



Mics KERYS

FEATURE MAN-MACHINE INTERFACE MODULARITY / PROTECTION MEASUREMENTS / CONTROL ARCHITECTURE COMMUNICATION PRODUCT PLUS POINTS

KER/GB-2004/1



Global Power
Solution™

MICS KERYS

Building on the experience acquired with the MICS Process I and II, of which over 10,000 units have been installed worldwide, SDMO has designed the Mics KERYS. This innovative, user-friendly and intuitive monitoring-control system offers a broad range of features. It is fitted as standard on all generator units designed for coupling applications and can be optionally fitted on all our other applications. The Mics KERYS can be directly integrated onto the generator, or provided in a separate cabinet, in order to meet all low or medium voltage power plant constraints.

Automatic generator control

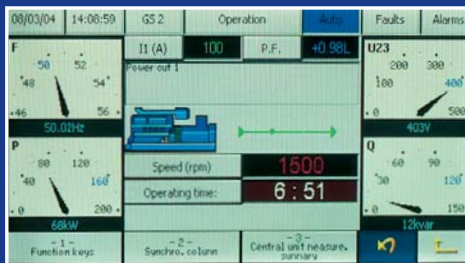
- ⊗ Generator alone or plant
- ⊗ HV or LV operation
- ⊗ Normal/Backup operation
- ⊗ Fugitive or permanent cut-free network coupling operation :
 - on network return,
 - on peak limiting,
 - during tests.
- ⊗ Inverted backup operation
- ⊗ Power production plant
- ⊗ Cogeneration

Measurements and displays

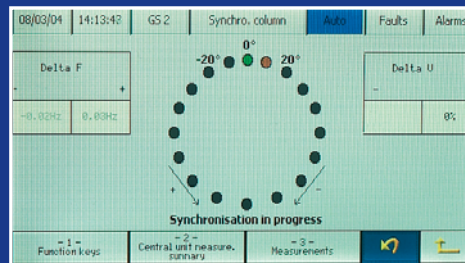
- Mechanical - Temperatures,
 - Pressures and levels according to motor configuration.
- Electrical - Voltages,
 - Currents,
 - Frequency and energies,
 - Power factors,
 - Powers,
 - Mechanical and electrical metering.

Communication

- ⊗ On-board Web site
- ⊗ User-friendly man/machine interface
- ⊗ 5 resident languages (French, English, Spanish, Portuguese, German) of which one interchangeable (contact us for details)
- ⊗ Ethernet port
- ⊗ Dialogue with all motors fitted with on-board electronics (ECU)
- ⊗ Mod Bus RTU port
- ⊗ RS232 port



Control screen



Synchro screen



Graph display

Protective devices

- Mechanical - Speed,
 - Alarms,
 - Motor safety devices,
 - Specific customer requirements.
- Electrical - Currents,
 - Voltages,
 - Powers,
 - Frequency,
 - Microbus.

Controls

- Mechanical - Speed,
 - Synchronisation,
 - Coupling,
 - Generator or network active power distribution or lock-out,
 - Wattmetric programming.
- Electrical - Voltage,
 - Voltage equalisation,
 - Generator or network reactive power distribution or lock-out,
 - Generator or network power factor regulation (cos Phi).
- Other physical quantities...



