● *APPLICATION*

THE ACS-PG-MCQ programmer allows supervision of the multifuel/MCQ burner system parameters, together with CHM-F-MCQ flame presence detector relay and SEL-SV-MCQ sensor-transmitter (weatherproof or explosion-proof) making this unit the man-machine interface (MMI) of the MCQ system.

See below the MCQ general diagram.

● *TECHNICAL DATA*

⇒ Micro processed

⇒ **Version: 3.000**

NOTE: VERSION 3.000 WAS CREATED DUE TO THE NEED OF TECHNOLOGICAL UPDATE IDENTIFIED BY CUSTOMERS. VERSION 3.000 OPERATES EXCLUSIVELY, WITH MCQ SYSTEMS THAT HAVE THE SAME VERSION OR ABOVE (RELAY / SENSOR / PROGRAMMER). EQUIPMENTS WITH PREVIOUS VERSIONS MAY RECEIVE THE UPDATE TO VERSION 3.000, AND IT IS REQUIRED THE SHIPMENT TO SELCON OF THE SET OF PRODUCTS THAT COMPOSE THE MCQ SYSTEM. THE IDENTIFICATION "**VERSION 3.000**" IS SHOWN ON THE EXTERNAL SIDE OF THE CHM-F RELAY CASE, THE SEL-SV-MCQ SENSOR AND THE ACS-PG-MCQ PROGRAMMER.

⇒ Power Source: Supplied through CHM-F-MCQ relay or through SEL-SV-MCQ sensor.

⇒ Power Consumption: 8 VA

⇒ RS-485 Communication - 1 (one) wire pair to communicate to the flame presence sensor-transmitter and to CHM-F-MCQ relay

⇒ Electric Connections: Through coiled cable and 9-way circular connector

⇒ Signaling: Through alpha numeric LCD display with 2 x 16-digit lines each.

⇒ Programming modes: Modes U, I, U and I, U or I, U *and I set point* and date/time

⇒ Allows independent adjustment of the SEL-SV-MCQ flame detector sensibility.

⇒ Allows monitoring: absolute and percentage UV and IV values, auto check, SEL-SV-MCQ temperature, ongoing events, last 16 past events, programmed parameters, tests on CHM-F-MCQ output relay, as well as its lamps.

⇒ Led.

⇒ Working Temperature: 0 to 45 ºC

⇒ Storage room temperature: 0 to 60 ºC

⇒ Maximum relative humidity of ambient air in operation: 90% (40 ± 2 ºC) – NBR 5291

⇒ Environmental protection grade: IP 54 Case

⇒ Polycarbonate keyboard

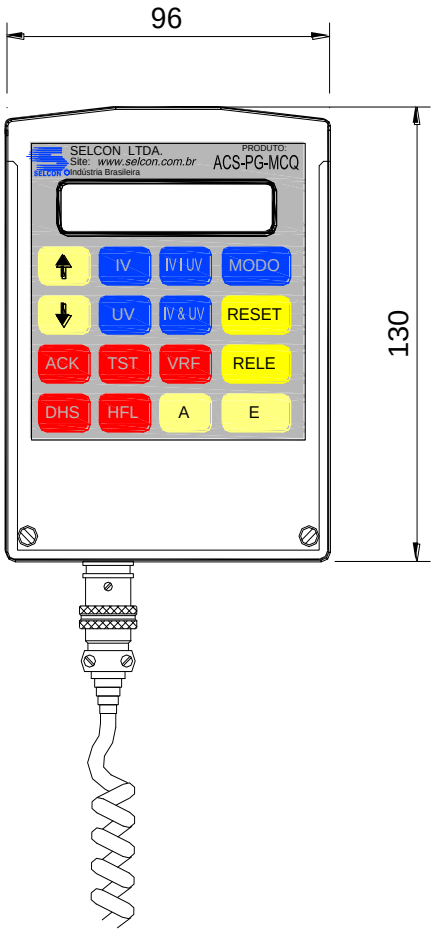
⇒ Case: Gray plastic box, provided with case (with handle) for protection and transportation (portable).

