

GE
Digital Energy



User Manual
Uninterruptible Power supply

IEMi
Intelligent Energy Management integrated

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imagination at work



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The illustrations and plans describing the equipment are intended as general reference only and are not necessarily complete in every detail.

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Dear Customer,

We thank you for selecting our products and are pleased to count you amongst our very valued customers at **GE**.

Please read carefully the *User Manual*, which contains all the necessary information and describes all you need to know about the use of **IEMi - Intelligent Energy Management integrated**.

Thank you for choosing **GE** !

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1 SAFETY RULES

With this document, **GE** gives to the user all the necessary information about the correct installation and connection with the UPS units.

Please carefully read this **User Manual** before installing or operating the equipment.

If any problems are encountered with the procedures contained in this **User Manual**, please contact the nearest **Service Centre** before you proceed.

All UPS installation, maintenance and service work should be performed by qualified service personnel only.

KNOWLEDGE and FULL compliance of the safety instructions and the warnings contained in this manual are

THE ONLY CONDITION

to avoid any dangerous situations during installation, operation, maintenance work, and to preserve the maximum reliability of the UPS system.



NOTE !

"IEMi - Intelligent Energy Management integrated" is available if enabled at the factory.

Otherwise, only a GE GLOBAL SERVICES FIELD ENGINEER can make it available on field installations.

In this case, the site upgrade may require the COMPLETE SHUTDOWN of the UPS system.

Please refer to the *"Safety Rules"* included in the *"User Manual"* & *"Installation Guide"* of the UPS.

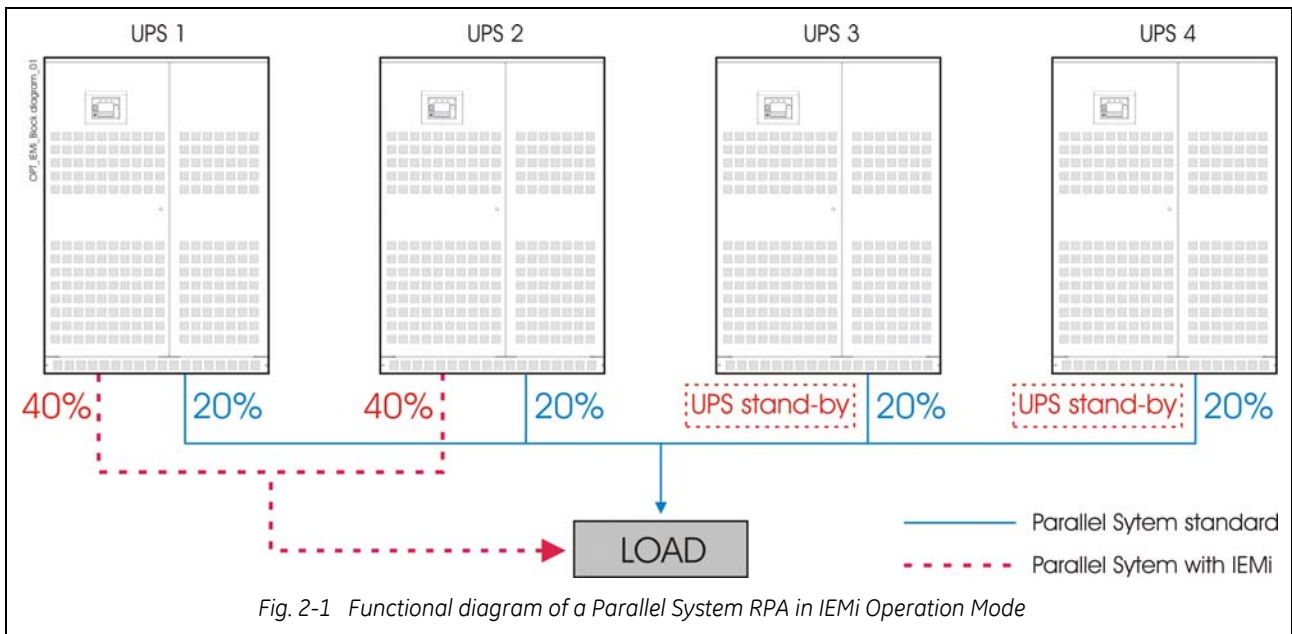
Please read carefully the UPS *"User Manual"* & *"Installation Guide"* before installing or operating the equipment.

If any problems are encountered with the description of this installation guide, please contact the nearest *Service Centre* before proceeding.

GE

Refuses any responsibility in case of non-observance, unauthorised alterations or improper use of the delivered equipment.

2 DESCRIPTION



GE Digital Energy offers the **IEMi - Intelligent Energy Management integrated** option to optimize energy cost while maintaining the highest possible reliability for *Parallel Redundant Uninterruptible Power Supply* units (max 6).

For *Parallel System* installations, secured with *Redundant Parallel Architecture™ (RPA™)*, *IEMi Operation Mode* saves energy by dynamically utilizing the UPS units as needed to meet the required load without compromising the power quality to the critical load.

The software will calculate the number of UPS units which are needed for load supply based on following:

- Redundancy (N+1 or N+2)
- System Load
- Rectifier status
- Inverter operating time
- IEMi Operation Mode programming

Particularly, the UPS control logic determines the minimal set of UPSs required to maintain a reliable supply to the critical load.

Then, an efficiency optimization algorithm determines the best UPS configuration in order to maintain the running UPS in their highest efficiency operating region.

Energy losses are reduced by switching the inverter section of one or more units to a stand-by state.

The critical load is fed by the remaining units operating in double-conversion.

As load increases, other units are gradually switched on-line in order to maintain the required redundancy level.

The *IEMi - Intelligent Energy Management integrated* option is only available on parallel installations.

It is clear that in order to enjoy the benefits of *IEMi* operation a system programmed for N+1 redundancy requires a parallel installation of at least three UPSs, while four UPSs are required for N+2 redundancy.

