



## MEDLL® Performance and Signal Quality Monitoring Measurements in Euro Card Format or Rugged EuroPak™ Enclosure

### Benefits

Reduced multipath effects for accurate range measurements

Detects satellite failures to ensure exceptional data integrity

Mitigates pulsed RF interference for increased tracking reliability

### Features

50% improvement in MEDLL performance

Real-time Signal Quality Monitoring (SQM) measurements using multiple correlators

In-band digital pulse blanking on the L2 signal

### Flexible Platform

Designed for system integrators, the Euro-3™ is available as an OEM receiver in the standard Eurocard format or housed in the rugged EuroPak-3 enclosure. Both include three high speed serial ports and auxiliary strobe signals, including a 1PPS output. Also available is the EuroPak-3T, which provides these same features, as well as an internal high precision clock tightly matched to GPS time, making it an ideal solution for timing applications.

### Standard and MEDLL versions

Available in two software models, the standard Euro-3 includes 14 channels for tracking L1/L2 GPS signals with NovAtel's patented Narrow Correlator® technology and four channels for wide correlator tracking of L1 GEOs. The Multipath Estimating Delay Lock Loop (MEDLL) version provides eight L1/L2 GPS channels and one L1 GEO channel and features a 50 percent improvement in MEDLL performance on a single card, compared to previous multicard implementations.

### Superior Tracking ability

The Euro-3 includes advanced algorithms to detect and eliminate cross-correlation for added tracking reliability. In addition, the Euro-3 features bit synchronization verification, in-band digital pulse blanking on the L2 signal, and includes RFI improvements developed for the U.S. WAAS network. A DO-228 compatible RF deck offers additional protection against out-of-band RF interference.

### Raw data and signal quality monitoring

The Euro-3 provides raw GPS and SBAS frame data with parity information and Signal Quality Monitoring (SQM) measurements, which can be used to monitor the quality of the incoming signal and detect satellite failures. Automatic gain control (AGC) data for the L1 and L2 signals is also provided.

If you require more information about our receivers, visit [novatel.com/products/gnss-receivers/oem-receiver-boards](http://novatel.com/products/gnss-receivers/oem-receiver-boards)



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## Performance<sup>1</sup>

### Tracking Channels

|                |                         |
|----------------|-------------------------|
| Standard Model | 14 L1/L2 GPS + 4 L1 GEO |
| MEDLL Model    | 8 L1/L2 GPS + 1 L1 GEO  |

### Position Accuracy

|                    |           |
|--------------------|-----------|
| Single Point L1/L2 | 1.5 m CEP |
|--------------------|-----------|

### Measurement Precision<sup>2</sup>

|                  |                                    |
|------------------|------------------------------------|
| C/A Code         | 10 cm RMS                          |
| P(Y) Code        | 50 cm RMS (AS on)                  |
| L1 Carrier Phase | 3 mm RMS<br>(differential channel) |
| L2 Carrier Phase | 5 mm RMS<br>(differential channel) |

|                  |      |
|------------------|------|
| <b>Data Rate</b> | 1 Hz |
|------------------|------|

### Time to First Fix

|                         |         |
|-------------------------|---------|
| Cold Start <sup>3</sup> | < 100 s |
|-------------------------|---------|

### Signal Reacquisition

|           |                  |
|-----------|------------------|
| C/A Code  | < 5 s (typical)  |
| P(Y) Code | < 60 s (typical) |
| SBAS      | < 10 s (typical) |

## Euro 3 Receiver

|                         |                   |
|-------------------------|-------------------|
| <b>Size<sup>4</sup></b> | 160 x 100 x 16 mm |
|-------------------------|-------------------|

|               |       |
|---------------|-------|
| <b>Weight</b> | 150 g |
|---------------|-------|

### Power

|                   |                 |
|-------------------|-----------------|
| Input Voltage     | +4.5 to +18 VDC |
| Power Consumption | 6 W (typical)   |

### Antenna LNA Power Output

|                 |        |
|-----------------|--------|
| Output Voltage  | +5 VDC |
| Maximum Current | 100 mA |

### External Oscillator Input

|                 |                       |
|-----------------|-----------------------|
| Input Frequency | 5 or 10 MHz ± 0.5 ppm |
| Signal Level    | 0 to +13 dBm          |

