
TIDELAND
TIDELAND SIGNAL CORPORATION

MLED Series

Medium Range

Nova Series

Nova-60 and Nova-80 bridge the gap between short and long range lanterns. The versatility of these two lanterns in both range and vertical divergence makes them a preferred choice for use on buoys and beacons. The release of Nova-60, with its >20° divergence, coincided with the requirement by the world's port authorities for wider vertical divergence lanterns on buoys. Nova-80's high intensity and low power features make it an ideal 'crossover' lantern for use on buoys and beacons. Nova-80 is available with a range of vertical divergences up to 10°.

Features:

- LED temperature compensation for consistent light output and long life.
- Reverse polarity protection.
- GPS or hardwire synchronisation.
- Remote monitor and control port.
- Wi-Fi capable.

Single

MLED-140/155/300

Tideland Signal has merged its patented and proven MaxLumina® lens technology with 21st century LED technology to provide low maintenance, low power consumption and long-range, MLED-140, MLED-155 and MLED-300 navigational lanterns. The series provides trouble-free service in rigorous marine environments.

All can be fitted with the proven LED flasher, MaxiHALO-60, to provide an exceptionally efficient lantern. Existing lanterns can be retrofitted with MaxiHALO-60.

Features:

- LED temperature compensation for long LED life.
- Reverse polarity protection.
- GPS or hardwire synchronisation options.
- User selected flash characters and power settings.
- MLED-140/155/300 UL Class 1, Div. 2 approved, and ATEX Category 3 approved.

MLED Series

Short Range

MLED-SR

A new addition to the Tideland family of lanterns, MLED-SR is capable of ranges in excess of 4Nm and its exceptional efficiency lends itself to small and cost effective power supplies. Its big brother, SolaLED is a self contained lantern with inbuilt solar and batteries.

Features:

- 256 user selected flash characters.
- Synchronising options.
- Strong yet lightweight lens and polycarbonate base.
- Monitoring capable.
- Optional sectoring.

MaxLED-200

Long Range

MaxLED-200 to 800

Constructed of rugged corrosion resistant marine aluminium, MaxLED is able to withstand the most severe environments, including icing regions of extreme latitudes. A combination of high efficiency optics, power conditioning circuitry and high intensity LEDs makes MaxLED ideal for solar power installations. Proven LED technology, merged with redundant power supplies, provide the highest reliability for years of uninterrupted service.

Features:

- User selectable power setting for multiple visual range performance.
- Full monitor and control access.
- Redundant high efficiency power supplies assure light operation is sustained in the event of failure of one power supply or LED series string.
- Temperature compensated LED drive circuits ensure uniform brightness with ambient temperature change.

MaxLED-600

Nova-60/80SC

Self Contained Lanterns

Nova-60SC and Nova-80SC

Nova-60 and Nova-80 self contained lanterns are exciting new additions to the Tideland range of self contained lanterns. Nova-60 provides a range of up to 5Nm with an incredible vertical divergence of up to 20° depending upon colour. Nova-80 provides between 7° and 10° vertical divergence for a range of over 6Nm.

Features:

- LED temperature compensation for long LED life.
- GPS or hardwire synchronisation options.
- Remote monitoring and control options.
- Wi-Fi capable.

MLED-120SC

Self Contained Lanterns

A popular self contained lantern with plenty of battery life for those areas with low sun and where there is a requirement for additional modules such as remote monitoring, AIS AtoN and satellite systems. Solar modules and high-grade batteries are housed in a compact self-contained marine lantern, designed for low maintenance.

Features:

- **High impact optical grade lens** – A wide vertical divergence lens for buoy or stationary locations.
- **LED light source** – Consists of a 1 or 2 diode array tier, with each tier containing 30 high intensity LEDs, precision mounted in a Tideland designed refracting ring.
- **Monitoring** – Capable of use with SRM, Wi-Fi and AIS AtoN.

MLED-120SC used on an IALA compliant wreck marker buoy

SolaLED

Self Contained Lanterns

SolaLED is a high intensity, self contained marine navigation light with its own solar power system and battery pack for 3 to 4 nautical mile ranges. It is available in several vertical divergences up to +10°, making it one of the most sought after self contained lights in the industry.

Features:

- **Two reflector options** – Narrow vertical divergence beam for maximum visual range, and wide divergence beam (+10°) for buoy.
- **Magnet activated switch (Quick Check)** – Provides a means of (1) switching SolaLED on or off, (2) testing the flash character and battery, and (3) placing SolaLED into a rest mode for solar charging or floating battery charge.
- **Programming modes** – SolaLED is factory set for power and flash character requirements. SolaLED can be easily re-configured utilising SignalView™ software available from Tideland.
- **Synchronisation** - Optional GPS synchronisation module.
- **Sectoring** - Optional sectoring is available.

SolaMAX-140/155

Self Contained Lanterns

Tideland Signal has merged its patented, proven MaxLumina® lens technology and 21st century LED technology to provide a low maintenance and long-range, self-contained LED lantern for 5 to 6 nautical mile ranges. SolaMAX has proven to be one of the leading self contained lanterns available and is used by numerous coast guard authorities, has UL approval and is also approved for use on offshore platforms.

Features:

- Full range of IALA colours and flash characters.
- User selectable power setting for visual range.
- Battery test and charge mode selection without opening lantern housing (Quick Check).
- Optional GPS synchronisation module.