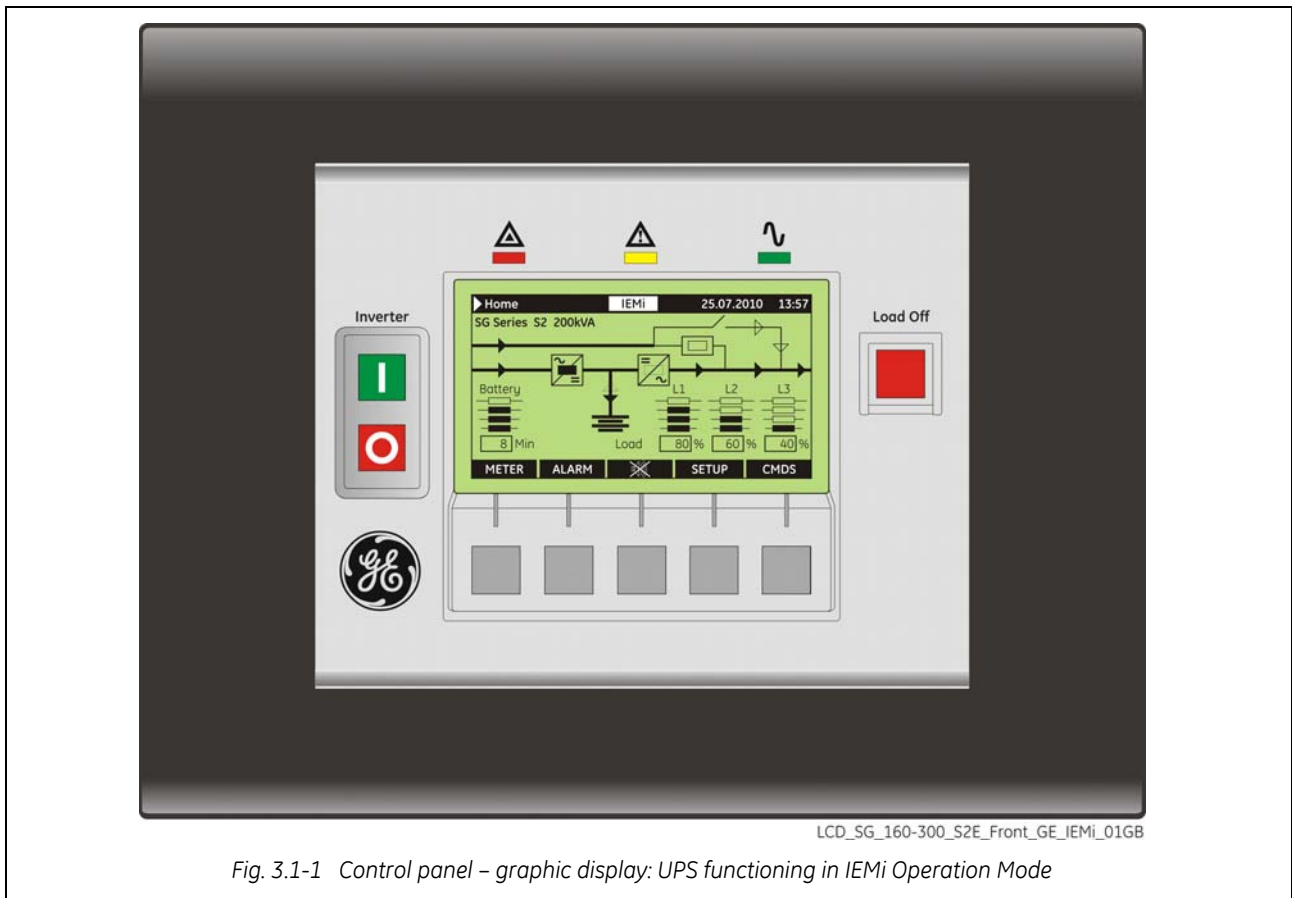
IEMi - Intelligent Energy Management integrated is an option, and it is available only if introduced at the factory, or if introduced in field installations by a GE GLOBAL SERVICES FIELD ENGINEER.

Benefits of *IEMi - Intelligent Energy Management integrated* include:

- Higher efficiency (reduced losses) in low-load conditions (efficiency optimization)
- No compromise on power quality (double-conversion operation)
- No compromise on system reliability (redundant operation)

3 SETUP

3.1 CONTROL PANEL – GRAPHIC DISPLAY



Key to switch the Inverter ON (I)

	<p>NOTE !</p> <p>When <i>IEMi Operation Mode</i> is enabled, control of Inverter status and selection of the feed path is done autonomously by the UPS control logic.</p> <p>Therefore, Inverter ON / Inverter OFF commands are disabled when <i>IEMi Operation Mode</i> is enabled.</p>
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Key for Inverter shutdown (O)

Press the key to transfers the *Load to Utility/Mains*.
 Keep pressed for 5 seconds to shutdown the *Inverter*.
 This key is also used as the *EPO (Emergency Power Off) reset*.

	<p>NOTE !</p> <p>Inverter OFF command is disabled when <i>IEMi Operation Mode</i> is enabled. Furthermore, all functions associated with the (O) key are disabled – including the <i>EPO reset</i>.</p>
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3.1.1 Home screen