### Communication Ports

- 3 RS-232 or RS-422 serial ports (user-configurable) capable of 9,600 to 230,400 bps

### Connectors

|                           |                              |
|---------------------------|------------------------------|
| Main                      | 160-pin five-row male header |
| Antenna Input             | SMB male                     |
| External Oscillator Input | SMB male                     |

## Environmental

### Temperature

|           |                |
|-----------|----------------|
| Operating | -40°C to +85°C |
| Storage   | -45°C to +95°C |

|                 |                    |
|-----------------|--------------------|
| <b>Humidity</b> | 95% non-condensing |
|-----------------|--------------------|

## EuroPak 3/3T Enclosure<sup>5</sup>

|             |                   |
|-------------|-------------------|
| <b>Size</b> | 235 x 154 x 71 mm |
|-------------|-------------------|

|               |        |
|---------------|--------|
| <b>Weight</b> | 1.2 kg |
|---------------|--------|

### Power

|            |                   |                |
|------------|-------------------|----------------|
| EuroPak-3  | Input Voltage     | +9 to +18 VDC  |
|            | Power Consumption | 6 W (typical)  |
| EuroPak-3T | Input Voltage     | +11 to +18 VDC |
|            | Power Consumption | 13 W (typical) |

### Antenna LNA Power Output

|                 |        |
|-----------------|--------|
| Output Voltage  | +5 VDC |
| Maximum Current | 100 mA |

### External Oscillator Input

|                         |                 |                       |
|-------------------------|-----------------|-----------------------|
| <b>(EuroPak-3 only)</b> | Input Frequency | 5 or 10 MHz ± 0.5 ppm |
|                         | Signal Level    | 0 dBm to +13 dBm      |

### Oscillator Output (EuroPak-3T only)

|                  |                 |
|------------------|-----------------|
| Output Frequency | 10 MHz          |
| Signal Level     | +10 dBm ± 3 dBm |

### Noise

|         |             |
|---------|-------------|
| 0.1 Hz  | -55 dBc/Hz  |
| 1 Hz    | -95 dBc/Hz  |
| 10 Hz   | -125 dBc/H  |
| 100 Hz  | -155 dBc/Hz |
| 1 kHz   | -165 dBc/Hz |
| 10 kHz  | -165 dBc/Hz |
| 100 kHz | -165 dBc/Hz |

## Communication Ports

- 3 RS-232 serial ports capable of 9,600 to 230,400 bps

### Connectors

|                         |             |
|-------------------------|-------------|
| Power                   | 4-pin LEMO  |
| Antenna Input           | TNC female  |
| Oscillator <sup>6</sup> | BNC female  |
| COM 1                   | DB-9 male   |
| COM 2                   | DB-9 male   |
| COM 3                   | DB-9 male   |
| I/O                     | DB-9 female |

## Environmental

### Temperature

|           |            |                |
|-----------|------------|----------------|
| Operating | EuroPak-3  | -40°C to +60°C |
|           | EuroPak-3T | -20°C to +50°C |
| Storage   |            | -45°C to +95°C |

|                 |                    |
|-----------------|--------------------|
| <b>Humidity</b> | 95% non-condensing |
|-----------------|--------------------|

|                 |         |
|-----------------|---------|
| <b>Altitude</b> | 3,000 m |
|-----------------|---------|



Version 1 - Specifications subject to change without notice.

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For the most recent details of this product:

[novatel.com/Documents/Papers/EuroPak3.pdf](http://novatel.com/Documents/Papers/EuroPak3.pdf)

<sup>1</sup> Typical values. Performance specifications subject to GPS system characteristics, operational degradation, ionospheric and tropospheric conditions, satellite geometry, baseline length, multipath effects and the presence of intentional or unintentional interference sources.

<sup>2</sup> Measurement precision  $C/N_0 = 44$  dB-Hz

<sup>3</sup> Typical value. No almanac or ephemeris and no approximate time or position.

<sup>4</sup> Main data connector extends approximately 7 mm past edge of board.

<sup>5</sup> Unless otherwise specified, all specifications apply to both the EuroPak-3 and EuroPak-3T.

<sup>6</sup> The EuroPak-3 provides external oscillator input on this connector while the EuroPak-3T provides and output from the internal clock.

