Marine & Offshore Solution | Integrated Automation System SSAS-Master

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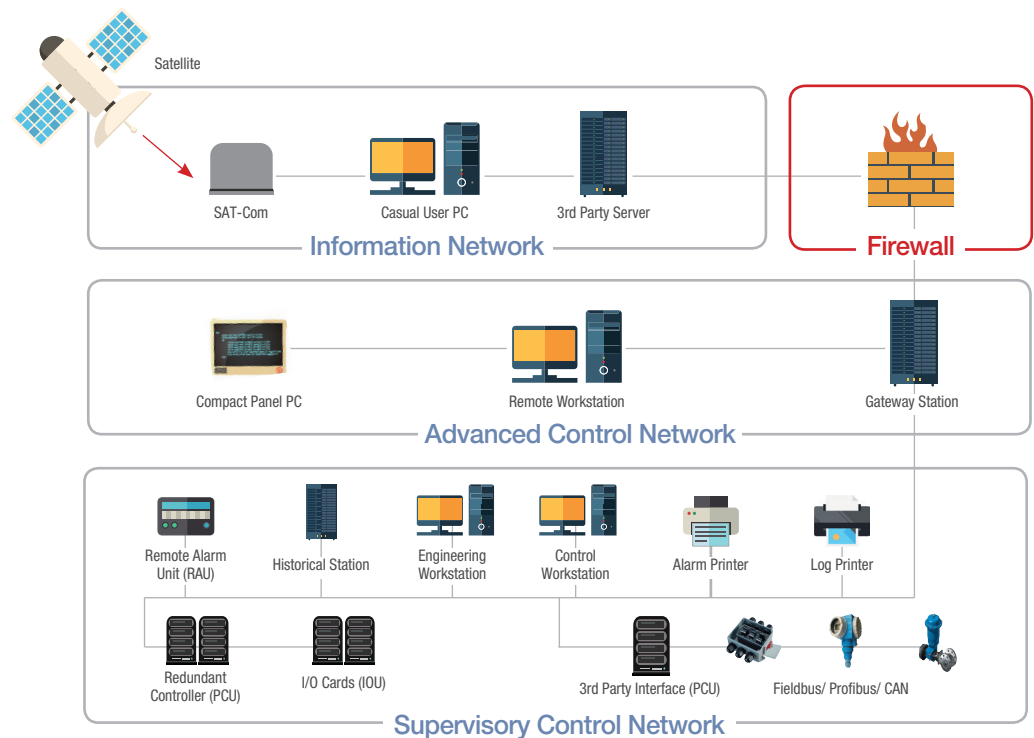# [Envisioning Tomorrow's Technology Today]

Integrated Automation System

SSAS-Master

SSAS-Master is perfectly suited to the Marine and Offshore requiring high reliability. Its compact hardware & outstanding software units contribute intuitive operating and efficient problem solving.

Configuration

Satellite

SAT-Com
Casual User PC
3rd Party Server

Information Network

Firewall

Compact Panel PC
Remote Workstation
Gateway Station

Advanced Control Network

Remote Alarm Unit (RAU)
Historical Station
Engineering Workstation
Control Workstation
Alarm Printer
Log Printer

Redundant Controller (PCU)
I/O Cards (IOU)
3rd Party Interface (PCU)
Fieldbus/ Profibus/ CAN

Supervisory Control Network

We developed SSAS-Master from its accumulated knowledge and experience with shipbuilding, e.g., merchant vessels, LNGC, LNG-FSRU, Drillship. SSAS-Master meets the customer's needs with reliable, powerful and proven system performance, efficient operation and easy maintenance. SSAS-Master is so innovatively designed with redundant system from the high-leveled workstation to the low-leveled I/O card that has no trouble with monitoring and controlling any tiny disorder occurring.
It is absolutely adjusted from commercial vessels to luxurious large Marine and Offshore which need high reliability like LNGC, LNG-FSRU, Drillship.

Design Awards

Good Design Awards
Austrailian Design Mark
IF Awards
Reddot Awards

Certification

DNV·GL
CCS
RMS
Korean Register
Lloyd's Register
ABS
Bureau Veritas
Nippon Kaiji Kyokai

SSAS-Master

The outstanding performances of the SSAS-Master make it widely applicable to all marine projects from low complexity alarm and highly integrated alarm & monitoring systems to integrated automation system with advanced process control.

Why SSAS-Master?

