



**JOYSTICKS,
CONTROL LEVERS
AND SOLUTIONS FOR
MARITIME APPLICATIONS**

KIEPE





KIEPE was established in 1959 and is one of the oldest Italian supplier in Industrial, Security and Transportation sectors.

KIEPE operates abroad as KINEXTEC and provides the highest technology products and innovative solutions to customers ranging from big multinational companies to small businesses.

lilaas[®]

KIEPE Electric SpA is the exclusive distributor of Lilaas AS joysticks, control levers and systems for marine industry in Italy and Spain.

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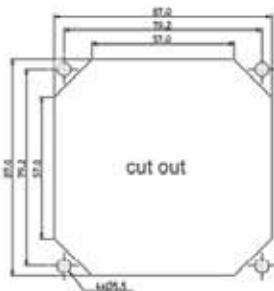
CONTROL LEVER LE90

ALL-IN-ONE LEVER. BEST QUALITY/PRICE RATIO

LE90 is All-In-One: Thruster – Propulsion – FWD – AFT lever.

Single or double lever, with optional interchangeable single, double and triple switch modules.

Easy mounting and adjustment.
Flush mounted with no parts under the plate.



- Interchangeable snap-on single, double and triple switch modules
- Personalizable with your own logo
- 3 interchangeable LED-illuminated scales
- Adjustable brakes and detents
- Adjustable screws for adjusting friction
- Other options on request

TECHNICAL DESCRIPTION:

Enclosure: IP66

Materials: Aluminium, Steel A2, POM

Finish: Anodised, SurTec

Weight: 900g

Handle movement/Electrical movement: $\pm 60^\circ$, 246°

Potentiometer: 5 k Ω , 350deg max wiper current 1mA

Detent: Zero and $\pm 20\%$

Friction: Adjustable

Block AFT movement: One handle (additional screw in box)

Scale foil: 3 types included in box

Illuminated scale: RGB LED scale 5VDC or 24VDC

Type approval: EN/IEC 60945, ABS, BV, DNV/GI, KR, LR, NK, RINA, PRS, RS, CRS (Pending)

CONTROL LEVERS LF90 - LF120 - LF180

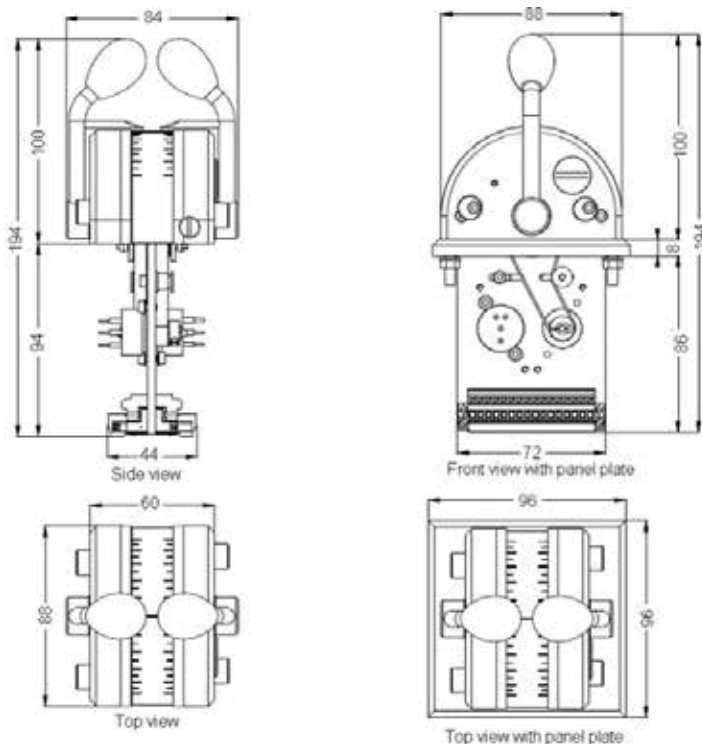
lilaas®

THE MOST RELIABLE MARITIME CONTROL LEVERS

Designed for single or double operation of tunnel thruster and propulsion machinery.

