

# FLAME PRESENCE DETECTION RELAY FOR BURNER

PRODUCT: CHM-F-MCQ-C□

VERSION 3.000

TECHNICAL SHEET 1/5

SAC 55 11 3019-1616

See technical bulletin for more details

## ● APPLICATION

The CHM-F-MCQ relay is a flame safety equipment recommended for machines, equipments mono or multiburners systems, of any type or power, for **continuous operation** (turn on / off in a period equals or higher than 24 hours), according to item 4.1.4.4 from NBR 12313 regulation. It offers a fail auto-diagnosis circuit during the secure fail operation (self-checking). The CHM-F-MCQ detection relay is the master unit of MCQ system; it establishes the communication with other units, it process and performs all needed operations to provide the flame control. It can be used with gaseous, liquid or solid fuels. It process signals from ultraviolet and infrared radiation sensors. The values of ultraviolet and infrared radiation levels, as well as other parameters, are programmed through ACS-PG-MCQ monitor and are stored in flash memories (non volatile) at CHM-F-MCQ. The last 16 system occurrence events are registered in flash memory, and it stores its numeric sequence, code, event date and time. The MCQ system is composed by CHM-F-MCQ relay, SEL-SV-MCQ flame sensor and ACS-PG-MCQ programmer.

**This product complies with NBR 12313 regulation requirements from ABNT – revision Sep/2000.**

## ● TECHNICAL DATA

⇒ Microprocessed with watch dog – safe fail with frontal signaling and through N.A. isolated electrical contact – **VERSION 3.0**

⇒ **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 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 supply 115 VAC +10 / -15%; 50/60 Hz

⇒ Power consumption: 10 VA

⇒ Internal protection fuse: 250 mA retarded.

⇒ **External fuse: Provide protection fuse for output circuits according to the project calculated load, respecting the limits of this specification.**

⇒ Protection against voltage surges through filters

⇒ Confirmation time for flame input: < 1 sec. or 4 sec.

⇒ Response time to flame fail: 4 sec.



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- ⇒ Communication RS-485 - 1 (one) pair of communication wires between CHM-F-MCQ and SEL-SV-MCQ flame presence signal sensor-transmitter, **in distances up to 1,300 meters between them**. It is also used to establish communication between them and the programming and supervising ACS-PG-MCQ unit.
- ⇒ Electrical connections: Through terminals in the frontal part of the box.
- ⇒ 3 on-off isolated outputs at 115 VAC - 1A resistive
- ⇒ Output relays lifetime: > 100,000 operations (ELECTRICAL)  
> 10,000,000 operations (MECHANICAL)
- ⇒ 1 analog output (0 to 4 Vcc) to indicate the flame level
- ⇒ 1 output through the front circular connector to interconnect the ACS-PG-MCQ programming/supervising unit.
- ⇒ Signaling on the equipment front; when it is lit means:
  - ⇒ **L**: indicates CHM-F-MCQ energized and operating
  - ⇒ **F**: indicates that a circuit internal fail has occurred (fixed lit)
  - ⇒ **CH**: indicates the presence of a flame (fixed lit)
  - ⇒ **UV**: indicates detection from the ultraviolet sensor (blinking).
  - ⇒ **IV**: indicates detection from an infrared sensor (blinking).
- ⇒ Programmed parameters register (flash memory): Last 16 events with code, individual date and time.
- ⇒ The internal clock keeps date/time by 48 h period, after power shortage.
- ⇒ Possible program types: **U**; **I**; **U** and **I**; **U** or **I**
- ⇒ Working and storage temperature: 0 to 60 °C; and from -5 to 65 °C, respectively.
- ⇒ Maximum relative environment humidity in operation: 90% (40 ± 2 °C) – NBR 5291
- ⇒ Environment protection degree: IP 21 Case, IP 20 terminals.
- ⇒ Case: ABS beige plastic box
- ⇒ Assembling: On a protected flat surface using DIN 35 fixing rails or screws to the case base.
- ⇒ Weight: 800 grams
- ⇒ Warranty: 12 months (**see warranty terms**)



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## ● Dimensional Design (mm)

