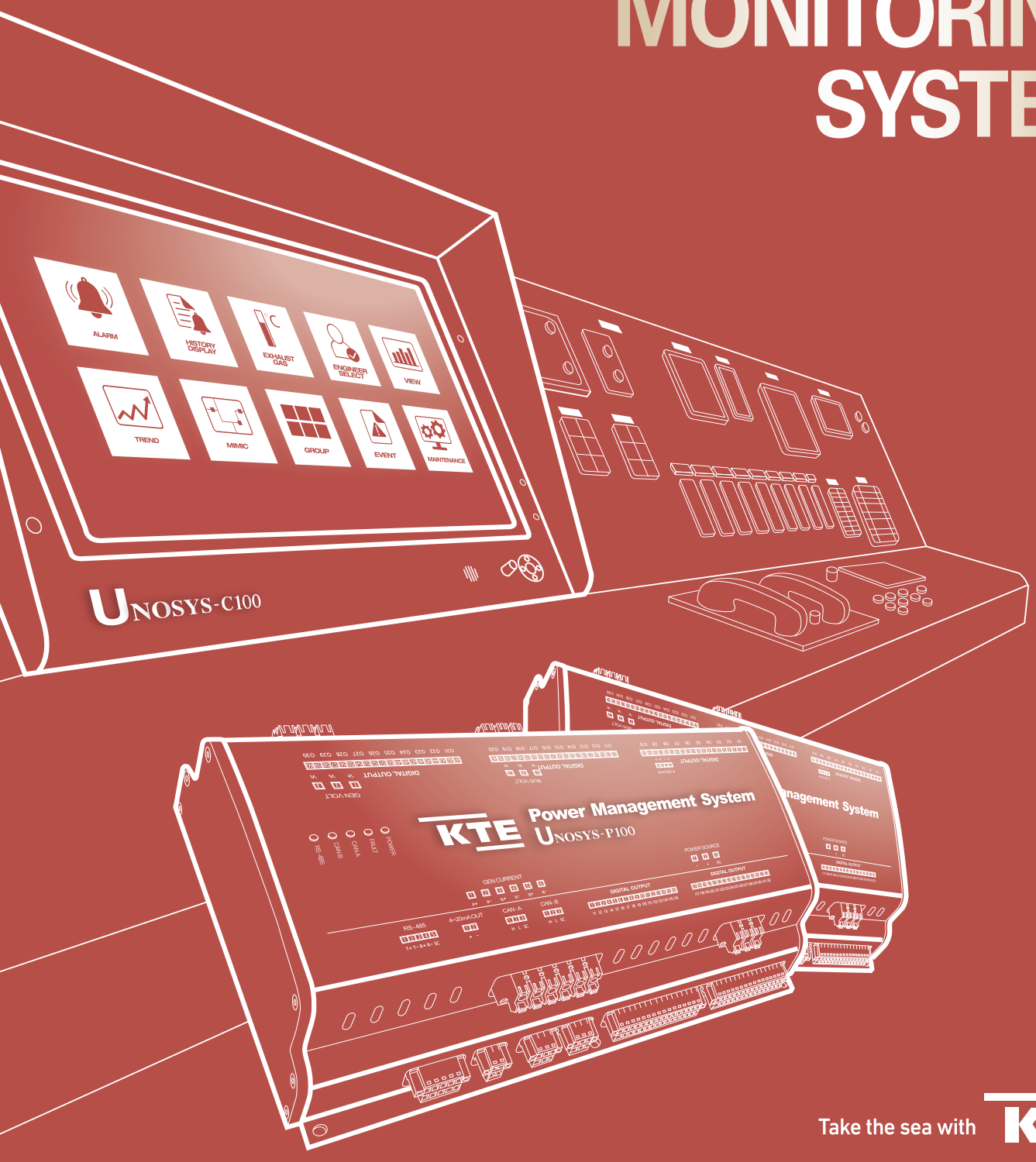
CONTROL AND MONITORING SYSTEM



Take the sea with KTE

Take the sea with KTE

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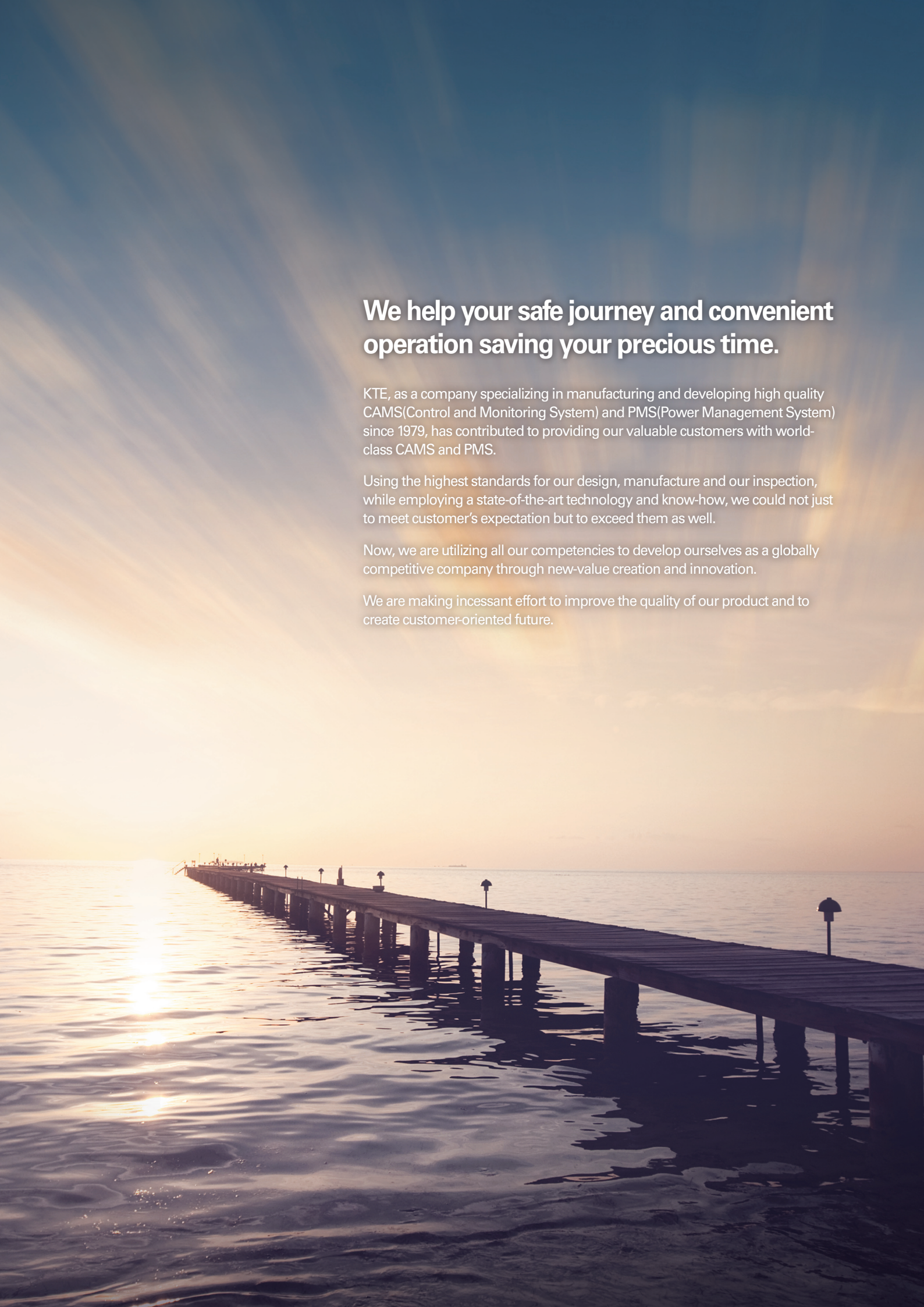


