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SUBJECT

Products News: New HC-A160SMS

DATE: MAR '09

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Summary

This technical bulletin introduces the new HC-A160SMS for the European market.

1. Applicable product, model code and date of sales
2. Features
3. New product data
 - 3.1 Dimensions
 - 3.2 Components Name
 - 3.2 Specifications
 - 3.3 Installation
 - 3.4 Operation

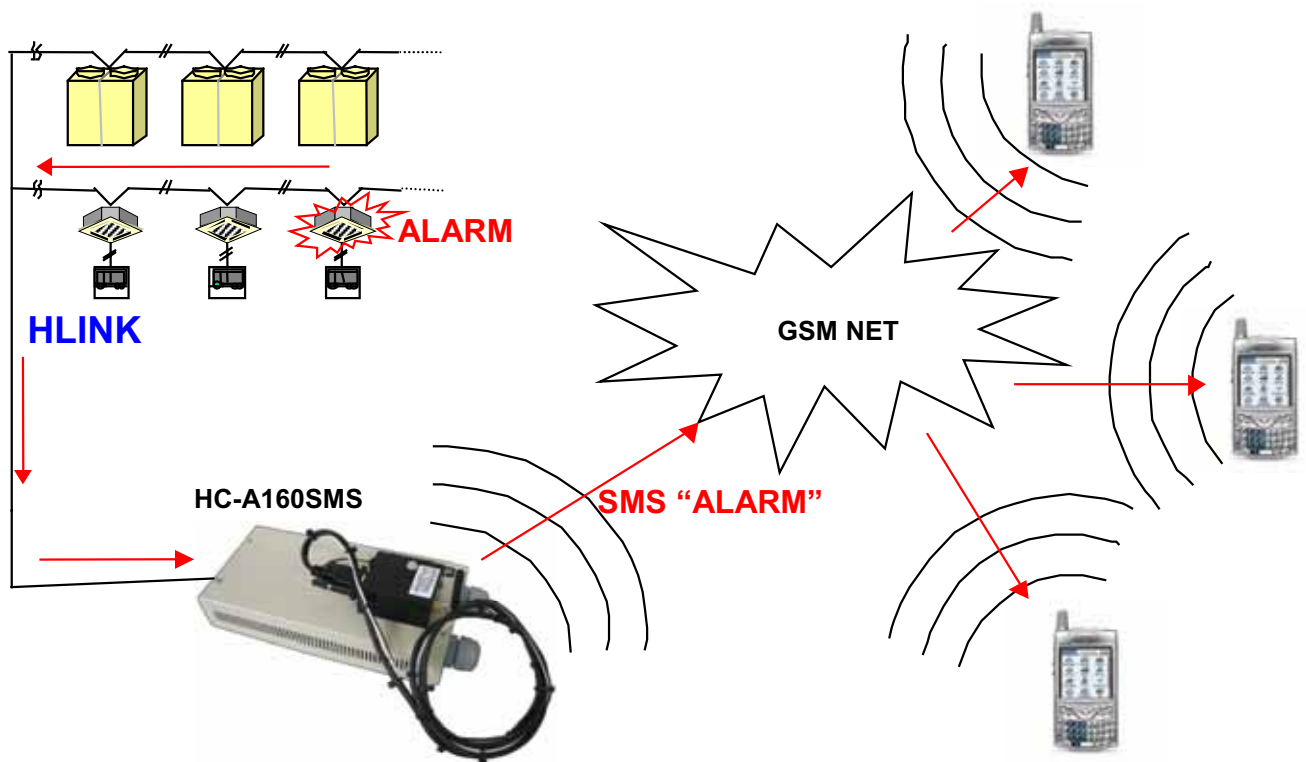
Description

1. Applicable products, model code and date of sales:

Model Description	Model Code	Sales Date
HC-A160SMS	7E519100	June 2009

2. Features

HC-A160SMS is a device that can be connected to any Hitachi Air Conditioning unit, Packaged or Chiller Installation using H-LINK or H-LINK 2 which informs to about any Alarm succeed in those installations up to 5 mobile telephone numbers (maintenance personnel, installer, ...)



