEE C37.238-2011 (including profile extensions)</li> <li>- IEEE C37.238-2017 (including profile extensions)</li> <li>- IEC/IEEE 61850-9-3 Power Utility Profile (including profile extensions)</li> </ul> |
|                                  | <b>Broadcast Profiles</b> <ul style="list-style-type: none"> <li>- DOCSIS 3.1</li> <li>- SMPTE ST 2059-2 (including profile extensions)</li> <li>- AES67 Media</li> </ul>                                                                                                 |
|                                  | <b>Telecom Profiles</b> <ul style="list-style-type: none"> <li>- ITU-T G.8265.1 (including profile extensions)</li> <li>- ITU-T G.8275.1 (including profile extensions)</li> <li>- ITU-T G.8275.2</li> </ul>                                                              |
| <b>Packet Transmission Modes</b> | <b>Automotive Profiles</b> <ul style="list-style-type: none"> <li>- AUTOSAR</li> </ul>                                                                                                                                                                                    |
|                                  | Two-Step mode, One-Step mode                                                                                                                                                                                                                                              |
| <b>Clock Modes</b>               | <ul style="list-style-type: none"> <li>- Multicast Master</li> <li>- Unicast Master</li> <li>- Multicast Slave</li> <li>- Unicast Slave</li> <li>- Multicast Auto (automated mode selection based on IEEE 1588 Best Master Clock Algorithm)</li> </ul>                    |
| <b>Other Features</b>            | <ul style="list-style-type: none"> <li>- Hybrid Mode (Sync &amp; Announce messages sent to multicast address, Delay Request &amp; Delay Response messages sent as unicast)</li> <li>- Path Trace TLVs</li> <li>- Alternate Time Offset Indicator TLVs</li> </ul>          |

## PTP Performance Levels

Your microSync<sup>XS</sup> 200 is provided with a license that provides one of three specified performance levels with the IEEE 1588 implementation in terms of the maximum number of unicast clients, PTPv1 support, and the maximum number of delay request messages per second. Please reach out to your Meinberg Sales Representative for more information.

| Performance Level | Max. Unicast Clients | Max. Delay Requests per Second / Hybrid Mode | PTP Versions |
|-------------------|----------------------|----------------------------------------------|--------------|
| PL-A              | 8                    | 1024                                         | PTPv2        |
| PL-B              | 256                  | 32768                                        | PTPv2        |
| PL-C              | 512                  | 65536                                        | PTPv1, PTPv2 |

## Oscillator Options

The microSync<sup>XS</sup> is shipped as standard with a “**OCXO SQ**” (temperature-controlled crystal oscillator), which provides excellent holdover performance if your server loses synchronization with its upstream reference for any reason. The microSync may also be shipped on request with a more powerful holdover solution; the options available and their performance metrics are listed below:

| Type    | Holdover Performance (1 Day) * | Holdover Performance (1 Year) * |
|---------|--------------------------------|---------------------------------|
| OCXO SQ | ± 65 µs                        | ± 4.7 s                         |
| OCXO HQ | ± 10 µs                        | ± 788 ms                        |

## Operating Specifications

|                          |                                             |
|--------------------------|---------------------------------------------|
| Acoustic Noise Emissions | 0 dB(A)                                     |
| Operating Temperature    | -20 °C to 55 °C (-4 °F to 131 °F)           |
| Storage Temperature      | -30 °C to 70 °C (-22 °F to 158 °F)          |
| Relative Humidity        | Max. 95 % at 40 °C (104 °F), non-condensing |
| Operating Altitude       | 5,000 m (16,404 ft)                         |
| Atmospheric Pressure     | 540 to 1,600 hPa                            |

## Chassis Specifications

|                                                         |                                                           |
|---------------------------------------------------------|-----------------------------------------------------------|
| Form Factor                                             | One-third of 19" rack unit                                |
| Dimensions (Only Chassis) [W x H x D]                   | 149 mm x 44 mm x 239 mm<br>(5.87 in x 1.73 in x 9.41 in)  |
| Dimensions (including Connectors & Handles) [W x H x D] | 149 mm x 44 mm x 270 mm<br>(5.87 in x 1.73 in x 10.63 in) |
| Material                                                | Sheet Steel                                               |
| IP Rating                                               | IP30                                                      |