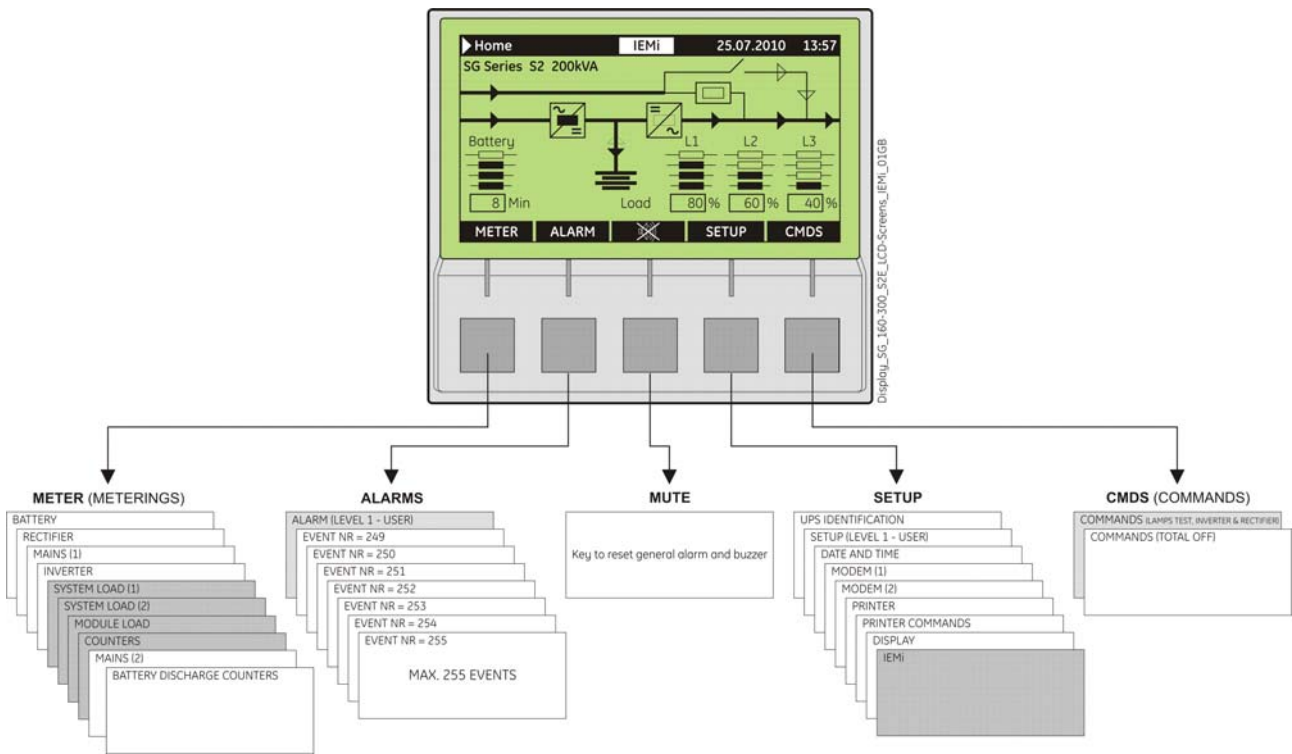


Fig. 3.1-2 Home screen LCD display

The buttons perform the following functions:

METER	METERING	View electric parameters values and statistics of use. See <i>Section 6.2</i> in the <i>User Manual</i> .
ALARM	ALARMS	Shows in chronological order, all the events occurred (alarms, messages, commands, handling, etc.). See <i>Section 6.3</i> in the <i>User Manual</i> .
	MUTE	Key to reset general alarm and buzzer.
SETUP	SETUP	Allows the user to customize some UPS functions to specific requirements and to view UPS identification data. See <i>Section 6.4</i> in the <i>User Manual</i> .
CMDS	COMMANDS	Allows the user to execute UPS operation commands. See <i>Section 6.5</i> in the <i>User Manual</i> .

The *LCD screen*, after 5 minutes of inactivity, shuts down the backlight. To reactivate it, it is sufficient to press any pushbuttons.

If the keypad remains inactive for 5 minutes or longer, during the viewing of a screen such as *MEASURES*, *ALARMS*, *SETUP* or *COMMANDS*, the *LCD screen* returns automatically to the main screen.

It is possible to view any pushbutton functional description by pushing the button for more than 3 seconds.

Pushing the key “*METER*” (1st button) and “*ALARM*” (2nd button) together automatically sets the *LCD* communication language for “*ENGLISH*”.

3.1.2 Metering

The *METERING mode* is entered any time the “**METER**” button is pressed.

The *LCD screen* will indicate a series of screenshots showing the measures of all electric parameters like AC, DC and various statistics.

In this mode the buttons perform the following functions:



Return to HOME screen.



Scrolls backward to the previous screen.



Scrolls forward to the next screen.

It is possible to view any pushbutton functional description by pushing the button for more than 3 seconds.

Home\Meter				
SYSTEM LOAD				
L1	:	277 V	180.0 A	50 %
L2	:	277 V	144.0 A	40 %
L3	:	277 V	108.0 A	30 %
LOAD ON INVERTER				

Load on phases screen 1

- ... V Output voltage PHASE/NEUTRAL for each phase.
- ... A The output current as RMS values (for RPA: total value of *Parallel System*).
- ... % The output load as percentage (for RPA: with respect to the rated power of *Parallel System*).

The source of the power supplied to the *load*:

- Detour ON (Q2 close)
- Load on inverter
- Q1 open
- Load on bypass
- Load Off
- On battery
- Inverter OFF (IEMi)

Home\Meter				
SYSTEM LOAD				
L1	:	44.8 kW	49.8 kVA	PF +/-0.90
L2	:	35.8 kW	39.8 kVA	PF +/-0.90
L3	:	26.9 kW	29.9 kVA	PF +/-0.90
INVERTER OFF (IEMi)				

Load on phases screen 2

- ... kW The load active power (kW) (for RPA: total value of *Parallel System*).
- ... kVA The load apparent power (kVA) (for RPA: total value of *Parallel System*).
- ... PF The load power factor:
 - + for inductive loads (lagging power factor).
 - for capacitive loads (leading power factor).

The source of the power supplied to the *load*:

- Detour ON (Q2 close)
- Load on inverter
- Q1 open
- Load on bypass
- Load Off
- On battery
- Inverter OFF (IEMi)

Home\Meter	
MODULE LOAD	
Total kVA	120 kVA
Percentage	40%
LOAD ON INVERTER	

Module load screen (when available)

Total kVA

The load level in kVA (for RPA Parallel System: only this unit).

Percentage

The load level as a percentage of the nominal rated load (for RPA Parallel System: only this unit).

The source of the power supplied to the *load*:

- Detour ON (Q2 close) - Load on inverter - Q1 open
- Load on bypass - Load Off - On battery
- Inverter OFF (IEMi)

Home\Meter	
COUNTERS	
Bypass utility failure	25
Rectifier utility failure	14
Overloads	15
InvOperTime [h]	2135
UPSOperTime [h]	3125
IEMi OperTime [h]	1379

Statistics screen

The total number of minor utility/mains faults (bypass utility/mains out of tolerance faults).

The total number of times a gap of utility/mains in the rectifier has been recorded.

The total number of detected output overloads.

The total operating time for the *Inverter* (in hours).

The total operating time for the UPS (in hours).







The total operating time for the UPS in *IEMi Operation Mode* (in hours) – this counter is displayed only when *IEMi Operation Mode* is available (option).

3.1.3 Alarms

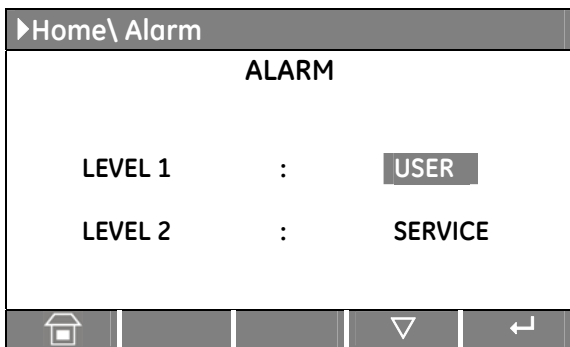
The *ALARMS mode* is entered any time the “**ALARM**” button is pressed.

The *LCD* will display a series of screens corresponding to the last **255 events**, two events per screen (LEVEL 1 USER).

In this mode the buttons perform the following functions:

-  Return to HOME screen.
-  Scrolls backward to the previous screen.
-  Scrolls forward to the next screen.
-  Move forward to the following event.
-  Move back to the following previous event.
-  Confirm the selection made.

It is possible to view any pushbutton functional description by pushing the button for more than 3 seconds.