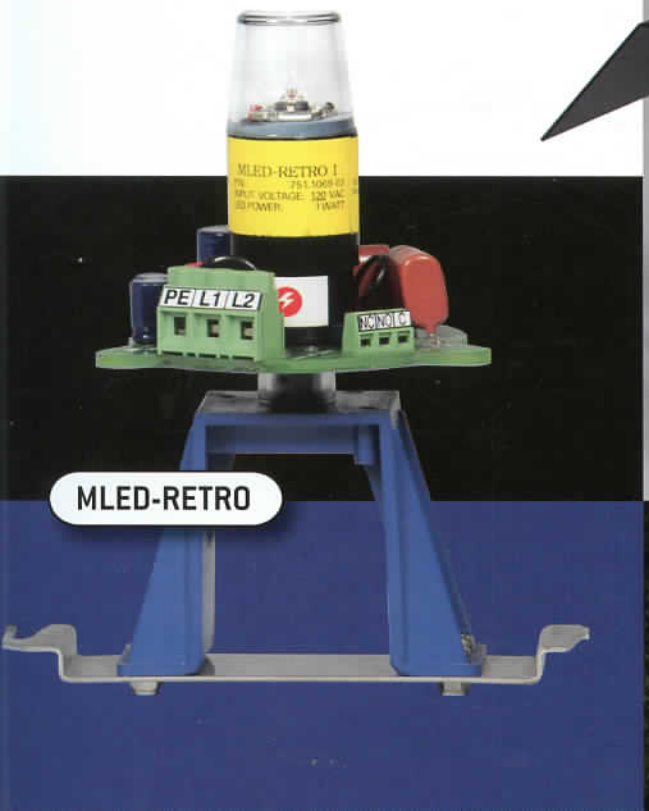
TF-3B Omnibus® II

Incandescent Flasher

TF-3B is a completely automatic solid-state flasher and six-place lamp changer for use in Tideland Signal marine signal lanterns. It is compatible with other manufacturers' marine signal lanterns, as a direct replacement flasher/lampchanger.

Features:

- A moisture protected stepper motor provides necessary torque to rotate a six-place lamp turret.
- Hardwire or GPS synchronisation.
- 9 to 36V DC.
- Full monitor and control options (Omnibus protocol or Modbus).

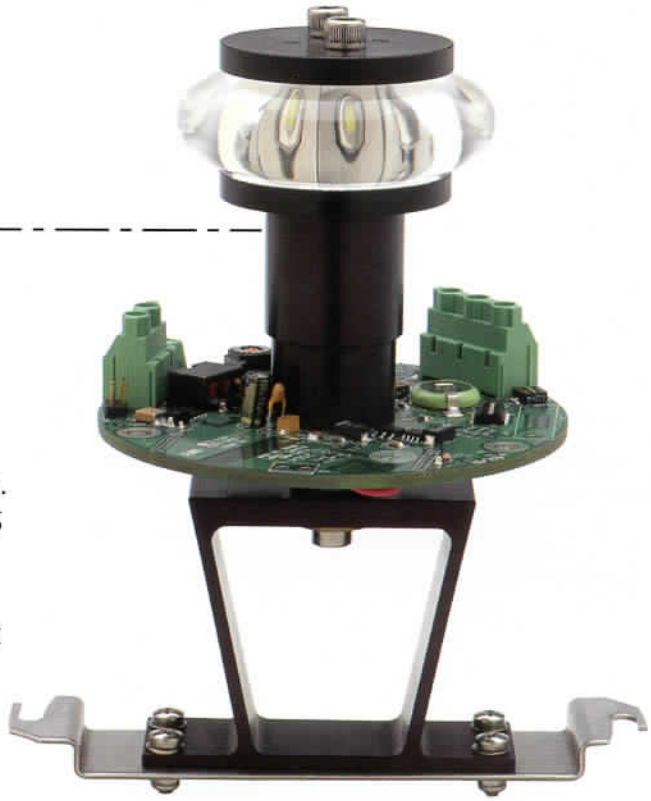


MLED-RETRO

MaxiHALO-60

LED Flasher

MaxiHALO-60 LED flasher assembly allows for an easy upgrade to LED technology without having to replace existing lanterns. MaxiHALO-60 is used in the MLED-140, 155 and 300 lanterns and is compatible with most competitors' lanterns. MaxiHALO-60 has become recognised as one of the most efficient flashers available.



Features:

- User selectable power settings.
- 7W or 19W ratings.
- 9 to 36V input.
- Full monitor and control access.
- Temperature compensated LED drive circuits ensure uniform brightness with ambient temperature change.
- Optional GPS synchronisation module.
- Wi-Fi compatible.

Dual-RETRO and MLED-RETRO

LED Flashers

These smaller LED units are often used in specialised applications such as bridge lights and rotating beacons. MLED-RETRO is used in range lanterns as an alternative to incandescent lamps and flashers.

RLED-170

RLED-170 is a high efficiency range lantern used to mark channels, rivers, canals or navigational zones, providing navigational assistance to maritime traffic. A single RLED-170 can be used to mark certain channels with the use of an assortment of beam spreaders. Conventional installations utilise two range lanterns: one positioned above and behind the other, so mariners can establish a centreline down a channel by keeping the lights vertically aligned. RLED-170 is available in low and high power versions.

RLED-170

RLED-Bullet

RLED-Bullet

A versatile range lantern LED conversion kit to upgrade from existing incandescent lamp technology based equipment. This assembly not only replaces traditional lampchangers, it also eliminates the costly and hard to focus mirrors. RLED-Bullet is available with multiple numbers of LEDs, from 2 to 15, allowing for a wide range of effective intensities. RLED-Bullet produces consistent, effective intensity no matter what flash characteristic is used. A range of assembly sizes are available to fit most range lanterns currently on the market.

RL-355

RL-355 MaxLumina

RL-355 was developed under U.S. Coast Guard contract as a high intensity range lantern. With a daytime range in excess of 5Nm as well as being visible for both short and long range approaches, RL-355 has earned its spot as Tideland's most popular range lantern. Now available with RLED-Bullet (RLED-355) which provides exceptional performance over incandescent lamps.

Features:

- Monitor and control via: hardwire, Wi-Fi, line of site radio, cell phone, or satellite.
- SignalView™ programmable.
- GPS or hardwired synchronisation capable.
- Available in all IALA approved colours.
- 256 flash characters.

TRB-400

TRB-400

TRB-400 is a standalone, major lighthouse beacon equipped with uniquely designed injection moulded acrylic lenses. It is AC or DC powered and lends itself to a DC solar power system due to its unique efficiency. With an AC version, ranges of up to 20Nm are possible. Models are also available which use modern LED technology and ranges of 15Nm can be exceeded with a very low power consumption.