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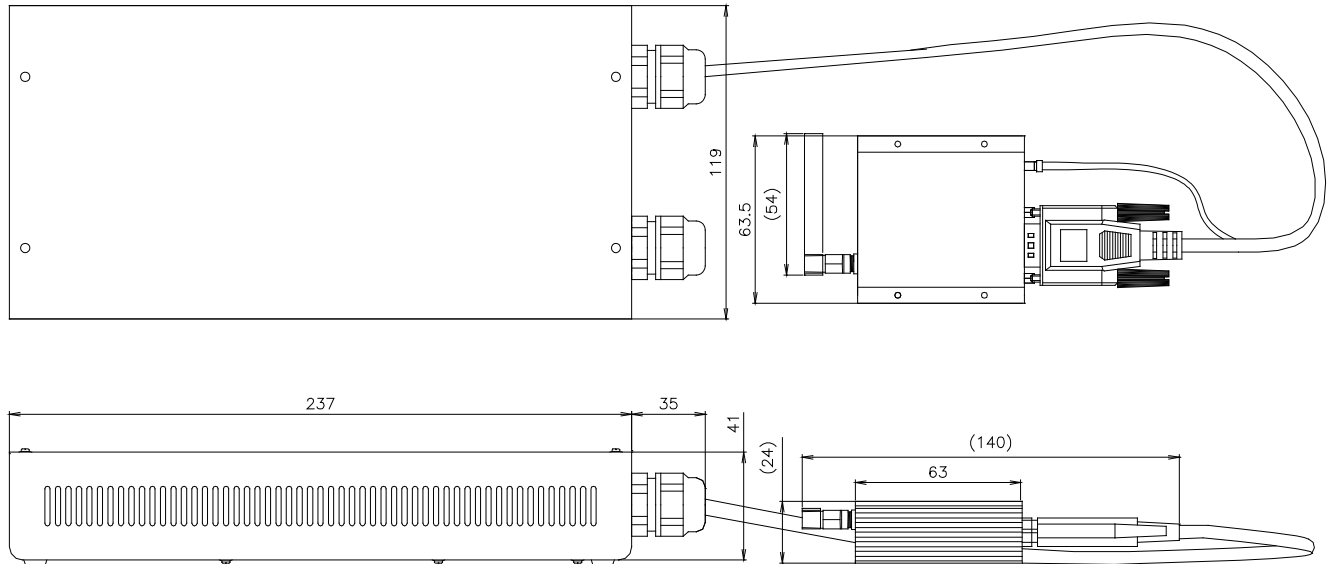
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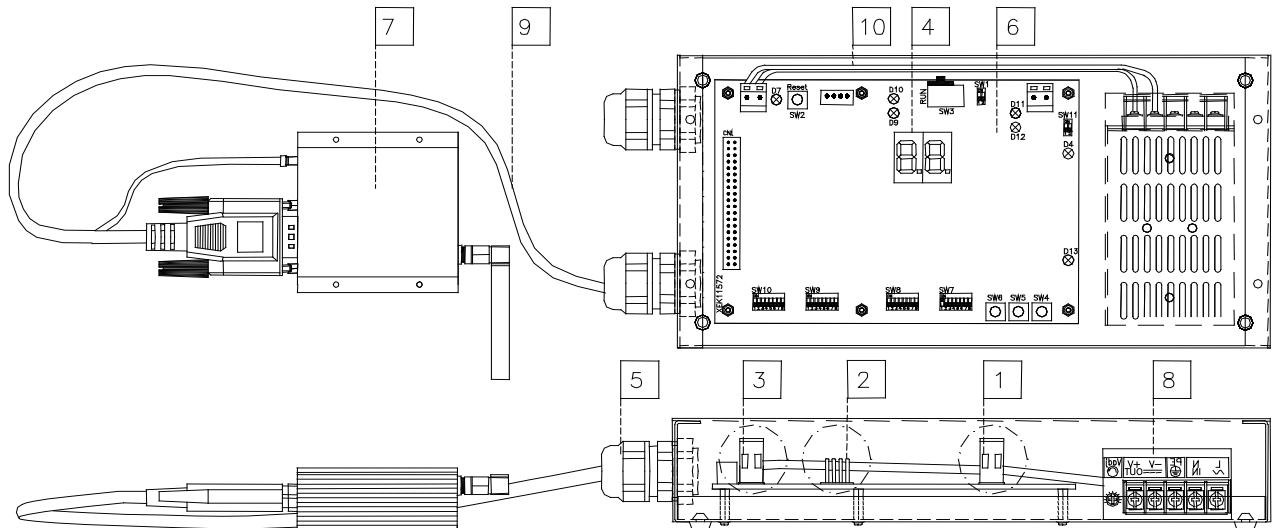
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3. Product Data

