PowerPlex®

COMPONENTS BROCHURE

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WELCOME TO *PowerPlex*®
DIGITAL SWITCHING TECHNOLOGY

PowerPlex® is a fully integrated alternative to traditional onboard power distribution and electrical systems, allowing users to monitor and control the electrical operations of their yacht with the touch of a button.

PowerPlex® sets itself apart with modular software and hardware components that provide an easy-to-use, customizable, intuitive system for your company's yachts. Read on for the full list of PowerPlex® modular components, and the technical specifications of each.

TECHNICAL SPECIFICATIONS

The modular components of *PowerPlex*® are designed to simplify installation and increase the flexibility in the design for each custom digital switching system.

A Complete *PowerPlex*® System Comprises the Following Components:	
Component	**Description**
PowerPlex® Power Module 	The *PowerPlex*® Power Module is E-T-A's physically isolated CAN bus interface as well as redundant protective functionality for connected DC loads. Similar to the *PowerPlex*® DC024, the device can control and monitor a total of twelve electrical loads. Each module has a manual override function for each 8 A and 25 A output via integral electro-mechanical mini circuit breakers. This manual override guarantees access to critical boat functions.
***PowerPlex*® AC Module** 	The *PowerPlex*® AC Module is a 14-channel power distribution unit equipped with either E-T-A single pole or double pole 8345 circuit breakers with full remote operation. With the remote circuit protection device installed, all AC loads are protected for short circuit and overload conditions and are completely remote controlled through the *PowerPlex*® software to allow easy on/off operation. For additional protection, the AC module also has manual override functionality.
***PowerPlex*® Gateway** 	The *PowerPlex*® Gateway is a multiprotocol module to connect *PowerPlex*® systems with other networks. It allows the combination of a *PowerPlex*® CAN bus with various other bus systems: CAN (e.g. NMEA2000, SAE J1939), Modbus. The *PowerPlex*® Gateway allows transmission of I/O data between *PowerPlex*® products and devices on other bus systems. It automatically translates and filters incoming messages so only relevant data is transmitted or received. This ensures a consistent flow of information for controlling and monitoring the entire system. Both buses are connected to the gateway and are galvanically isolated from each other. Configuration of the gateway is accomplished with software via the *PowerPlex*® CAN bus.
***PowerPlex*® Web Server** 	The *PowerPlex*® Web Server provides display, monitoring and control of a *PowerPlex*® system via smartphone, tablet, multi-function display or computer. Up to eight devices can be integrated into a system via LAN.
***PowerPlex*® Battery Monitor** 	The *PowerPlex*® DC Battery Monitor offers eight multi-functional inputs, which can be used for measuring current, voltage and temperature on the DC battery strings. The Battery Monitor is available with two or four temperature sensors for use on multiple battery banks. It connects directly into the PowerPlex CANbus network through the E-T-A *PowerPlex*® Mini Module.
***PowerPlex*® Power Meter** 	The *PowerPlex*® AC Power Meter is a highly accurate multi-functional device for taking electrical measurements in low-voltage systems up to 500VAC. It provides voltage, current, power and frequency readings for single, two and three-phase networks. The pushbuttons on the front of the device can be used to display measured values as well as configure the device. The X0649-ACPM is equipped with an RS485 communication interface (MODBUS/JBUS) for connection to a higher-level control system such as the *PowerPlex*® Gateway.

A Complete *PowerPlex*® System Comprises the Following Components:	
Component	**Description**
Miniature Thermal Circuit Breakers 	10 A or 30 A thermal circuit breakers type 1610-21 are integrated in the *PowerPlex*® modules. They provide advanced load protection and manual override of the 8A and 10A loads.
CAN Bus Cable 	A standard twisted-pair CAN bus cable comprising two wires (CAN-H and CAN-L) and the shield (SHLD) connects two *PowerPlex*® modules to each other.
Terminating Resistors 	Two 120 Ω resistors terminate the CAN bus network, one at each end of the bus structure.
***PowerPlex*® Configuration Software** Windows	Windows based configuration software for defining the addresses, characteristics and functions of the *PowerPlex*® modules, assigning inputs and outputs to them, and carrying out system tests and analysis.
CAN-USB Converter Plus Software/RJ-45 Adapter 	Converter cable to connect the CAN bus to the USB interface of the computer running the *PowerPlex*® configuration and TouchPC software.
Voltage Supply 	12 V DC or 24 V DC battery voltage supply.
Remote Hydraulic Magnetic Circuit Breakers 	Protection of AC 120/240V loads. Remotely operated through the *PowerPlex*® CANbus system. Recommended: E-T-A thermo-magnetic circuit breaker type 8345.

OVERVIEW OF *PowerPlex*® COMPONENTS

All *PowerPlex*® components are built for a marine environment and provide the protection and reliability you need for simple to more complex electrical systems. The modular design of our system allows you to create a customized solution for each individual yacht.