## Support & Compliance

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Technical Support</b>       | Free lifetime support via telephone and email, including firmware updates                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Warranty</b>                | Three-year warranty, extendable upon request                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Firmware Updates</b>        | Firmware is field-upgradable; updates can be installed via the Web Interface (upload via a web browser), or via the CLI (download from a server). meinbergOS allows you to install multiple firmware versions onto the device concurrently and select which one should be used when the system starts.                                                                                                                                                                                                                       |
| <b>Conformity Declarations</b> | CE, UKCA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>RoHS Compliance</b>         | The product is fully RoHS-compliant.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>WEEE Status</b>             | The purchase of this product is considered to be a “B2B” transaction (non-household product) for the purposes of the EU Waste of Electrical and Electronic Equipment Directive; the product falls under Category 6, “Small IT and Telecommunications Equipment”. For disposal, it can be returned to the manufacturer to ensure WEEE compliance. Any transportation expenses for returning this product (at end-of-life) must be covered by the end user, while Meinberg will cover the costs for the waste disposal itself. |

## Accessories

(Optional - only on order)

- | Models with a GPS or GNS-UC clock receiver include a Meinberg GPSANTv2 antenna for outdoor installation, a mounting kit containing all the accessories required to mount the antenna on a pole or wall, and a 20 m (65.6 ft) RG 58 coaxial cable with pre-fitted connectors as standard\*.
  - | Models with a GNS receiver clock include a multi-GNSS antenna for outdoor installation, a mounting kit containing all the accessories required to mount the antenna on a pole or wall, and a 20 m (65.6 ft) Belden H155 coaxial cable with pre-fitted connectors as standard\*.
- \* Meinberg also offers customized antenna cables, antenna splitter and surge protector to accommodate your specific installation requirements. Please reach out to your Meinberg Sales Representative for more information.

# microSync-XS200 Connector Side View

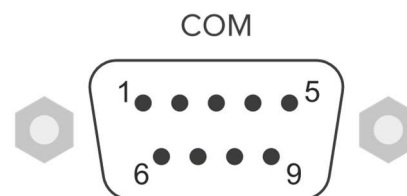
## 1 Power Supply - microSync<sup>XS</sup>

|                                           |                                                           |
|-------------------------------------------|-----------------------------------------------------------|
| Connector Type                            | Barrel connector (right angle):<br>(Ø 5.5/Ø 2.5) L10.5 mm |
| Polarity                                  | Positive internal conductor                               |
| Nominal Voltage (U <sub>N</sub> )         | 48 V DC                                                   |
| Rated Voltage Range (U <sub>max</sub> )   | 20 V – 60 V DC                                            |
| Nominal Current (I <sub>N</sub> )         | 1.25 A DC                                                 |
| Power Consumption (P <sub>max</sub> )     | 30 W                                                      |
| Max. Thermal Output (E <sub>therm</sub> ) | 102.36 BTU/h (108 kJ/h)                                   |

## 2 GNS Antenna Connector

|                   |                         |
|-------------------|-------------------------|
| Connector Type    | SMA female              |
| Termination       | 50 Ω                    |
| Recommended Cable | Belden H155 (max. 70 m) |
| Voltage Output    | 5 V                     |

## 3 Serial Time String I/O



| Pin | Function              |
|-----|-----------------------|
| 1   | PPS Input             |
| 2   | RS-232 RxD (Receive)  |
| 3   | RS-232 TxD (Transmit) |
| 5   | GND (Ground)          |

