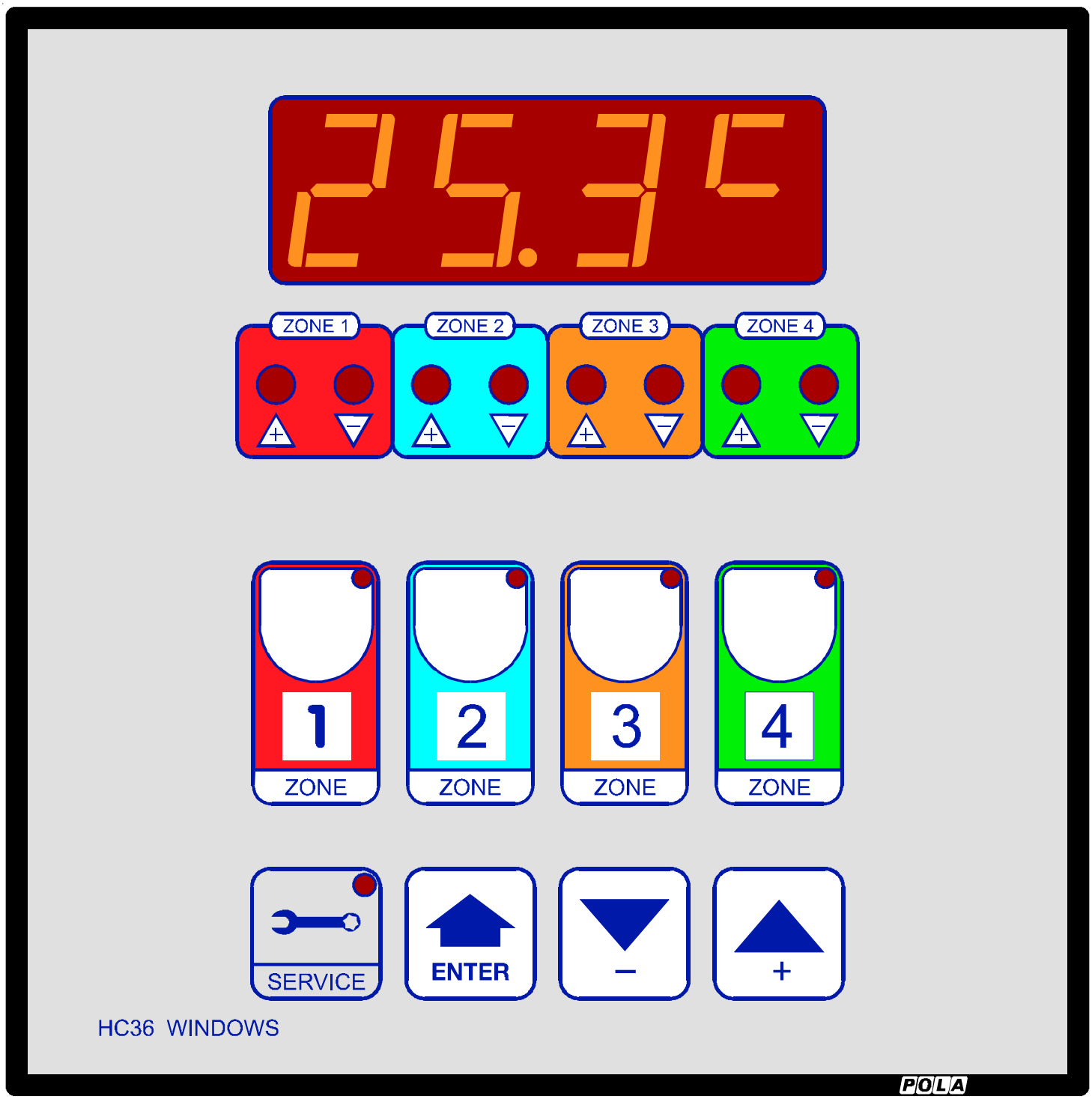

25.3C
ZONE 1
ZONE 2
ZONE 3
ZONE 4
1
ZONE
2
ZONE
3
ZONE
4
ZONE
SERVICE
ENTER
–
+
HC36 WINDOWS
POLA

TABLE OF CONTENTS

INTRODUCTION TO USER PROGRAMMING

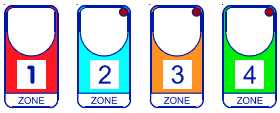
The symbol placed at top of every paragraph indicates:

: Settings to be performed only at plant start-up they determine working mode suited for the kind of plant existent (heating, equipments, flap tipology, etc.).