Rotating Beacon

TRB-220

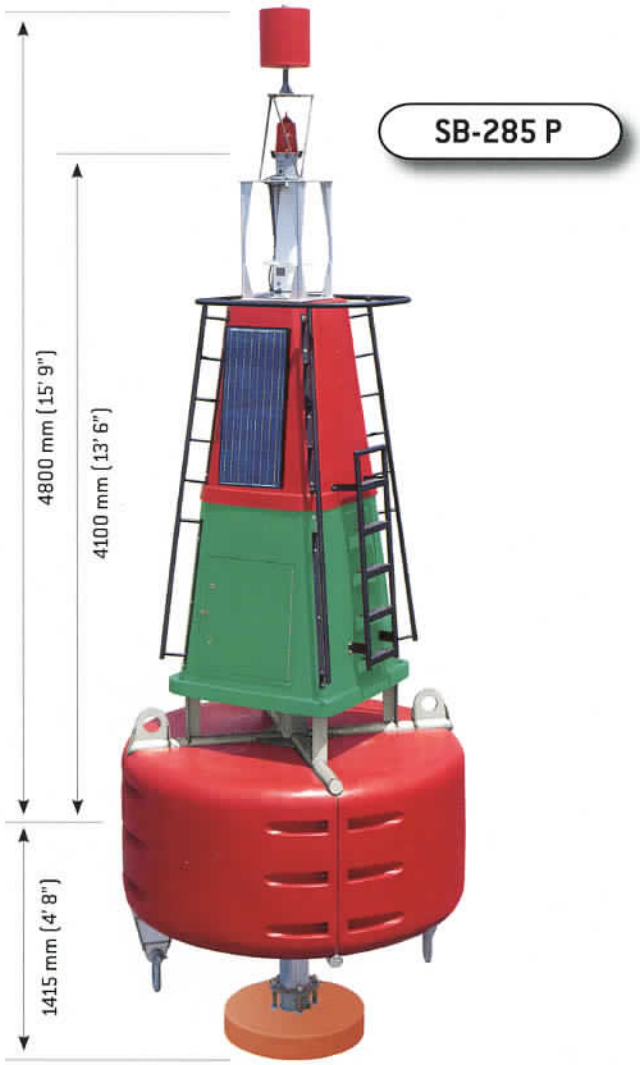
TRB-220 is a smaller version of the industry leading TRB-400. Its range is up to 20Nm and it can also be fitted with LEDs to provide over 12Nm. As with the TRB-400, it is always wise to check with a Tideland office as LED technology and nautical mile ranges are advancing daily.

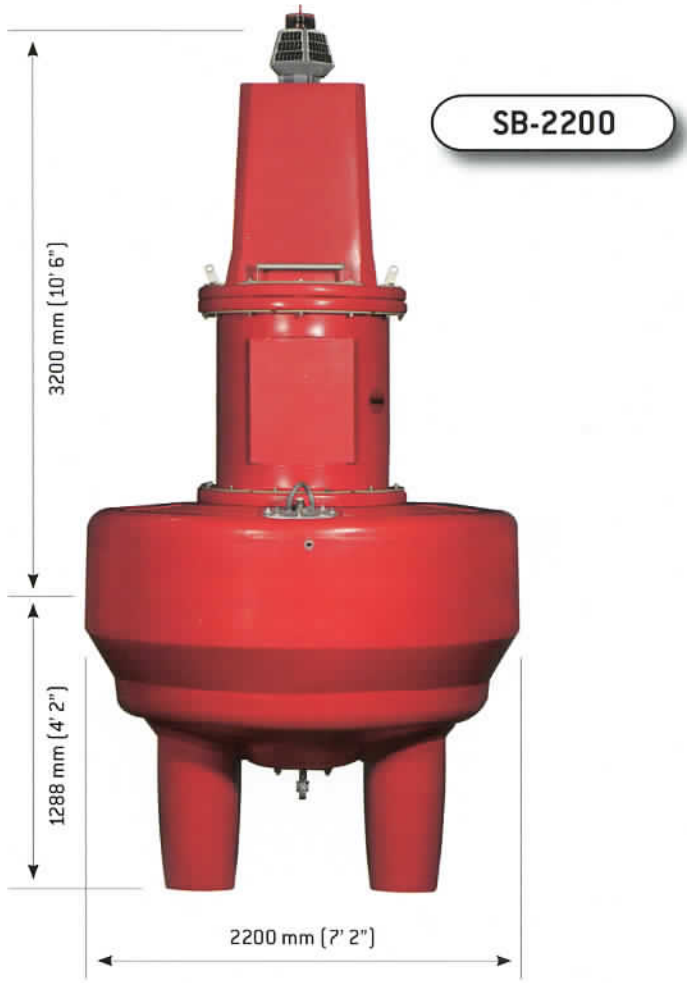
TRB-220

Features:

- 25 year design life.
- 6 lens or 8 lens option for the TRB-400.
- Brushless DC drive motor.
- Over 16 pre-programmed rotation speeds.
- Accepts Omnibus II and LED flashers (LC-70 option for TRB-400).
- Capable of auto switchover to standby lantern.
- Remote monitoring capable.
- IP-65 housing.

Coastal and Port Buoys





Return on investment is one reason Tideland Signal is so successful. Any product can be made at a lower cost but at what cost to long term reliability and performance?

POLYETHYLENE
Sentinel buoys are manufactured from compounded UV-15 stabilised polyethylene. The colour pigment is throughout the thickness. Life expectancy is well in excess of 20 years.

FOAM FILLING
Hull sections are filled with various options of foam. This will not allow water in and, if damaged, the bouy will almost certainly not sink.

INTERNAL CROSS BRACING
Utilising internal cross bracing between the mooring and lifting eyes adds strength and ensures integrity.

LIFTING AND MOORING EYES
Stainless steel bushings ensure both mooring and lifting eyes last as long as the buoy body.

