



# Smart Electrical Distribution

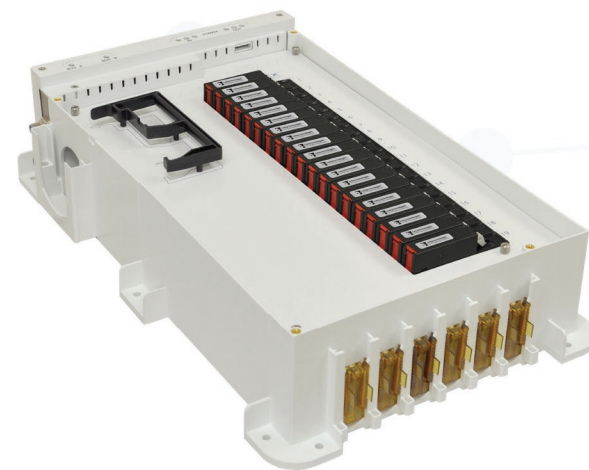
## *Intelligence At Sea™*



### Titan – Smart Electrical Distribution

Titan is the next step of advanced technology for the yacht/ship, with the automation of the Electrical Distribution. In the past, all Electrical Distribution systems were a repetition of old designs with large electrical breaker distribution panels located on each deck of the yacht/ship. From these distribution panels, long cable runs were needed to connect to each electrical consumer, such as lighting, galley appliances, electrical outlets, air conditioning handlers, etc.

Our Titan designs, eliminate these cumbersome panels by placing small remote controlled and monitored electrical panels close to the consumer electrical systems. Since these smaller breaker panels can be monitored and controlled remotely, they can be located in deck-heads or other hidden locations, eliminating the need for accessibility.



Cable runs are radically reduced, resulting in cable, labor, weight and space savings. Yacht/Ship build times are also reduced as individual blocks can be prewired with the remote breaker panels. The individual breakers within our Titan system are a unique product from our partner, Carling Technologies, Inc. These Titan/Octoplex remotely monitored and controlled breakers, are of the highest quality hydraulic – magnetic design, providing for precise trip curves independent of ambient temperatures. Our Titan/Octoplex panels come with the Lloyds Type Approvals.

### System Design

The design of this system is simple yet elegant as the Titan system is a true distributed electrical system. The example drawing provided shows one segment of this design, with a high amperage cable between the switchboard and the Titan Intermediate Distribution Panel. These panels would be located at strategic locations on each deck and are single or three phase up to 25 amp cabling back to the Titan/Octoplex remote panels.



The Titan/Octoplex remote panels, are fully monitored with remote control over each of the up to 19 breakers. This means that these panels can be located in hidden locations such as deck heads, or behind lockers and furniture. Now the cable runs to the end consumers are radically shortened, allowing for sections to be prewired during the build process.

### Communications

Each of the remote Titan Electrical Panels are connected via redundant CAN buses on a multi-drop network. Information such as Breaker Status, Voltages, Current, KVA, Power Factors, Controller Temperatures, etc., is collected at the Titan Server. The Titan Server, then interfaces to the ships IT network, enabling any Engineer, connected to this IT network via hard wired connection or wifi, to access the Titan screens.



The screenshot is the expanded view of the Titan/Octoplex which not only provides the status of each breaker, and controller's critical information, but enables the Engineer to move a breaker on the screen to turn ON, OFF, or RESET a tripped breaker.

Other screens within the Titan system show Active Alarms, and Histories of all Alarm Triggers.

One screen provides a wealth of information for the intermediate Titan Distribution Panel and the distribution circuits it controls.

### Titan Features and Benefits

Below is a summary of the major highlights in the implementation of the Titan system:

#### FEATURES

- Location of the Breaker Panel close to consumers
- Breaker Panel hidden in inconspicuous spaces
- Remote Notification of breaker trips
- Remote Control – On/Off of breakers, remote resetting of tripped breakers
- Redundant Communications buses
- Historical recording of breaker trips for analysis
- Simple to use UI (User Interface)

#### BENEFITS

- Cable length savings (shorter load cable runs)
- Space savings (volumetric reduction in traditional electrical space required)
- Weight savings (less copper needed)
- Installation labor & materials overall cost savings
- Prewiring of modules/blocks resulting in reduced build times
- Remote monitoring, immediate notification of breaker trips and expedited fault resolution time.

#### EXAMPLE OF COST SAVINGS IMPLEMENTING TITAN ON A 110M VESSEL

- Cable Cost Savings – 54%
- Cable Length Savings – 67km
- Cable Installation Labor Savings – 62%
- Overall Total Costs Savings – 13%
- Weight Savings – 18 Metric Tons
- Space Savings – 1.6 cubic meters

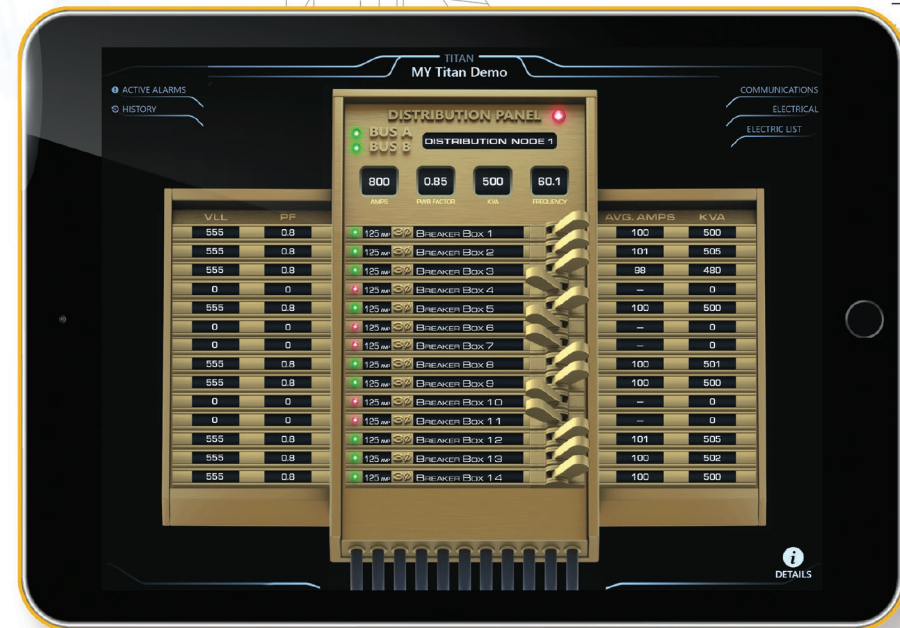




Alarm Notification



Titan Octoplex Panel



Titan Distribution Panel



Alarm History

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