We help your safe journey and convenient operation saving your precious time.

KTE, as a company specializing in manufacturing and developing high quality CAMS(Control and Monitoring System) and PMS(Power Management System) since 1979, has contributed to providing our valuable customers with world-class CAMS and PMS.

Using the highest standards for our design, manufacture and our inspection, while employing a state-of-the-art technology and know-how, we could not just to meet customer's expectation but to exceed them as well.

Now, we are utilizing all our competencies to develop ourselves as a globally competitive company through new-value creation and innovation.

We are making incessant effort to improve the quality of our product and to create customer-oriented future.

UNOSYS-**C100**

Control and Monitoring System

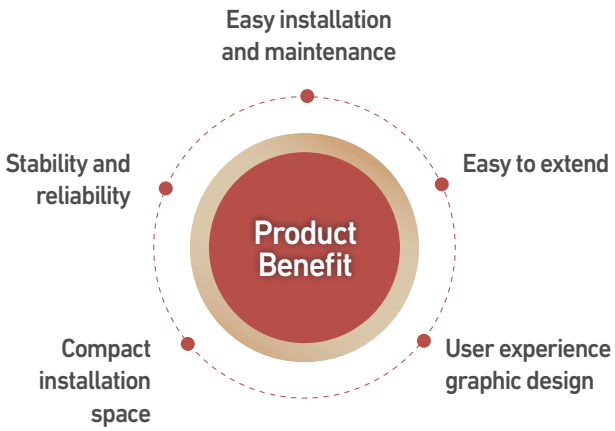
CONTROL AND MONITORING SYSTEM UNOSYS-C100

UNOSYS-C100 is a control and monitoring system. This system is designed by standard modules communicating on serial instrument net, local area network, and local operator network. It is adaptable for all types of ships.

The main purpose of the system is to give ship's officers all the basic alarms and status information they require in order to maintain safe and efficient operation of the machinery. The system is dual in structure for the sake of stability and reliance, and designed for user to operate easily.

The system is designed to meet the classification society's requirements. The design conforms to all rules and regulations, and all modules are type approved.

Product Benefit



- User-friendly graphic interface
- Support the interface for other shipboard system using serial line and Ethernet line.
- Cost effective solutions that can be tailored to owner requirements
- Stability and reliability
  - Distributed control process and I/O acquisition and external communication.
  - Support the redundant process network and CPU
- Installation and commissioning
  - Reduce the cabinet size using small size I/O module
  - Provide the easy maintenance
  - Easy Installation and extension

UNOSYS-C100 is to observe and control the conditions of all kinds of electrical or mechanical equipments at one place, which have been installed in various parts of ships, plants, buildings, etc.

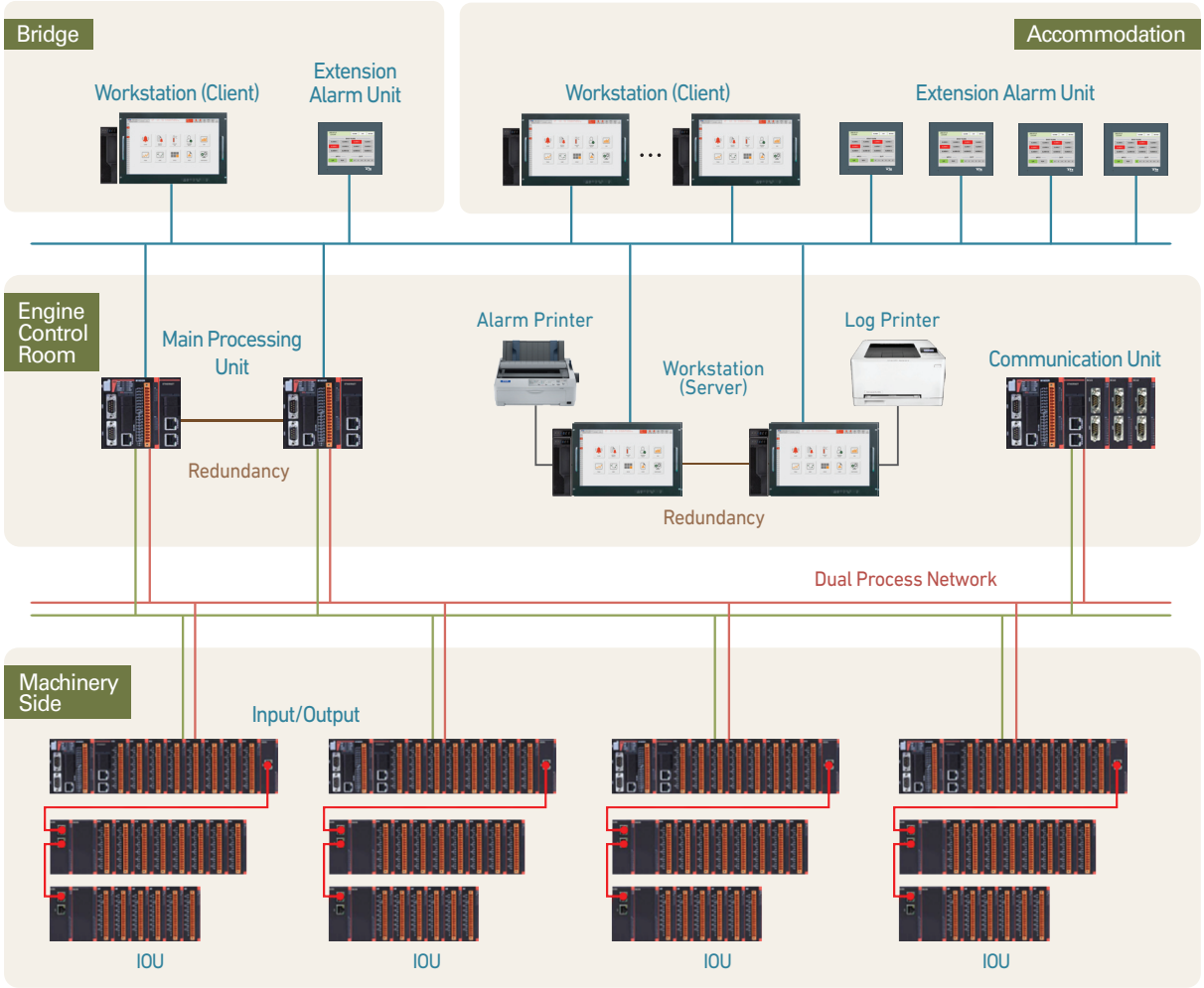
KTE's Control and Monitoring System, UNOSYS-C100, brings more benefits to shipbuilders as well as ship owners.