The units are designed for electronic control and are equipped with potentiometers.

Available motorized and non-motorized versions. Panel plate is standard on motorized controllers.



Technical drawing mechanical version of LF90

Options

- Spring loaded return to neutral position
- Built-in switches
- Other termination available
- Panel plate 96x96mm (LF90), 96x144mm (LF120), 144x220mm (LF180)
- Motorised axes
- A range of different scale foils
- Custom design (illuminated LED scale, colour, panel plate, potentiometer, shafts and handles)
- Other options on request

TECHNICAL DESCRIPTION:

Enclosure: IP66 (with panel plate)

Side covers: Black coated aluminium

Materials: Aluminium, Steel, POM (plastic material)

Finish: Anodised, SurTec

Weight: 0,6 - 1,5kg (depending on version)

Handle movement/ Electrical movement: $\pm 60^\circ$, 300° (320° - LF180)

Potentiometer: 1x5/2x5k_Potentiometer/ Dual 5Vsensor/Dual CANopen/Dual 4-20mA

Standard potentiometer: 5 k Ω

Friction: Adjustable

Scale foil: Black and white 100-0-100 thruster or propulsion scale

Illuminated scale: 28V bulb

Standard termination: 16 pins contact with plug

Type approval: EN/IEC 60945, ABS, BV, DNV, GL, KR, LR, NK, RINA, PRS, RS, CRS

CONTROL LEVERS LF90 & LF120 - New Design!

NEW AND MODERN DESIGN - MULTI INTERFACE OPTIONS

New LF90 and LF120 high quality single or double thruster and propulsion levers. LF120 is slightly larger than the LF90.

Measurements:

LF90X: L=96mm W=96mm H=112mm

LF120X: L=144mm W=96mm H=145mm

Console depth needed: ≤100

All models can be delivered with the following choice of interface:

Potentiometer: 1x5kΩ CT, 2x5kΩ CT (other available on request)

Hall sensors:

Dual 0,5-4,5V, Supply voltage 5V

Dual CANopen, Supply voltage 8-36V

Dual 4-20mA, Supply voltage 16-36V

Available motorized and non-motorized versions.



Options

- Single and double
- With and without panel plate
- Build in switches
- Detents
- Blocked aft movement
- Other options on request

TECHNICAL DESCRIPTION:

Enclosure: IP66

Materials: Aluminium, Steel, POM (plastic material)

Finish: Anodised, SurTec

Weight: 1 - 1,5kg (depending on version)

Handle movement/ Electrical movement: ±60°, 245°

Potentiometer: 1x5/2x5kPotentiometer/ Dual 5Vsensor/Dual CANopen/Dual 4-20mA

Detent: In Zero

Friction: Adjustable

Scale foil: Black and white 100 - 0 - 100 thruster or propulsion scale

Illuminated scale: 24V LED

Termination: 16 pins contact with plug

Type approval: EN/IEC 60945, ABS, BV, DNV, GL, KR, LR, NK, RINA, PRS, RS, CRS

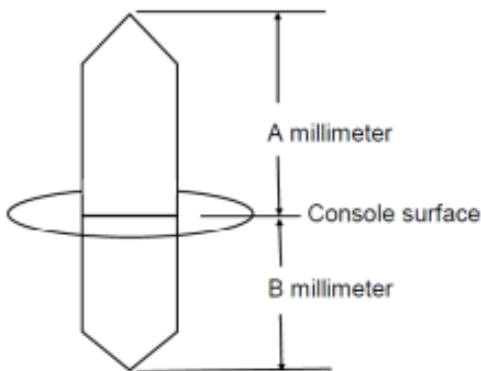
STYLISH JOYSTICKS FOR ELECTRONIC CONTROL

A multifunction-type joystick with simultaneous operation of all 3 axes.
Designed for electronic control.

Touch-free magnetic sensors reduce the amount of space required under the mounting plate and make movement extremely smooth and accurate.