High Performance & Reliable Component
· 32bit embedded microprocessor with real time O/S
· Compact and uniformed hardware structure of modules installed on DIN rail
· Surge and short circuit protected I/O cards
· Optimized DBMS provides robustness and scalability on the system configuration and history data

Excellent Integration & Interface
· Easy extension of applying different equipment with standard interface protocol (Profibus, CANOpen, DeviceNet, Modbus, NMEA0183, OPC, ODBC, XML, etc.)
· Various reports and simple user-defined-report generating function

Advanced IT
· Support new technology for customer's needs

Powerful Reliability
· Fault tolerant configuration of process control and database
· Optical isolated fault tolerant control network and I/O network
· Simple replacement of faulty hardware without turning off the system for continuous operation and easy maintenance

Supplies Brand-New & Advanced Software
· Fully implementing XML schema based on IEC61131-6(TC6) PLC open control language
· Interoperable with other applicable software including internal controls (Flash Animation, Active-X control, AutoCAD, MS-Word, Adobe PDF, etc.)
· Easy web-based monitoring and control user interface with security

What can we offer?

Machinery System
· Machinery Alarm Monitoring System
· Power Management System
· Pump & Valve Remote Control System
· Oil Transfer System
· Auxiliary Control System

Cargo & Ballast System
· Cargo Alarm Monitoring System
· Loading & Unloading Sequence Control System
· Ballast & De-ballast Sequence Control System
· Pump & Valve Remote Control System
· Pressurization & Insulation Space Monitoring System

Gas Management System
· Stripping/Spray Pump Control System
· Compressor/Heater/ Vaporizer Control
· Re-liquefaction Plant Control & Monitoring
· Gas Combustion Unit Control
· Re-gasification Control & Monitoring System

Oil & Gas Processing System
· Separation System (Oil, Gas and Water)
· Pre-treatment System
· De-hydration System
· Gas Compression & Transfer System
· Flare System

Fuel Gas Supply System
· HP Pump Control
· Glycol Water Heating Control
· Load Control
· Cool Down Control

Interface
· Custody Transfer System
· Loading Computer
· Fire/Gas Detection System
· IGG/N2 Generator
· Emergency Shutdown System
· Tank Level Gauging System
· Propulsion Control System
· Integrated Navigation System
· Voyage Data Recorder
· Ship Performance Monitor
· Ship Management System
· Extension Alarm System

Features & Application

SSAS-Master IS DESIGNED TO MAXIMIZE OUR CUSTOMERS' PROFITABILITY

SSAS-Master is specifically designed to meet the needs of the next generation of high-tech Marine and Offshore. It employs the world's latest cutting-edge integrated automation systems, along with a high quality GUI, providing optimal monitoring and control of onboard equipment.
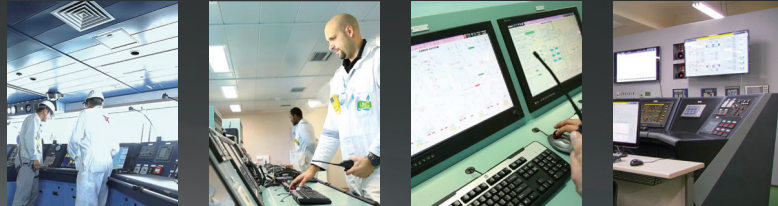
Hardware

Main Units

· Simplified and well-organized network configuration
· Compact and uniformed hardware structure of units installed on DIN rail
· Simple replacement of faulty hardware without turning off the system for continuous operation and easy maintenance

SMPCU (Process Control Unit)

· 32bit Embedded Microprocessor
· Fault Tolerant Ethernet Controller (2Ch. Redundancy)
· Optical Isolated Fault Tolerant Communication
  (Profibus-DP, 2Ch. Redundancy)
· Max. 8 Optical Isolated Serial Communication Channel
  (RS485/422 Selectable)
· Add-in 1 Interface Modules (Option)