: User common settings normally used during operation procedures (temperature, settings, speed, etc.).

: View only operations (temperature, speed, etc.) without changing settings.

The setting mode is the same for the various programs you want to run:

Select the desired function by pushing the appropriate ideogram key 

after push 

for start-up settings or 

for common settings.

At this point the message related to the parameter to be set will appear on display in alternance with the parameter value: use 

to increase, or 

to decrease the value to be set, when required value has been reached, push 

for entering data.

In the case of sequential settings at this point the next parameter message will appear; act as already explained.

At the last settings the system will return in normal operating mode.

To escape from operation setting push the specific flashing key.

ZONE 1 SETTING

Press **ZONE 1** and then **ENTER**:
this message will be displayed instead of the
°C Zone 1 temperature value.
Press **+** or **-** to modify , press **ENTER** to exit.

At this point (only in feedback potentiometer type) this message will be displayed instead of the *Minimum % opening.*
Press **+** or **-** to modify , press **ENTER** to confirm.

At this point (only in feedback potentiometer type) this message will be displayed instead of the *Maximum % opening.*
Press **+** or **-** to modify , press **ENTER** to confirm.

In normal condition (not in programming) press **ZONE 1** key to display Zone 1 temperature probe.
In feed-back potentiometer working press **ZONE 1** for at least two seconds to display % Zone 1 flap real position.

ZONE 2 SETTING

Operate like in ZONE 1setting, but press **ZONE 2** key.

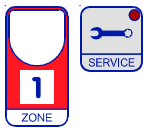
ZONE 3 SETTING

Operate like in ZONE 1setting, but press **ZONE 3** key.

ZONE 4 SETTING

Operate like in ZONE 1setting, but press **ZONE 4** key.

ZONE 1 PARAMETERS PROGRAMMING



Press together **ZONE 1** and **SERVICE**:

Press ENTER to go forward, press + or − to modify.

Zone 1 type working:
=0 : no-working (zone disabled).
=1 : proportional floating actioning (without flap response potentiometer).
=2 : feedback proportional actioning, with connection of flap response potentiometer (see **INSt** par. function ***PotE***).

(only with ***tYPE= 1***) *°C zone 1 neutral band* .

(only with ***tYPE= 1***) *°C zone 1 close modulation band.*

(only with ***tYPE= 1***) *°C flap open modulation band.*

(only with ***tYPE= 1***) *Zone 1 on time (in Seconds.decimals)*.

(only with ***tYPE= 1***) *Zone off maximum time (in Seconds.decimals)*.

(solo con ***tYPE=2***) *°C zone 1 proportional band* .

At this point pressing **ENTER** you can return at the beginning of the programming list (message ***S.E.r.v.*** will be displayed).
You can press **SERVICE** at any time to exit and return to the run mode.

ZONE 2 PARAMETERS PROGRAMMING

Press **ZONE 2** together with **SERVICE** and work like on ZONE 1.

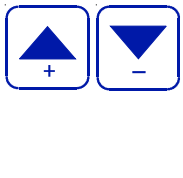
ZONE 3 PARAMETERS PROGRAMMING

Press **ZONE 3** together with **SERVICE** and work like on ZONE 1.

ZONE 4 PARAMETERS PROGRAMMING

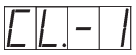
Press **ZONE 4** together with **SERVICE** and work like on ZONE 1.

FLAP POTENTIOMETER INITIALIZATION PROCEDURE



ZONE 1: Only if you have selected in **ZONE 1-SERVICE *tYPE= 2*** function.

Press **+** / **-** / **ZONE 1** together for at least 1 second:



Value on delivery: **=0**

The program CLOSES the Zone 1flap (lamp + flashes) and *the Flap 1 potentiometer resistence value* is displayed.