Redundant sensor included.
Adjustable brakes and zero point.
For maritime as well as shore based purposes.

Other available models: LF40, LF50, LF60



Standard	L04
A	113
B	74



Options

- Customizable with your logo
- Push button with or without light
- Different shafts
- Spring-loaded return to neutral
- Colours
- Built-in switches
- Light

TECHNICAL DESCRIPTION:

Enclosure: IP56

Material: Aluminium, Steel A2, POM

Finish: Alodine, Powder coating

Weight: 0,8 kg

Handle movement: X= $\pm 24^\circ$; Y= $\pm 24^\circ$; Z= $\pm 24^\circ$

Electrical movement: X= $\pm 48^\circ$; Y= $\pm 48^\circ$; Z= $\pm 120^\circ$ (90° with spring return)

Sensors: Magnetic

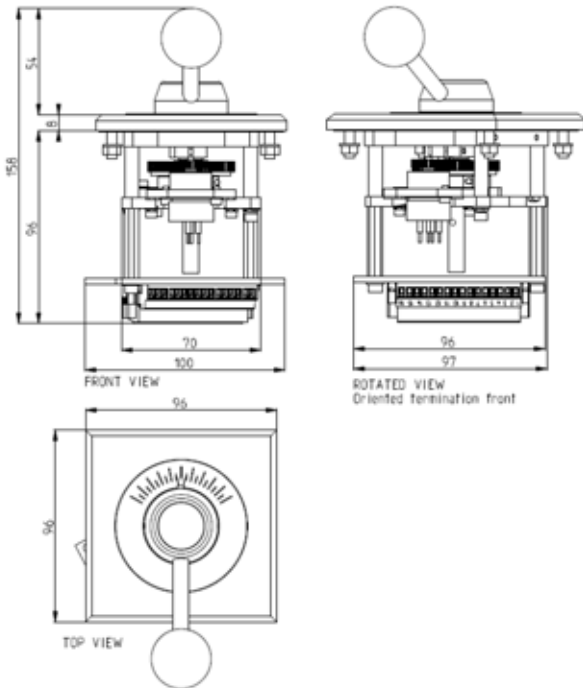
Standard termination: 16 pins contact with plug

RUDDER CONTROL UNIT LF80

SMALL AND RELIABLE CONTROL LEVER

The unit is designed for electronic control, equipped with potentiometer.

Different knobs and/or wheels and a range of scales available as options.



Options

- Integrated scale light
- Built in switches
- Motorized axis
- Alternative potentiometers
- Wheel, knob or handle
- Deflection
- EMC protection
- Spring-loaded return to neutral

TECHNICAL DESCRIPTION:

Enclosure: IP66

Panel plate: Coated aluminium

Handle: Dull surface stainless steel and POM

Standard potentiometers: 5kΩ

Potentiometer operation: Gear Wheel

Standard termination: 16 pins contact with plug

Illuminated scales: Self-adhesive with light (24V)