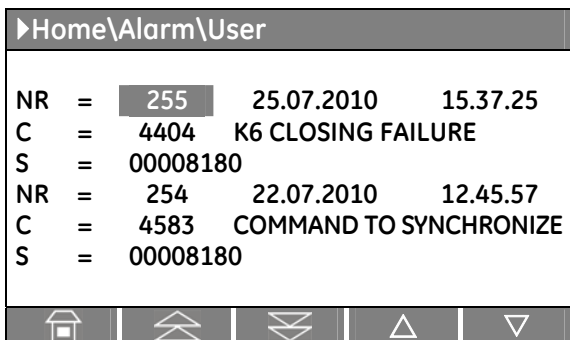
Alarms screen

LEVEL 1 USER

Chronologically view 2 events per screenshot.

LEVEL 2 SERVICE

Chronologically view 5 events per screenshot with service related info.



Screen of user alarms

NR Number chronologically assigned to an event (Nr. 255 is the more recent, Nr. 1 is the first).

Date and exact hour of the moment when the event occurred.

C Number of standard GE code of the event and an explicit text describing the event in the selected languages.

S Status code of the UPS (information reserved for the connectivity and the diagnostic).

Events (alarms and messages)

Each of the following listed events, alarm or message, can be displayed on the *LCD screen*, on a *PC* with the software "*GE Data Protection*" installed or with the monitoring system "*GE Power Diagnostic*".

Alarms and *Messages* are differently specified because the **alarms** are indicating an abnormal functioning of the UPS (which are additionally signaled with the **LED Alarm** and acoustically with the **buzzer**), while the **messages** indicate the various states of operation of the UPS (stored in the events list, but not activating the *LED alarm* and the *acoustical alarm*).

Code	Alarms	Meaning
4608	ECO CONFIG FAILURE	The propagation of the <i>IEMi Operation Mode</i> configuration to other units in a <i>Parallel System</i> failed.

Code	Message	Meaning
4604	COMMAND IEMi ON	The <i>IEMi Operation Mode</i> function is enabled, and according to the time program the UPS system will run in <i>IEMi Operation Mode</i> .
4605	COMMAND IEMi OFF	The <i>IEMi Operation Mode</i> has been disabled or the programmed time is expired. The UPS returns to <i>VFI Operation Mode</i> supplying the <i>Load</i> normally by <i>Inverter</i> .
4606	eBoost/IEMi ACTIVATION ALLOWED	<i>IEMi control</i> signal has been cleared on the <i>Customer Interface Board</i> (X1 - 11, 22). Operating mode depends on scheduled activation of the functions.
4607	eBoost/IEMi ACTIVATION INHIBITED	<i>Customer Interface Board</i> (X1 - 11, 22) received an <i>IEMi control</i> signal. <i>IEMi Operation Mode</i> will be temporarily inhibited.

3.1.4 Setup

The *SETUP mode* is entered any time the “**SETUP**” button is pressed.

This screen allows the user to modify some parameters permitting to adapt some functions of the UPS to his/her needs, described as follows.

The *LCD* will display a series of screens containing the user parameters, accessible without password protection.

In this mode the buttons perform the following functions:



Return to HOME screen.



Scrolls backward to the previous screen.



Scrolls forward to the next screen.



Confirm selected choice of USER / SERVICE level.

Description of the pushbutton to set or modify the parameters:



Allows to exit a selected screen without making any modification.



Scrolls backward to the previous line.



Scrolls forward to the next line.



Allows to access a value to be set or modified.



Select, on the same line, the following value or letter to set or modify.

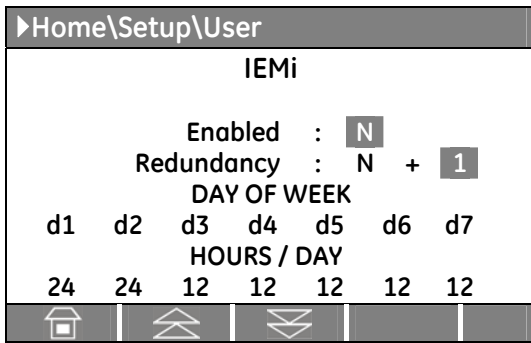


Set or modify the selected value.



Save the set or modified value and return to the selected screen.

It is possible to view any pushbutton functional description by pushing the button for more than 3 seconds.



IEMi Operation Mode screen (option)

This screen is displayed only when *IEMi Operation Mode* is available (option).

Enabled (Y / N / Wait)

Y/N This parameter (values Y/N) enables or disables the *IEMi Operation Mode*.

If the value is Y and the current time is in the interval for the current day, the *IEMi Operation Mode* is active.

Wait The *IEMi Operation Mode* configuration is being updated.

Redundancy

N + ... Redundancy level: N+1, N+2.

Note: the redundancy level can only be updated when *IEMi Operation Mode* is disabled (*Enabled: N*).

In order to enjoy the benefits of *IEMi Operation Mode* operation a system programmed for N+1 redundancy requires a parallel installation of at least three UPSs, while four UPSs are required for N+2 redundancy. The *IEMi Operation Mode* must be available on all units in a *Parallel System*.

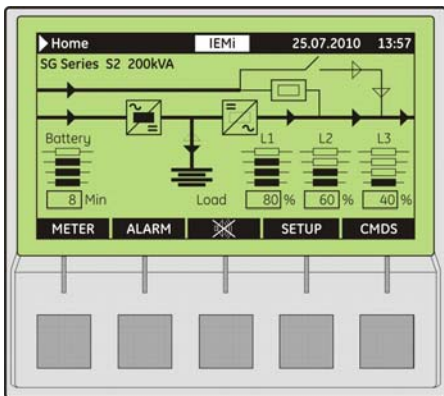


If *IEMi Operation Mode* is currently disabled (*N*) and *Q1* is closed, when programming it to enable (*Y*) the selected configuration will automatically be propagated to all units in the *Parallel System*.

If *IEMi Operation Mode* is currently enabled (*Y*) and *Q1* is closed, when programming it to disable (*N*) all stand-by inverters in the system will be switched on-line.

When programming *IEMi Operation Mode* for scheduled activation, *IEMi* must be left inactive for at least 1 minute the week (otherwise, *IEMi Operation Mode* cannot be enabled).

This configuration forces a weekly test of all Inverters in the system.



DAY OF WEEK (d1 ÷ d7): Enabling time in function of weekdays

Note: the configuration of the activation schedule can only be updated when *IEMi Operation Mode* is disabled (*Enabled: N*).

For the weekdays from **d1** to **d7** (*Saturday* to *Friday*) the edit mode (edit day) allows to define time intervals when the UPS is operating in *IEMi Operation Mode*.

