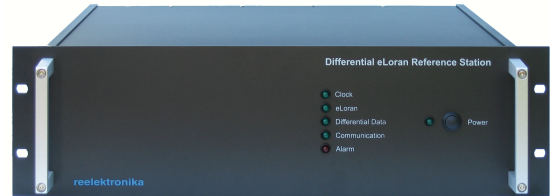


Differential eLoran Reference Station



reelektronika's Differential eLoran Reference Station is a key component for the maritime Harbour Entrance and Approach application. The Reference Station provides differential corrections for all relevant eLoran stations necessary for the marine user to achieve the HEA accuracy requirement of 10-20 m (95%).

Harbour Entrance and Approach

The maritime Harbour Entrance and Approach application requires the very best performance that eLoran can deliver. To reach the HEA accuracy requirement the basic eLoran system has to be augmented by a differential eLoran service and an ASF survey map of the harbour area. The ASF map provides nominal ASF values along the harbour approach path for all relevant eLoran stations, whereas the Loran data channel provides differential corrections to correct for the deviation from the published nominal ASFs. By measuring the basic eLoran signals and correcting the mapped ASF value for his current location by the received differential corrections the user receiver is now capable to calculate an eLoran position solution providing the best positioning performance eLoran has to offer.

Differential eLoran service

reelektronika's Differential eLoran Reference Station is installed on a fixed location with known nominal ASF values for all eLoran stations of interest. By comparing the current measured Time of Arrival with the expected Time of Arrival based on distance towards the transmitter and the nominal ASF, the Reference Station calculates the differential corrections, which are communicated to the eLoran network for distribution. In order to get the best possible correction accuracy, the Reference Station is equipped with an eLoran simulator for continuous calibration of the signal processing paths. Additionally, the Reference Station provides on-site integrity horizontal positioning monitoring on the calculated corrections to protect the HEA application's integrity.

Key features

- Fully autonomous, easily configurable
- Monitoring and alarm generation
- LORADD Series performance standard
- GPS disciplined rubidium clock
- eLoran signal simulator for calibration
- TCP/IP interface to eLoran transmitter
- Firmware upgradeable