Type approval: EN/IEC 60945, ABS, BV, DNV, GL, KR, LR, NK, RINA, PRS, RS, CRS

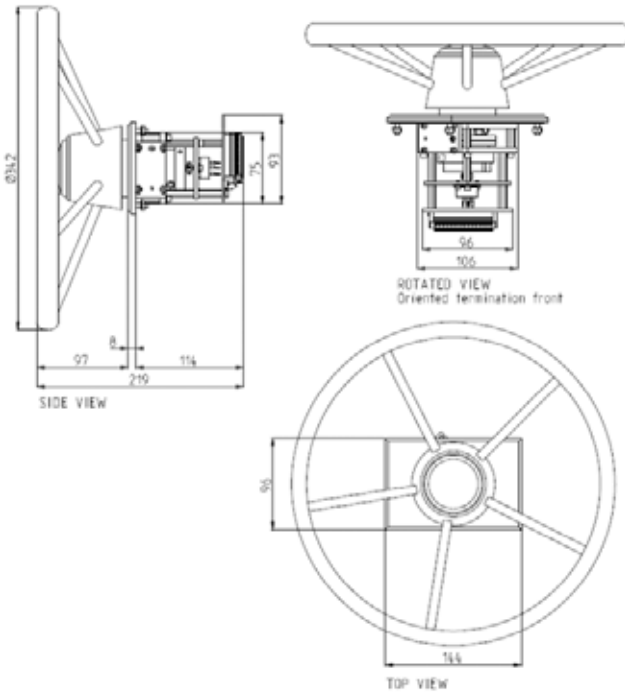
RUDDER CONTROL UNIT LF150



HIGH QUALITY AND RELIABLE GOOD GRIP

The rudder control unit is designed for electronic control. It includes potentiometer and visible panel plate.

The full size standard wheel can be turned maximum 280°.



Options

- Spring-loaded return to neutral
- Built-in switches
- Termination
- Scale with or without lights
- Custom design (wheel and panel plate)

TECHNICAL DESCRIPTION:

Enclosure: IP56

Material/Finish: Steel A2, Coated aluminium, POM, alodine, powder coating

Weight: approx. 3kg

Standard potentiometers: single 5kΩ, linear

Detent: In Zero

Movement: ±60° (LF150-01-19) and ±155° (LF150-01-30)

Wheel diameter/grip: 350mm/steel or padded

Standard termination: 16 pins contact with plug

Type approval: EN/IEC 60945, ABS, BV, DNV, GL, KR, LR, NK, RINA, PRS, RS, CRS

CONTROL LEVER LF70

DUAL CONTROLS COMBINED - SIMPLE, SAFE & COMPACT

LF70 is an Azimuth dual axis control lever.

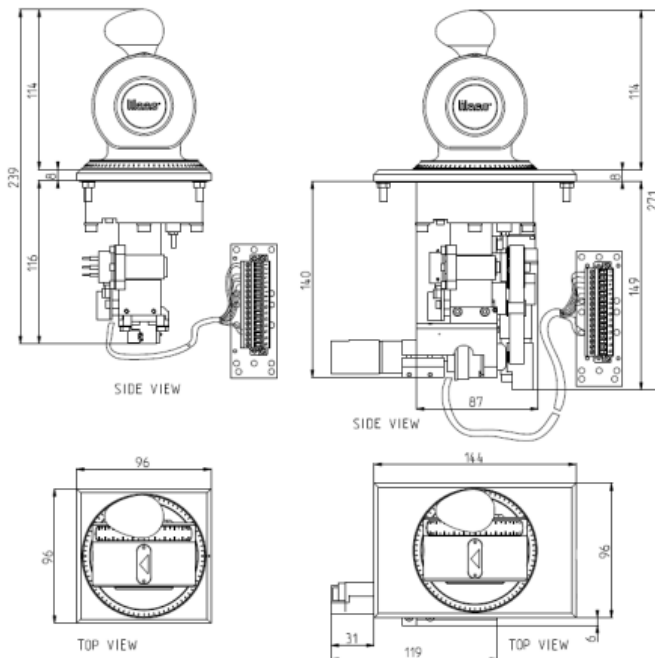
It is intended for controlling two functions such as pitch or engine speed as well as thrust direction of the propeller.

The control lever can be moved $\pm 60^\circ$ vertically and continuously 360° horizontally.

It is designed for electronic control and is equipped with potentiometer.

Pointer and scale with integrated illumination.

Motorized version and Lilaas el-shaft system available as options.



