LORADD series
Integrated GPS / eLoran Receiver

reelektronika's new generation of LORADD receivers marks the start of a new era in eLoran receiver technology. Drawing from its long history of experience in the field of Loran, **reelektronika** successfully implemented unprecedented digital signal processing algorithms on a newly designed, compact yet powerful DSP platform.

Navigation

LORADD receivers can output independent eLoran positions, enhanced by the use of ASF maps where available. However, LORADD technology can also take full advantage of an integrated or optionally externally connected GPS receiver. In this case, the GPS receiver provides additional raw measurements to the LORADD. The LORADD then combines its own eLoran measurements with the GPS measurements, and outputs a so-called 'integrated position solution', taking full advantage of the strong points of both navigation systems.

Measurements

Designed for high performance, the LORADD is capable of outputting independent measurements at user selectable intervals. Measurements on eLoran time-of arrival, ECD and signal quality are output. Also, accurate true-North heading info based on eLoran is available even if the receiver is stationary.

Interfacing

Through the serial ports, the receiver is fully customizable to output all required measurements on any of the serial ports. A Windows® software package is supplied for easy interfacing. The receiver's interface is according to NMEA standards. Relevant NMEA messages and proprietary messages in NMEA format can be used in parallel for flexible receiver operation and easy connection to other navigation equipment.

Key features

- All-in-View eLoran receiver
- Small size
- Integrated GPS receiver
- Built-in eLoran data channel capability
- ASF-map ready
- Differential eLoran ready
- Firmware upgradeable

Performance characteristics

Frequency	90-110 kHz
Signal strength	30-120 dBµV/m
Dynamic range	90 dB
Loran data channel	Eurofix decoding 9th pulse prepared
Interference suppression	30 dual-channel notch filters
Measurement output	TOA, TD, position (eLoran/GPS/ integrated), Heading, SNR, ECD and Eurofix data

Physical characteristics

Receiver	
Power consumption	4 W
Voltage	9-36 V DC
Operating temperature	0° to +50° C
Humidity	90% (non-condensing)
Antenna	
eLoran H-field	Active dual-loop eLoran H-field antenna with GPS patch antenna, 19 x 19 x 8 cm
eLoran E-field	Active eLoran E-field antenna with high dynamic range, 30 x 3 (diameter) cm
Cable length	Up to 50 meters
Interfacing	
Serial ports	3 RS232
Speed	Up to 115.2 kbps
Connector type	3 x header-connection on OEM 2 x RJ10 in SmallPack 1 x DB-9 on Single Housing

Configurations

OEM board	Option LORADD-D1-OE-x 10 x 7.5 x 2 cm
SmallPack	Option LORADD-D1-SP-x 11 x 8.5 x 3 cm
SingleHouse	Option LORADD-D1-SH-x 20.3 cm diameter 8.3 cm height
Integrated GPS receiver	Option LORADD-D1-xx-G
External GPS receiver	Option LORADD-D1-xx-E
RTCM SC104 input	Option LORADD-D1-xx-R
UTC Timing receiver	Option LORADD-D1-19-U

Specifications are subject to change without prior notice

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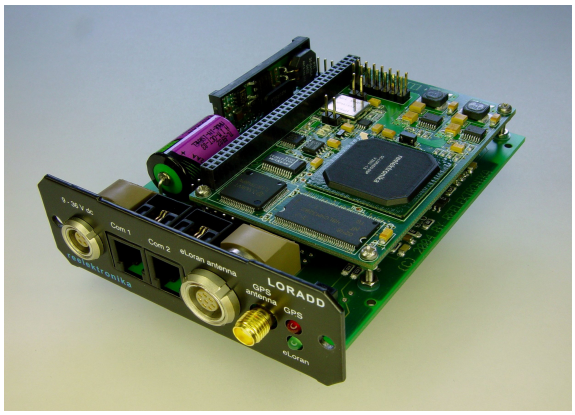
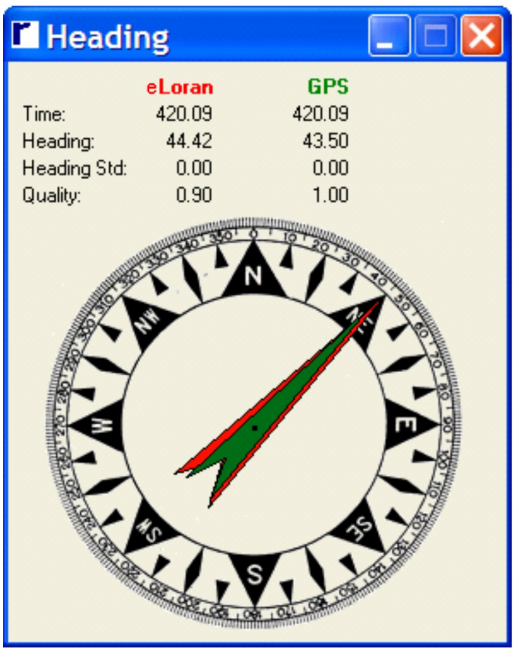
Right: Internal view of the SmallPack LORADD receiver. The upper credit card size PCB contains the DSP. The lower PCB contains the front end with the dual channel high-dynamic range A/D converters. On the left the power supply circuitry including power line RFI filters, and backup battery

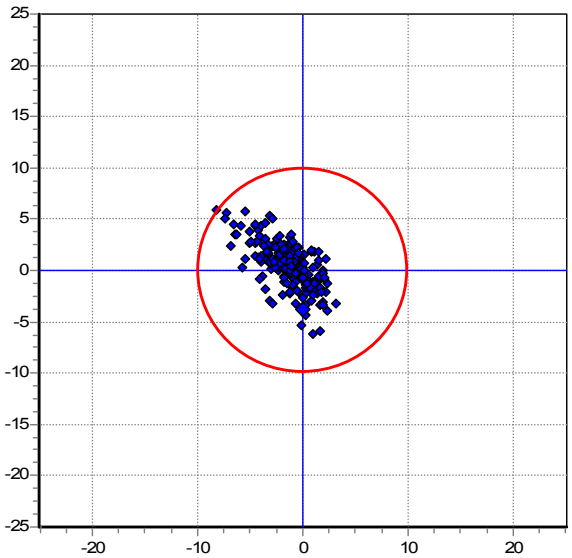


Above: eLoran E-field antenna (left) and H-field antenna (right) with integrated GPS patch antenna

Above: LORADD SingleHouse GPS/eLoran receiver



Above: Comparison of GPS and eLoran based compass performances. eLoran antenna heading output is typically better than 1 degree under normal conditions



Above: Differential eLoran position error scatter plot with respect to GPS reference. Red circle is 10-m target accuracy

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