|                                 |                                                                                                                                                                                                                                                                                                                     |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Connector Type                  | D-Sub 9-pin, male                                                                                                                                                                                                                                                                                                   |
| Supported Time Strings (Output) | Meinberg Standard ( <i>Default</i> ),<br>Meinberg Capture, Meinberg GPS, SAT,<br>NMEA RMC, NMEA GGA, NMEA ZDA,<br>NMEA RMC GGA ( <i>RMC followed by GGA</i> ),<br>NMEA GGA ZDA ( <i>GGA followed by ZDA</i> ),<br>Uni Erlangen, Computime, Sysplex 1, SPA,<br>RACAL, ION, ION Blanked, IRIG-J-1, 6021,<br>Freelance |
| Supported Time Strings (Input)  | Meinberg Standard, NMEA RMC, NMEA ZDA,<br>Uni Erlangen                                                                                                                                                                                                                                                              |
| Baud Rates                      | 300, 600, 1200, 2400, 4800, 9600, 19200<br>( <i>Default</i> )                                                                                                                                                                                                                                                       |
| Framing Options                 | 7N2, 7E1, 7E2, 8N1 ( <i>Default</i> ), 8N2, 8E1, 8O1                                                                                                                                                                                                                                                                |
| Supported Cable Type            | Standard RS-232 (female) for time string output<br>Modified RS-232 cable (female) with PPS signal on Pin 1 for synchronization with external time string + PPS signal                                                                                                                                               |

#### 4 GNSS Receiver Status LEDs

|                    |                                                                                                                        |
|--------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>“Fail” LED</b>  | When lit, this reveals if that clock is having problems with synchronization.                                          |
| <b>“Ant.” LED</b>  | Indicates no functional connection to the antenna or that there is a short-circuit in the connection with the antenna. |
| <b>“Nav.” LED</b>  | Shows the state of the geopositioning process.                                                                         |
| <b>“Init.” LED</b> | Provides an indication of initialization state of the clock and onboard oscillator.                                    |

#### 5 USB Interface

This USB interface can be used for:

- | saving a backup of the meinbergOS configuration to an external storage medium (such as a USB flash drive) and restoring this backup (or copying a standard configuration between multiple microSync servers)
- | creating a backup of logfiles
- | performing a local factory reset using a specially prepared “USB key”

#### 6 Network Interfaces (LAN0 & LAN1)

|                                  |                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Network Interfaces</b>        | 2x SFP 1000BASE, PTP master & slave capable                                                                                                                                                                                                                                                                                     |
| <b>Network Protocols</b>         | <ul style="list-style-type: none"> <li>- IPv4 (with DHCP support)</li> <li>- IPv6 (with DHCPv6 and Autoconf support)</li> </ul>                                                                                                                                                                                                 |
| <b>Network Services</b>          | <ul style="list-style-type: none"> <li>- HTTP(S) for web interface and REST API access</li> <li>- FTP for access to log files and uploading firmware updates</li> <li>- SSH for command line access</li> <li>- SNMP for monitoring</li> </ul>                                                                                   |
| <b>Other Networking Features</b> | <ul style="list-style-type: none"> <li>- Full Parallel Redundancy Protocol (PRP) support as Doubly Attached Node, including for PTP and NTP</li> <li>- TACACS+/Radius/LDAP Auth, IEC 61850 MMS</li> <li>- Support for network link aggregation (“bonding”) with multiple modes for load balancing or link redundancy</li> </ul> |