⇒ Provided with interconnection cable and protective case.

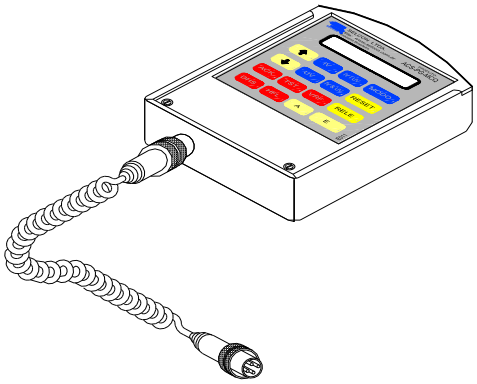
⇒ Weight: 450 grams

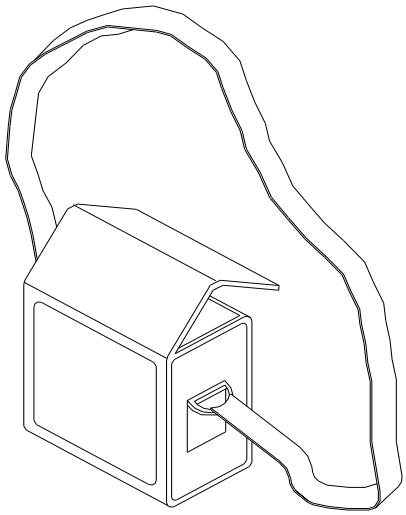
⇒ Warranty: 12 months **(see warranty term)**

●*Dimensional Drawing (mm)*



INTERCONNECTION CABLE
LENGTH (max) : 1.20 meters





CIRCULAR CONNECTOR
PLUG TO CHM-F-MCQ RELAY FRONT
OR TO SEL-SV-MCQ SENSOR TERMINALS

FIG 1

KEYBOARD IDENTIFICATION	
KEY	**DESCRIPTION**
↑	Selects via display, the numbers shown above
↓	Selects via display, the numbers shown below
MODE	Selects the four programming modes shown below
IV	Selects the *IV Mode and indicates the last existing set point value*
UV	Selects the *UV Mode UV and indicates the last existing set point value*
IV / UV	Selects the *UV* or *IV Mode and indicates the last existing set point value*
IV & UV	Selects the *UV* and *IV Mode and indicates the last existing set point value*
ACK	Allows interrupting the engine operation, causing the obstructive vision of open or closed sensors.
TST	Allows running the general CHM-F-MCQ-C relay test.
VRF	Allows checking dynamically the last minimum and maximum values, measured by SEL-SV-MCQ-O k5-K6 or K7 flame sensor.
DHS	Allows setting date and time
HFL	Allows checking the history of last 16 occurrences registered.
RESET	Allows readjusting automatically, the set point values to the original values set in the factory.
RELE	Allows monitoring the data sent by SEL-SV-MCQ-O K5-K6 or K7 sensors.
A	Allows cancelling the function or the data and returns automatically to the initial screen.
E	Allows confirming the entry of a selected function or a typed data.

● *OPERATION*

Through ACS-PG-MCQ all programming, monitoring and tests operations of MCQ system are performed, becoming the man-machine interface (MMI) for the MCQ system.

The ACS-PG-MCQ programmer has all the following features and types of operation:

I. A 2-line alphanumeric LCD display

II. A keyboard with the following keys :

● ↑ and ↓: They allow to change the programmable values from 0 to 9 (increment and decrement respectively)

● **A**: Cancel keyboard operations

● **E**: Type **E** to confirm the execution of operation.