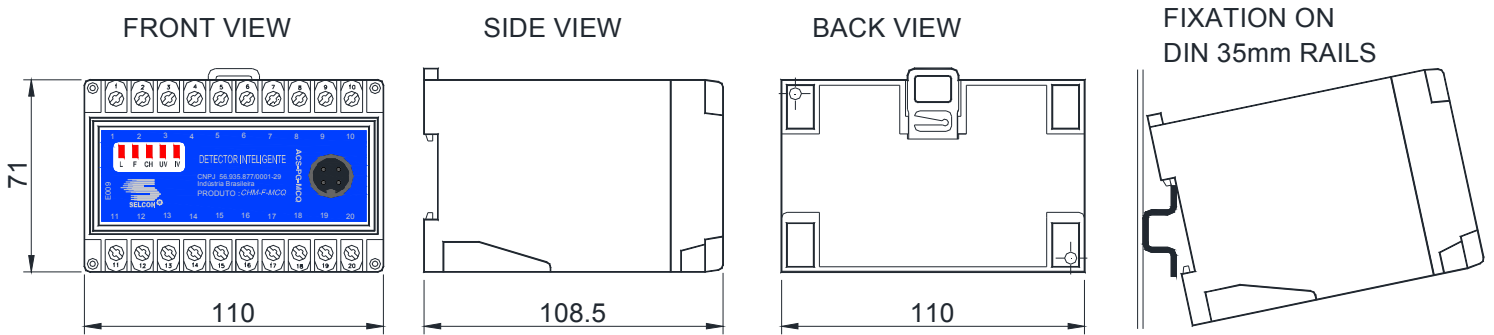


FIG 1

## ● CHM-F-MCQ relay wiring diagrams

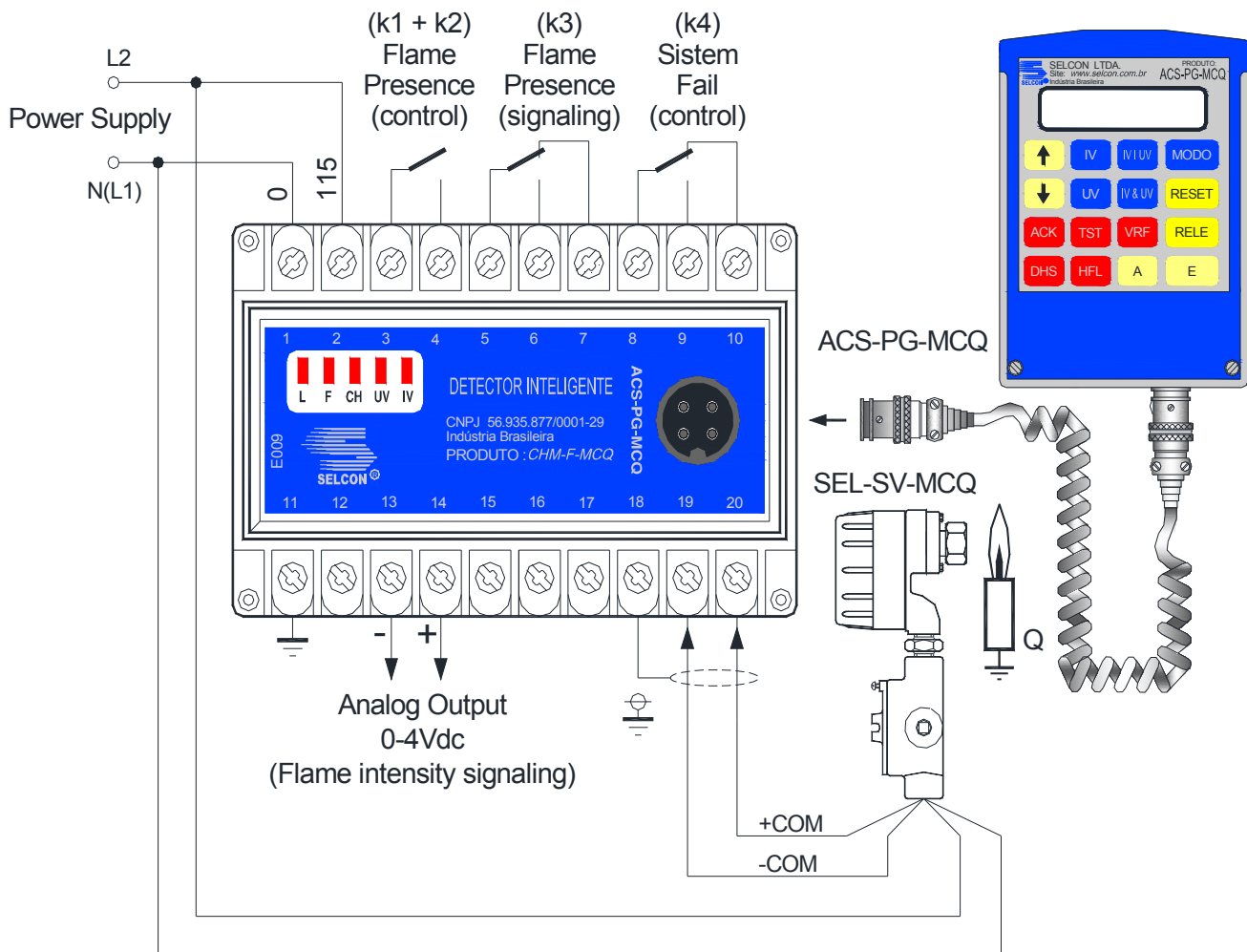


FIG 2



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TRHTH TABLE				COMMENTS
ENERGIZED? CHM-F	OUTPUT RELAY COIL ?	FLAME SYSTEM CONTACTS		
		OK	FAIL	
No	(K1+K2) No (K3) No (K4) No	X	X	terminals 13/14 - 0V
Yes	(K1+K2) No (K3) No (K4) Yes	0	1	No Flame+ CHM-F-MCQ operating, terminals 13/14 - 0V
Yes	(K1+K2) Yes (K3) Yes (K4) Yes	1	0	Whit or without flame+ CHM-F-MCQ failed terminals 13/14 - 0V
Yes	(K1+K2) No (K3) No (K4) No	X	0	

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 : ENERGIZED SIGNALING. L(max): MAXIMUM DISTANCE BETWEEN CHM-F-MCQ and SEL-SV-MCQ = L(max) < 1300 m
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.