Port and River Buoys

SB-138 P

SB-98 P

SB-1000

STABILITY
Sentinel buoys are engineered for rough, open sea use and are exceptionally stable. We are only too pleased to show you the extensive stability calculations and site test reports.

NON SLIP SURFACE
The top of the hulls are manufactured to provide a slip resistant surface to assist the maintenance engineer when changing lamps or cleaning a lens.

MODULAR CONSTRUCTION
Larger buoys are of modular construction that allows replacement of parts if damaged.

POLYETHYLENE DOOR (Available on some models) The optional battery access chamber available on SB-285 P, SB-2200, and SB-138 P is provided with a strong polyethylene door with a positive gasket and secure lock for security protection.

OPTIONS
- Solar power systems.
- Bridle and mooring systems.
- Top marks and day marks.
- Radar reflectors.
- AIS AtoN with monitoring via VHF, Wi-Fi, cell phone or satellite.

Multi-Purpose Buoys

Tideland's series of multi-purpose and channel marker buoys offers a reliable and inexpensive buoy system suitable for use in smaller ports, inner harbours, marinas, inland waterways, rivers and aquacultural boundaries. These buoys utilise the same materials and manufacturing technologies as proven deepwater buoys.

UV stabilised polyethylene provides rugged, lightweight buoys with exceptional station-keeping, long life and stability. The hulls are foam filled, making the buoys virtually unsinkable. Buoys are available in red, green, yellow, white, black and orange. Optional self-adhesive reflective sheeting provides international day and night identification.

SB-60

At 600mm diameter and over 4m long SB-60 is used extensively by many coast guards and port authorities for its excellent performance in severe conditions.

SB-104

Designed for high current rivers. Diameter is 750mm and it has three mooring points for varying currents. Lighted and unlighted versions are available.

SB-75

SB-75 marker buoy has a 750mm diameter float section and is available in can or conical shapes.

WB-068

WB-950

Marker Buoys

SB-23

SB-23 marker buoy is ideal for aquacultural areas and small channels.

DM-390

DM-390 is 900mm in diameter and can accommodate Tideland Signal's L-120 LED light. It is available in can or conical shapes.

These marker buoys are excellent for marking aquacultural areas an small channels.

SB-40

SB-40 marker buoys are 400mm diameter and come with one mooring eye. They are available in can or conical shapes.

SeaBeacon® 2 *System 6*

SeaBeacon® 2 *System 6,* a frequency agile radar beacon (racon), provides dependable service to all marine radars, including those with modern narrowband receivers. A Tideland racon is the ideal solution to mark, for example, a platform or important AtoN to provide a clear display on the mariners' radar. SeaBeacon® 2 *System 6* is unequaled in frequency matching accuracy, consistent pulse-by-pulse response and advanced sidelobe suppression.

Features:

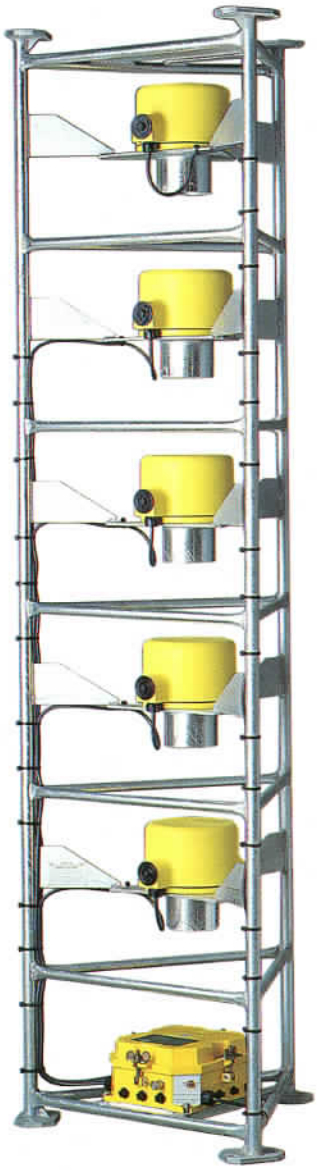
- **Greater operational range** – provides improvements in receiver dynamic range, receiver sensitivity, power consumption and transmitter power.
- **Positive pressurisation** – Tideland pressurises its racon with nitrogen to protect electronics against the corrosive environment, seasonal variations in ambient pressure fluctuations, condensation and accidental submergence.
- **Dual-token sidelobe suppression** – Radars are identified accurately by measuring frequency and pulse width. Amplitude values are used to block responses to sidelobes.
- **User selections** – Operating parameters such as quiescent periods, trace length, active period, extended quiescent and standard response code (per IALA recommendations).
- **Intelligent power management** – Users may program quiescent and active time intervals to match performance and power consumption requirements.
- **Proportional scaling** – Ensures length of racon trace appearing on the radar screen is generally uniform on all range settings.
- **Hazardous use rating** – Available for General Marine Use (GMU), ATEX Category 2 or 3 for Hazardous Areas.

Fog Signal

AB-560

AB-560 Audiobeam fog signal automatically broadcasts a 360° beam of sound to a preselected code audible for 2 miles. It can be operated from mains power using a Tideland battery charger and rechargeable battery, or DC power using a solar panel and battery system.

It is United States Coast Guard approved, complies with all IALA recommendations and is UL listed as suitable for use in Class I, Division 2, Group D Hazardous Locations.



Class A Single Lift

Class B Single Lift

Standalone System

Sola-Chan can be fitted with Tideland's range of incandescent lamps or LED lanterns.

One 12-volt solar module mounts under the lantern by a galvanised steel or marine grade aluminium mounting bracket. Often a power of 10 or 20W is sufficient. Each module is equipped with bird scarers. Normally 1 or 2 110Ah batteries are fitted. Sola-Chan is often used on offshore platforms, bridges and jetties.