Options

- Limited movement
- Motorised axis
- El-shaft system
- Built-in switches
- Termination
- Alternative potentiometer
- Custom design: Handles, scale foils

TECHNICAL DESCRIPTION:

Enclosure: IP66 + EMC - screened

Material/Finish: Steel A2, Coated aluminium, POM

Handle: Moulded polyurethane plastic

RPM movement, handle/electrical: $\pm 60^\circ$, 245°

Azimuth movement, handle/electrical: 360° , 360°

Standard potentiometer: RPM $5k\Omega$, Azimuth $5k\Omega$ sin/cos

Potentiometer operation: Gear Wheel

Standard termination: 16 pins contact with plug

Illuminated scales: Self-adhesive (24V)

Type approval: EN/IEC 60945, ABS, BV, DNV, GL, KR, LR, NK, RINA, PRS, RS, CRS

MULTIFUNCTION LEVER L01 (MECHANICAL)

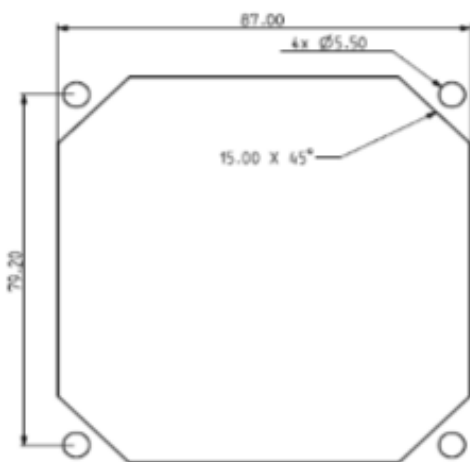
THRUSTER AND PROPULSION CONTROLS FOR AZIMUTH

It is compact, rugged and combines multifunction control simply and safely for all types of ship.

L01 is available as azimuth, thruster and propulsion control lever with laser engraved and LED illuminated scale.

The new mechanics require only a minimum installation depth: Azimuth 98mm. Thruster/Propulsion 71mm.

L01 has redundant magnetic sensors on all axes.



Options

- Built-in switches
- Mechanical detents
- Limited deflection
- Customized scale
- EI motor
- Colours on request
- Logo on request
- Isolated analog output and backup output

TECHNICAL DESCRIPTION:

Enclosure: IP66

Power Supply: 24V DC; 5V DC (sensors) mechanical version

Panel plate and housing: Coated aluminium

Handle: Aluminium and moulded Arnitel

Handle movement azimuth: $\pm 60^\circ$ and 360°

Handle movement thrust/propulsion: $\pm 60^\circ$

Standard sensor: Magnetic 5V DC

Isolated analog output and backup output

Type approval: EN/IEC 60945, ABS, BV, DNV GL, KR, LR, NK, RINA, PRS, RS, CRS

MULTIFUNCTION LEVER L01i

THRUSTER AND PROPULSION CONTROLS FOR AZIMUTH WITH BUILT-IN EL-SHAFT SYSTEM

The new cost-effective force feedback solution that does not use electric motors.

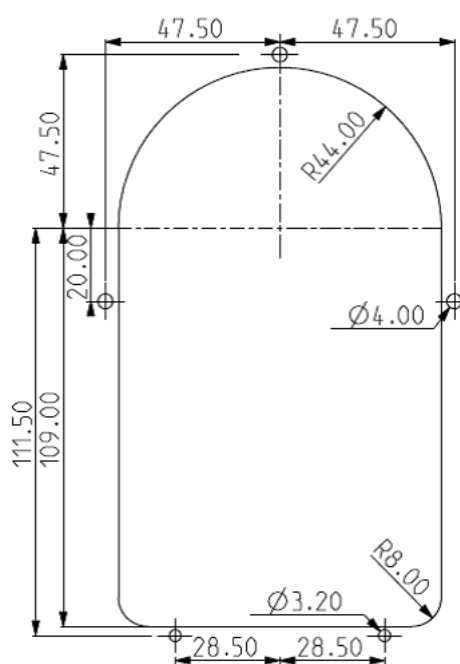
Software solutions and a built in TFT LCD digital display for position of the lever and feedback information from the ship's systems.

Various parameter settings: FWD or AFT, CAN, alarm, display, networks, feedback etc.

Capacitive touch switches on the display available for menu operations and/or for custom functionality.

Integrated el motors and in house developed electronic shaft system within the lever.

No more need for big expensive external boxes.