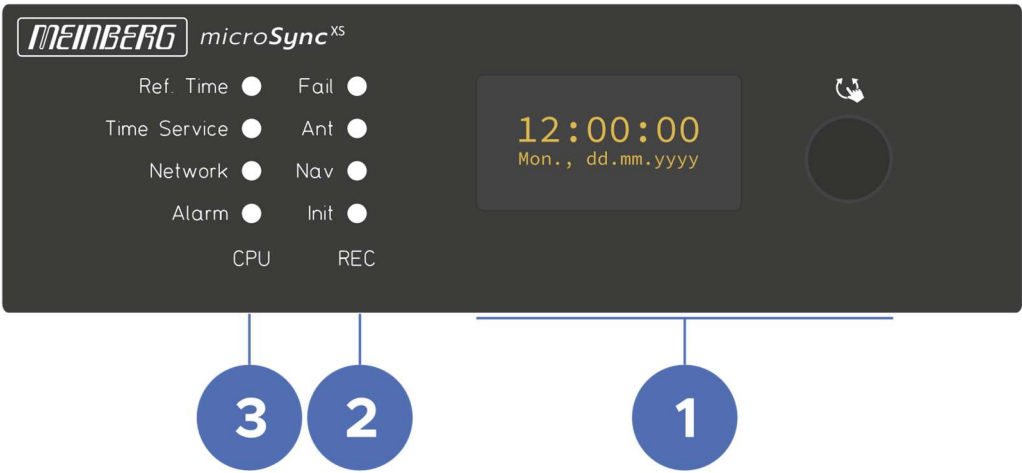
#### 7 Programmable Pulse Outputs 1-3

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Connector Type</b>  | SMA, female (for shielded coaxial cable)                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Signal Level</b>    | TTL, 2.5 V <sub>pp</sub> with 50 Ω load (unbalanced)                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Supported Modes</b> | <ul style="list-style-type: none"> <li>- Idle</li> <li>- Timer</li> <li>- Single Shot</li> <li>- Cyclic Pulse</li> <li>- Pulse Per Second, Minute, Hour</li> <li>- DCF77 Marks</li> <li>- Position OK</li> <li>- Time Sync</li> <li>- All Sync</li> <li>- DCLS Time Code</li> <li>- Serial Time String</li> <li>- DCF77-like M59</li> <li>- Synthesizer Frequency</li> <li>- PTTI 1 PPS</li> <li>- 1 MHz Frequency</li> <li>- 5 MHz Frequency</li> <li>- 10 MHz Frequency</li> <li>- 48 kHz Frequency</li> </ul> |

#### 8 System Status LEDs

|                         |                                                                                          |
|-------------------------|------------------------------------------------------------------------------------------|
| <b>R (Ref. Time)</b>    | Indicates whether the reference clock is providing a valid timebase.                     |
| <b>T (Time Service)</b> | If lit, the internal NTP service of the server is synchronized with the reference clock. |
| <b>N (Network)</b>      | Shows whether there is a valid link-up on any of the configured network interfaces.      |
| <b>A (Alarm)</b>        | Advises of a general system fault that requires attention.                               |

# microSync<sup>XS</sup>200 - Display Side View



## 1 OLED Panel with Dial Control

The front OLED panel of the microSync 19” Rackmount Systems can be used to display basic service information such as software and firmware versions, the current synchronization state of the reference clock, the current time & date, and the network configuration. In conjunction with the dial control, it can also be used to modify the network configuration of the network port LAN0 to allow a device to access it over the network for management purposes.