3.1 Dimensional Drawing



3.2 Element Identification



- 1 K1: H-LINK Connector: Connected to CSNET WEB
- 2 K2: Serial Port RS232
- 3 K3: +5V DC Power connection
- 4 7 Segments
- 5 Packing Glands (2)

- 6 H-LINK PCB
- 7 Modem GSM
- 8 Power Source: 230V AC/ 5V DC
- 9 Modem Cable
- 10 DC Power Cable

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3.3 Specifications

3.3.1 Hardware Specification

Item	Specifications
Power Source	1~ 230V \pm 10% 50 Hz
Power Consumption	25W (max)
Outer Dimensions	Width : 143mm Height : 76 mm Depth : 302 mm
Weight	1,7 kg
Setting Condition	Indoors (in a control panel or desktop)
Temperature Condition	0~40°C
Humidity Condition	20~85% (Without Condensation)

3.3.2 GSM RS232

Item	Specifications
K2	Serial Port R232. Connection to GSM Modem
Communication	Asynchronous
Baud rate	GSM 850, 900, 1800, 1900
SIM	External -3V with locking mechanism
Transmit power	Class 4 (2W@850/900MHz); Class 1 (1W@1800/1900 MHz)
Sensitivity	-106 dB
Information	GSM Packet Data Class B, Multislot 10 Protocol: GPRS REL 97 and 99', SMG31 Packet Channel: PCBCCH/PCCCH

3.3.3 H-LINK

Item	Specifications
Communication with	Hitachi Packaged/Chiller
Communication line	Twisted pair shielded cable, non polarity
Communication system	Half duplex
Communication method	Asynchronous
Speed transmission	9600 bps
Length of wiring	1000 max. (total length of H-LINK I/O bus)
Maximum number of HC-A160SMS	No limit (Recommended 1 HC-A160SMS/H-LINK SYSTEM)

3.4 Installation

3.4.1 Fastening Data and Servicing Space

Perform the following procedure:

1. Remove rubber supports
2. Unscrew the 4 screws from the top cover and remove it.
3. Attach the box to the rear vertical board from the inside with M4 screws (not provided) and place 3 mm washers on the outside to separate the box from the wall.
4. Reinstall the top cover. Be careful to position it correctly.
5. Keep free grated area for ventilation and cable connection.

Hitachi Air Conditioning Products Europe, S. A.
Barcelona (Spain)