● **MODE**: Allows programming the system operation mode by prompting function via the **MODE** key, followed by the **E** key plus the following Keys: **IV, UV, IV / UV, UV&IV**. The display shows the programmed "mode" and the cursor will indicate the first entry of absolute values, it will adjust the sensibility values (set point) through ↑ ↓ keys. The adjustable range for UV and IV is from 8 to 600 pulses. At each entry of a desired value type **E**; the cursor will automatically go to the next entry and so successively until the last entry**.** After last data entry, the ACS-PG-MCQ programmer will send the values to the CHM-F-MCQ-C relay**,** that will calculate the percentage values, as well as the correspondent scale; and then will restart the SEL-SV-MCQ-O-K (disable CH led and 0-4V analog output), waiting for new set points values that will be considered from here to monitor the flame signal. The output relays stay on if there is any flame.

● **RESET**: Programs mode and absolute values for the factory adjustment conditions: UV or IV, UV and IV = 8 pulses

● **VRF**: Allows checking dynamically, the minimum and maximum values of ultraviolet and infrared emitted by the flame (**Us**, **Ui**, **Is** and **Ii**), update at every 12 seconds approximately.

● **RELAY**: Monitors the CHM-F-MCQ-C and SEL-SV-MCQ-O-K systems on-line:

⇒ The display shows on the first line: Exx (number of the ongoing event), **T0** or **T1** if SEL-SV-MCQ-O-K internal temperature **>** 60°C), **Son** or **Sof** (motion sensor of flame sensor obstruction system).

⇒ The display shows on the second line the instant value of **UV** and the percentage value of **UV**, instant value **IV** and percentage value of **IV**. The **IV** and **UV** value will only be showed simultaneously on modes **IV / UV, UV&IV**. In case of communication failure to SEL-SV-MCQ-O-K6, the burner will not be monitored anymore and will show the event number then, and all other indications will be equal to zero.

- **DHS**: Allows programming and checking clock date and time on CHM-F-MCQ-C.
- **ACK**: Sends a command to stop the autocheck with open or closed sensor: 1 = open sensor or 2 = closed sensor. After applying this command, it will be possible to test if SEL-SV-MCQ-O-K sensor detects the failure and the stop of the flame vision obstruction engine, generating automatically a "system fail" message blocking the operation of MCQ system, and the OP led flame sensor lamp will blink continuously.
- **TST**: Allows CHM-F-MCQ-C to perform tests for LEDs, relays and the analog output. On the first 30 seconds, CHM-F-MCQ-C will illuminate all leds, disable all outputs, including the 0-4V analog output, Then after 30 more seconds, it will illuminate all leds (except the led L on) and will activate all outputs including the analog one (4,1 V); and finally automatically will be generate the "system fail" message including blocking the MCQ system operation.
- **HFL**: It shows on display the last 16 past events: sequential event number, briefly event description, date and time of event occurrence.

III. In case, after a request for operation, the ACS-PG-MCQ during 3 seconds is not able to communicate to CHM-F-MCQ-C, the display will indicate COMMUNICATION ERROR.

CANCEL key:

IV. In case of any incorrect operation, the display will show the correspondent error.
Type CANCEL to start a new request on the keyboard.

MCQ SYSTEM PARAMETER PROGRAMMER

PRODUCT: ACS-PG-MCQ **VERSION 3.000** **TECHNICAL SHEET 6/7**

☎ SAC 55 11 3019-1616 See technical bulletin for more details

TRHTH TABLE

ENERGIZED? CHM-F	ENERGIZED OUTPUT RELAY COIL ?	OUTPUT RELAY CONTATS STATUS	FLAME	SYSTEM OK	SYSTEM FAIL	COMMENTS
No	(K1+K2) No (K3) No (K4) No	(3/4) Open (5/6) Open (8/9) Open	X	X	X	X terminals 13/14 - 0V
Yes	(K1+K2) No (K3) No (K4) Yes	(3/4) Open (5/6) Open (8/9) Closed	0	1	1	0 No Flame+ CHM-F-MCQ operanting, terminals 13/14 - 0V
Yes	(K1+K2) Yes (K3) Yes (K4) Yes	(3/4) Closed (5/6) Closed (8/9) Closed	1	0	1	0
Yes	(K1+K2) No (K3) No (K4) No	(3/4) Open (5/6) Open (8/9) Open	X	X	0	1 Whit or without flame+ CHM-F-MCQ failed terminals 13/14 - 0V