DC Modules		
Component	***PowerPlex*® Power Module** 	**Mini Module** 
Total Voltage	DC 12 V DC 24 V	DC 12 V DC 24 V
Total Current Max.	102 A per module	12 A per module
Inputs Digital Analog	8 4	8 multifunctional inputs, configurable
Outputs	2 (max 25A) 4 (1A dimming outputs)	8 (max. 1.5 A)
Protection Class	IP22 (available with watertight enclosure)	IP22
Approvals	GL, LR (pending)	E1
Part number	PP-M-PM500-000-0-0-00	PP-M-MM300-000-0-Z-00

AC Module	
Component	***PowerPlex*® AC Module** 
Total Voltage	AC 120/240 V AC 230 V
Total Current Max.	100 A per module
Outputs	Up to 14 depending on circuit breaker configuration
Protection Class	IP44
Approvals	GL (pending), CE-Logo
Part number	X8345R-S00-0649

Metering and Monitoring		
Component	***PowerPlex*® Battery Monitor** 	***PowerPlex*® Power Meter** 
Total Voltage	DC 12 V DC 24 V	AC 120/240 V AC 230 V
Inputs Digital Analog	8	8
Protection Class	IP65	IP65
Approvals	GL (pending), CE-Logo	E1 (pending)
Part number	X0649-DC-BM4	X0649-AC-PM

User Interfaces			
Component	***PowerPlex*® Keypads** 	***PowerPlex*® 12" Touchscreen** 	***PowerPlex*® Touch Panel 7" TP070** 
Total Voltage	DC 12 V DC 24 V	DC 12 V DC 24 V	DC 12 V DC 24 V
Protection Class	IP53 (front) IP00 (rear)	IP65 (when console mounted)	IP20 or IP65 depending on mounting
Positions	2, 6, 8, 15	Custom	Custom
Approvals	E1	Designed to meet FCC Class A, Marine standard EN60945	E1
Part number	PP-M-KP200-…-000	GBL-12T-ETA	PP-M-TP070-000-0-Z-00

Third Party Connectivity & Compatibility		
Component	***PowerPlex*® Gateway** 	***PowerPlex*® Web Server** 
Total Voltage	DC 12 V DC 24 V	DC 12 V DC 24 V
Protection Class	IP22	IP22
Part number	PP-M-CG300-000-0-Z-00	PP-M-WS300-000-0-Z-00

PowerPlex® SUITE SOFTWARE

YOUR HOME SCREEN

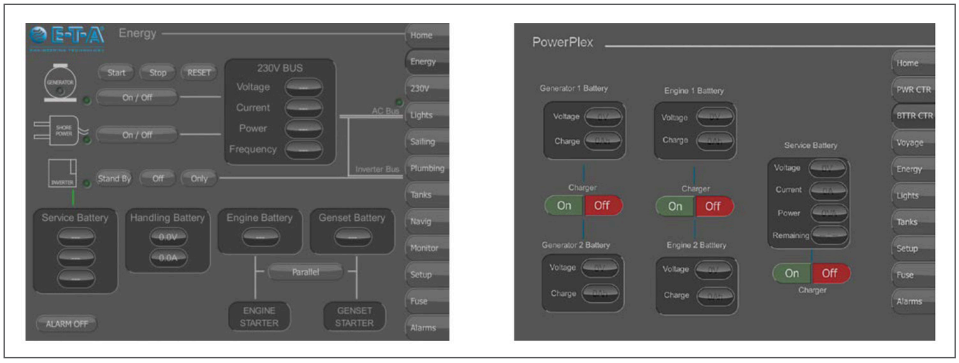
Unnecessary trips to various areas of your boat are a thing of the past. Let *PowerPlex*® do this for you with the practical scenarios feature. *PowerPlex*® can examine each electrical load and determines if and for how long it´s needed for a selected scenario. Increase the security and comfort for your customers through intelligent power distribution, control and monitoring.

Example of Home Screens Showing Power Consumer Levels

ENERGY MANAGEMENT

Electrical equipment increases comfort on board and different energy concepts can be configured using *PowerPlex*®. This allows the generator to start automatically when AC devices are switched on – depending on the configuration. With an existing shore connection, the generator would not be turned on by *PowerPlex*®.

For each on-board battery, the current status will be determined and displayed. This allows load shedding of unimportant loads when pre-determined battery levels are reached, preserving the limited available battery capacity.