Monitoring-control cabinet
2 x 2000 KVA

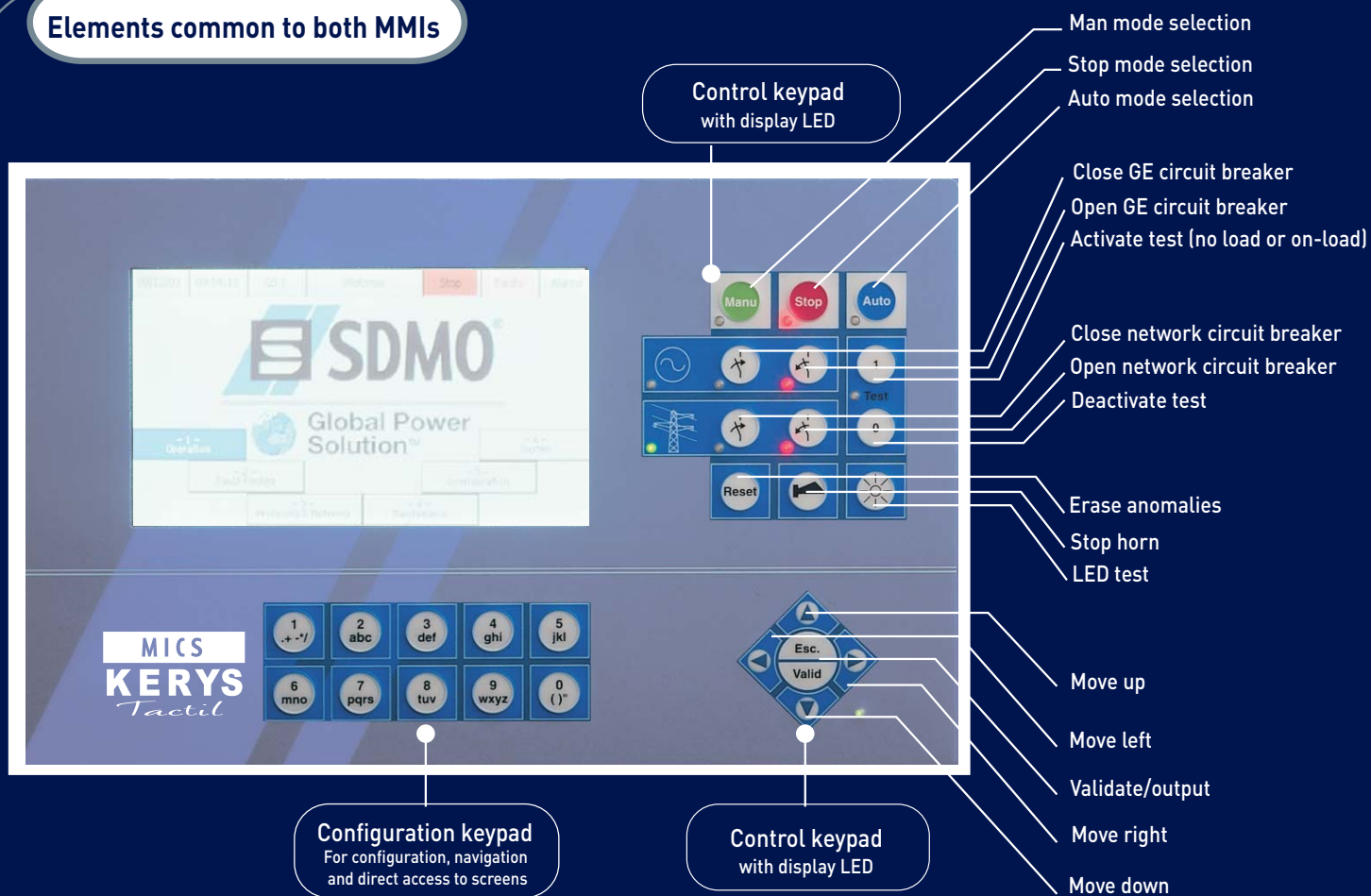


Mics KERYS touch screen console on 2000 kVA generator set

MICS KERYS

The Mics KERYS is available with two different Man-Machine Interfaces (MMIs): the standard version possesses a monochromatic screen with LEDs and function keypad, the top of the range version possesses a colour touch screen.