X = The status does not matter
0 = Status OFF
1 = Status ON

NOTE: FOR EACH BURNER, PROVIDE AN MCQ SYSTEM; EXCEPT ACS-PG-MCQ PROGRAMMER, BECAUSE WITH ONE UNIT, "N" SYSTEM MAY BE PROGRAMMED/SUPERVISED (ONE AT A TIME).

CHM-F-MCQ- C□
(FLAME PRESENCE DETECTOR RELAY)

K1/K2: FLAME PRESENCE - CONTROL USAGE. F : SYSTEM FAIL - SIGNALING (FRONT)
K3 : FLAME PRESENCE - SIGNALING USAGE. UV : PRESENCE OF ULTRAVIOLET - SIGNALING (FRONT)
K4 : SYSTEM FAIL - CONTROL USAGE. IV : PRESENCE OF INFRARED - SIGNALING (FRONT)
0 - 4v : PROPORTIONAL SIGNAL FOR FLAME SIGNALING L(max) : MAXIMUM DISTANCE BETWEEN CHM-F-MCQ and SEL-SV-MCQ = L(max) < 1300 m
L : ENERGIZED SIGNALING.
CH : FLAME PRESENCE - SIGNALING (FRONT)

UV Mode - proportional to the ultraviolet rays focusing on ultraviolet sensor.
IV Mode - proportional to the infrared rays focusing on infrared sensor.
IV and UV Mode - proportional to the focusing rays with lower number of incident rays.
IV or UV Mode - proportional to the focusing rays with higher number of incident rays.