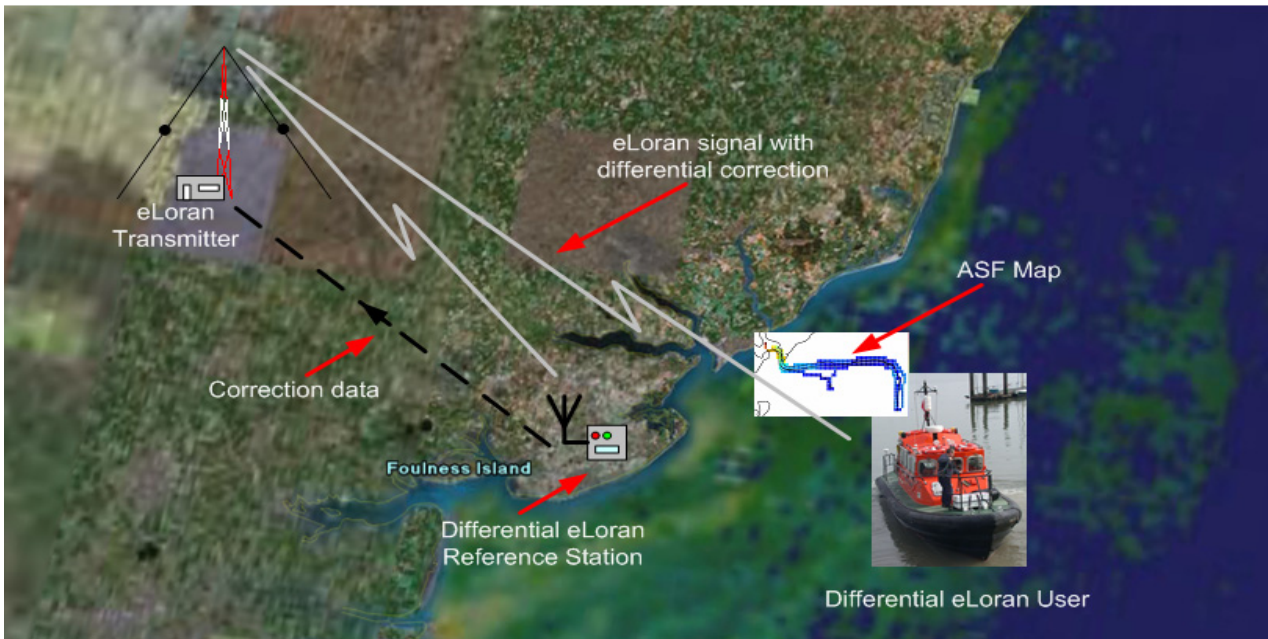
Performance characteristics

Frequency	90-110 kHz
Signal strength	30-120 dB μ V/m
Dynamic range	90 dB
Interference suppression	30 dual-channel notch filters
Calibration	eLoran signal simulator included
Measurement output	Differential eLoran Correction data, eLoran position solution, configuration and monitoring
Loran data channel	Eurofix based differential eLoran broadcasts 9 th pulse prepared

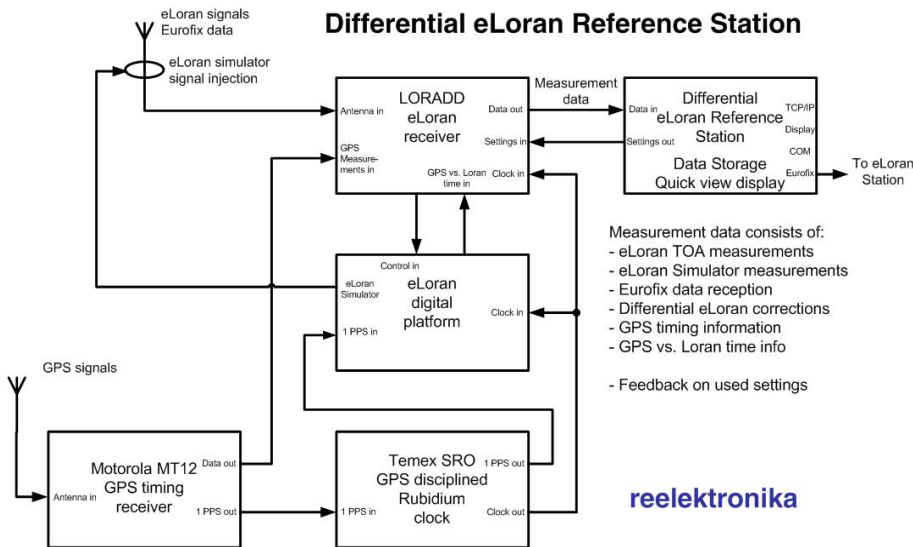
Physical characteristics

Reference Station	
Size	48x13.5x35 cm
Voltage	100-240 V AC 50/60 Hz
Operating temperature	0° to +50° C
Humidity	90% (non-condensing)
Hardware configuration	
eLoran receiver	LORADD series
Clock	GPS disciplined Rubidium Temex SRO-100
GPS receiver	Motorola MT12+
Antenna	
eLoran H-field	Active dual-loop eLoran H-field antenna with GPS patch antenna and antenna calibration input, 19 x 19 x 8 cm Up to 50 meters
Cable length	
Interfacing	
Hardware	Keyboard, mouse, monitor
User interface	Windows® based configuration / communication / monitoring application
Status/Alarm LEDs	Power, Clock, eLoran, Differential Data, Communication, Alarm
eLoran transmitter communication	TCP/IP via VPN
Remote control	TCP/IP via VPN
Troubleshooting	Various BNC outputs

Specifications are subject to change without prior notice



Above: Differential eLoran application overview



Left: Functional diagram of the Differential eLoran Reference Station

Right: Horizontal Positioning Accuracy monitoring by applying the calculated differential eLoran corrections to the current eLoran measurements