Examples of Energy Screens Showing Battery Statistics

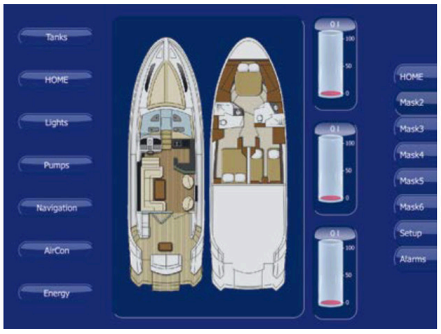
PANEL MANAGEMENT

The conventional switch panel can be combined with or completely replaced by *PowerPlex*®. All loads with DC 12 V / DC 24 V as well as AC 120/240 V / AC 230 V can be switched on or off via a touch screen. On-screen buttons provide the ON/OFF functionality of switches.

Here, *PowerPlex*® opens up new possibilities for boat designers. Via the system configuration, it is possible to switch several loads simultaneously using just one button.

The complete electrical on-board system can also be configured to operate in a pre-determined way using the scenario-functions i.e. night mode or cruising mode.

Example of Screen for Lights



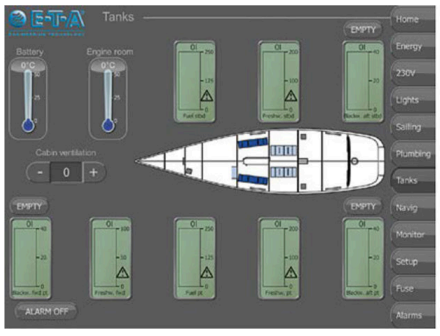
Example of Screen Overview

Example of Screen for Loads

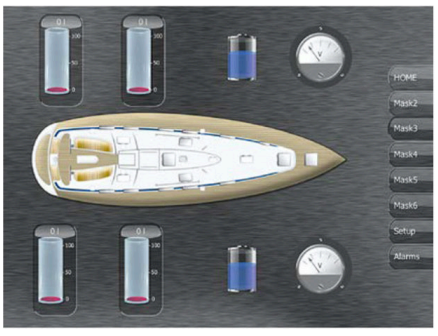
PUMP AND TANK MANAGEMENT

PowerPlex® controls and monitors the status of pumps and various tank levels with sensors. The system provides this information via the displays, alerts the crew when critical levels are reached and activates or deactivates the pumps.

The monitoring function of *PowerPlex*® switches off the respective pump when pre-set tank levels are reached again and prevents it from idling. The status and location of the pumps and tanks are indicated on the user interface.



Example of a Tank Screen



Example of a Tank Screen

Example of a Pump Screen

SAFETY MANAGEMENT

Increased safety on-board is accomplished by using customized safety management functions.

PowerPlex® monitors, informs and alerts the crew of any malfunctions within the electrical installation. For example, the bilge tank or the fresh water alarm will be clearly displayed in a list.

To better see any malfunctions, up to 100 alarms per day for the past 30 days are listed in an alarm history. Warnings and other messages are displayed as pop-up´s and are also logged in the alarm history.

Fusebox & Alarm List Screen | Example of a Pop-Up Screen | Example of a Pop-Up Screen

Your Benefits

- Integration of any Windows-based Touch PCs
- Individual designs of your graphical user interface (GUI)
- Intuitive to understand, no programming skills required
- Increased functionality

USER EXPERIENCE: FULL CONTROL AND MONITORING

***PowerPlex*® HMI Solutions**

Increase your client's experience. The *PowerPlex*® HMI devices allow convenient visibility and intuitive operation. Visualize status, alarm or error messages. Select your preferred HMI from various keypads, touch displays for your *PowerPlex*® application. The *PowerPlex*® Suite allows you to create your own design.

PowerPlex® HMI devices for convenient control and monitoring of the entire electrical system.

INTEGRATION OF THIRD-PARTY SYSTEMS

Integrating third-party systems is crucial when building a smart boat. E-T-A has partnered with marine electronics companies to improve the user experience. *PowerPlex*® control and monitoring is possible at the touch of a finger on various boat locations such as the helm, salon or via mobile devices.

Your Benefits

- Increased convenience for your customers
- Convenient control and monitoring of the electrical installation
- Status control at a glance - on board or on-shore
- Superior performance and high quality
- Easy to install

Integration Partners

B&G

DOMETIC

FURUNO

SIMRAD

Sea Recovery

victron energy
BLUE POWER

Whisper Power
Generating Confidence

GARMIN.

ABOUT E-T-A

Since 1948, E-T-A has built a reputation on our engineering and manufacturing expertise in electrical protection and control components. We are market leaders, recognized for our cutting edge, internationally patented products. Innovation is at the forefront of our product development with a focus on new technologies and designs.

For nearly two decades E-T-A has worked with marine product OEMs to create *PowerPlex*®: a proven, responsive, and adaptable digital switching infrastructure for yacht manufacturers. We stand behind our products with on and off-site training, after-sales customer support, and remote technical advice and service. We're not just a solution provider, we become an extension of your team.

PowerPlex®

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E-T-A®
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