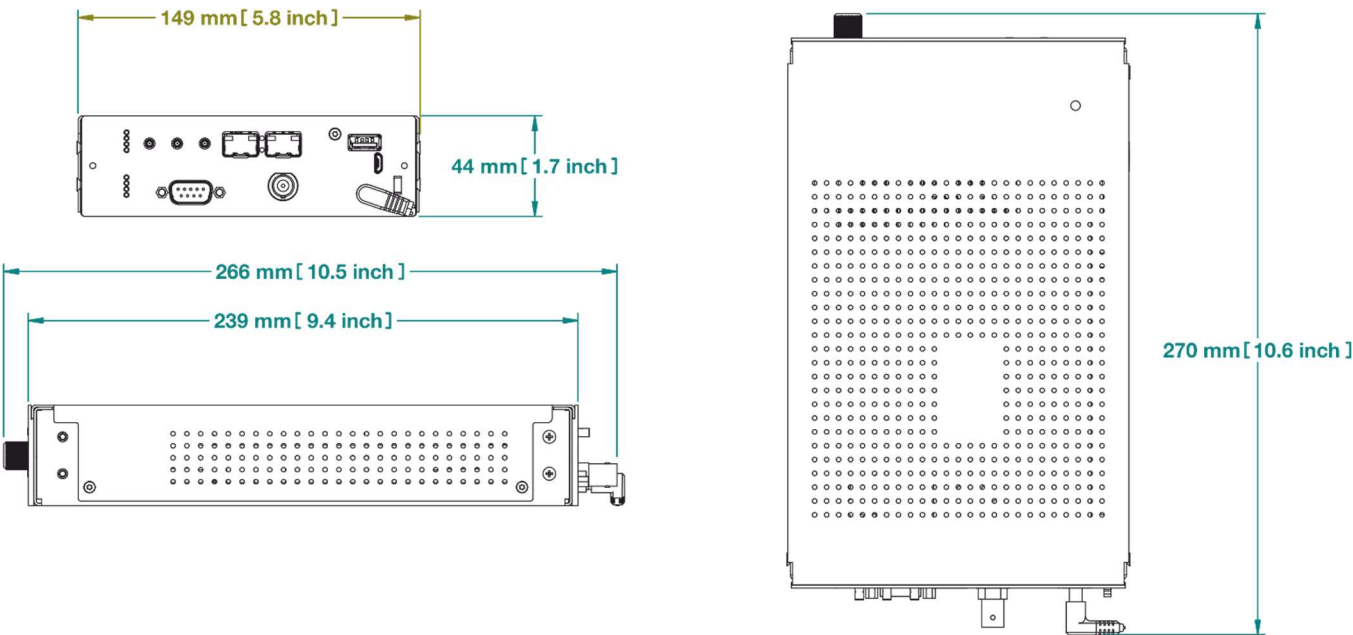
## 3 On-Board CPU Status LEDs

|                         |                                                                                          |
|-------------------------|------------------------------------------------------------------------------------------|
| <b>R (Ref. Time)</b>    | Indicates whether the reference clock is providing a valid timebase.                     |
| <b>T (Time Service)</b> | If lit, the internal NTP service of the server is synchronized with the reference clock. |
| <b>N (Network)</b>      | Shows whether there is a valid link-up on any of the configured network interfaces.      |
| <b>A (Alarm)</b>        | Advises of a general system fault that requires attention.                               |

## 2 GNSS Receiver Status LEDs

|                    |                                                                                                                        |
|--------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>“Fail” LED</b>  | When lit, this reveals if that clock is having problems with synchronization.                                          |
| <b>“Ant.” LED</b>  | Indicates no functional connection to the antenna or that there is a short-circuit in the connection with the antenna. |
| <b>“Nav.” LED</b>  | Shows the state of the geopositioning process.                                                                         |
| <b>“Init.” LED</b> | Provides an indication of initialization state of the clock and onboard oscillator.                                    |

# Dimensions of microSync<sup>XS</sup>



## Supported SFP Modules

| Type                  | Mode                                   | Connector Type | Max. Connection Length                   |
|-----------------------|----------------------------------------|----------------|------------------------------------------|
| Avago ABCU-5740RZ     | Copper (1000BASE-T)                    | RJ45           | 100 m                                    |
| Finisar FCLF8521P2BTL | Copper (1000BASE-T)                    | RJ45           | 100 m                                    |
| Avago AFCT-5710PZ     | Fiber-optic, single-mode (1000BASE-LX) | Duplex LC      | 10000 m                                  |
| Finisar FTLF1318P3BTL | Fiber-optic, single-mode (1000BASE-LX) | Duplex LC      | 10000 m                                  |
| Avago AFBR-5710PZ     | Fiber-optic, multi-mode (1000BASE-SX)  | Duplex LC      | 550 m (50/125 μm)<br>275 m (62.5/125 μm) |
| Finisar FTLF8524P3BNL | Fiber-optic, multi-mode (1000BASE-SX)  | Duplex LC      | 300 m (62.5/125 μm)                      |

## Order Codes

### microSync<sup>XS</sup> 200

| Oscillator         | Order Code |
|--------------------|------------|
| With SQ Oscillator | 03400274   |
| With HQ Oscillator | 03400275   |

### Accessories

| Power Supply         | Order Code |
|----------------------|------------|
| Desktop Power Supply | 00263091   |

| Bracket Sets   |          |
|----------------|----------|
| For 1 System   | 03400241 |
| For 2 Systems* | 03400253 |
| For 3 Systems* | 03400254 |

| Adapter                                              |          |
|------------------------------------------------------|----------|
| 2-pin Terminal to Barrel Connector<br>for DC adapter | 00263092 |

\* For mounting two or three microSync<sup>XS</sup> side by side