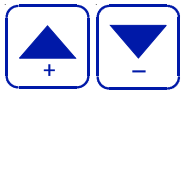
When the flap has closed, press **ENTER** to record the value:

Value on delivery: **=1000**

At this point the program OPENS the Zone 1flap (lamp **-** flashes) and *the Flap1 potentiometer resistence value* is displayed.

When the flap has opened, press **ENTER** to record the value:

At this point the program returns automatically to the run mode.



ZONE 2: Only if you have selected in **ZONE 2-SERVICE *tYPE= 2*** function.

Press **+** / **-** / **ZONE 2** together for at least 1 second:

Value on delivery: **=0**

The program CLOSES the Zone 2 flap (lamp + flashes) and *the Flap 2 potentiometer resistence value* is displayed.

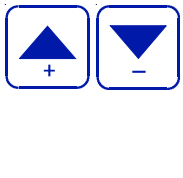
When the flap has closed, press **ENTER** to record the value:

Value on delivery: **=1000**

At this point the program OPENS the Zone 2 flap (lamp **-** flashes) and *the Flap2 potentiometer resistence value* is displayed.

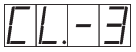
When the flap has opened, press **ENTER** to record the value:

At this point the program returns automatically to the run mode.



ZONE 3: Only if you have selected in **ZONE 3-SERVICE *tYPE= 2*** function.

Press **+** / **-** / **ZONE 3** together for at least 1 second:



Value on delivery: **=0**

The program CLOSES the Zone 3 flap (lamp + flashes) and *the Flap 3 potentiometer resistence value* is displayed.

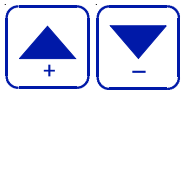
When the flap has closed, press **ENTER** to record the value:

Value on delivery: **=1000**

At this point the program OPENS the Zone 3 flap (lamp **-** flashes) and *the Flap3 potentiometer resistence value* is displayed.

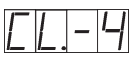
When the flap has opened, press **ENTER** to record the value:

At this point the program returns automatically to the run mode.



ZONE 4: Only if you have selected in **ZONE 4-SERVICE *tYPE= 2*** function.

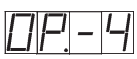
Press **+** / **-** / **ZONE 4** together for at least 1 second:



Value on delivery: **=0**

The program CLOSES the Zone 4 flap (lamp + flashes) and *the Flap 4 potentiometer resistence value* is displayed.

When the flap has closed, press **ENTER** to record the value:



Value on delivery: **=1000**

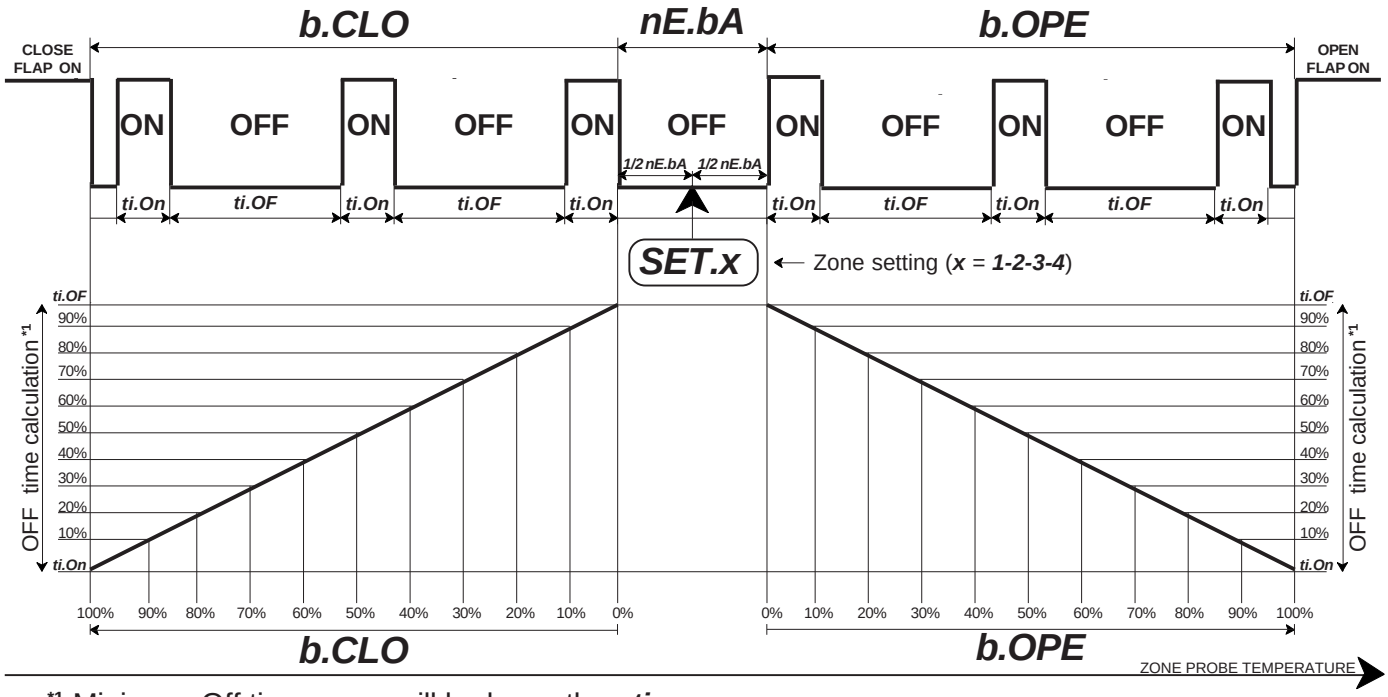
At this point the program OPENS the Zone 4 flap (lamp **-** flashes) and *the Flap4 potentiometer resistence value* is displayed.

When the flap has opened, press **ENTER** to record the value:

At this point the program returns automatically to the run mode.