Feature

- **Various communication methods available**
  - RS-485/422, Ethernet
- **The effective use of database**
  - Input data from sensors
  - Running conditions of each equipment
  - System Information
- **Better designed and easy to use**
  - High resolution graphic display
  - Dynamic graphic interface

System Overview I



System Overview II

"Our model is completely newly designed product based on our vast experience and achievements."

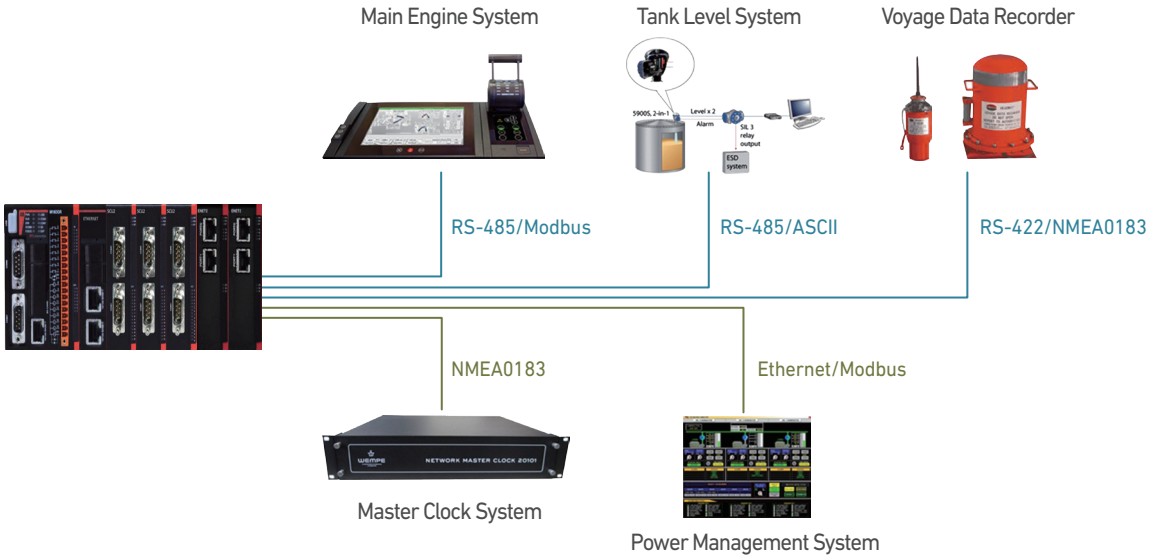
Day Mode

Night Mode

Graphic interface

UNOSYS-C100 supports user-friendly graphic interface.

- Alarm display shows the alarm list and control for each alarm setting parameter.
- Mimic display shows the P&ID for each ship, and apply owner request
- Trend display shows log data for analog and digital data, and support easy control for trend.
- View display supports text box view, gauge view and bar view for user selected alarm point.
- Display mode supports day mode and night mode.



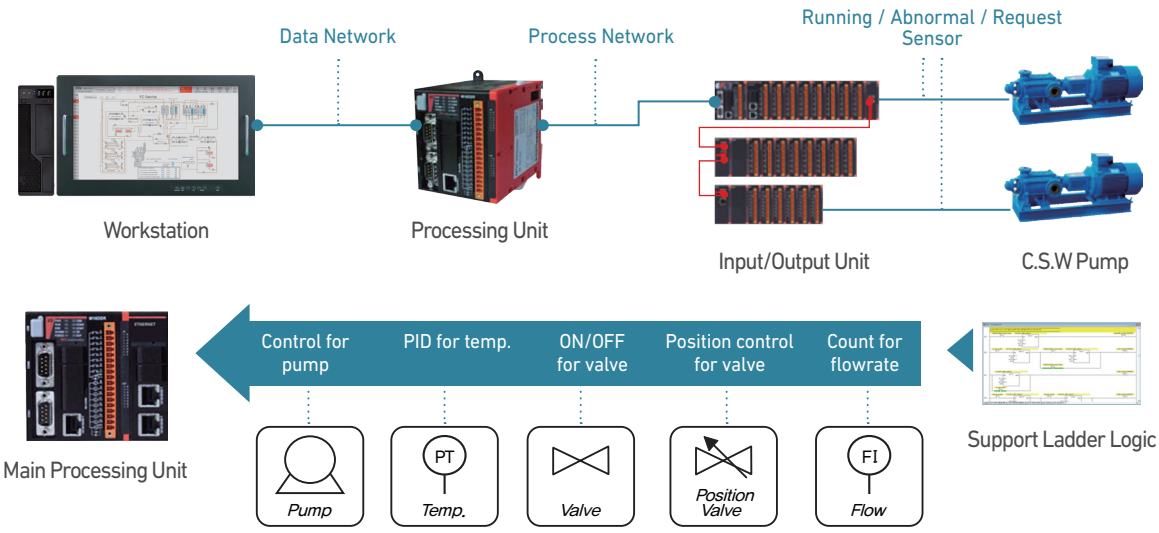
Support interface for various external unit

UNOSYS-C100 supports interface with various equipment.

- RS-485 and RS-422, RS-232.
- Industrial Ethernet (10 ... 100 Mbps.)
- Communication protocol supports MODBUS-RTU, NMEA-0183 (only serial), MODBUS-TCP and User defined protocol (only serial).