Options

- Display graphics
- Digital isolated input
- Force feedback
- Integrated el-shaft system
- Colours on request
- Logo on request

TECHNICAL DESCRIPTION:

Enclosure: IP66

Power Supply: 24V DC;

Panel plate and housing: Coated aluminium

Handle: Aluminium and moulded Arnitel

Handle movement azimuth: $\pm 60^\circ$ and 360°

Handle movement thrust/propulsion: $\pm 60^\circ$

Scale: 2,4" TC LCD display (with electronics)

Standard sensor: Magnetic 5V DC

Communication via CANopen protocol or standard analogue signal or combination of both

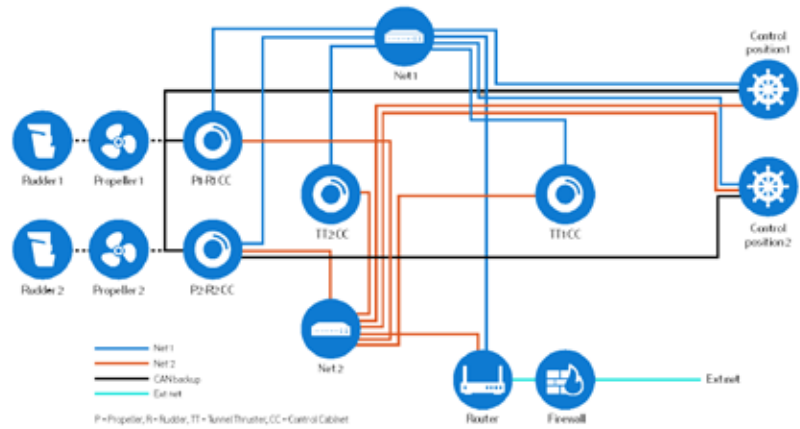
Type approval: EN/IEC 60945, ABS, BV, DNV GL, KR, LR, NK, RINA, PRS, RS, CRS

THE MODULAR AND ADAPTABLE SYSTEM FOR ALL VESSEL SIZES

LTC01 is reliable system to remotely operate the thrusters from various control positions, such as forward bridge, aft bridge, bridge wings ect. The control can be taken bumpless from any control position at any time.

Modular built to be extendable to any system. Designed to work with any levers of choice and is capable of handling as many control positions as requested as well as being able to handle as many propulsion and thrusters units as needed.

- Modular
- Adaptable to any vessel
- High-quality parts
- Fuel saving
- Compatible with future software functions
- Redundant network
- Interface to existing automation system
- Interface to engine control



OPTIONAL CENTER CONSOLE

LTC01 can be installed in Lilaas slim-line center console with alarm LED RGB edge, which changes color after severity of active alarms. Panel can be used with or without large screen.

Installing Lilaas new L01 control lever series and Lilaas new LED consoles will result in no parts below surface of the consoles.

Lilaas LED Console may be customized to fit bridge and bridge wing layout. Additional consoles can be installed if needed.



TECHNICAL DESCRIPTION:

Navigation: Interface to navigation equipment available. Echosounder, Log, VHF/UHF radio, Radar(s), Satellite navigation, Gyro, MRU, Nav lights ect. to be displayed on conning display

VDR output: may output all data in Ascii to VDR, included Lever set-point as well as Thruster/Propulsion feedback

Remote access security: available using secure solutions such as Open VPN, SSL/TLS firewall, IPSec, SSH ect. Optional Remote operation from app.

Design: Customizable for any vessel configuration. Broad array of Lilaas control levers to be used. LTC are able to interface any thruster configuration and any number of control positions.

Redundancy: dual internet as a standard. CAN-bus between back-up sensor on each lever to thruster control as option. CAN-bus for simple and small systems available as option. All controllers with dual power supplies including alarm for power failure.

Interface: interface protocols for any thruster, propulsion and rudder units on the market. Open serial line standards to be used, enabling interfacing of all analogue standards including Lilaas actuators.

Alarm handling: Alarm interface on serial line, on analogue signals. LED output for severity of alarms. Alarms available on separate alarm view. Alarms be displayed only when active.