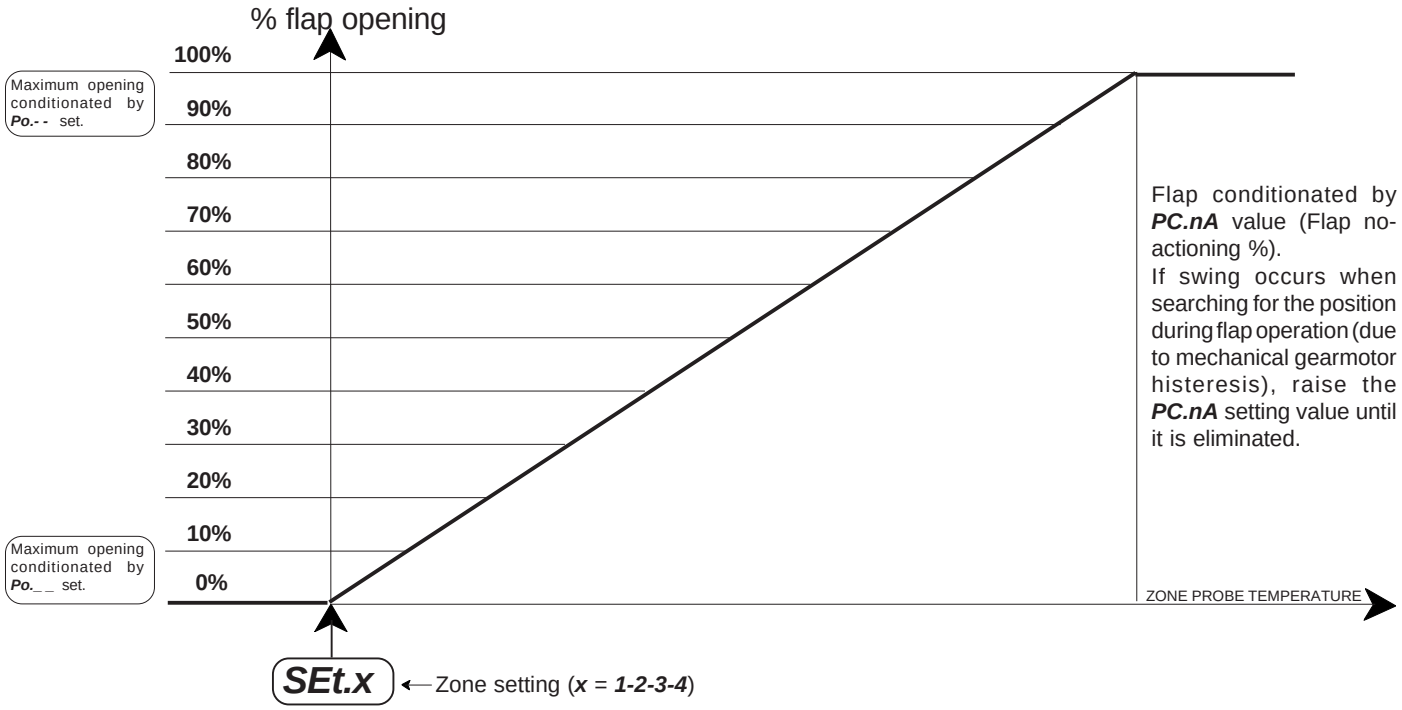
FLAP OPERATIVE DIAGRAMS

tYPE=1 proportional floating actioning.



*1 Minimum Off time never will be lower than ***ti.on***

tYPE=2 Feedback proportional actioning (with flap potentiometer response).



With ***Perc*** different from ***0*** to temperature set reaching (***SEt.x***) the flap is positionated on % value set in ***PErc***.
Flap closing is limited by setting of percentage of minimum opening ***Po.***_ _ .
Flap opening is limited by setting of percentage of maximum opening ***Po.- -*** and ***Po.- E***.
To obtain the complete closing and opening flaps, when set 0% is required and 100%, closing and opening relay stays always in "on" condition (this operation is signaled with permanent lightings of its lamps) in order to stop the flap with safety's limit-switch.

tYPE=2 *and* ***Pote= 2*** Feedback proportional actioning with automatic correction of mistake

The actuation of the flap is similar to that with ***Pote=1***, but while in that case the operation of the flap was conditioned by ***PC.nA*** setting (minimum % of operation, which has the purpose to avoid annoying oscillations during the search of the flap position, due to mechanical hysteresis).
With ***Pote=2*** this value is calculated automatically at each movement of the flap (every each flap movement the difference between the percentage of theoretical opening and the real one is calculated, and this correction is applied on the next shift).
In this way, the system is self-correcting at every movement of the flap.
If you set this type of operation the program also checks at every movement the functionality of the potentiometer response.
if there are some anomalies the program reports the fact (see special messages on the display) and inserts emergency operation, which consists in the complete opening of the flaps when the zone temperature rises above the set temperature and in closure of the flaps when the zone temperature falls below the set one.

To ensure a satisfactory operation, the run time of the flap between the position completely open and the one completely closed is advisable to be at least 30 seconds. (anyway even for shoterter pediod of time the works the same way. Accuracy in % is obviously lower).

INSt PARAMETERS PROGRAMMING

Press together **+** , **-** , **SERVICE** for at least 1 second: this message will be displayed.

Press ENTER to go forward, press + or − to modify.

SCAn Time of temperature scanning viewing (in seconds) *1.

PotE (only with ***tYPE=2*** in the relative **ZONE-SERVICE**) *Flap operation mode:*
*=1 : Proportional actioning with fixed no-action % *2.*
*=2 : Proportional actioning with auto-tracking on position search *3.*
*=3 : Proportional actioning referred to % ventilation inserted *4.*

Pc.nA (only with ***PotE=1*** and ***PotE=3***) *Flap no-actioning % *2.*

PEr-C (only with ***PotE=1*** and ***PotE=2***) *Flap positioning % at temperature Set*.

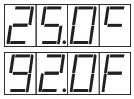
Ad.-1 *°C Input 1 temperature probe correction *5.*

Ad.-2 *°C Input 2 temperature probe correction *5.*

Ad.-3 *°C Input 3 temperature probe correction *5.*

Ad.-4 *°C Input 4 temperature probe correction *5.*

tEnP ***=1*** ; °C (0,1° resolution).
=2 ; °F (0,1° resolution).