Sola-Chan

Platform Systems

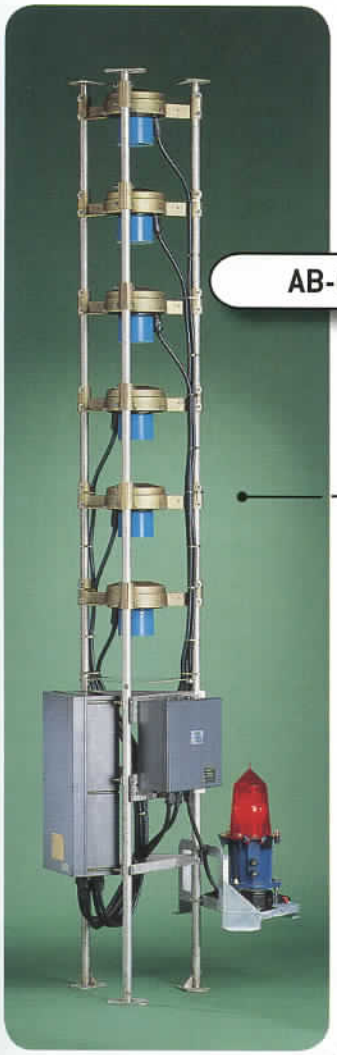
MLED-150 Ex

Tideland Signal has been providing marking systems to the offshore industry for over 55 years. These systems have a history of reliable service in some of the harshest environments on the planet.

The systems comply with the latest IALA Recommendation O-139 on the Marking of Man-Made Offshore Structures and include the option of a 15Nm light which is often required by regional authorities. For USA waters, systems are fully compliant with US Coast Guard requirements for Class A, B and C structures.

Shown here is an AB-68 fog signal that is ATEX Category 2 certified, together with a 15Nm and 10Nm standby light. The MLED-150 Ex is often used for platforms that require only 10Nm range and is also ATEX Category 2 certified.

Other options include a fog detector for automatically switching a fog signal on and off, and a racon for enhancing the platform's signature on a vessel radar. Both are available in GMU or ATEX Category 2 versions.



AB-68

Fog Detector

Main/Standby Lights

15-10 Nm

Ex-Racon

SRM

Tideland Signal has developed a Satellite Monitoring System that provides remote monitoring information of important aids to marine navigation (AtoN). A small satellite radio is installed on the AtoN which utilises the Inmarsat I2 and I3 satellites via the IsatM2M. Information such as GPS position, light go/no go, battery voltage and additional data is displayed on any web browser. Warnings are automatically sent if preset values are exceeded.

Informer V03 AIS AtoN

V-Track™ Informer™ is an AIS information provider and remote monitoring system for use on marine aids to navigation (AtoNs) and other structures. Informer is available in two options: "Type 1" is a transmit only device, "Type 3" is a transmit and receive device or optional repeater. For most applications a transmit only device provides the ideal AIS AtoN solution.

Informer is a compact and rugged AIS unit that is installed on any AtoN or structure such as an offshore platform. Designed and built to the international standard ITU-RM 1371-3, the unit broadcasts message 21 which electronically indicates the position of the AtoN or structure to all shipping within the area.

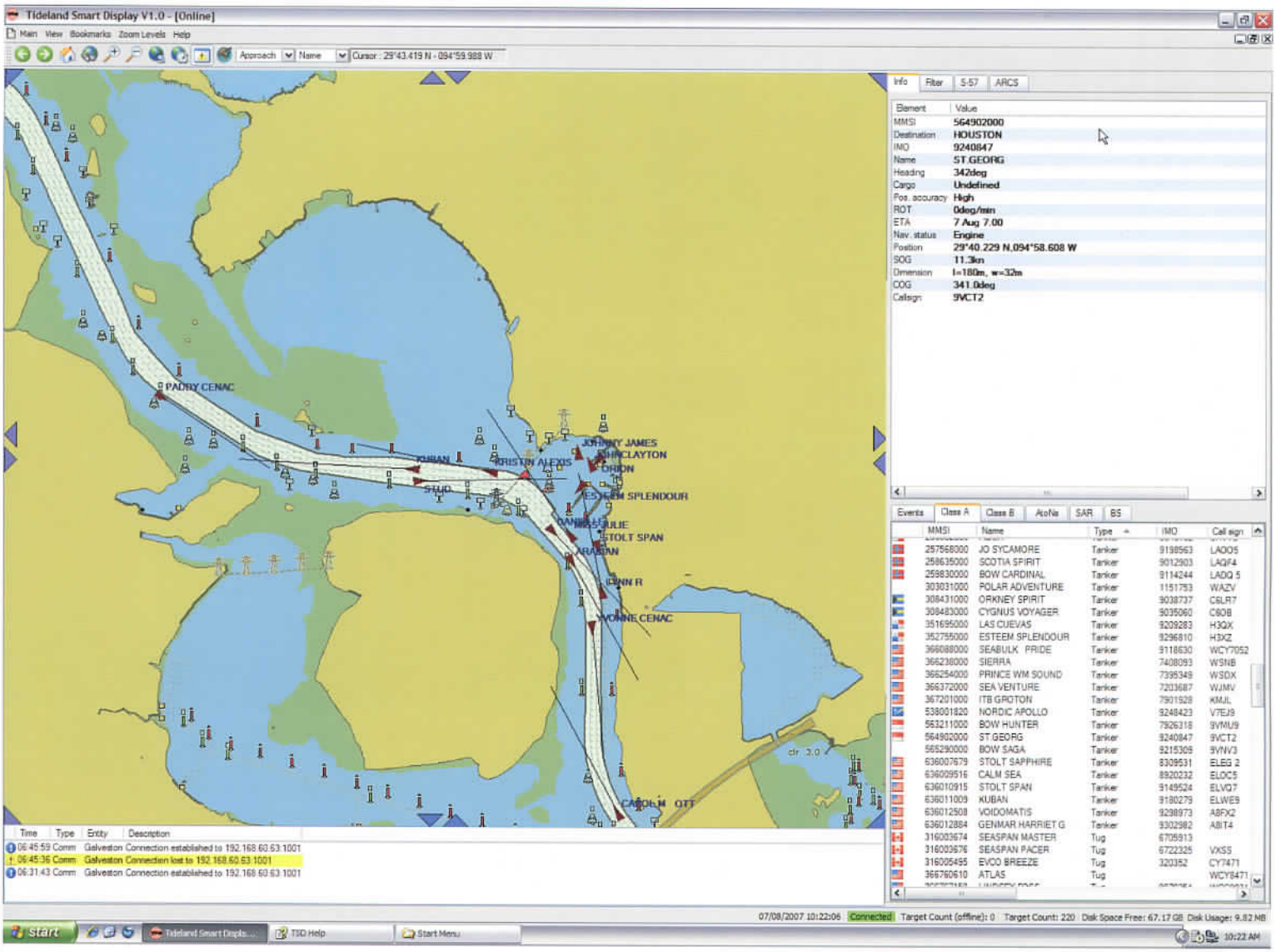
In addition, Informer V03 is capable of broadcasting remote monitoring, hydrological and meteorological data as well as safety and warning messages. It is an ideal complement to the Tideland Smart Display (TSD).