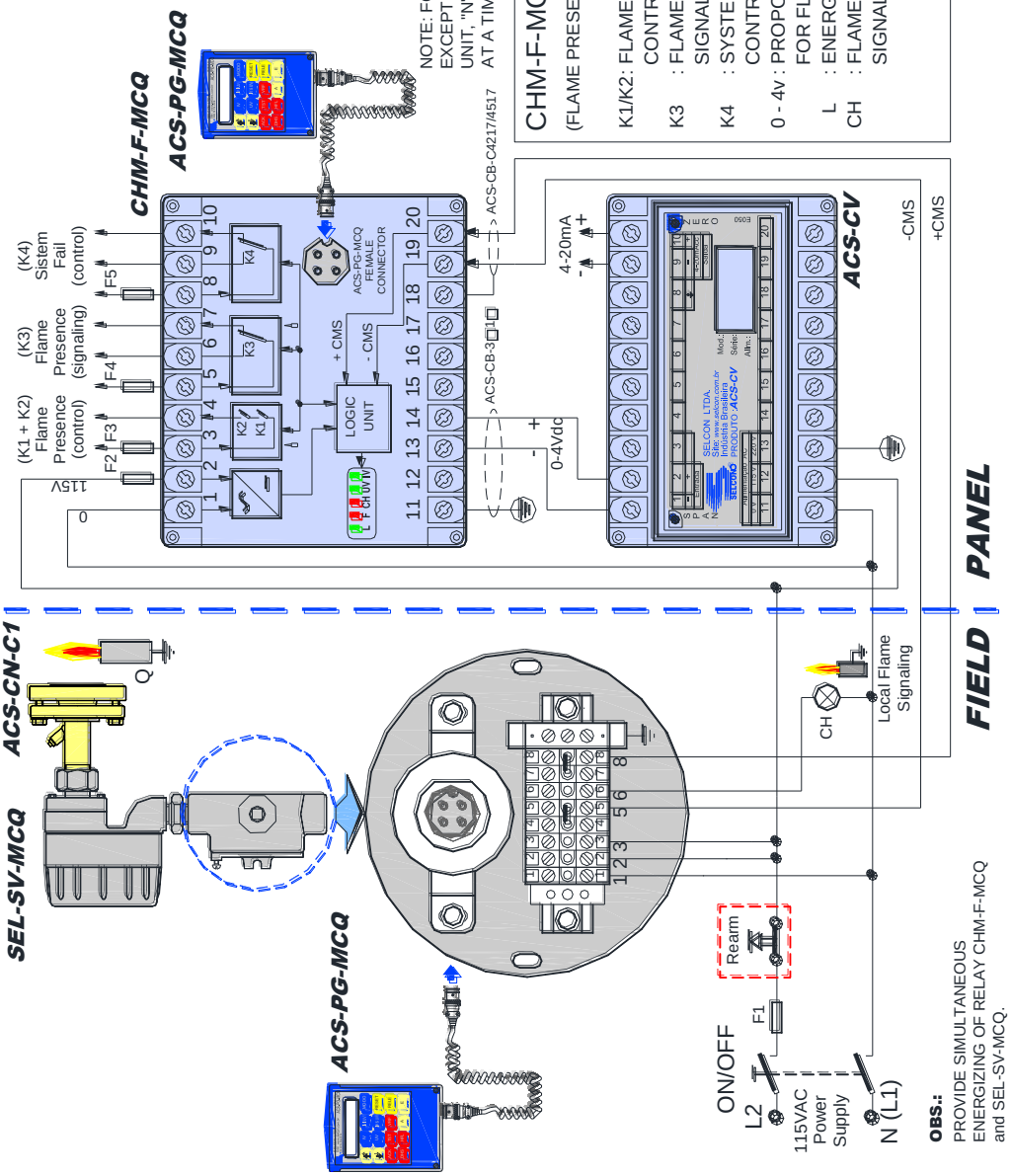


FIG 2

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SELCON SISTEMAS ELETRÔNICOS DE CONTROLE LTDA.
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R. Américo Samarone, 502 • CEP 04284-000 • Moinho Velho • São Paulo • SP • Tel/Fax: (55 11) 3019-1616
http://www.selcon.com.br

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Representative or Distributor:

- ***WARNING:***

⇒ **Use the sensor only with programmers and/or detector relays made by Selcon.**

- ***OTHER PRODUCTS AND ACCESSORIES:***

⇒ Flame relays: CHM–SE, CHM–P, CHM–M, CHM–M–IIIMe (with base) and CHM–F
⇒ Automatic valve proving control: CHM –T
⇒ Ignition and flame monitoring programmers: PRG–SE, PRG–E, PRG–Ie,
⇒ PRG-Ie–IIIMe (with base), PRG–I, PRG–M and PRG–M–IIIMe (with base)
⇒ Flame optical sensors: SEL- SV
⇒ Ionization flame sensors and ignition electrodes: SEL– HT (standard) and SEL– HT–E
⇒ (sensors and electrodes mounted under drawing or customer sample- special);
⇒ Flame signal transmitter: ACS –TX (up to 500 meters between sensor and relay or programmer)
⇒ Flame signal converter for 4 -20 mA: ACS – CV
⇒ Ignition transformers: ACS –TE (for supply in VAC or VCC)
⇒ Timed ignition panel: ACS – IT
⇒ Portable ignitor: ACS – IP (operates on batteries)
⇒ Ignition panel (operates on batteries): ACS–PN–E
⇒ Ignition panel and flame monitoring: PRG-Ie/O3
⇒ Cables: ACS - CB (ignition / sensing / communication / control)
⇒ Touch-sensitive connector and protector for ignition cable: ACS–CP
⇒ Articulate connection ACS–CN
⇒ Ignition and monitoring panel: ACS–PN (on request)
⇒ Reform service for pilot burners: on request
⇒ **PRODUCTION DATA SUPERVISOR LINE**

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