Example temperature representation with ***tEnP = 1***
Example temperature representation with ***tEnP = 2***

At this point pressing **ENTER** you can return at the beginning of the programming list (message ***I.n.S.t.*** will be displayed).
You can press **SERVICE** at any time to exit and return to the run mode.

1** If the set time is different from ***0 in normal conditions (not programming) on display will appear alternatively to the programmed time in ***SCAn*** the temperatures of the individual zones (the displayed area is reported by lighting of the zone relative lamp).

2** Flap actioning is proportional with fixed flap no- action %(PC.nA)*** .
If swing occurs when searching for the position during flap operation (due to mechanical gearmotor histeresis), it raises the ***PC.nA*** setting value until is eliminated.
If the potentiometer doesn't work, the actioning operates in "emergency" and it opens and closes the flap on the ground of the required temperature on the relative zone; this anomaly is present on display (see *Particular messagges on display*) and an the alarm starts working.

***3** The actioning of flap starts with the self-acquisition of the error precision on the setting of flaps; in this way when each flap starts, the program calculates the error and corrects it with the next actioning.
If the potentiometer doesn't work, the actioning operates in "emergency" and it opens and closes the flap on the ground of the required temperature on the relative zone; this anomaly is present on display (see *Particular messagges on display*) and an the alarm starts working.

***5** You can correct the readings on the various temperature sensor (**+** or **-**).
Attention: temperature probe is specified with a precision of 0.2°C (typically is better than 0.1°C) so to adjust them is required almost a certified thermometer with a precision of 0.05℃.

SPECIAL MESSAGGES ON DISPLAY

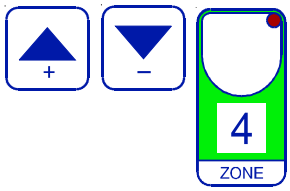
In normal condition on display appears temperature of selected zone.
Some special conditions can cause following messages:

When selected probe has an open circuit wire failure..

When selected probe has a short circuit wire failure.

When selected function is not working.

MANUAL MODE



In some start-up condition may be useful to work in "hand" mode.

Press **+** / **-** / **ZONE 4** keys together for at least one second: ***HAnd*** message will be displayed (release now keys); on display it will appear ***HAnd*** message.

Press **+** keys until is displayed number required to be hand (see table in **State indication lamps**).
Press **ENTER** key to activate the output.
Pressing again **+** to increase relay number previous relay is disactivated.
Press **ZONE 4** key to exit and return to the run mode.

STATE INDICATION LAMPS

The light situated at the bottom of display shows the state of the various relay as set out below.

Led	State	N° Relay	Conctacts
ZONE 1 "+"	Flap 1 close on	1	11-12
ZONE 1 "-"	Flap 1 open on	2	13-14
ZONE 2 "+"	Flap 2 close on	3	15-16
ZONE 2 "-"	Flap 2 open on	4	17-18
ZONE 3 "+"	Flap 3 close on	5	19-20
ZONE 3 "-"	Flap 3 open on	6	21-22
ZONE 4 "+"	Flap 4 close on	7	23-24
ZONE 4 "-"	Flap 4 open on	8	25-26

HC36 installation.
Place the module in a clean and dry site.
Connect electric wires such as shown in diagram.

