LS Instruments

# LSI Correlator - Specifications

| **Multiple Tau Correlator Mode** | |
|---|---|
| Channel layout: | 16/8 semi-logarithmic |
| LSI correlator computes auto and cross correlation function in real time<br>Input channel A and B are selectable | Mode Auto: A/A or B/B<br>Mode Cross: A/B or B/A |
| Initial lag time is selectable amongst: | 12.5 ns<br>200 ns<br>400 ns<br>800 ns<br>1600 ns<br>3200 ns |
| Number of correlation channels: | 320 |
| Number of monitor channels: | 296 |
| Min sampling time:<br>Max sampling time: | 12.5 ns<br>3436 s |
| Max lag time range: | >54976 s |
| Normalization selectable via software: | Symmetric, Compensated |
| Max count rate:<br><br>Channel capacity: | 20 Mcps over 52 ms integration interval<br>40 bit |
| Standard count trace sampling time: | ~52 ms |

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| Linear Correlator Mode | |
|---|---|
| Channel layout | Linearly spaced |
| Sampling time is selectable amongst: | 0.4 µs<br>0.8 µs<br>1.6 µs<br>3.2 µs<br>6.4 µs<br>12.8 µs<br>25.6 µs |
| Max number of channels: | 2048 selectable (even non-consecutive!) from the total of 1032192 channels |
| Max lag time range: | 26.42 s |
| Sample buffer size: | 16 bit per channel |

| General Features | |
|---|---|
| Number of independent inputs:<br>Type: | 2<br>SMA |
| Supported input pulse voltage: | 2 x LVTTL (TTL tolerant) |
| Supported minimum input pulse width: | ~2.5 ns |
| Maximum Mcps sustained: | ~160 Mcps |
| Power requirements: | 12 V x 1.5 A |
| Operational temperature range: | -40 °C to 85 °C |
| Correlator housing:<br>Housing size: | Aluminum<br>120 x 120 x 53.60 mm |

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| Clock generator output synchronized with the first<br>lag time, choose first lag time from:<br><br><br><br><br>Accuracy:<br><br>Peak Jitter: | 200 ns<br>400 ns<br>800 ns<br>1200 ns<br>3200 ns<br><br>100 ppm<br><br>250 ps |
| Connector type: | SMB |
| APD overload protection: | User selectable count rate threshold and integration time to cope with either slow or rapidly fluctuating signals |
| Synchronization Trigger | LVTTL signal output with programmable delay for synchronizing measurement with external hardware. |
| Host communication modes: | USB2 10Mbyte/s, Gigabit Ethernet |
| Software:<br><br><br>Algorithms:<br><br>Operating system: | LSI correlator software for online control, visualization and data treatment (one license provided)<br><br>Cumulant Analysis, CONTIN<br><br>Windows 7, 8, 10<br>(English language setting required) |
| Screen resolution: | Minimum screen resolution of 1680 x 1050 is required. |
| After-pulse correction: | All PMT and APD-based photon detectors have a certain probability to produce a second electronic pulse after they detect a photon. The LSI Correlator eliminates this undesirable effect. |

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| Cables/accessories provided with the LSI Correlator | | |
|---|---|---|
| **Item** | **Description** | **Quantity** |
| Network cable | USB to Ethernet cable assembly | 1x |
| Ethernet-USB adapter | USB 2.0 fast Ethernet adapter | 1x |
| Power supply | External power supply 12V, 18W | 1x |
| Signal cable | BNC to SMA cable; 1m | 4x |
| RF cable | BNC to SMB cable: 1m | 1x |
| USB stick | USB stick with software | 1x |
| User manual | Latest user manual | 1x |

| Optional | |
|---|---|
| Calling libraries: | MATLAB, LabVIEW, Python |
| Additional licenses: | Each correlator comes with a single software license. Additional licenses are provided on request. Please contact LSI for a quote |
| Custom development: | Feasibility study and development of additional hardware and/or software features on request |