SMSRSPC-X32 and IO Modules
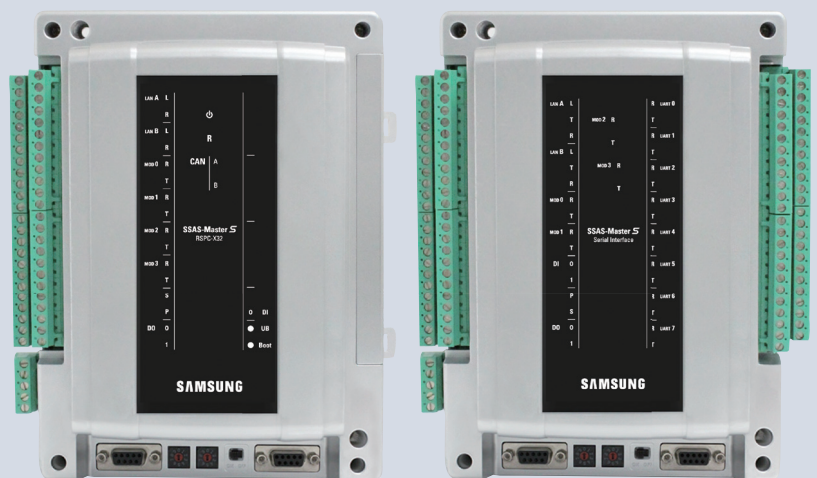
Redundant System Process Controller 32bit

· 32bit Embedded Microprocessor
· Fault Tolerant Ethernet Controller
  (2Ch. Redundancy)
· Fault Tolerant CAN Communication
· Max. 4 Optical Isolated Serial Communication
  Channel (RS485/422 Selectable)

IO Modules

· Fault Tolerant CAN Communication with
  SMSRSPC-X32

Operation Condition

· Operating temperature : -15℃ ~ +70℃ / Maximum
  humidity : 95% (Non-condensed)
· Storage temperature : -30℃ ~ +80℃ /
  Supply voltage : 24V DC

SSAS-Master

Specification

Module	SMPCU
Power	24VDC
Operating Temp.	-15°C ~ +70°C (95% Humidity)
Size	174.5 x 300.7 x 123.6 (mm)
Power Consumption	17W
External Com. Port	Heart Bit for redundancy PCU 2 Lan Port (100Mbps) 1 Backup Lan Port (100Mbps) 2 Profibus Port (Add SMPB-2) 8 Serial Port (Add SMSC-8) 1 CAN Port & Backup (Add SMCAN-2)
Add Com. Card Slot	3 (Fixed 1 SMSC-8 slot)
Add I/O Card Slot	-

Module	SMPB-2	SMCAN-2	SMMB-8	IOGW
Power	5VDC, 3.3VDC, 2.5VDC			
Operating Temp.	-15°C ~ +70°C (95% Humidity)			
Size	112 x 90.4 x 28.8 (mm)			112.8 x 90.4 x 24.2 (mm)
Power Consumption	4.37W		6W	3.12W
External Com. Port	2 Profibus Channel	1 CAN Channel 1 Backup Channel (RS422)	8 Serial Channel (RS485/422)	1 Profibus Channel 1 CAN Channel
Baudrate	1.5Mbps (Default)	250Kbps (Default)	Standard Baudrate Selectable (Need Initialize)	500Kbps (Default)

Module	SMDI-8,12	SMDO-8,12	SMAIC-8,12	SMAOC-8,12	SMRTD-8	SMTC-8	SMPI-8
Power	5VDC, 2.5VDC (Main Power), Sensor Power 24VDC (DCDC Isolation)						
Operating Temp.	-15°C ~ +70°C (95% Humidity)						
Size	112.8x80.4x24.2 (mm)						
Power Consumption	3.6/5.0W	4.81/5.0W	8.0/11.3W	7.1/8.8W	3.84W	3.84W	3.6W
External Com. Port	2 CAN Channel						
Baudrate	500Kbps						
Channel Input/Output	Contact Input Voltage Input(DC24V)	Contact Output 8Ch : NO, NC 12Ch : NC	Current Input (Source or Sink) 1~23.7mA	Current Output 0~20mA	Default PT100 3Wire JPT100, NI100, NI120, CU10, PT50 Selectable	Default K 2Wire J,T,B,R,S,E,N,L,U, C,D Selectable Temp. Compensation Selectable (PT100)	Contact or Voltage (DC24V) Pulse Input Max 1KHz

Module	SMSRSPC-X32		SMSSI-8	
Power	24VDC		24VDC	
Operating Temp.	-15°C ~ +70°C (95% Humidity)		-15°C ~ +70°C (95% Humidity)	
Size	166x210x59.7 (mm)		178x210x59.7 (mm)	
Power Consumption	16W		12W	
External Com. Port	Heart Bit for redundancy PCU 2 Lan Port (10Mbps) 1 Can port, 1 Backup port 4 Serial Port		2 Lan Port (10Mbps) 12 Serial Port	