The hour is given in 24-hour format.

Status of the LCD Home Page with UPS functioning in *IEMi Operation Mode*.

These intervals are defined by:

IEMi START:

The hour of the day after which the *IEMi Operation Mode* is enabled.

The *IEMi Operation Mode* is enabled until the following *IEMi STOP* time is reached (the *IEMi STOP* time of the same day if this is later than the *IEMi START* time, the *IEMi STOP* time of the following day otherwise).

IEMi STOP:

The hour of the day before which the *IEMi Operation Mode* is enabled.

The *IEMi Operation Mode* is enabled starting from the preceding *IEMi START* time (the *IEMi START* time of the same day if this is earlier than the *IEMi STOP* time, the *IEMi START* time of the previous day otherwise).

Identical times for *IEMi START* and *IEMi STOP* maintain the existing mode only in case the previous command was *IEMi START* and the following command will be *IEMi STOP*.

HOURS / DAY:

The number of *IEMi Operation Mode* hours per weekday (from **d1** - *Saturday* to **d7** - *Friday*) is displayed in the operation mode parameter window (ceiling value).

To better understand the *IEMi* programming modes, some typical examples are shown:

Example 1:

For continuous *IEMi Operation Mode* set the *IEMi START* times to 00:00 and the *IEMi STOP* times to 23:59 for all weekdays, but almost 1 day must have 1 minute of *VFI* programming: i.e *d2 - Sunday* 00:00 to 23:58).

Weekday	d1 - Saturday	d2 - Sunday	d3 - Monday	d4 - Tuesday	d5 - Wednesday	d6 - Thursday	d7 - Friday
<i>IEMi START</i>	00:00	00:00	00:00	00:00	00:00	00:00	00:00
<i>IEMi STOP</i>	23:59	23:58	23:59	23:59	23:59	23:59	23:59

Example 2:

***IEMi STOP* before *IEMi START*.**

IEMi START 18:00, *IEMi STOP* 06:00 for weekday *d4 - Tuesday*.

Means that on *d4 - Tuesday* the *IEMi Operation Mode* is active between 00:00 and 06:00 and between 18:00 and 23:59.

Weekday	d1 - Saturday	d2 - Sunday	d3 - Monday	d4 - Tuesday	d5 - Wednesday	d6 - Thursday	d7 - Friday
<i>IEMi START</i>	00:00	00:00	00:00	18:00	00:00	00:00	00:00
<i>IEMi STOP</i>	23:59	23:59	23:59	06:00	23:59	23:59	23:59

Example 3:

***IEMi Operation Mode* during the night and week-end.**

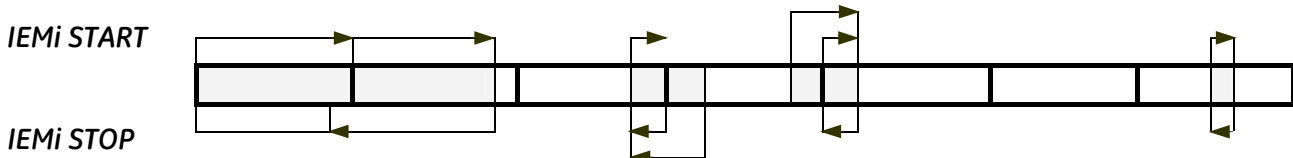
If the *IEMi Operation Mode* must be enabled all nights (*d3 - Monday ÷ d7 - Friday*) between 18:00 in the evening and 06:00 of the following morning and during all Saturday (*d1*) and Sunday (*d2*), the corresponding parameters are:

Weekday	d1 - Saturday	d2 - Sunday	d3 - Monday	d4 - Tuesday	d5 - Wednesday	d6 - Thursday	d7 - Friday
<i>IEMi START</i>	00:00	00:00	18:00	18:00	18:00	18:00	18:00
<i>IEMi STOP</i>	23:59	23:59	06:00	06:00	06:00	06:00	06:00

Example 4:

If the *IEMi Operation Mode* must be enabled on *Monday (d3)* and *Tuesday (d4)* between 18:00 in the evening and 06:00 of the following morning, on *Friday (d7)* between 12:00 and 13:00, during all *Saturday (d1)* and on *Sunday (d2)* until 20:00, the corresponding parameters are.

Weekday	d1 - Saturday	d2 - Sunday	d3 - Monday	d4 - Tuesday	d5 - Wednesday	d6 - Thursday	d7 - Friday
<i>IEMi START</i>	00:00	00:00	18:00	18:00	00:00	00:00	12:00
<i>IEMi STOP</i>	23:59	20:00	23:59	06:00	06:00	00:00	13:00



In dark color are displayed the times with *IEMi Operation Mode*.

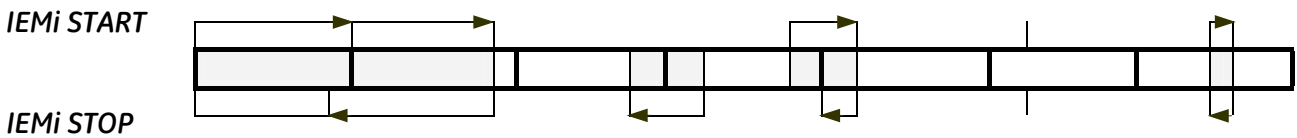
The arrows indicate the conditions given by the *IEMi START* and *IEMi STOP* times introduced with the parameters.

Note that on day *d6 - Thursday* the interval has length 0 (zero), therefore the *IEMi Operation Mode* is not enabled on this day.

Example 5:

An equivalent set of parameters for *Example 4* is.

Weekday	d1 - Saturday	d2 - Sunday	d3 - Monday	d4 - Tuesday	d5 - Wednesday	d6 - Thursday	d7 - Friday
IEMi START	00:00	00:00	18:00	18:00	06:00	09:00	12:00
IEMi STOP	23:59	20:00	18:00	06:00	06:00	09:00	13:00



The *IEMi Operation Mode* is active from 18:00 of weekday **d3 - Monday** until 06:00 of weekday **d4 - Tuesday** (as indicated by the *IEMi STOP* time of weekday **d4 - Tuesday**).


The *IEMi STOP* time of weekday **d3 - Monday** has no effect as it is followed by the *IEMi STOP* time of weekday **d4 - Tuesday**.


It can be, without change of meaning, any time between 18:00 and 23:59.

Similarly, the *IEMi Operation Mode* is active from 18:00 of weekday **d4 - Tuesday** until 06:00 of weekday **d5 - Wednesday**.

The *IEMi START* time of weekday **d5 - Wednesday** has no effect as it is preceded by the *IEMi START* time of weekday **d4 - Tuesday**.