Wi-Fi Monitoring

An exciting new development comprises a Wi-Fi system that will automatically connect an AtoN to a convenient handheld device to provide easy, wireless access to check the status of the AtoN. The data can be stored on the handheld unit for later retrieval and can be downloaded onto a laptop for viewing, printing and storing in a variety of formats.

TSD

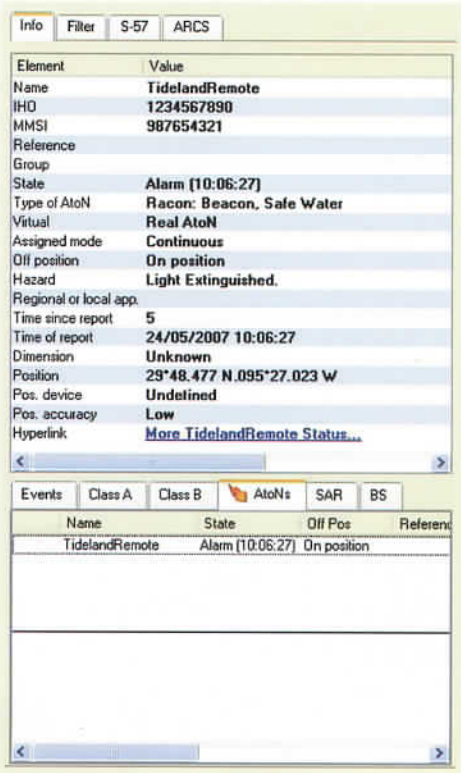
BELOW *Typical TSD display showing numerous vessels and selected individual vessel data on the right of the screen.* ***BOTTOM*** *Detail example of an AIS message 21 shown in a separate window.*

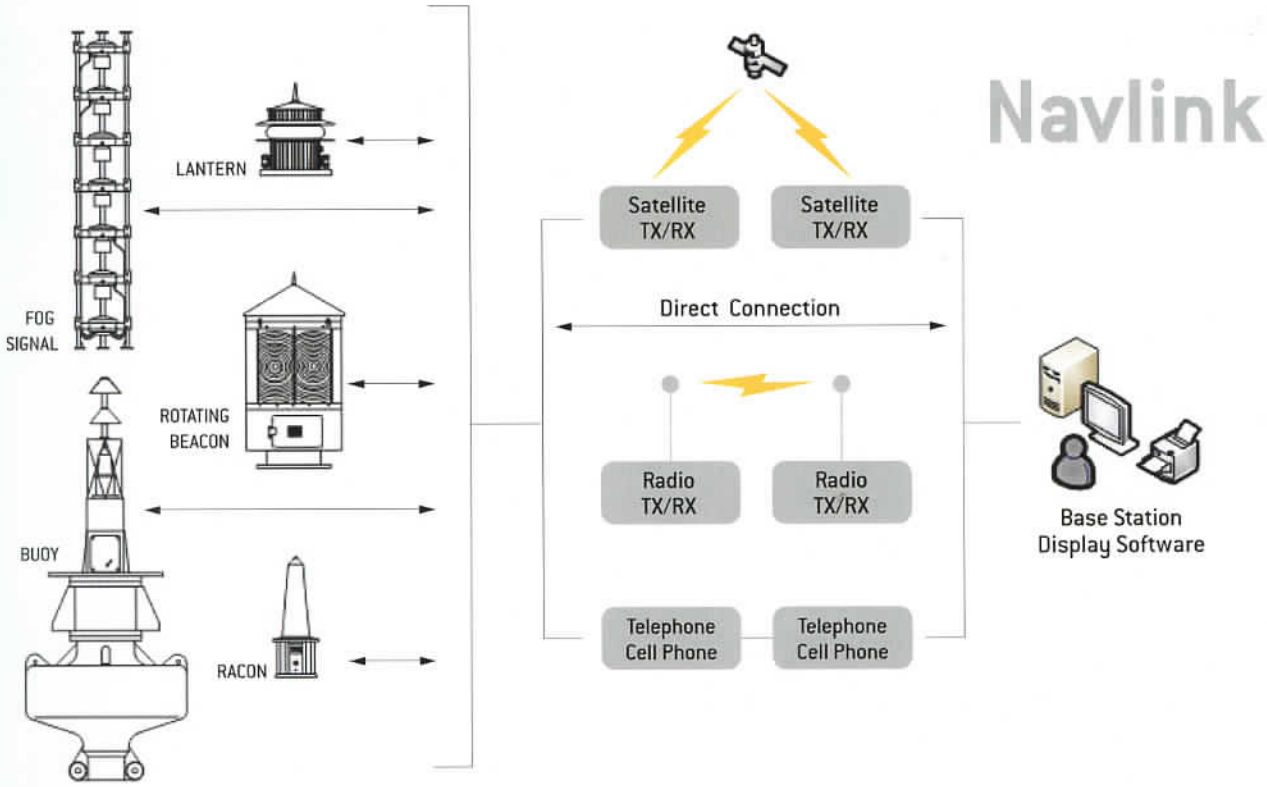


Tideland Smart Display (TSD) is a powerful AIS display system that allows the viewing of AIS data transmitted from vessels and also AIS fitted AtoNs. TSD is compliant with ITU-RM 1371-3 standards and has such features as record and replay, warning areas and AIS target filtering. TSD offers a unique concept by allowing the operator to view AIS vessel traffic with the option of integrating and viewing AtoNs via AIS message 21. TSD is compatible with Tideland's NavLink remote monitoring and control system. In addition to these robust features, TSD is also able to display radar tracks from an NMEA compliant radar system.