Module	SMSDI-16/32/48	SMSDO-16/32	SMSRDO-16/32	SMSAI-16/32	SMSAO-8/16	SMSRTD-16/32	SMSTC-8/16	SMSDIPI-24.8	SMSDI-32B
Power	24VDC								
Operating Temp.	-15°C ~ +70°C (95% Humidity)								
Size	178x210x59.7 (mm)								
Power Consumption	6W/10W/14W	Max.3W,Sensor 55W/Max. 3W,Sensor 35W	9W/15W	15W/25W	8W/11W	8W/11W	6W/8W	12W	10W
External Com. Port	2 DeviceNet port								
Baudrate	125Kbps, 250Kbps, 500Kbps (Selectable), Default 250Kbps								
Channel Input/Output	SMSDI-16/48 Contact Input SMSDI-32 Contact Input(0~23ch) Contact or Voltage(24v) Input(24~31ch)	Voltage Output	Contact Output (N.O/N.C)	Current Input (Source or Sink) 1~23.7mA	Current Output (Source) 0~20mA	Default PT100, 3Wire JPT100, NI100, NI120, CU10, PT50 Selectable	Default K 2Wire J,T,B,R,S,E,N,L,U, C,D Selectable Temp. Compensation Selectable (PT100)	Contact Input (0~23ch) Pulse [Contact or Voltage(24v)] Input(24~31ch)	Contact Input

Software
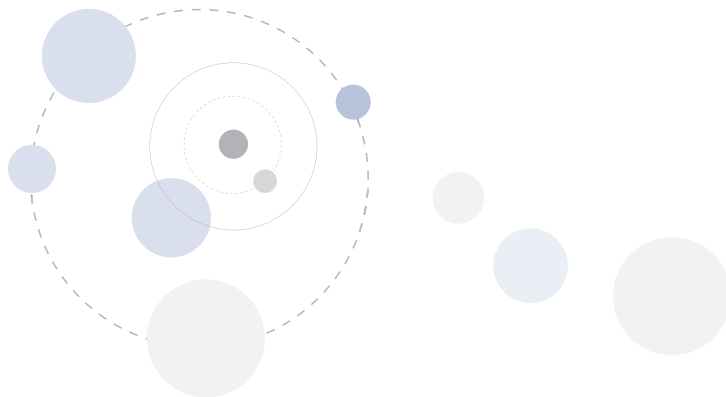
HMI (Human Machine Interface)

3rd Party Control

It's possible to import diverse 3rd party objects, e.g., PDF, media player, etc. which are feasible on MS Windows onto HMI and use them, thus they are applicable in various ways, for instance, providing with user manuals in PDF or Windows media file format and supplying with moving pictures.

Realistic User Interface

It's easy for operators to recognize the conditions of the corresponded equipment by using 3D flash animations presenting pump, value, etc. directly on the HMI.

User-friendly Graphic Image Library

· The various graphic images in the graphic library makes the quality of
HMI much more perfect and reduces the additional designing work simultaneously.

· The graphic image library is easily extendable henceforth.

Diverse trend charts supporting

· Realtime Trend
· Historical Trend
· Max. 12 pens
· Various Trend Chart
Curve charts, Step lines, Bar chart, 3D area charts , Marker shapes and styles, 3D bar charts, Area charts, Ribbon charts, etc.
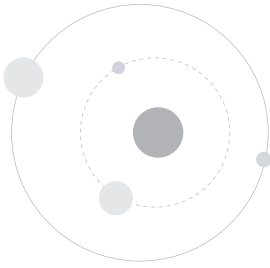· Trend Tooltip
  It is possible to check the current status and miscellaneous information through the Tooltip messages.
· Multi Pane
  Classifying panes by chart and printing them out is practicable at printing several charts.
· Data Grid

Diverse Gauge Images Support

It provides with over 90 gauge images which are designed completely.

Report Manager

· The report system is designed to easily meet with various ship owners requirements by adopting the user friendly XML and Excel COM technology.

· It creates reports from a list of templates. It maintains the report configuration for scheduled or interactive execution and various output forms.