No

APN-2009013

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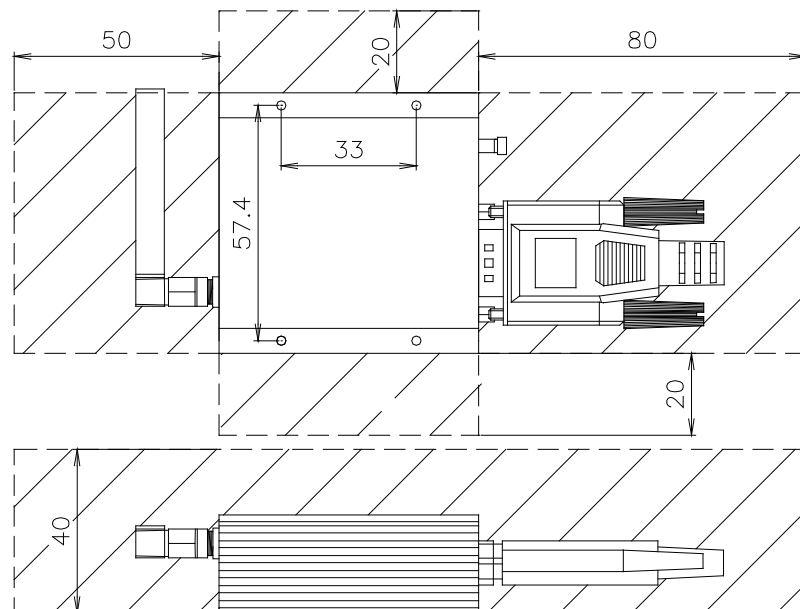
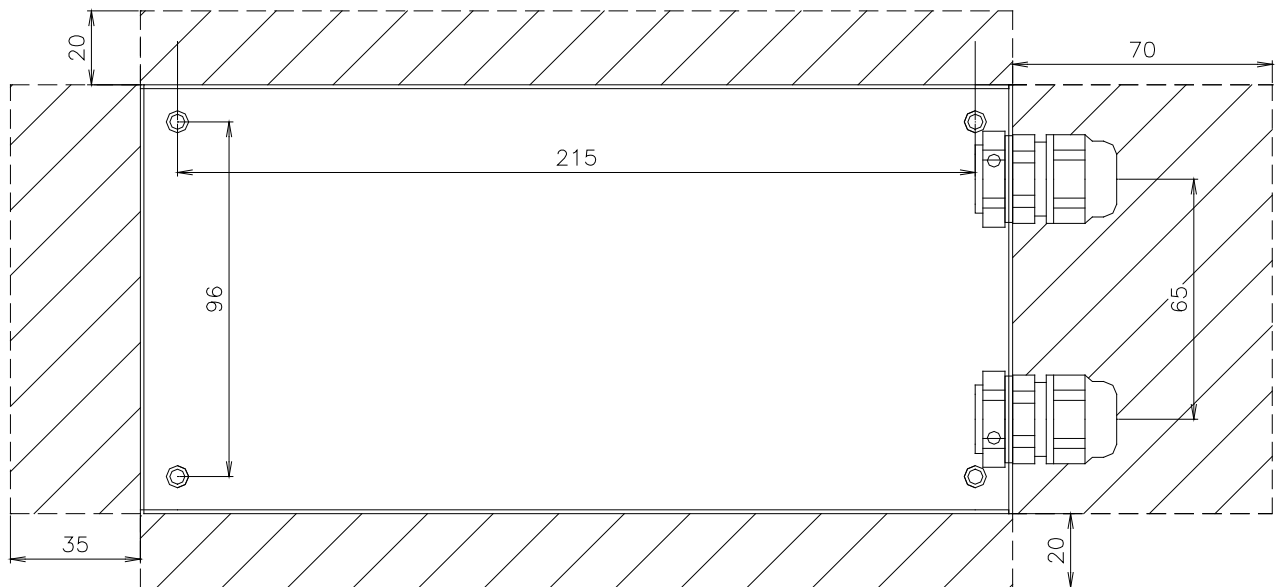
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6. Install the GSM Modem in a place with GSM coverage

Note: In case of HC-A160SMS is installed inside Electrical Box, GSM modem part may require to be outside installed in order to keep GSM coverage.