Data flow for pump control

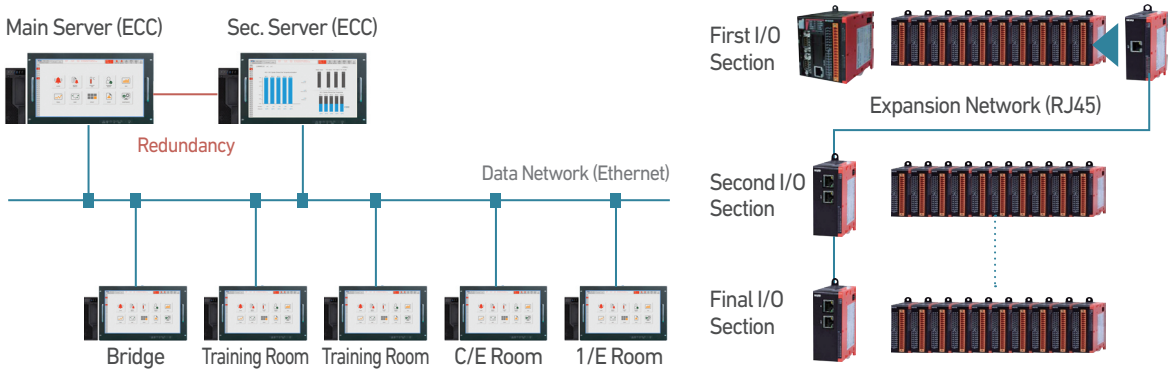
- Auto control by system
- Manual control by operator
- Processing for pump (exchage time, request time, etc..)
- Input for pump run / abnormal
- Output for start / stop pump



Support control for various device

UNOSYS-C100 supports control for various device using ladder logic (IEC-61131-3).

- Two/three stand-by pump control
- PID for temperature.
- Proportional valve control.
- Count for flow rate (high-speed pulse signal)



System Configuration using Ethernet network

The data network is used single Ethernet line for communication between the Workstation and Processing Unit (Main and Secondary) and EAU (Extension Alarm Unit) and printer.

- EAUs are communicated with Processing Unit for alarm data and Watch mode data.
- Server workstations are communicated with Processing Unit for alarm process and control data and I/O data.
- Client workstations are communicated with Server workstation.

The processing network is used redundant Ethernet line for communication between the I/O Unit and Processing Unit and Communication Unit.

Main Layout

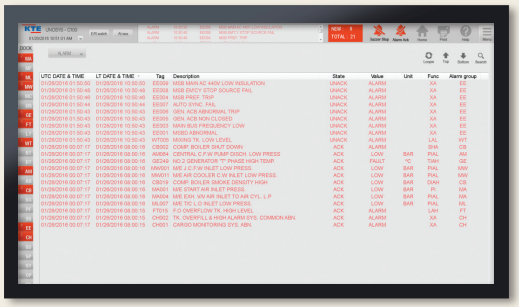
Alarm Display

"Alarm Display" displays all alarm information processed by the system on the monitor. This is composed of the list of alarm status, alarm page button, the list of recent alarms, buzzer stop button, alarm acknowledge button, alarm history button, and so on.

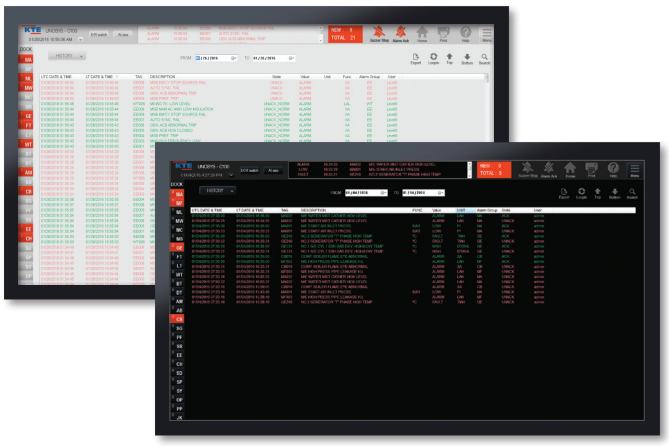
If an alarm arises, a buzzer sounds and the following information of channel is displayed on the monitor

Alarm

Alarm Navigation



- UTC DATE & TIME
- LT DATE & TINE
- TAG (Group Number)
- DESCRIPTION
- STATE
- VALUE
- UNIT
- FUNC. (Function)
- ALARM GROUP



History Display

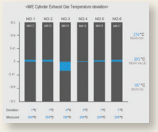
Alarm history is a record for all alarms that have arisen since the system had started to operate. In addition, this includes the record for the release of the alarm.

So, user can know when the alarm has released as well as which type of alarm or when the alarm has arisen. The construction of alarm history display is similar with that of alarm display. Alarm history can display up to 30,000 history of alarms at the same time.

Exhaust Gas Display

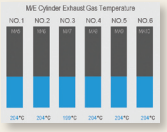
Exhaust gas display shows the temperature of the gas exhausted from the cylinder of main engine, in the form of bar graph. It includes the current temperature, the mean, the deviation for the mean, etc.

The main engine is selected at the top of the monitor, and the temperature of the exhaust gas for the selected main engine is displayed. The number of the main engine to be selected is changeable according to the system.



Deviation Display

Turbocharger Status Display

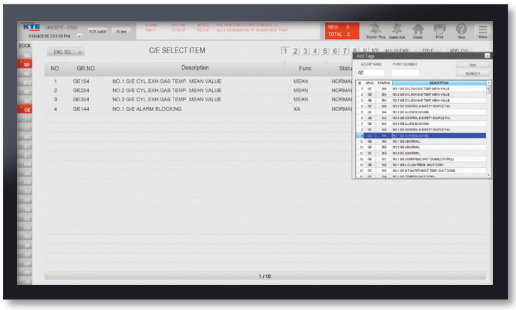


Exhaust Gas Display

Engineer Select Display

Engineer select display is similar to group display in the function and the construction. But on engineer select display, user can group only the channels which he verifies frequently. In addition, user can create a new group, and add/delete the channels in the group.

States	Color
NORMAL STATE	GREEN
ALARM STATE	RED
INHIBIT	PURPLE
TAGOUT	BLUE
SYSTEM FAULT	VIOLET



On engineer select display, user can create maximum 10 groups, and modify the engineer's name freely. 21 channels for a group can be added or deleted.

View Display

View Display shows the value of the channel in the form of a meter or bar graph, of which the type is analog or Exhaust Gas.

Because it is possible to construct pages freely according to the item or alarm group, it is convenient to compare and analyze various channels.

The display method of each page is divided into meter mode and bar graph mode. View Display is composed of 10 pages, similarly to the Engineer Select Display, and each page is able to include up to 10 channels.

Trend Display

Trend Display shows the trend in the change of the data acquired from the sensors. The trend is shown in the graphic form according to time, and useful in analyzing the past data.