Features:

- Efficient display of real-time AIS data.
- Powerful filtering system (see only what you want).
- Advanced replay feature viewing replay and online data simultaneously.
- Display of historical tracks for one or all vessels, with timestamp indication.
- Custom warning areas can be set for ships entering/leaving a sensitive zone.
- Full message 21 support and compatibility with NavLink monitoring system.
- Customisable screen views and colours.
- Vessel database with filtering.
- Can be connected to up to 5 AIS base stations.
- Operates on standard windows PC.
- Advanced customisable features.



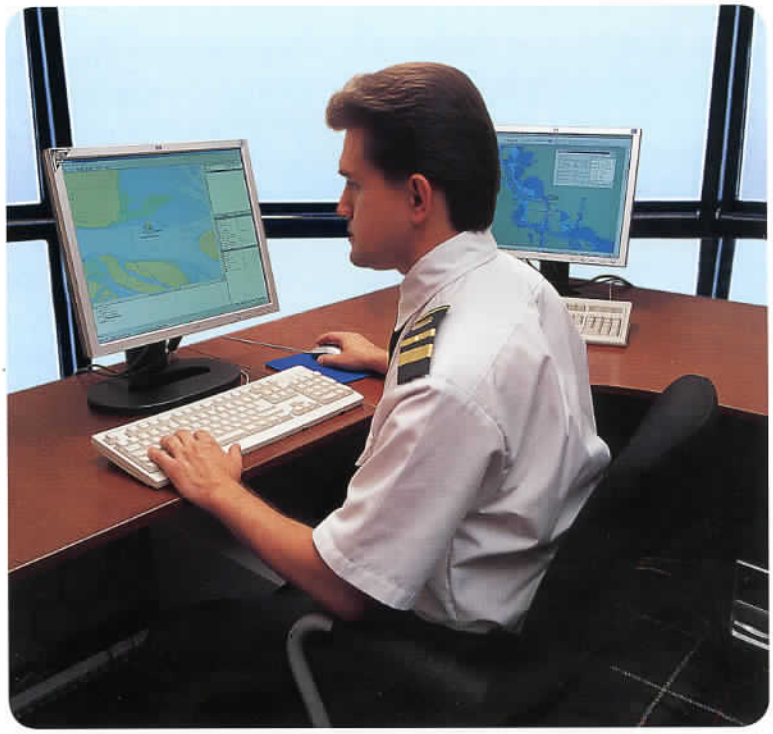


Monitoring and Control

Features:

- **Communication media** – NavLink communications support any number of mediums: VHF/UHF, dial-up modem, IP, direct, cell phone, satellite or AIS information systems.
- **Communications health monitoring** – NavLink continuously monitors the primary network communication medium for disruptions of RTU data signal routing between RTUs. If a disruption occurs, automatic re-routing between RTUs and monitoring location is implemented.
- **AtoN monitoring** – NavLink interfaces with any combination of AtoNs: lanterns, fog signals, racons, buoys, meteorological monitoring devices and custom-designed aids to navigation.
- **Electronic charting** – NavTerm utilises Electronic Navigational Charts (ENC-IHO/IMO Standard S-57) or CAMP for AtoN topology.
- **Database** – Comprehensive database and reporting system.
- **Alarms** – Configurable warning alarm settings.
- **AIS** – Can be integrated with the powerful TSD AIS monitoring system.

Since its introduction in the early 1990s, NavLink® has consistently proved to be a reliable remote monitoring and control management system, with the capacity to handle many aids to navigation (AtoN) data point connections and means to remotely monitor and control the functionality of AtoNs.



Windfarms

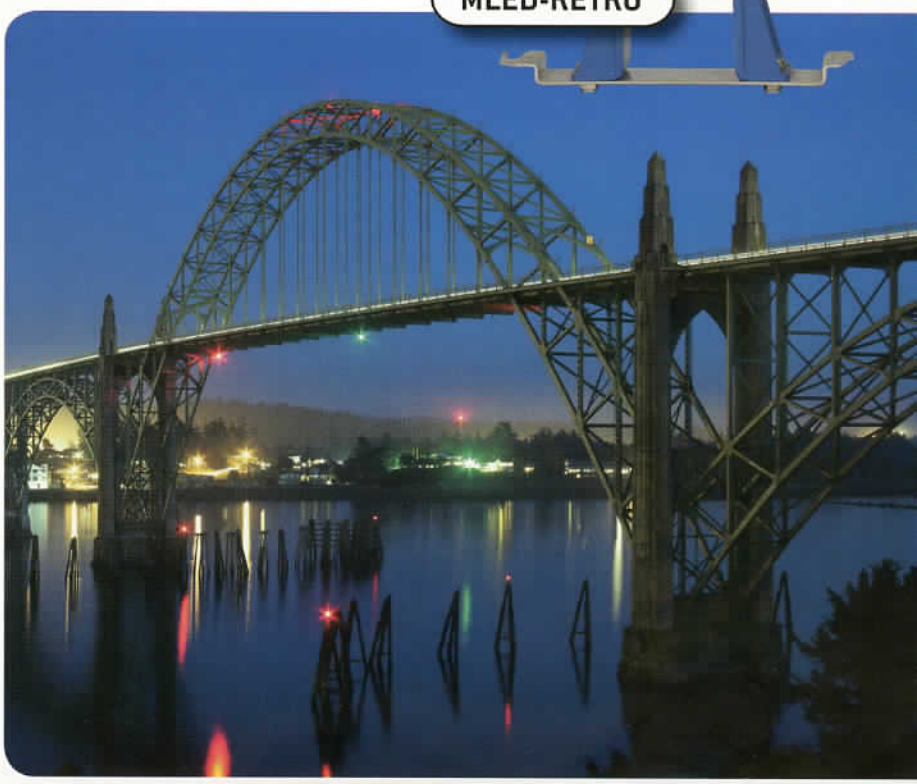
The availability of "green" energy is a worldwide priority. Tideland and its partners are supporting this need with windfarm aviation and marine navigational warning systems. Installations typically comprise a red LED lantern fitted to the top of the wind turbine for aviation purposes. Marine lanterns are fitted close to sea level to warn the mariner and often other AtoNs are employed such as fog signals, AIS AtoNs and racons. Tideland is well equipped to supply a complete system and advise on local regulations.