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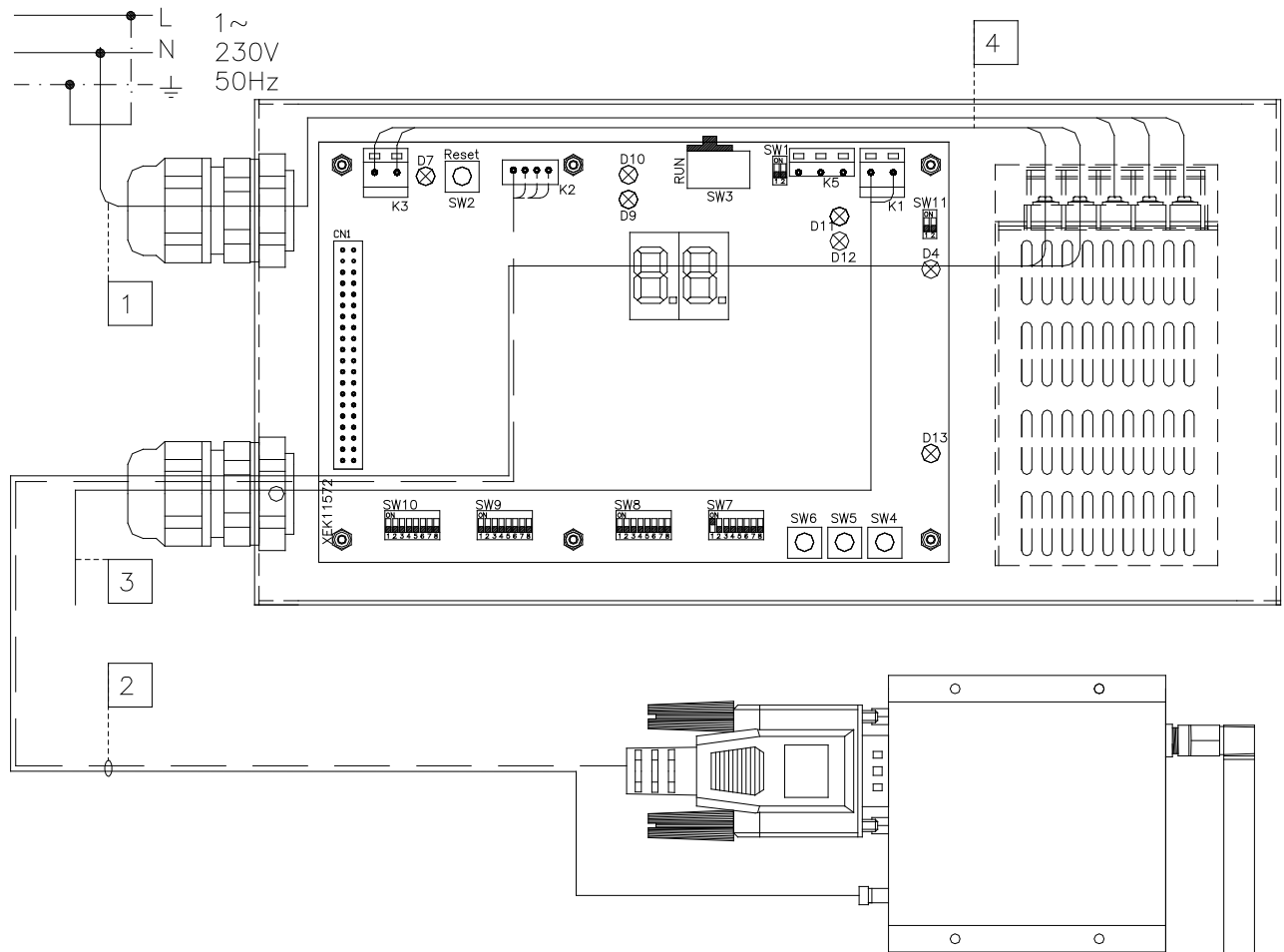
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3.4.2 Electrical Connections

In order to operate, HC-A160SMS will have to be connected to input and output signals, power supply cables and H-LINK .



	Name	Description
1	Power Supply Circuit 1~ 230V 50 Hz 25W (With protection circuit)	Select wires according Local Regulations (Recommended minimum 1.5 mm ² H05RN-F)
2	RS232 (MODEM) With Power Supply DC	4 Poles Cable RS232 and Power Supply of Modem +5V DC (H05RN-F Type)
3	H-LINK	Communication cables for the connection of HC-A160SMS to a Hitachi installation, via CSNET WEB or any Hitachi unit using same H-LINK terminals. Twisted pair shielded cable 0.75 mm ² (H05RN-F Type). Shield should be grounded in one side only.
4	PCBs Power supply +5V DC. I _{max} .= 5 A DC	Pair cable 0.75 mm ² (H05RN-F Type).

Note: All cables, except 2 and 4, are field supplied.