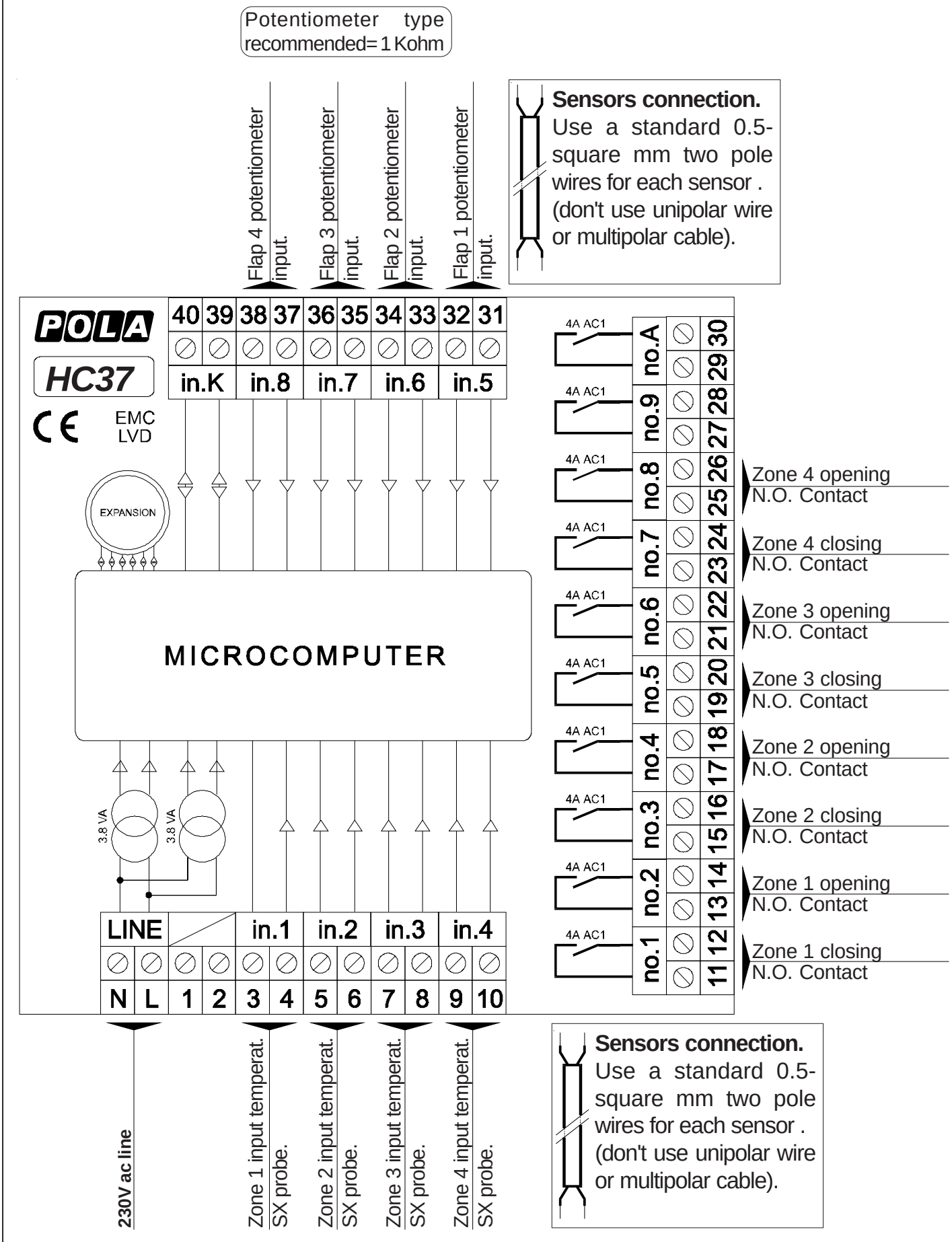
How to connect the power line.
Connect power line on **L-N** terminals; protect supply with adequate fuse.

How to connect the auxiliary contacts:
Connect **11-22.....29-30** terminals on the terminals block (contacts up to **4AMP.AC1**) to the loads as shown in the diagram.
Protect contacts with a **2AMP.F** fuses.

How to connect probes and control signals.
Connect the provided sensor as shown in the diagram: **for remote connections use a standard 0,5-square millimetre two-poles wire for each sensor**, taking great care over the connection, by insulating and sealing carefully the joints.
In case of strong radio-interference insert a ferrite sleeve in the cable near regulator.

How to connect response flap potentiometer.
Connect the provided flap potentiometer as shown in the diagram: **for remote connections use a standard 0,5-square millimetre two-pole wire for each potentiometer**, taking great care over the connections.
In case of strong radio-interference insert a ferrite sleeve in the cable near regulator.
If the program calculates the precision's mistake of flap (see **INSt**, ***POtE=2***) operation that avoids annoying swings during flap position required (due to flap mechanical hysteresis), value is automatically calculated at each flap moving (at each moving it is calculated the difference between the theoretic opening percentage and the real one; and this correction is set on the next moving).
In this way the system autocorrects itself at each flap moving response potentiometer.