MLED-RETRO

Bridge Lighting

Tideland's marine navigation lights mark bridges, fenders and piers worldwide. Lanterns are available in AC and DC powered versions utilising LEDs for the most efficient operation. Traditional six-place lampchangers using incandescent lamps are also available.

In typical bridge light installations, the lantern marking the centre of the channel is mounted below the bridge superstructure in the inverted position on a swing arm mounting of hot-dipped galvanised steel with stainless steel hardware. This lantern provides a reference point for bridge clearance height. The lanterns marking bridge piers, abutments and deck ends are mounted on pedestals in the upright position.



Intensity /Range Table For Darkness

INTENSITY (candela)	RANGE IN NAUTICAL MILES TRANSMISSIVITY 0.74	0.85	0.90
1	1.0	1.1	1.1
2	1.4	1.5	1.6
3	1.6	1.8	1.9
4	1.8	2.1	2.2
5	2.0	2.3	2.4
6	2.2	2.4	2.6
7	2.3	2.6	2.8
8	2.4	2.7	3.0
9	2.5	2.9	3.1
10	2.6	3.0	3.2
11	2.6	3.1	3.4
12	2.7	3.2	3.5
13	2.8	3.3	3.7
14	2.9	3.4	3.8
15	3.0	3.5	3.9
16	3.1	3.6	4.0
17	3.2	3.7	4.1
18	3.2	3.8	4.2
19	3.3	3.9	4.3
20	3.3	4.0	4.4
25	3.6	4.3	4.8
30	3.8	4.6	5.1
35	4.0	4.8	5.4
40	4.1	5.1	5.7
45	4.3	5.3	6.0
50	4.4	5.5	6.2
55	4.6	5.7	6.4
60	4.7	5.8	6.7
65	4.8	6.0	6.9
70	4.9	6.1	7.0
75	5.0	6.2	7.2
80	5.1	6.4	7.4
85	5.2	6.5	7.6
90	5.3	6.7	7.7
95	5.4	6.8	7.9
100	5.4	6.9	8.0
110	5.5	7.1	8.3
120	5.6	7.2	8.5
130	5.8	7.4	8.8
140	5.9	7.6	9.0
150	6.0	7.8	9.2
160	6.1	8.0	9.4
170	6.2	8.1	9.6
180	6.3	8.3	9.8
190	6.4	8.4	10.0
200	6.5	8.5	10.1
220	6.7	8.8	10.5
240	6.8	9.0	10.7
270	7.0	9.3	11.2
300	7.2	9.6	11.5
330	7.3	9.8	11.9
360	7.5	10.0	12.2
400	7.7	10.4	12.6

INTENSITY (candela)	RANGE IN NAUTICAL MILES TRANSMISSIVITY 0.74	0.85	0.90
450	7.9	10.6	13.0
500	8.1	11.0	13.5
550	8.2	11.3	13.8
600	8.4	11.6	14.2
650	8.6	11.8	14.5
700	8.7	12.0	14.8
800	8.9	12.4	15.4
900	9.2	12.8	15.9
1,000	9.4	13.2	16.3
1,100	9.6	13.5	16.8
1,200	9.8	13.8	17.1
1,300	9.9	14.1	17.5
1,400	10.1	14.3	17.8
1,500	10.2	14.5	18.2
1,600	10.3	14.7	18.5
1,700	10.5	15.0	18.8
1,800	10.6	15.2	19.0
1,900	10.7	15.3	19.3
2,000	10.8	15.5	19.6
2,200	11.0	15.8	20.0
2,400	11.2	16.1	20.4
2,700	11.4	16.5	21.0
3,000	11.7	16.9	21.5
3,500	12.0	17.5	22.3
4,000	12.2	17.9	23.0
5,000	12.7	18.8	24.2
6,000	13.1	19.5	25.2
7,000	13.5	20.0	26.0
8,000	13.8	20.5	26.7
9,000	14.1	21.0	27.4
10,000	14.3	21.4	28.0
15,000	15.2	23.0	30.3
20,000	15.9	24.1	32.0
30,000	16.8	25.8	34.5
40,000	17.5	27.0	36.2
50,000	18.1	28.0	37.6
70,000	18.9	29.4	39.8
100,000	19.8	31.0	42.1
150,000	20.8	32.8	44.8
200,000	21.5	34.1	46.7
300,000	22.6	35.9	49.4
400,000	23.3	37.2	51.4
500,000	23.9	38.3	53.0
700,000	24.8	39.9	55.4
1,000,000	25.7	41.5	57.9
1,500,000	26.8	43.5	60.8
2,000,000	27.6	44.9	62.9
3,000,000	28.6	46.8	65.9
4,000,000	29.4	48.2	68.0
5,000,000	30.0	49.4	69.7
7,000,000	31.0	51.0	72.2
10,000,000	31.9	52.8	76.0

RANGE (nautical miles)	INTENSITY (candela)
1	4,600
2	25,000
3	75,000
4	182,000
5	383,000
6	745,000
7	1,400,000
8	2,400,000
9	4,100,000
10	6,900,000

Range/Intensity For Daylight

Atmospheric Transmission Factor (T) = 0.74