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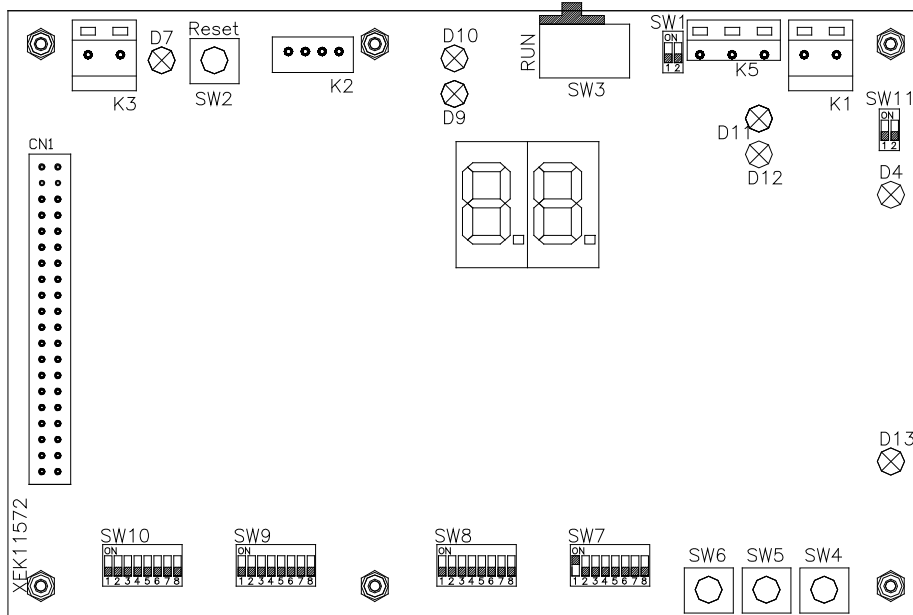
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3.4.3 DSW setting (SWn) and led indicators (Dn) in H-LINK PCB (lower PCB)



Name	Function	Factory setting	Description
SW1	Not available		All in off (no function)
SW2	Reset	—	Reset button. To be used in case of program has been locked
SW3 (TELE)	Not available		Factory purposes. Never change it
SW4	Available	—	Press for 3 seconds for INFO sending (See chapter 6)
SW5	Available	—	Press for 3 seconds for LIST sending (See chapter 6)
SW6	Available	—	Press for 3 seconds for CANCEL sending (See chapter 6)
SW7	Options 2		SW7-1: Master (default) / Slave setting SW7-2~6: All in OFF (no function) SW7-7, 8: Feedback signal and its frequency. Disbled by default.
SW8	Options 1 (Application type)		SW8-1: Packaged (default) / Chiller setting SW8-2: Enable (default) / Disable communications SW8-3, 4: SMS sending frequency (SMS repetition) Default: Initial SMS sending frequency is 12h SW8-5, 6: Period set for alarm advising Default: Duration period is 1h SW8-7: Mobile numbers configuration Disable (default) / Enable SW8-8: OFF No function
SW9	Not available		All in off (no function)
SW10	Not available		All in off (no function)
SW11	H-LINK DSW		2-Pins DSW SW11-1: H-LINK end resistance SW11-2: H-LINK fuse protection
D4, D11	H-LINK	—	H-LINK transmission
D7	Power	—	Power supply ON/OFF
D9/D10	MODEM	—	Communication between Modem and RS232
D12	-	—	Not used
D13	Operation	—	Normal software operation

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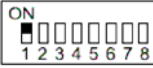
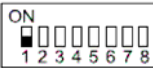




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3.4.3.1 SW7 – MASTER/SLAVE Configuration

SW7	Description
	Configuration as MASTER HC-A160SMS: SW7-1: ON Only one HC-A160SMS must be set as Master HC-A160SMS. Note: If there is any Central control like CSNET WEB, then all HC-A160SMS must be set as SLAVE.
	Configuration as SLAVE HC-A160SMS: SW7-1: OFF It must be one HARC-SMS configured as MASTER, all the rest of HC-A160SMS must be configured as SLAVE.
	HC-A160SMS feedback signal Feedback signal disabled
	Feedback signal enable with a frequency of 1 month
	Feedback signal enable with a frequency of 1 week
	Feedback signal enable with a frequency of 1 day