Easy accessibility to each tag through the tag attribute viewer

· It's able to pop up the tag attribute on alarm summary, alarm history, HMI, etc.
· Easy accessibility to tag, logic information, trends and alarm information
· User-friendly overview of diverse operations in one screen

  - Tag realtime value, status
  - Set manual block
  - Set manual blocking time
  - Link to tag configuration
  - Link to real time trend
  - Link to historical trend
  - Link to alarm history
  - Link to event log history
  - Acknowledge alarm
  - Link to logic diagram

Multi screen arrangement

Monitoring and controlling at the same time are available by arranging multi HMI screens as tiles layout.
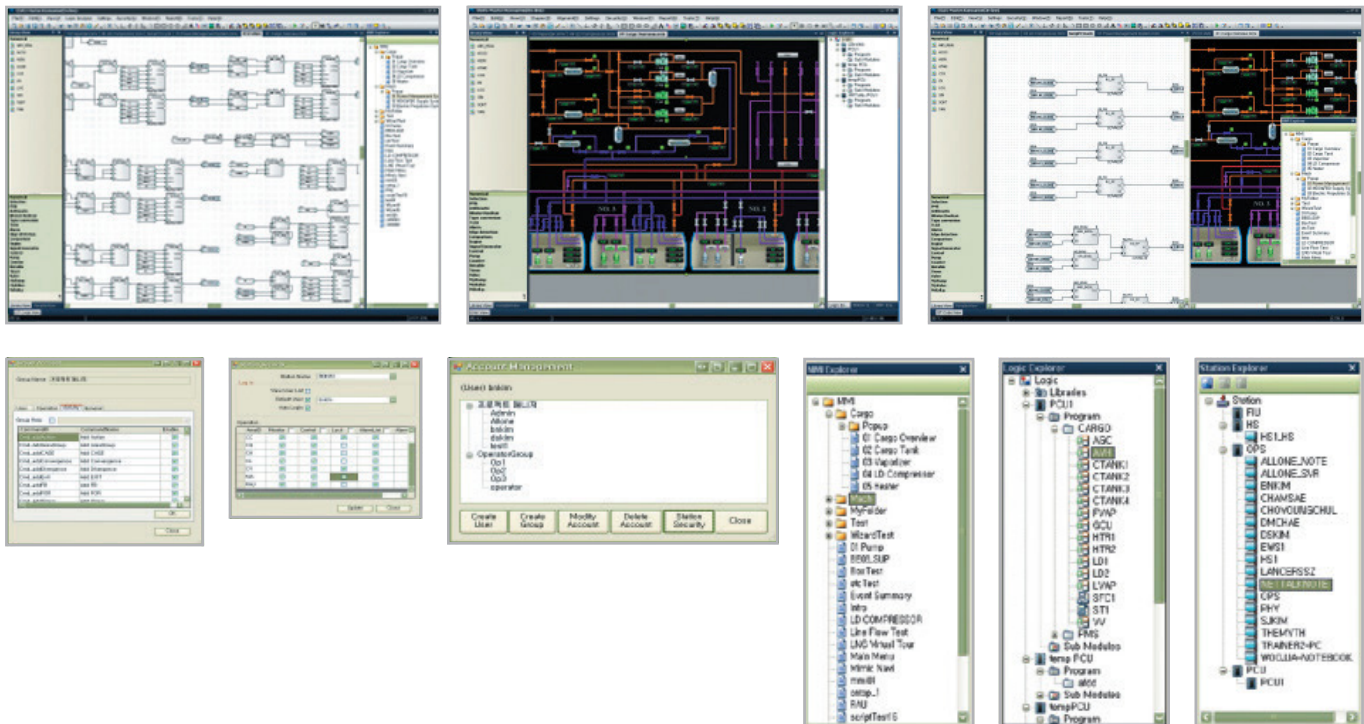
Web monitoring

Outstanding interface providing the same control environment using Internet Explorer

Operation & Engineering Tools

Graphic user interface

· Easy and intuitive user interface
· User-customized GUI which is flexible on any setting
· Consistently integrated engineering and operating environment
· Supporting various OS and hardware
· Reliable security mechanism with easy and flexible configuration