It can be, without change of meaning, any time between 00:00 and 06:00.

	<p>NOTE !</p> <p>To avoid undesired <i>IEMi Operation Mode</i>, verify:</p> <ul style="list-style-type: none"> • Date and Time (first page of parameter). • <i>IEMi Operation Mode</i> screen shows how many hours of <i>IEMi Operation Mode</i> have been selected for each day of the week.
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	<p>NOTE !</p> <p>For <i>IEMi Operation Mode</i> to become active a manual <i>Inverter</i> start is required at start-up and after a <i>Load Off</i> reset.</p>
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3.1.5 Commands

The *COMMANDS mode* is entered any time the “**CMDS**” button is pressed.

Allows the user to execute UPS operation commands.

In this mode the buttons perform the following functions:



Return to HOME screen.



Scrolls forward to the next screen.

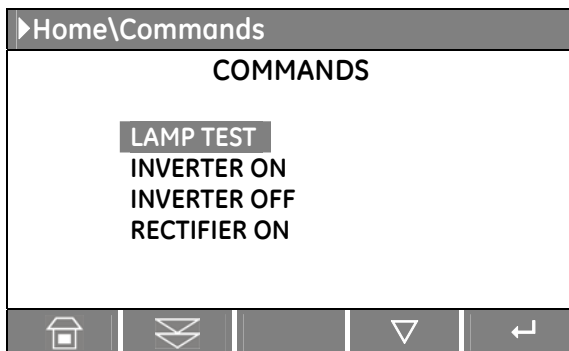


Scrolls forward to the next line.



Confirm the selection made.

It is possible to view any pushbutton functional description by pushing the button for more than 3 seconds.



Commands screen 1

LAMP TEST

Signaling *LEDs* test and *buzzer* test (all LED should be lit and blinking and the acoustical alarm should be activated).

INVERTER ON

Command to switch the inverter.

INVERTER OFF

Command to shutdown the inverter.

RECTIFIER ON

Command to switch the rectifier.

Only for Service Center, the command access is protected by a code.



NOTE !

When *IEMi Operation Mode* is enabled, control of Inverter status and selection of the feed path is done autonomously by the UPS control logic.

Therefore, Inverter ON / Inverter OFF commands are disabled when *IEMi Operation Mode* is enabled.

3.2 CONTROL PANEL – LCD DISPLAY

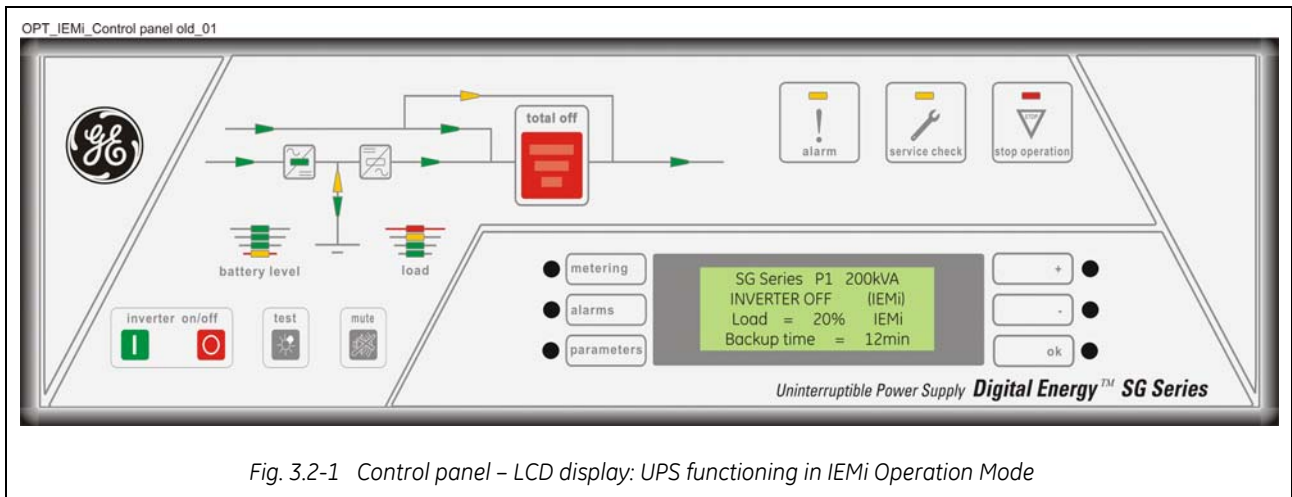
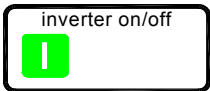



Fig. 3.2-1 Control panel – LCD display: UPS functioning in IEMi Operation Mode

Key to switch the Inverter ON (I)



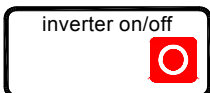
	<p>NOTE !</p> <p>When <i>IEMi Operation Mode</i> is enabled, control of Inverter status and selection of the feed path is done autonomously by the UPS control logic.</p> <p>Therefore, Inverter ON / Inverter OFF commands are disabled when <i>IEMi Operation Mode</i> is enabled.</p>
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Key for Inverter shutdown (O)

Press the key to transfers the *Load to Utility/Mains*.

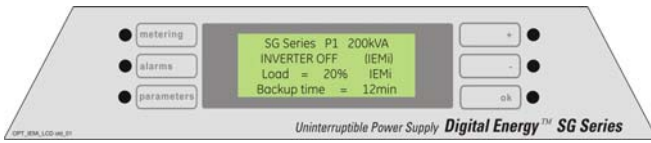
Keep pressed for 5 seconds to shutdown the *Inverter*.

This key is also used as the *EPO (Emergency Power Off) reset*.



	<p>NOTE !</p> <p>Inverter OFF command is disabled when <i>IEMi Operation Mode</i> is enabled.</p> <p>Furthermore, all functions associated with the (O) key are disabled - including the <i>EPO reset</i>.</p>
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3.2.1 Metering mode

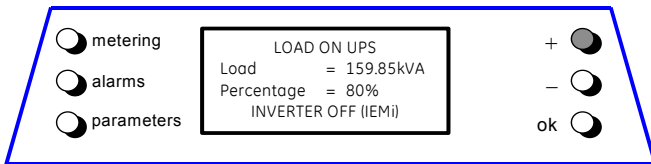


The *metering mode* is entered any time the **metering** button is pressed.

While in this mode the LCD will display a series of screens containing metering information.