Elements common to both MMIs



Specific elements

Display screen
LCD standard
Monochrome graphical display
Dimensions 114 x 64 mm

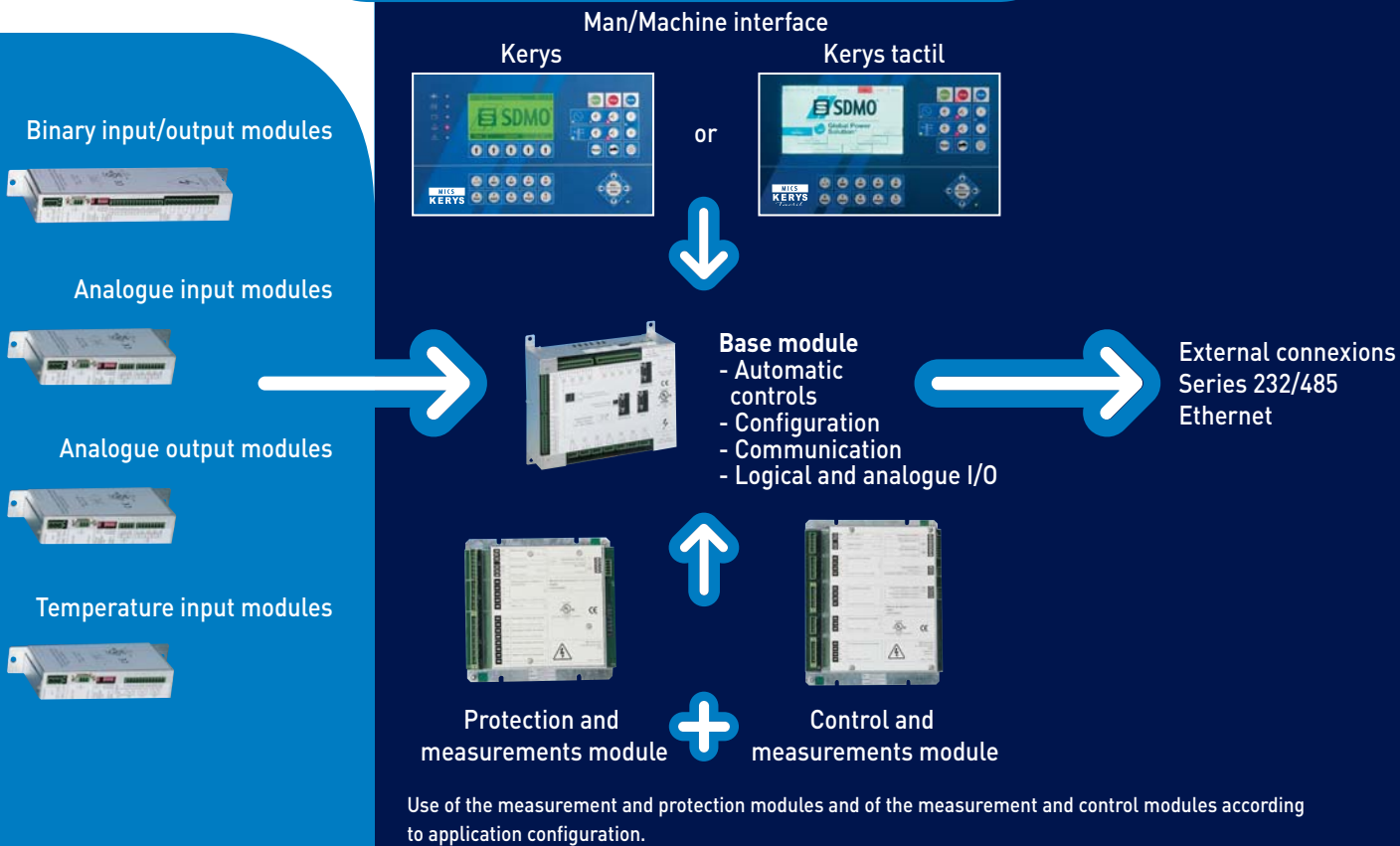
Alarm and fault LEDs
Water temperature fault
Oil pressure fault
Battery voltage fault
Fault summary
Alarm summary

Functions keypad

Display screen
TFT LCD screen 16/9ème
Colour graphical display
Touch screen
Dimensions 154 x 86 mm



Mics Kerys modularity



Protections available* (ANSI codes)

CURRENT	Overload (50) - Short circuit (50/51) - Phase current direction indicator (67) - Neutral current (four-pole) (50) - Inverse component (50) - Voltage carry over (51V) - Thermal image (49)
VOLTAGE	Voltage minimum (27) - Voltage maximum (59) - Presence and absence of voltage (27)
FREQUENCY	Frequency minimum (81) - Frequency maximum (81)
ACTIVE AND REACTIVE POWER	Active power maximum (32) - Active power return (32P) - Reactive power return (40) - Loss of excitation (40)
INSULATION CONTROL	Homopolar current (51N) - Homopolar current direction indicator (67N) - Homopolar voltage (64) - Restricted earth (64 REF)
UNCOUPLING / MICROCUTS	Vector jump (78) - Impedance minimum (21) - Frequency variation dF/dt (78)

* All protection systems are available within the measurement and protection modules, only some of these systems are available in the measurement and control modules (contact us for details).