3.4.3.2 SW8 - FUNCTIONS SETTING

SW8	Description
	SW8-1: Packaged and Chiller setting SW8-1 – It is set in ON position when monitored units are Chiller type SW8-1 – It is set in OFF position when monitored units are Packaged type
	SW8-2 – Enable / Disable communications SW8-2 – It is set in ON to allows the disconnection of SMS Alarm sending. It is useful during maintenance works, commissioning, ..., when technicians are assisting the installation and no SMS are required. Disconnection is done in ON position. SW8-2 – Factory setting in OFF. SMS alarm is enabled
	SW8-3 & 4 – SMS Sending frequency SW8-3 & 4 – OFF & OFF - 1 SMS sent every 12 h SW8-3 & 4 – ON & OFF - 1 SMS sent every 1h SW8-3 & 4 – OFF & ON (Special frequency) - 1 SMS sent every 15min (during first h) - 1 SMS sent every 1h (rest of the 1st day) - 1 SMS sent per day (from 2nd day) SW8-3 & 4 – ON & ON - 1 SMS sent every 30 min Note: These frequencies must be set accordingly to advising period (SW8-5&6)

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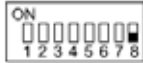
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SW8	Description
 <p>ON 1 2 3 4 5 6 7 8</p>	SW8-5 & 6 – SMS Sending period SW8-5 & 6 – OFF & OFF - SMS Alarm sent for a period of : 1 hour
 <p>ON 1 2 3 4 5 6 7 8</p>	SW8-5 & 6 – ON & OFF - SMS Alarm sent for a period of : 1 day
 <p>ON 1 2 3 4 5 6 7 8</p>	SW8-5 & 6 – OFF & ON - SMS Alarm sent for a period of : 1 week
 <p>ON 1 2 3 4 5 6 7 8</p>	SW8-5 & 6 – ON & ON - SMS Alarm sent for a period of : Unlimited Note: These duration period must be set accordingly to send frequency (SW8-3&4)
 <p>ON 1 2 3 4 5 6 7 8</p>	SW8-7 – Mobile numbers configuration SW8-7 – ON: Allows configuration of Mobile numbers as it is explained in chapter 6.
 <p>ON 1 2 3 4 5 6 7 8</p>	SW8-7 – OFF: Configuration of Mobile numbers is disabled.
 <p>ON 1 2 3 4 5 6 7 8</p>	SW8-8 – Non function SW8-8 – Set in OFF by default

3.5 Operation

HC-A160SMS is an electronic device intended to be connected to any H-LINK system, Packaged or Chiller, which is permanently monitoring H-LINK bus in order to detect any alarm.

It must be contracted a GSM service with its corresponding SIM card.

When any alarm is detected, HC-A160SMS registers for 3 min all alarms occurred (max. 5 alarms) and report them inside initial SMS. If more than 5 alarms occur, then it is add a “Multiple Alarm” note to SMS.

Initial SMS is send 3 times for safety in order to avoid communication missing and it is send these 3 times to each Mobile number registered (max. 5 mobile phone).

After initial sending, this SMS is re-sent with a certain frequency for a certain duration period (see chapter 5). In each repetition only 1 SMS is sent to each Mobile number.

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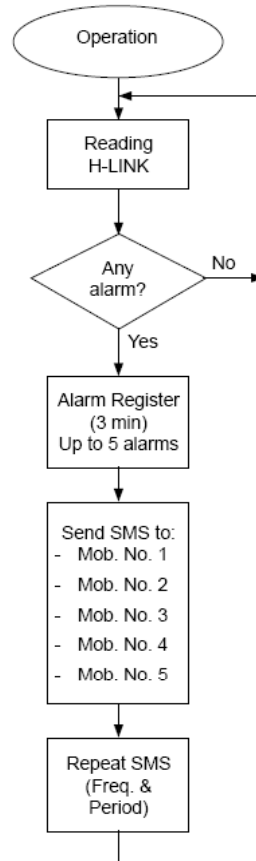
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It can be configured a feedback signal from HC-A160SMS with a certain frequency.