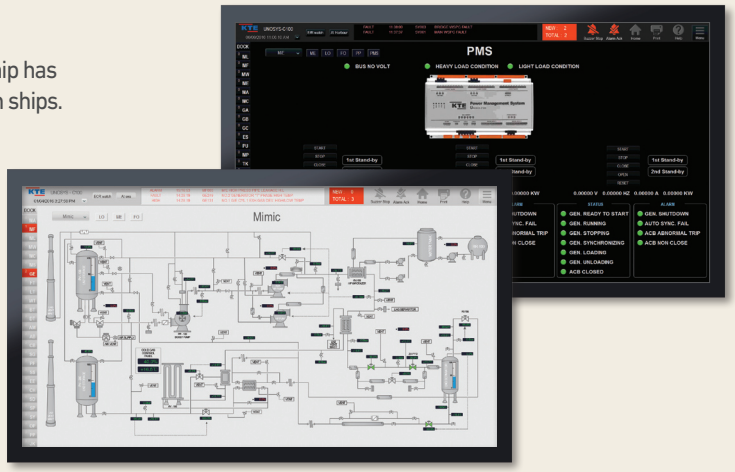
Trend Display is divided into text part and graphic part. At text part, the following items of the selected channel are displayed, and the color of the text is defined according to the channel.

- GROUP NO.
- DESCRIPTION
- FUNCTION
- VALUE
- UNIT
- LIMIT

At graphic part, the data of the channel shown at the upper text part is displayed in the graphic form according to time. On the graph, there is movable scroll bar shown in dotted line. And the figure to indicate the data designated by the scroll bar is displayed at the upper part of the graph. Each channel might be classified according to the color, and all colors of the text part, the figure, and the graph are the same.

MIMIC Display

Mimic reflects each ship' s information. Because each ship has different information, so this page can be diferred to each ships.



Divide into two parts.

1. Engine Information Display
2. Pipeline Diagram Display

※This mimic can be changed according to ship scircumstance

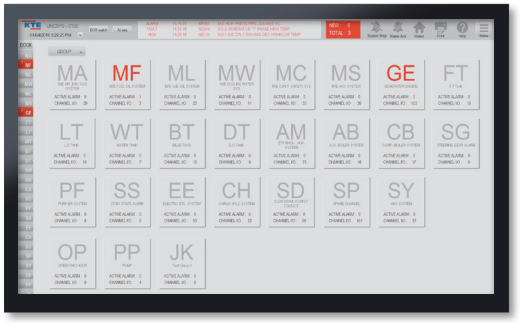
Group Display

On group display, it is possible to group the channels which have similar properties into one group. The following table shows a tag and description of each group.

The total numbers of the channels and alarms of the system are indicated on group display. In addition, the number of alarms which have arisen in the group, as well as that of the channels included in the group, is also indicated. Therefore, it is possible to verify in which channel alarms have occurred the most.

	Group Tag	Description
1	MC	M/E CONTROL & SAFETY SYSTEM
2	ML	M/E LUB OIL SYSTEM
3	MF	M/E FUEL OIL SYSTEM
4	MW	M/E WATER SYSTEM
5	MA	M/E AIR SYSTEM
6	MX	M/E EXH. GAS SYSTEM
7	AI	BOW THRUSTER CONTROL
8	SG	STEERING GEAR ALARM
9	EL	ELECTRIC ALARM MONITORING SYSTEM
10	ST	ST' BY START ALARM
11	GE	GENERATOR ENGINE
12	BC	BOILER SYSTEM
13	PF	PURIFIER SYSTEM
14	AM	E/R MACH. & AUX. SYSTEM
15	FT	E/R F.O/D.O TANK
16	BL	BILGE TANK
17	LT	L.O/SLUDGE TANK
18	WT	WATER TANK
19	CH	C/H & SHIP SERVICE
20	RI	RUN INDICATION
21	SY	AMS SYSTEM

※This group policy can be changed according to ship' s circumstance.

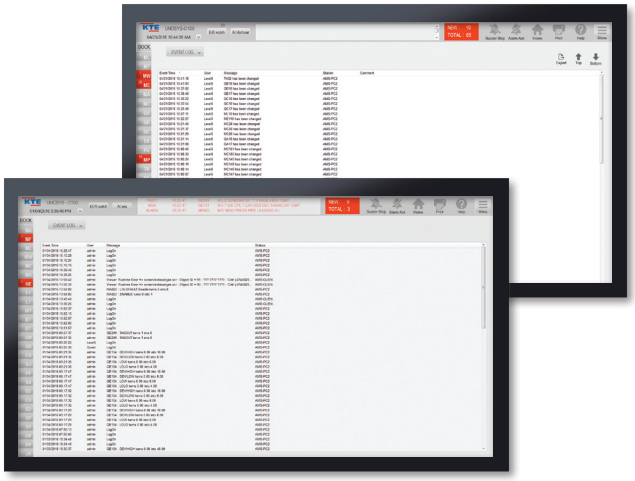


The description part of the group where alarm has arisen is indicated by red, those of the other groups are indicated with grey. When an alarm arises under the operation of group display, the number of the alarm for the appropriate group is increased.

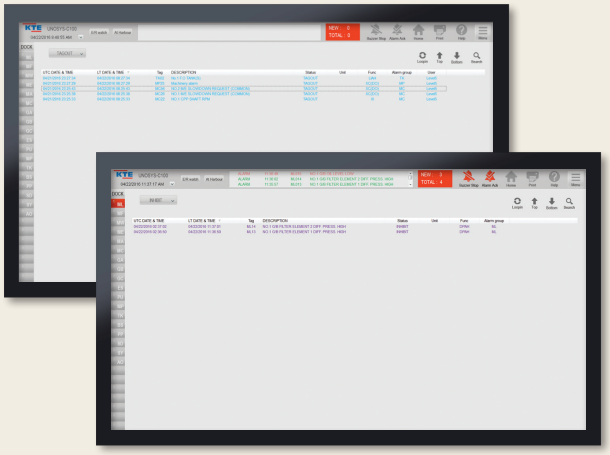
Event Log

- The Event history view presents all events logged in the system.
  Such events as:
  - Process events: start, stop, open, closed, connect, disconnect etc.
  - Time change events
  - Tag parameter change events
  - User logon/logoff events

- View columns
  - Event Time : The time stamp of the alarm (local time).
  - User : User who create alarm
  - Description : Detailed description of the alarm tag.
  - Station : Computer name that Operating is used.



Maintenance

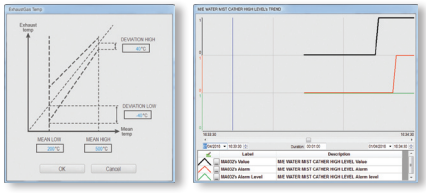


Maintenance Display allows modifying the configuration of the system, e.g. date & time, password, database, and the information of the vessel.

- Group Info
  Operator can modify information that is related to Group.
- Tagout
  To avoid unnecessary alarms, some alarms will be inhibited when an Operator want to hide. The tagout tags view is used to display these alarms.
- Inhibit
  To avoid unnecessary alarms, some alarms are conditional and will be inhibited when a specified condition is present. The Inhibit tags view is used to display these alarms.