Automation: LTC is able to interact with various automation systems, displaying data on the bridge screen. Data will be transferred between LTC and automation system using serial line, analogue signals or ethernet.

AESS - ELECTRONIC SHAFT SYSTEM

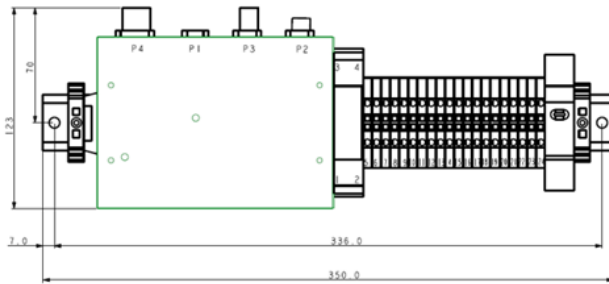


ACCURATE AND INTUITIVE INTERACTION

Is a network system for up to 8 control lever positions and up to 4 propulsion engines into one redundant network.

Each control lever is a node in a network and consists of one control lever with servo systems and an electronic unit.

The system administrates the master position selection, slave positions and fault detection.



APPLICATIONS:

- Propulsion control levers
- Thruster control levers
- Rudder control
- General purpose joysticks 1, 2 and 3 axes
- Combinations of above mentioned

The AESS is delivered with 1,5 meter cables and Instruction manual.

THE NETWORK:

The network is based on the CANbus standard (Controller Area Network.)

The CANbus is a well proven standard originally designed for vehicles.

Due to its simplicity and operability in harsh environment this standard is used in a wide range of applications, such as industrial, medical and nautical.

The network in AESS is dual redundant with two physical separated buses.

EMERGENCY TELEGRAPH (OPTIONAL):

A separate dual redundant network can be installed e.g. between the bridge and the engine room.

In emergency mode all control lever clutches are released, and levers can be moved freely.

In this state the activity on the main bus is ignored.

The bridge will originate the emergency state, and the angle and throttle positions are transmitted to the engine room displayed on LED indicators.

The engine room accept the message by turning its levers into the same position.

LINEAR FIRE DETECTION SYSTEM

FIRE AND TEMPERATURE MONITORING

- Precise localisation of the alarm
- Quickest possible alarm transmission thanks to highly sensitive sensors
- Individual alarm threshold can be configured for each detection area
- False-alarm-proof
- Simple installation
- No maintenance required
- VdS approval according to EN 54-5, EN 54-22, Class A1.
- DNV-GL certification category D, F, EMC1
- Compatible with Lilaas LTC01 system



TECHNICAL DESCRIPTION:

- Temperature range: -40 °C ... +85 °C up to +120 °C briefly
- Measurement resolution: 0,1°C
- Branching of cables routes via connection boxes
- Quick cable repair in case of mechanical damage
- Up to 2 x 250m combined cable length or 2 x 99 sensors

MARINE CABLES

YOUR SAFETY ON BOARD

All cables are type certified by leading marine certifying agencies and used for installation on board ships, for communication, instrumentation, power supply, control and lighting.

Main International standards and approvals: ABS, BV, DNV-GL, LRS, PRS, RMRS, RINA.

TECHNICAL DESCRIPTION:

- Halogen-free IEC 60754/1-2
- Flame-retardant IEC 60332/1, IEC 60332/3 Cat A
- Fire-resistant IEC 60331
- Oil-resistant
- Smoke density IEC 61034/1-2 (DIN EN 50268/1-2)

CABLE TYPE:

- | | |
|---|---|
| Telecommunication, Instrumentation, Data: | MarineCom YOZc
FM2XCH (EMC Type), FM2XCH-FFR
FM2XAH
FM2XCCH
FM2XAAH |
| Power: | MarineFlex YOZp, YZp
MarineLine YOZp, YZp
M2XCH-EMC, M2XCH 0,6/1 kV (EMC-type)
M2XH
M2XCH |
| Control, Alarm: | MarineSignal YOZs |





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