HC-A160SMS send installation STATUS (like "INFO function" in 6.3-D) to mobile numbers set in positions 1 and 2 with a frequency set in SW7 pins 7 and 8.

Note:

SMS messages sent are not cost-free, so ensure that desired configuration of frequency and duration period are correctly configured in order to avoid uncontrolled huge costs.

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3.5.1. SMS Alarm contents

In case of any alarm appear in a Hitachi installation, SMS are sent to any Mobile number registered.

PACKAGED type	CHILLER type
HITACHI: AAAAAAAAAA	HITACHI: AAAAAAAAAA
(OU, IU): AL AA	(CH): AL AA. CC
(OU, IU): AL AA	(CH): AL AA. CC
(OU, IU): AL AA	(CH): AL AA. CC
(OU, IU): AL AA	(CH): AL AA. CC
(OU, IU): AL AA	(CH): AL AA. CC

Where:

“AAAAAAAA”: Installation name; Maximum length of 16 characters

In case of Packaged:

“(OU,IU): AL AA”: “OU” corresponds to OU address, “IU” corresponds to IU address, “AL” means alarms and “AA” is detected alarm code.

In case of Chiller:

“(CH): AL”: “CH” corresponds to Chiller Address, “AL” means alarms

“AA”: means general Chiller alarm

“CC”: means first detected cycle alarm ; if more cycle alarms are detected, it is shown “...”

If more than 5 alarms are detected, then SMS is send as follows:

PACKAGED type	CHILLER type
HITACHI: AAAAAAAAAA	HITACHI: AAAAAAAAAA
(OU, IU): AL AA	(CH): AL AA. CC...
(OU, IU): AL AA	(CH): AL AA. CC...
(OU, IU): AL AA	(CH): AL AA. CC...
(OU, IU): AL AA	(CH): AL AA. CC...
(OU, IU): AL AA	(CH): AL AA. CC...
Multiple alarms	Multiple alarms

Note:

HC-A160SMS never detects any alarm caused by the disconnection, communication failure or similar of a IU. Communication alarm is only found if a existing IU is sending communication alarm (alarm codes: 03 or 32)

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3.5.2. Mobile number configuration

Mobile numbers are registered as follows:

Configuration is done by using any mobile phone and sending a specific SMS message to the HC-A160SMS as follows:

A) Mobile number registering:

First of all is required to set SW8-7 in ON position

Take any Mobile and create and sent an SMS as follows:

"SET XXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXX"

Where X = Mobile phone numbers. Maximum length is 16 numbers.

Each mobile phone number must be separated by one blank space

Other functions related are:

B) Mobile phone number delete:

"DEL" : From any Mobile it is sent to HC-A160SMS and all Mobile numbers in the list are deleted

C) Mobile phone numbers list reminder:

"LIST"; From any Mobile it is sent to HC-A160SMS and it is answered Mobile number list inside HC-A160SMS

```
HITACHI: AAAAAAAAA
1: XXXXXXXXXXXXXXXX
2: XXXXXXXXXXXXXXXX
3: XXXXXXXXXXXXXXXX
4: XXXXXXXXXXXXXXXX
5: XXXXXXXXXXXXXXXX
```

3.5.3. Other Commands

D) Installation STATUS:

"INFO": It is send a SMS informing about the Installation Status.

If no alarm exist, it is answer from Modem:

```
HITACHI: AAAAAAAAA: NO ALARM
```

If an alarm exist, last SMS alarm is re-send.

PACKAGED type	CHILLER type
HITACHI: AAAAAAAAA	HITACHI: AAAAAAAAA
(OU, IU): AL AA	(CH): AL AA, CC...
(OU, IU): AL AA	(CH): AL AA, CC...
(OU, IU): AL AA	(CH): AL AA, CC...
(OU, IU): AL AA	(CH): AL AA, CC...
(OU, IU): AL AA	(CH): AL AA, CC...

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E) Cancellation of SMS alarm

"CANCEL": This function disabled more SMS alarm repetition. If new alarms are detected, new SMS alarms are send.

It is displayed in 7 segments: **CL**