Pop Up

In Pop up display of Each Signals user can confirm and modify the information of each channel. The items which can be displayed and modified are dependent upon the type of the channel.



Processing **Units**

UNOSYS-C100 CONTROL AND MONITORING SYSTEM

Programmable Logic Controller(PLC), installed in Engine Control Room and Engine Room, handles each type of signal from sensors with which have been equipped such devices of the vessel as an engine, generator, tank, etc., and transmits the data to HMI. In addition, it has self-diagnosis function, so that user can detect the problems and maintain the system easily.

Main Processing Unit

Digital Input / Output

Expansion Input / Output

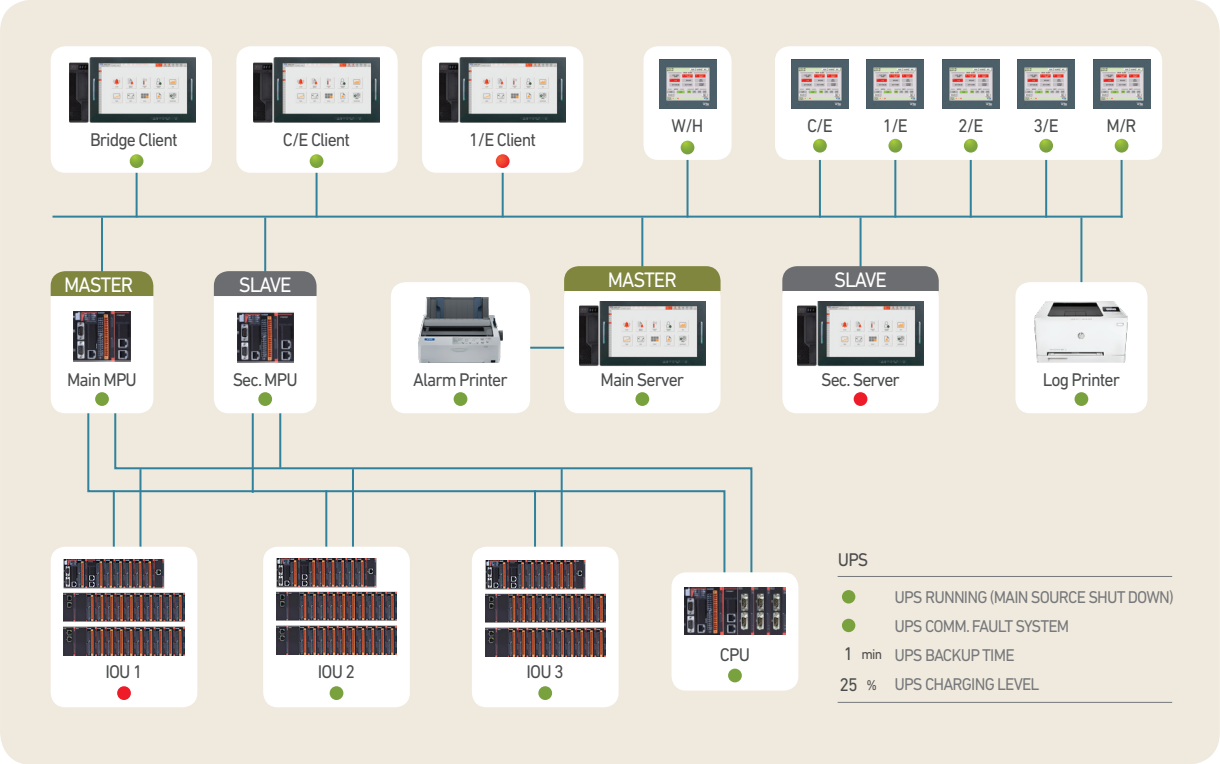
Serial Communication Module

Analog Input / Output

RTD Module

Troubles and Correcting Measurement

- **Failure detection and Identification Feature (Auto or Manual)**
  User can confirm in System mimic. (Main -> Maintenance -> System)
  If failure occurs, lamp is changed green to red. And alarm activates.



- **Redundancy or reversionary mode**
  UNOSYS-C100 is configured to be redundancy. So if one PC is broken down, another computer starts replacing broken PC. Each other device checks others device status. When problem occurs, automatically change connection to another device. So don't need to have redundancy mode or reversionary mode.

- **Trouble Correcting Procedure**
  1. Workstation system
  2. Processing units
  3. EAU

Extension Alarm Unit (EAU)

Extension Alarm Unit (EAU) displays remote alarm state which occurs on the ship, present watch mode, duty engineer, and a calling state of duty engineer from Engine Control Room (ECR) and Bridge. According to the positions where it is installed, it is classified as Bridge Extension Alarm Unit (B-EAU) installed at a bridge and Cabin Extension Alarm Unit(C-EAU) installed at a cabin or public areas.

Function

This unit supports various screen. Alarm display, group alarm display, duty section & watch mode display, specific alarm display (such as dead man alarm, unit failure alarm).

H/W	Size 5.7 (Inch)
Terminal type	Touchscreen display
Display type	Backlight color TFT LCD
Supply voltage	24 V DC

UNOSYS-**P100**

Power Management System

UNOSYS-P100 Power Management System is a Digital signal controller for switchboards, generators and circuit breakers control. The system performs normal functions necessary to manage each generator in order to balance power generations and power consumptions. The PMS is interfaced with the main switchboards through hardwire (digital inputs or outputs and analog inputs) and interfaced with a external system through serial communication link or Ethernet.

Product Benefit

- Fast load sharing
- Simple configuration
- Reliability
- Redundancy communication
- Easy interface
- Easy setting

Technical Data

Size	Width Height Depth	293.5 (mm) 189 (mm) 72.5 (mm)
Weight		2.58 (kg)
Input Power		DC 24V
Digital Input		Photo Isolated Input 28 point
Digital Output		Relay Output 30 point
Analog Input		3 Phase Bus Voltage Input (450VAC) 3 Phase Gen. Voltage Input (450VAC) 3 Phase Gen. Current Input (5A) 4~20mA Input (2 point)
Analog Output		4~20mA Output (1 point)
Communication		CAN (2 channels), RS 422/485

Power Management Function

- **Load dependent start/stop**
  Auto parallel running by heavy load
  Auto parallel running cancellation by light load

- **Auto load sharing**
  Proportional load sharing (Default)
  Optimum load sharing
  Fixed load sharing