In this mode the buttons perform the following functions:

- metering** Scrolls forward to the next screen.
- alarms** Abandons the *metering mode* and enters the *alarms mode*.
- parameters** Abandons the *metering mode* and enters the *parameters mode*.
- +** Scrolls forward to the next screen.
- Scrolls backward to the previous screen.
- ok** Displays the main screen for this mode.



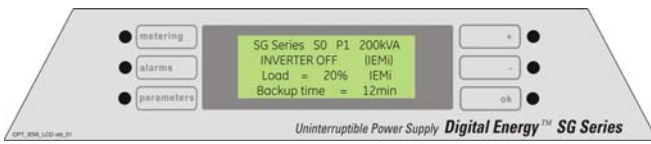
Status Load screen

This screen displays:

- The *Load* level in kVA (for RPA: only this unit).
- The *Load* level as a percentage of the nominal rated *Load* (for RPA: only this unit).

The source of the power supplied to the *Load*.

3.2.2 Alarms

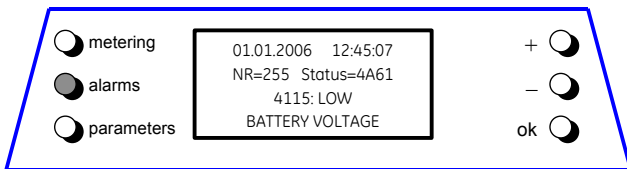


The *alarms mode* is entered any time the **alarms** button is pressed.

The LCD will display a series of screens corresponding to the last 256 events, one event per screen.

The buttons perform the following functions:

- metering** Abandons *alarms mode* and enters *metering mode*.
- alarms** Next screen.
- parameters** Abandons the *alarms mode* and enters the *parameters mode*.
- +** Scrolls forward to the next screen.
- Scrolls backward to the previous screen.
- ok** Display the main screen for this mode.



The information displayed includes:

- The exact date and time when the event occurred.
- The number of the event, 255 being the most recent event, and 0 the oldest.
- The standard **GE** code for the event and the machine status word.

An explicit text description of the event.

Events (alarms and messages)

Alarms and *Messages* are differently specified because the **alarms** are indicating an abnormal functioning of the UPS (which are additionally signaled with the **LED Alarm** and acoustically with the **buzzer**), while the **messages** indicate the various states of operation of the UPS (stored in the events list, but not activating the *LED alarm* and the *acoustical alarm*).

Code	Alarms	Meaning
4608	ECO CONFIG FAILURE	The propagation of the <i>IEMi Operation Mode</i> configuration to other units in a <i>Parallel System</i> failed.

Code	Message	Meaning
4604	COMMAND IEMi ON	The <i>IEMi Operation Mode</i> function is enabled, and according to the time program the UPS system will run in <i>IEMi Operation Mode</i> .
4605	COMMAND IEMi OFF	The <i>IEMi Operation Mode</i> has been disabled or the programmed time is expired. The UPS returns to <i>VFI Operation Mode</i> supplying the <i>Load</i> normally by <i>Inverter</i> .
4606	IEMi ACTIVATION ALLOWED	<i>IEMi control</i> signal has been cleared on the <i>Customer Interface Board</i> (X1 - 11, 22). <i>IEMi Operation Mode</i> depends on scheduled activation of the functions.
4607	IEMi ACTIVATION INHIBITED	<i>Customer Interface Board</i> (X1 - 11, 22) received an <i>IEMi control</i> signal. <i>IEMi Operation Mode</i> will be temporarily inhibited.

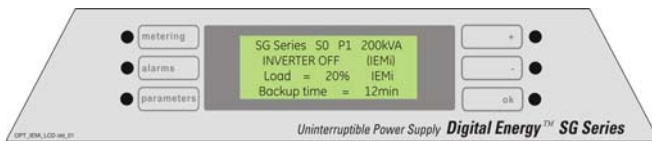
3.2.3 User parameters



NOTE !

Programming and activation of "*IEMi Operation Mode*" is not possible in the User parameters section. However, such functionality is available via the *3-ph SNMP/Web plug-in adapter* option (if installed).

For more information please to refer to appropriate User Manual.



Pressing the **parameters** button displays a series of screens containing the user parameters on the **LCD panel**.

This first parameter level is not protected by password, therefore the user can freely adapt these parameters to their needs.

In this mode the buttons perform the following functions:

- metering** Scrolls forward to the next screen.
- alarms** Abandons the *metering mode* and enters the *alarms mode*.
- parameters** Abandons the *metering mode* and enters the *parameters mode*.
- +** Scrolls forward to the next screen.
- Scrolls backward to the previous screen.
- ok** Displays the main screen for this mode.

4 OPERATION

When *IEMi Operation Mode* is active, the *Inverter control* and the *selection of the feed path* are done autonomously by the UPS.

Therefore, when *IEMi Operation Mode* is enabled, *Inverters* may start/stop at any time.

IEMi START

Start of *IEMi Mode Operation* is based on the programming of dedicated *Parameters* and on the *Load* being supplied by the UPS system (*Q1* closed).

For *IEMi Operation Mode* to become active a manual *Inverter* start is required at start-up and after a *Load Off* reset.

Additionally, activation is not inhibited from the dedicated input relay function (message 4606).

IEMi Mode Operation start is logged with the message 4604.

When *IEMi Mode Operation* is enabled, the "*Inverter ON*" and "*Inverter OFF*" commands from the *Control Panel*, are disabled, since the *Inverter control* and the *selection of the feed path* are done autonomously by the UPS.

During *IEMi Mode Operation*, the following events will force all *Inverters* on-line:

- Rectifier Utility/Mains failure.
- Bypass not available.
- Battery test.
- Transfer to Utility/Mains (overload or error detector).
- Connectivity bus failure.

IEMi STOP

Stop of *IEMi Mode Operation* is based on the programming of dedicated *Parameters*.

Additionally, activation can be inhibited from the dedicated input relay function.

When *IEMi Mode Operation* is stopped all *inverters* are switched on-line; this occurs in one of the following conditions:

- *IEMi Mode Operation* is disabled.
The "*Inverter ON*" and "*Inverter OFF*" commands are enabled.
- End of programmed time:
The commands "*Inverter ON*" and "*Inverter OFF*" from the remain disabled.
- *IEMi Mode Operation* inhibited from the Input Relay (message 4607).
Only the commands "*Inverter ON*" and "*Inverter OFF*" from the Input Relays of the *Customer Interface* (IM0005 or IM0171) are active.

5 SERVICE AND MAINTENANCE



WARNING !

All maintenance and service works must be performed by **QUALIFIED SERVICE PERSONNEL**.

All maintenance activities to be done with *IEMi Operation Mode* **disabled**.

Always disable *IEMi Operation Mode* before Service, Maintenance or Shut-down of a UPS unit.