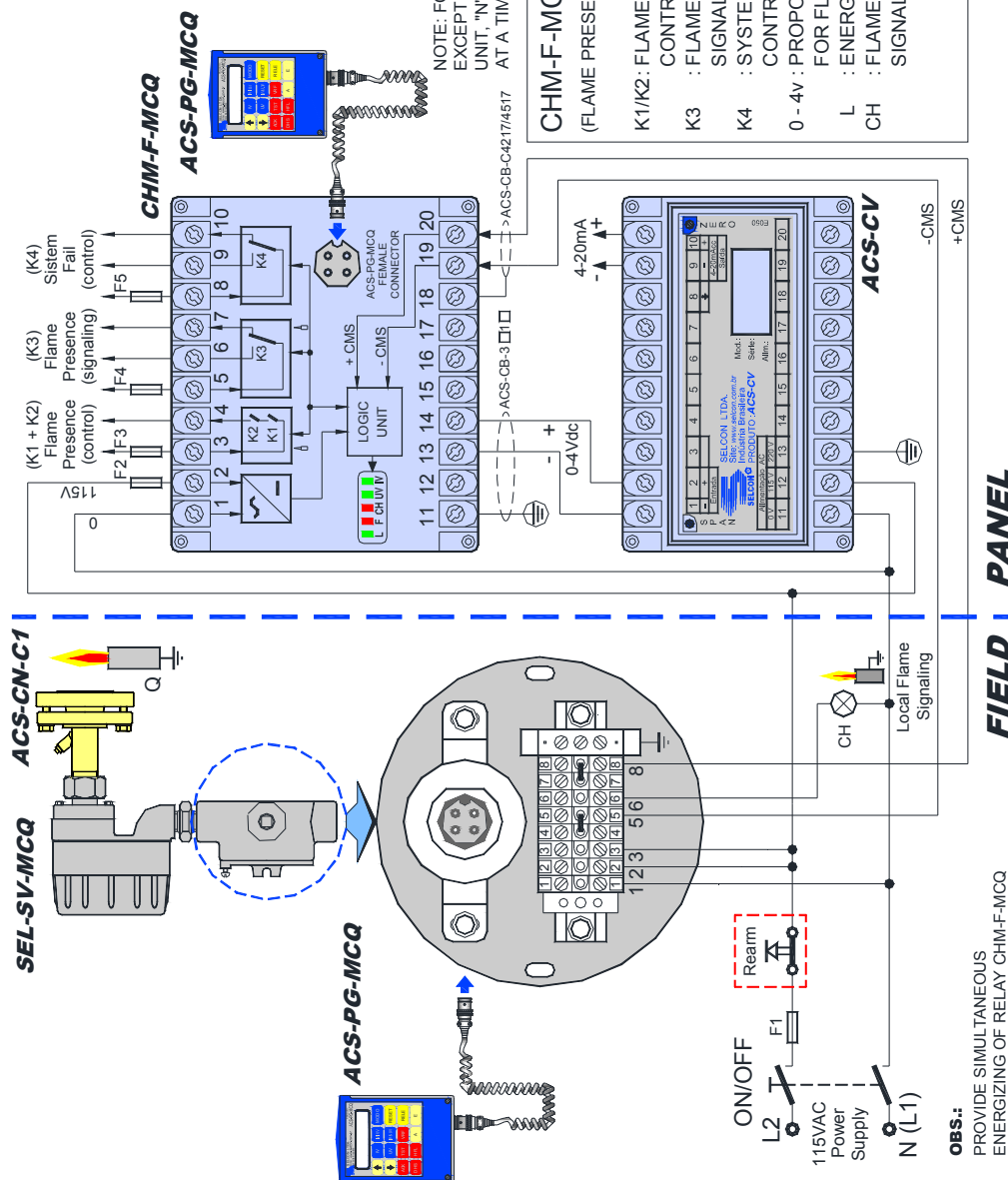


FIG 3



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## ● ORDERING CODE - CHM-F-MCQ-C□

CHM-F-MCQ	-	<b>C – DELAY TO CONFIRM FLAME PRESENCE</b>
		<b>(d1)</b>  d1 = 1 => 1 sec.  OR  d1 = 2 => 4 sec.

**Note: The sensor and other accessories must be specified separately, according to their corresponding code tables.**

NOTE: It allows the usage with other products made by Selcon.

## ● **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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