Windows 7 Windows 10

Logic Designer

· Easy and intuitive engineering environment
· Highly cooperative engineering environment via program configuration management
· Effective debugging environment by real-time monitoring and presenting each simulation-motions
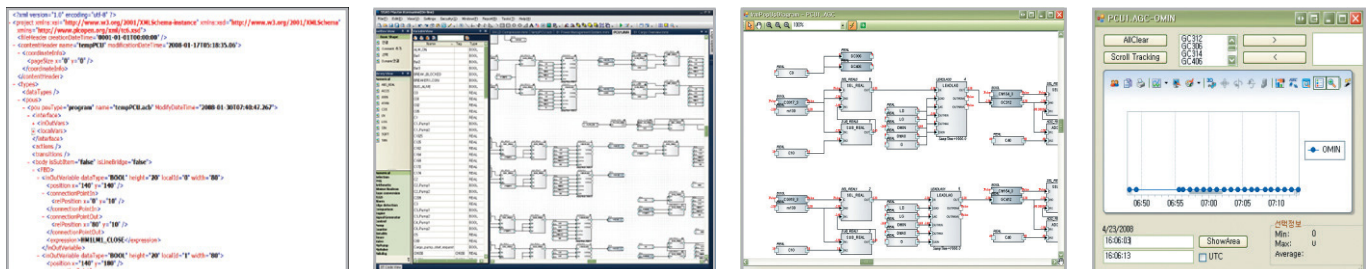
Energy Monitoring System

EN-Saver provides accurate ship performance evaluation tools to meet IMO's SEEMP(Ship Energy Management Plan) regulation.

Function
· Fuel oil consumption monitoring
· Emission monitoring : CO_2 / Nox, Sox, EEOI
· Propulsion status : Shaft power / Torque / RPM / Engine speed / Slip
· Propulsion / Energy flow analysis

| Fuel oil consumption monitoring | Emission monitoring | Overview Energy Flow | Propulsion energy loss analysis | Engine analysis |

Remote Maintenance System

SSAS-Master RMS provides total solution for remote access

. Easy web-based monitoring and control user interface with security
. Remote diagnostics and maintenance using satellite link in office
. The ability to improve performance or prevent problems
. Remote management of ship's navigational and operational data

Function
· On-line access from a shore office via internet
· Remote diagnostics via satellite
· Remote maintenance for S/W

Firewall

Internet   User Out of Office

Server
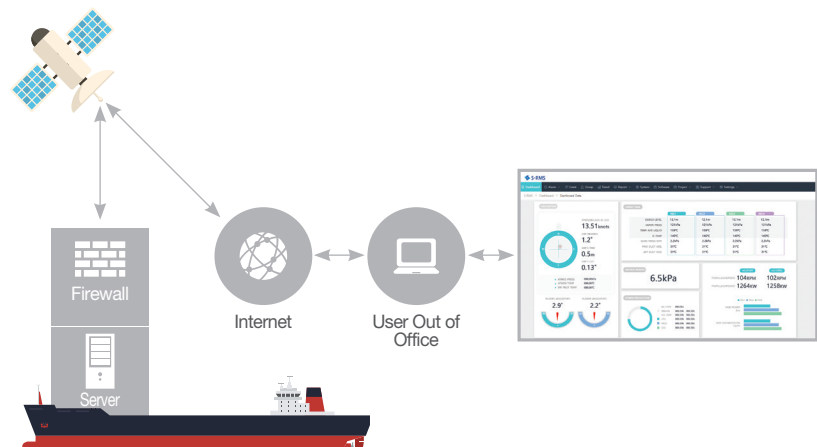
ASIA	
KOREA	DEX
KOREA	STK Engineering Co.,Ltd.
SINGAPORE	CWH Engineering Co.,Ltd.
SINGAPORE	Treys Pte Ltd.
CHINA	Seven Seas Electronic Co.,Ltd.(Shanghai)
CHINA	Seven Seas Electronic Co.,Ltd.(Qingdao)
CHINA	Seven Seas Electronic Co.,Ltd.(Dalian)
CHINA	SAMSUN Marine Technology (HK) Co.,Limited
INDIA	Navicom Technology International Pvt. Ltd.
TAIWAN	RESON Electronics (Kaohsiung)
TAIWAN	RESON Electronics (Taichung)

OCEANIA	
AUSTRALIA	NOVAMARINE

MIDDLE EAST	
U.A.E.	ELCOME INT.
U.A.E.	MARITRONICS

EUROPE	
GERMANY	MARE Systems
ITALY	MASTER CONTROL
U.K.	MJR Controls Ltd.

AMERICA	
USA	Forneer & MarineBCTEC
USA	Mackay Communications, Inc.

CERTRAL AMERICA	
PANAMA	PASRAS S.A.

SOUTH AMERICA	
BRAZIL	METALOCK Brazil Ltd.

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SOUTH AFRICA	SMD Telecommunications CC (Cape Townn)
SOUTH AFRICA	SMD Telecommunications CC (Durban)

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