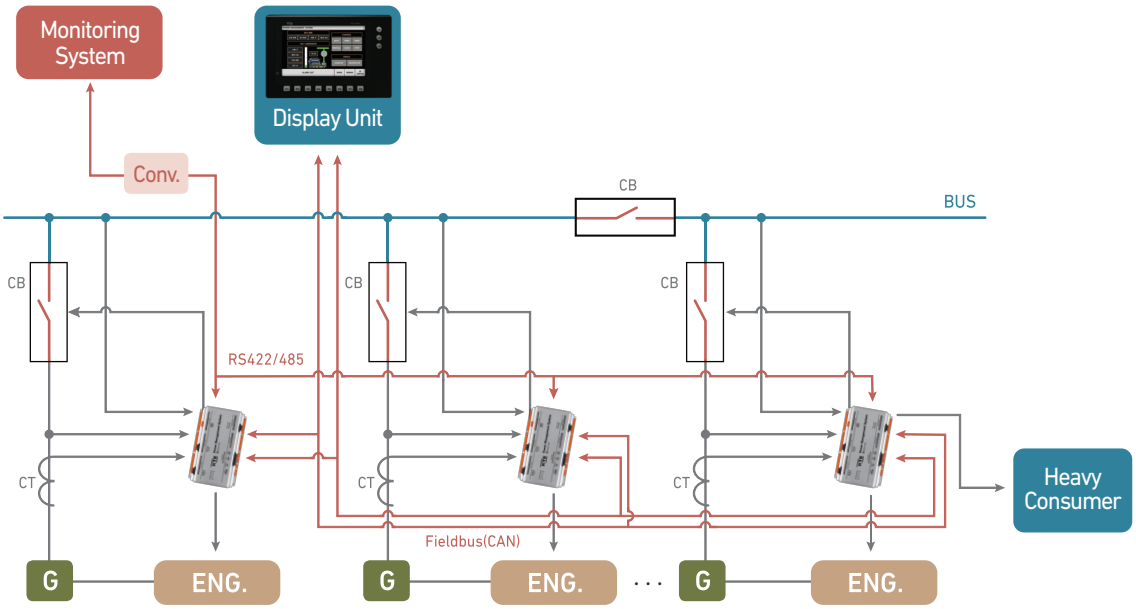
- **Power control**
  Bus frequency control
  Load sharing control
  Active/Reactive power control
  Power factor control

- **Standby generator start/stop**
  Generator start by heavy consumer handling
  Standby generator start following alarm
  Auto changeover by bus abnormal

- **Bus tie control**
  Bus tie open according to ACB abnormal trip
  Bus tie recovery according to power restoration

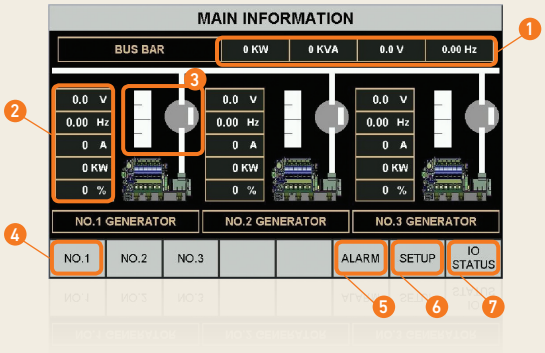
- **Generator protection**
  Over current protection
  Reverse power protection
  Short circuit protection
  Preferential trip

System Overview



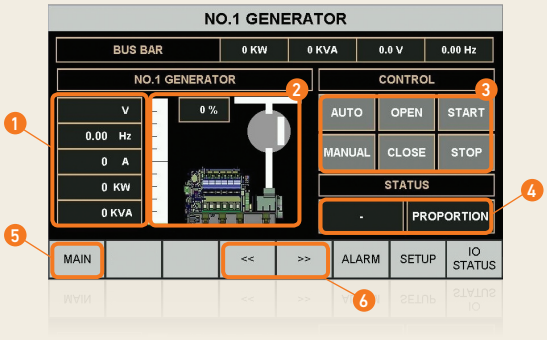
Display Configuration

Initial screen of PMS display unit



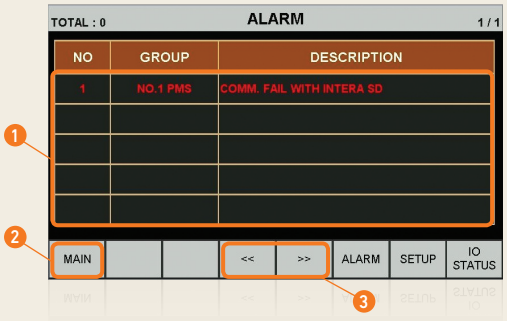
1. **Condition of bus bar** - Active Power, Apparent Power, Voltage, Frequency
2. **Condition of generator** - Voltage, Frequency, Current, Active Power, Percentage of power
3. **Display of condition** - Generator on/off , ACB close/open , Bus bar, Percentage of power
4. **Detail display** - Details of the selected generator
5. **Alarm** - When alarm is occured, displayed as red. operator can know in detail when selecting.
6. **Setup** - Operator can set the parameter when selecting.
7. **I/O status** - Indicate that details of the input/output status when selecting.

Detail display



1. **Condition of generator** - Voltage, Frequency, Current, Active Power, Apparent Power
2. **Display of condition** - Generator on/off , ACB close/open , Bus bar, Percentage of power
3. **Control button** - In auto mode, Operator can control the generator.
4. **Status** - Indicate that generator standby condition and load sharing condition.
5. **Main** - Change back to the initial screen.
6. **Change screen** - Operator can see status of other generator.

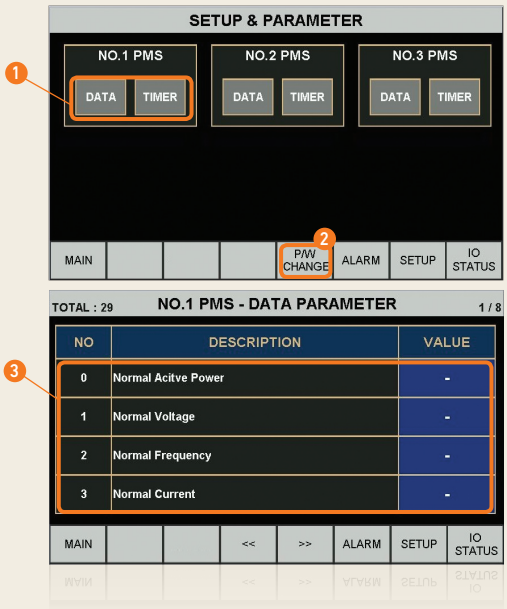
Alarm display



1. **Alarm list** - Indicate that group and description of alarm has occurred.
2. **Main** - Change back to the initial screen.
3. **Change screen** - Operator can see status of other alarm.