Note: the disable command is not propagated if Q1 of the unit is open!

Maintenance bypass transition via digital I/O (CIC card).

- Inverter ON (I) / Inverter OFF (O) via digital input are disabled when *IEMi Operation Mode* is enabled.
- An 'IEMi Control' input function is available to deactivate *IEMi Mode Operation* (route digital input to all units).
- Once *IEMi Operation Mode* is deactivated, Inv ON/OFF via digital I/O is operational.

Note: all inverters started when *IEMi Mode Operation* goes disabled / inactive.

6 CONNECTIVITY

6.1 CUSTOMER INTERFACE IM0005

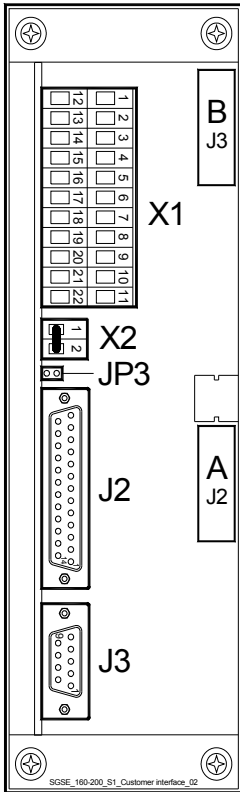


Fig. 7.1-1 Customer interface IM 0005

J2 (sub D-female 25p) – Output signals on voltage free contacts			
J2 / 1, 2, 3	NO, C, NC	Mains Failure	(def. Parameter RL=1)
J2 / 4, 5, 6	NO, C, NC	Load on Inverter	(def. Parameter RL=3)
J2 / 7, 8, 9	NO, C, NC	Stop Operation	(def. Parameter RL=5)
J2 / 14, 15, 16	NO, C, NC	Load on Mains	(def. Parameter RL=2)
J2 / 17, 18, 19	NO, C, NC	General Alarm	(def. Parameter RL=4)
J2 / 20, 21, 22	NO, C, NC	Acoustic Alarm	(def. Parameter RL=6)

⚠ Signals on terminals X1 and on connector J2 are in parallel and therefore not separated galvanically from each other.
The programmable signals on X1 and J2 will be disabled with Q1 open, with the exception of the signals for "16 - Manual Bypass ON" and "26 - EPO".

X1 terminals – Output signals on voltage free contacts			
X1 / 1, 2, 3	NO, C, NC	Mains Failure	(def. Parameter RL=1)
X1 / 4, 5, 6	NO, C, NC	Load on Inverter	(def. Parameter RL=3)
X1 / 7, 8, 9	NO, C, NC	Stop Operation	(def. Parameter RL=5)
X1 / 12, 13, 14	NO, C, NC	Load on Mains	(def. Parameter RL=2)
X1 / 15, 16, 17	NO, C, NC	General Alarm	(def. Parameter RL=4)
X1 / 18, 19, 20	NO, C, NC	Acoustic Alarm	(def. Parameter RL=6)

Input contacts			
X1 / 10, 21 or J2 / 10, 23	NO	Programmable	
X1 / 11, 22 or J2 / 11, 24	NO	Programmable / Generator ON	

On terminals **X1** or **J2** connector, the output signals can be associated to a specific function. This selection can be performed from the display by **QUALIFIED AND TRAINED PERSONNEL** (password required).

With reference to *IEMi Operation Mode*, the following function is available:

27- eBoost/IEMi mode.

This signal indicates when *IEMi Operation Mode* is enabled and active.

Some UPS functions can be activated when an external Normally Open contact is closed on:

X1-10, 21 / J2-10, 23 or X1-11, 22 / J2- 11, 24

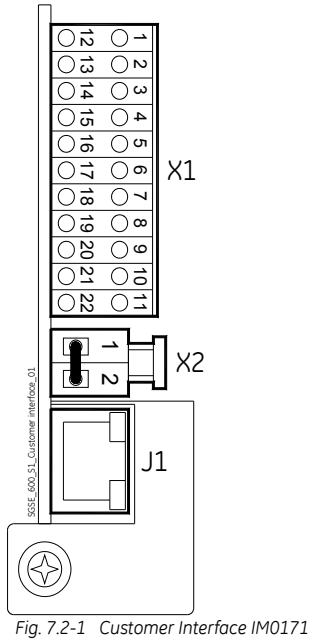
The specific function can be selected from the display by **QUALIFIED AND TRAINED PERSONNEL** (password required).


With reference to *IEMi Operation Mode*, the following function is available:

8 – eBoost/IEMi control.

When active, this function will deactivate *IEMi Operation Mode*.

6.2 CUSTOMER INTERFACE IM0171



X1 terminals – Output signals on voltage free contacts			
X1 / 1, 2, 3	NO, C, NC	Mains Failure	(def. Parameter RL=1)
X1 / 4, 5, 6	NO, C, NC	Load on Inverter	(def. Parameter RL=3)
X1 / 7, 8, 9	NO, C, NC	Stop Operation	(def. Parameter RL=5)
X1 / 12, 13, 14	NO, C, NC	Load on Mains	(def. Parameter RL=2)
X1 / 15, 16, 17	NO, C, NC	General Alarm	(def. Parameter RL=4)
X1 / 18, 19, 20	NO, C, NC	Acoustic Alarm	(def. Parameter RL=6)
 The programmable signals on X1 will be disabled with Q1 open, with the exception of the signals for “16 - Manual Bypass ON” and “26 - EPO”.			

Input contacts		
X1 / 10, 21	NO	Programmable
X1 / 11, 22	NO	Programmable / Generator ON

On terminals **X1** connector, the output signals can be associated to a specific function. This selection can be performed from the display by **QUALIFIED AND TRAINED PERSONNEL** (password required).

With reference to *IEMi Operation Mode*, the following function is available:

27- eBoost/IEMi mode.

This signal indicates when *IEMi Operation Mode* is enabled and active.

Some UPS functions can be activated when an external Normally Open contact is closed on:

X1-10, 21 or X1-11, 22

The specific function can be selected from the display by **QUALIFIED AND TRAINED PERSONNEL** (password required).

With reference to *IEMi Operation Mode*, the following function is available:

8 – eBoost/IEMi control.

When active, this function will deactivate *IEMi Operation Mode*.

6.3 3-PH SNMP/WEB ADAPTER

IEMi Operation Mode can be enabled, disabled and programmed via the web interface of a 3-ph SNMP/Web adapter when this option is available in the *Parallel System*.

The configuration selection mirrors the parameters described in this manual.

For further details, refer to the product documentation of the 3-ph SNMP/Web adapter option.