| *Related Product* | *Product Version* |
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# *Table of Contents*

Revision history:

| *Rev* | *Date* | *Description* |
|---|---|---|
| 1 | 18.05.2022 | First release |
| 2 | 15.11.2022 | Rewritten sentences for better wording. |
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# 1. General

## 1.1. On-shore preparation

It is important that the unit is placed on a stable surface with good friction. There should not be any snow or ice on ground surface. It is recommended to secure the unit to the quay to prevent sliding. For securing the device see document; ZPP215 Footprint

## 1.2. On-shore Connection

Normally there is an "extension cable" for connection to electrical supply system on shore. This is reeled on the back of the ZPP215 for transport and when parked.

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| ⚠ | It is important that power plugs (shore side) are properly connected before operation. |

## 1.3. Activation of operator panel

The operator panel has a key switch for activation. When set to "ON", it is possible to operate the ZPP215 by use of the operator panel.
If the key switch is set to "OFF", no buttons on the panel will work. Automatic safety functions are still activated and signal lamps on the front will signal as normal.
When the switch is turned from «OFF» to «ON», a lamp test will be activated and all signal lamps will switch between GREEN, YELLOW and RED for 8 seconds. It is possible to start operation of the ZPP215, while the lamp test is in progress.


## 1.4. Emergency stop

This will emergency stop all operations. As an indication that the ZPP215 has been emergency stopped. Signal lamps will flash RED while the emergency stop is activated.

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| ⚠ | An emergency stop will NOT break the power supply between shore and ship. |

## 1.5. External signals

There are two potential-free relay contacts per cable drum for signaling to external system. These are used to exchange information between the ZPP215 and the shore power supply system.

### 1.5.1. «WARNING»

This is activated when there is less than 5 meters cable left on the drum.

### 1.5.2. «ALARM»

This is activated by cable tension overload, if only 3 meters left on the drum or if cable maximum temperature is reached. This is also activated if emergency stop is activated.

# 2. Functions

## 2.1. Manual operation

In manual operation it is possible to run the cable in and out by use of the operator panel.

## 2.2. Safety functions

### 2.2.1. Emergency stop

If emergency stop is activated, all operation and automatic functions will be deactivated, at the same time all signal lamps will flash RED. It will now only be possible to pull out cable if the holding force on the drum motor brake is exceeded.

## 2.3. Cable

The ZPP215 is operated by use of the operator panel. From this panel each cable can be operated separately, or several at the same time.

### 2.3.1. Manual operation

By use of the operator panel, it is possible to run each individual cable in or out, to achieve requested length or is pulled in after use.

### 2.3.2. Run cable out

To start unreeling cable, the key switch must be in «ON» and «OUT» button for the selected cable to be held down for at least 5 seconds. The system is set for cable out when the signal lamp for the selected cable flashes GREEN. This can be done on one or more cable drums in parallel.
There is defined a high and a low limit for automatic running of cable out. By pulling the cable with a force above the upper limit, the drum motor will start and run out cable and gradually increase the speed, until the pulling force is below the upper limit.
If pulling force is below lower limit, the speed will gradually decrease and if necessary, stop completely.

### 2.3.3. Pulling cable in

To pull in the cable, the key switch must be in the «ON» position and the «IN» button for the selected cable is held down. It is possible to run all cables at the same time. Cable speed will decrease as it reaches the inner position.

### 2.3.4. Safety functions

#### 2.3.4.1. Emergency stop

If the emergency stop switch is activated, both automatic and manual operation will be aborted and all motors for cable pulling will stop.

#### 2.3.4.2. Cable tension overload

If the cable is pulled in and exceeds the maximum tension (> 150 kg), the motor stops and signal lamp for overload starts flashing RED. As soon as the operator releases the button, the cable will automatically be freed to run out of overload. A load cell is monitoring cable tension to prevent unwanted tension in the cable. By tension in cable above the set point, the brake on the gear for operating the drum is released so that the cable can run "freely". If all cable is pulled out, it will be released from the drum via plugs in a separate emergency release system. This is to prevent the ZPP215 from being pulled out of position when out of cable.

#### 2.3.4.3. Cable end position

To prevent pulling cable beyond the maximum length or pulling in when the cable is at inner position, the length of the extension cable is continuously calculated. Inner position is registered via mechanical stop on cable. When the mechanical cable stop reaches inner position, the counter is reset, so that the calculation for cable out has the correct position reference. If the cable is detected at inner position, the pulling of cable will stop.

When the cable exceeds maximum run-out length, regardless of manual or automatic mode, the run-out of the cable will stop. If the rotation sensor should fail, there will be a separate sensor detecting if cable has been pulled too far out, so that on shore power supply can set the system powerless.

#### 2.3.4.4. Cable high temperature

A thermostat is monitoring the temperature of the cable. At 60% of the accepted cable temperature the air fan will be activated. If the cable temperature increases over 90% of the accepted cable temperature so that on shore power supply can set the system powerless.

#### 2.3.4.5. Description of signaling light

In front of each cable module, you find a beacon light that changes colors based on various detections ready for driving, warning and alarm. Below you will find color description and actions:

| *Color* | *Signal* | *Description* |
|---|---|---|
| GREEN | Steady light | Cable at inner position |
| GREEN | Blink | Cable ready for pulling out |
| YELLOW | Steady light | System set to «Service Mode» (for service personnel only) |
| YELLOW | Blink | WARNING<br>Little cable left on drum (reduced speed)<br>Cable approaching inner position (reduced speed) |
| RED | Steady light | Emergency stop activated |
| RED | Blink | ALARM<br>Out of cable on drum<br>To high cable temperature<br>Too high tension on cable<br>System set to "Override Mode" (for service personnel only) |

## 3. Operator panel layout