Main applications

- Single generating set
- Generator sets plant
- Fugitive or permanent network coupling
- Power production plant (up to 15 generator sets)
- Cogeneration
- Possibility of successive coupling to 5 networks

Speed control with all motor types

Voltage control with all AC generator types

Manual or automatic synchronisation

- ⊗ phasing
- ⊗ frequency equalisation
- ⊗ voltage equalisation

Control

- ⊗ Dual frequency
- ⊗ Multi-voltage
- ⊗ Voltage setpoint adjustment
- ⊗ Frequency setpoint adjustment

- ⊗ Voltage
 - . setting a setpoint value
 - . manual value adjustment
 - . multi-voltage

- ⊗ Speed/Frequency
 - . setting a setpoint value
 - . manual value adjustment
 - . dual frequency

- ⊗ Active and reactive power
 - . setting a setpoint value
 - . manual power adjustment
 - . manual or automatic distribution
 - . power build-up ramp and load shedding ramp (value and time)

Measurements and display

- ⊗ global and phase-based active power
- ⊗ global and phase-based reactive power
- ⊗ global and phase-based power factor

Synchro measurements

- ⊗ phase deviation
- ⊗ voltage deviation
- ⊗ frequency deviation

Other

- ⊗ active energy coupling
- ⊗ reactive energy metering
- ⊗ U and I harmonics
- ⊗ mains loss detection
- ⊗ generator set and network rotational field control

Operation

- ⊗ measurements analysis with log plots and data archiving, used for diagnostic and maintenance assistance