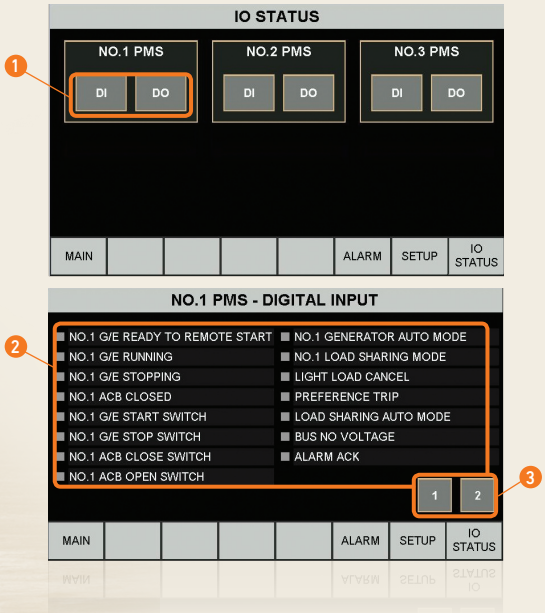
Setup

1. Type of parameter - Operator can change the data and time parameters.
2. Password change - When first time operator change the parameters, must enter the password. And the password can change in this section.
3. Parameter list - Operator can change the parameter in value section.



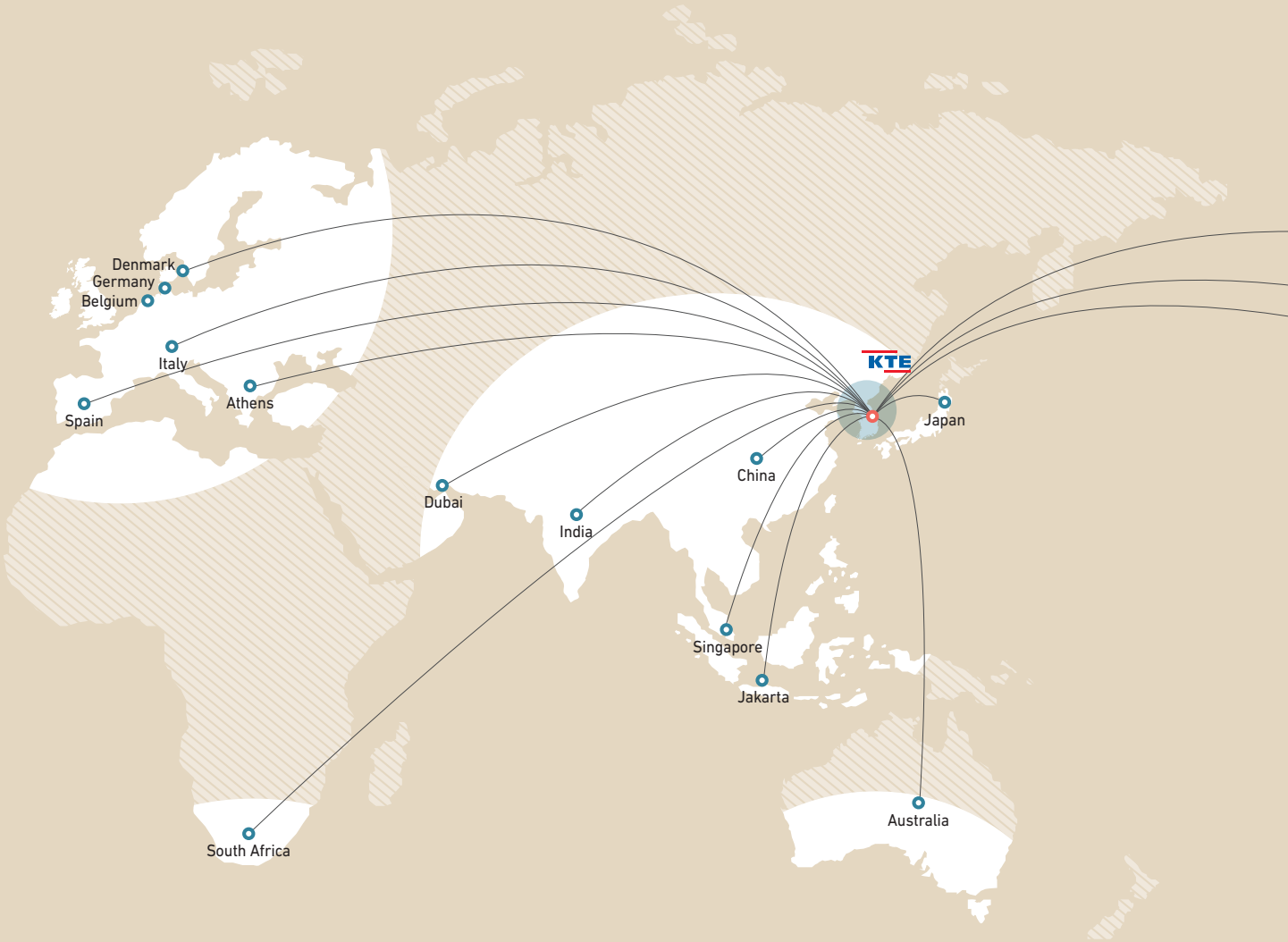
I/O status

1. DI / DO - Operator can view DI or DO list.
2. DI or DO list - Displaying in the applicable list as green
3. Select page - Operator can select the page to see the other list.



Service Network

Customers are recommended to contact KTE first.



● Electrical service available ● Mechanical service available ● Electrical & Mechanical service available

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FAX : +30-210-9532 355
http://www.franman.gr

Australia
● Read's Electric Company Pty. Ltd.
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FAX : +61-8-9335-9465
www.Readselectric.com

● H.I. Fraser Pty. Ltd.
TEL : +61-2-9970-7322
FAX : +61-2-9913-7207
www.hifraser.com

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FAX : +32-3-542-3035
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FAX : +55-13-3226-4680
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China
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FAX : +86-511-8888-2561
www.saiernico.com

● Shanghai NSE Co.,Ltd.
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FAX : +86-21-5858-4332
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● Shanghai Marine diesel engine research institute
TEL : +86-21-3131-0307
FAX : +86-21-5171-1737
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● Taiyo Electric Co.,Ltd. Shanghai Liaison Office
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FAX : +86-21-62346939
http://www.taiyo-electric.co.jp

● Zhejiang Xin Ya Electric Development Co.,Ltd.
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FAX : +86-58-0309-1157
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● Karle & Fuhrmann
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* I.S.E.S(International Electrical & Engineering Services Association) network available.

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FAX : +81-86-279-3595
http://www.nakashima.co.jp

● Taiyo Electric Co.,Ltd.
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FAX : +03-3292-7002
http://www.taiyo-electric.co.jp

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● Taiyo Electric Co.,Ltd.
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● Talleres Industriales SA
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www.talleresindustriales.com

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● Cyclect Electrical Engineering PTE Ltd.
TEL : +65-6863-6877 / 9003-6992 / 9003-9039 (24/7)
FAX : +65-6863-6260
www.cyclect.com.sg

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● L.H. Marthinusen Cape Town
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● L.H. Marthinusen Engineering Services
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United States

● Seaboard Control Inc.
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