MICS KERYS

Example applications



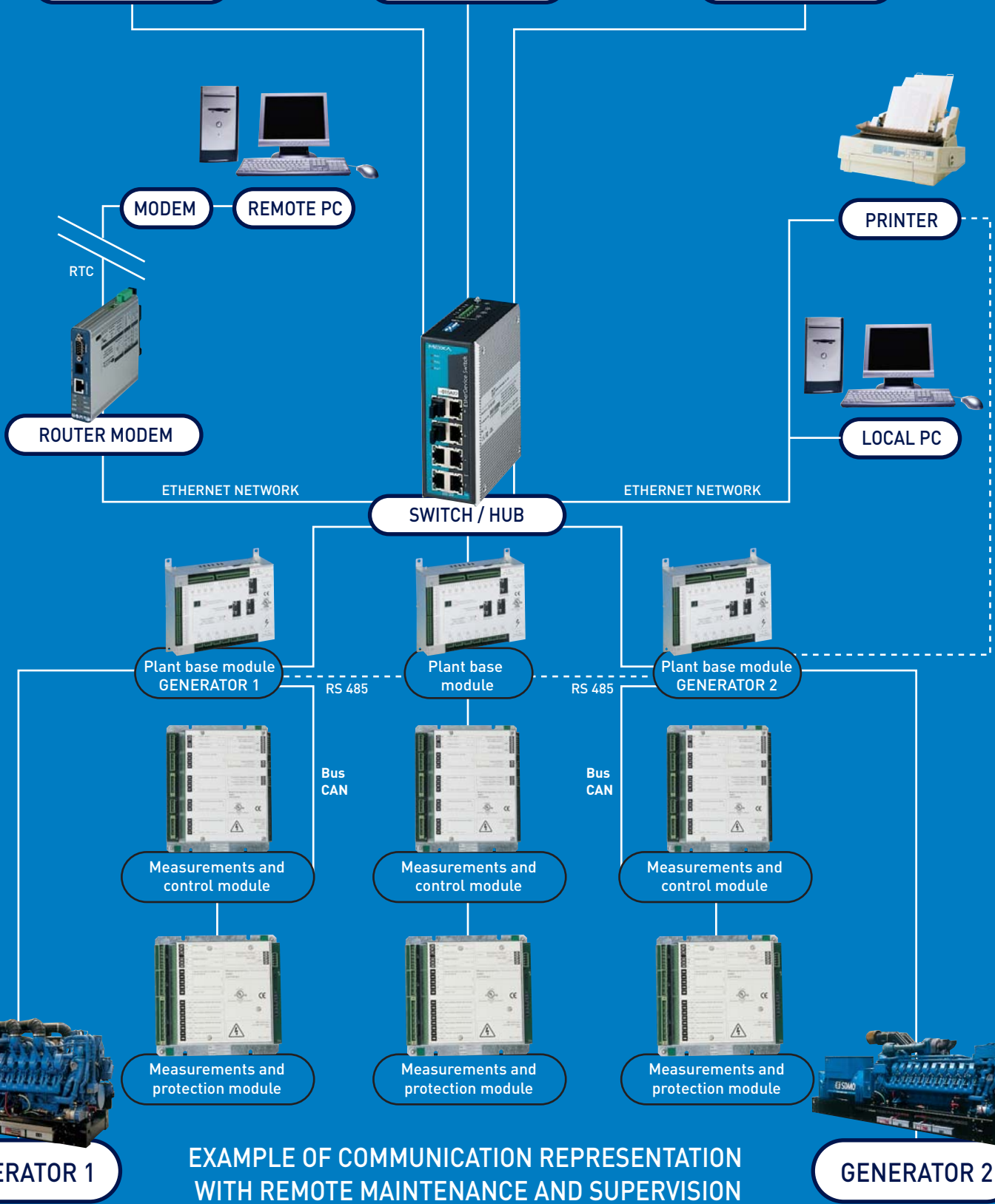
MMI GENERATOR 1



MMI PLANT



MMI GENERATOR 2



GENERATOR 1

EXAMPLE OF COMMUNICATION REPRESENTATION WITH REMOTE MAINTENANCE AND SUPERVISION

GENERATOR 2

Internal and external communication

CAN BUS LINK

The CAN (Controller Area Network) bus, broadly used in the motor and general industry, is a tried and tested technology, providing a high degree of electromagnetic immunity and simplified implementation, connected by simple shielded pair. There are numerous protocols, they are of the «proprietary» type, or comply with a specific standard. The KERYS Mics use 3 types of protocol: a protocol for system-internal operation, the CAN OPEN protocol and the J1939 CAN protocol.

ETHERNET LINK

Ethernet is a high speed local network capable of connecting a great number of systems of different types. The KERYS and KERYS Tactil Mics use this type of link for connecting the base module to the MMI as it allows :

- rapid transmission of user data, entered with the keypad, to the base module
- information requested by the user to be displayed on-screen

We can then create a network of systems connected by wire double pairs via a computer HUB or switch, thus allowing simple RJ45 type connections.

WEB site

The KERYS and KERYS Tactil Mics are delivered as standard with a particularly user-friendly On-board web site. This feature presents a number of advantages. Indeed, it is possible, by launching Internet Explorer on your PC and connecting to the base module's IP address, to obtain all of the information concerning the operation of your equipment via the local Ethernet network (Intranet), or from the WEB via a remote modem (Internet).

Connection to the base module through the site's various pages, allows you to :

- view, in real time, the electrical or mechanical values
- modify the configuration via a customised access code
- control the generator set or plant, on condition that certain security conditions are met

Over 60 display screens are available in each of the resident languages.

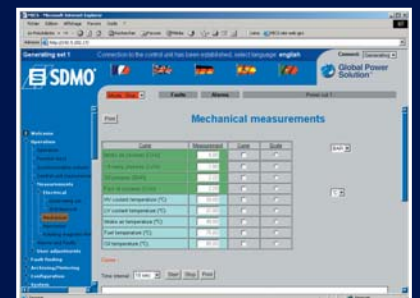
Whatever the distance separating you from your installation, SDMO rapidly gives you the answer that you expert.



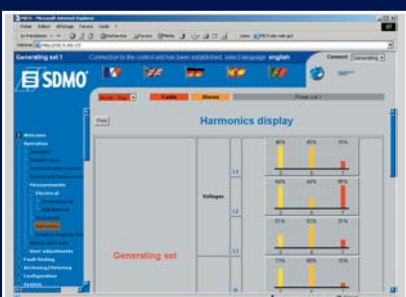
Electrical measurements



Network or bus bar measurements



Mechanical measurements



Harmonics display



Central unit measurement summary



Alarms and faults

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MICS KERYS: PRODUCT PLUS POINTS

⇒ PLC dedicated to generator set applications

Choice of multiple resident standard configurations

Addition of auxiliary logic without the need to use an external tool

Functional module library

⇒ Troubleshooting

Validation of protections by simulation

Variable status display

Troubleshooting guide with keyword search

⇒ Assistance and Maintenance

Automatic Email transmission on triggering of alarms or faults,
or on maintenance operation requests

Log of actions performed (maintenance or repairs)

⇒ Load impact

Improved generator performance on strong load

⇒ Plotting and logging of electrical and mechanical parameters

Adjustable sampling and definable criterions for release

⇒ Compliance with international standards

The Kerys and Kerys tactil MICS as a whole, have been thoroughly tested
by independent laboratories (climatic tests, electromagnetic counting,
vibratory tests, etc.).

They are EC, UL and CSA certified.



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