This kind of actioning permits a good functioning only if the flap's time work between the all open position and the one all closed is at least 30 seconds (in any case even for inferior times the system works in a right way, obviously the imprecision % on the position is superior).


Potentiometer type recommended= 1 Kohm
Flap 4 potentiometer input.
Flap 3 potentiometer input.
Flap 2 potentiometer input.
Flap 1 potentiometer input.
Sensors connection.
Use a standard 0.5-square mm two pole wires for each sensor . (don't use unipolar wire or multipolar cable).
POLA
HC37
EMC
LVD
40 39 38 37 36 35 34 33 32 31
in.K in.8 in.7 in.6 in.5
EXPANSION
MICROCOMPUTER
3,8 VA
3,8 VA
LINE
in.1 in.2 in.3 in.4
N L 1 2 3 4 5 6 7 8 9 10
4A AC1
no.A no.9 no.8 no.7 no.6 no.5 no.4 no.3 no.2 no.1
30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11
Zone 4 opening N.O. Contact
Zone 4 closing N.O. Contact
Zone 3 opening N.O. Contact
Zone 3 closing N.O. Contact
Zone 2 opening N.O. Contact
Zone 2 closing N.O. Contact
Zone 1 opening N.O. Contact
Zone 1 closing N.O. Contact
230V ac line
Zone 1 input temperat. SX probe.
Zone 2 input temperat. SX probe.
Zone 3 input temperat. SX probe.
Zone 4 input temperat. SX probe.
Sensors connection.
Use a standard 0.5-square mm two pole wires for each sensor . (don't use unipolar wire or multipolar cable).

Power supply	
Line voltage	220-240Vac
Frequency	50/60Hz
Cabinet	
Material	PVC
Dimensions	144x144x77mm
Weight	KG 1
Protection degree	IP20
Outputs	
Maximum relay contacts load	4A AC1
Serial output	TTL 2400 baud
Inputs	
Probe measuring range	-50.0...+115.0℃
Instrument precision	0.2℃
Temperature probe reading precision	0.2℃
Temperature setting range	-50.0...+115.0℃
Humidity probe signal	4-20mA
Temperature range	
Operatibility	-10...+40℃
Storage	-40...+85℃

CE DECLARATION OF CONFORMITY

POLA® declares that your **HC36** model is conform to following European normatives:

EN 50081-1 (1992) (Emission)

EN 50082-2 (1995) (Immunity)

referred to directive **EE 89/336** and subsequent **92/31** about electro-magnetic compatibility (**EMC**)

and it is conform to directive **EEC 72/23** and subsequent **EEC 93/68** about low voltage safety (**LVD**).

Measure was performed by an
ACCREDITATED COMPETENT BODY.

TECHNICAL DATA

Power supply	
Line voltage	220-240Vac
Frequency	50/60Hz
Cabinet	
Material	PVC
Dimensions	144x144x77mm
Weight	KG 1
Protection degree	IP20
Outputs	
Maximum relay contacts load	4A AC1
Serial output	TTL 2400 baud
Inputs	
Probe measuring range	-50.0...+115.0℃
Instrument precision	0.2℃
Temperature probe reading precision	0.2℃
Temperature setting range	-50.0...+115.0℃
Humidity probe signal	4-20mA
Temperature range	
Operatibility	-10...+40℃
Storage	-40...+85℃

CE DECLARATION OF CONFORMITY

POLA® declares that your **HC36** model is conform to following European normatives:

EN 50081-1 (1992) (Emission)

EN 50082-2 (1995) (Immunity)

referred to directive **EE 89/336** and subsequent **92/31** about electro-magnetic compatibility (**EMC**)

and it is conform to directive **EEC 72/23** and subsequent **EEC 93/68** about low voltage safety (**LVD**).

Measure was performed by an
ACCREDITATED COMPETENT BODY.

NOTES

PRESET PROGRAMS

This processor is programmed with the following (variable) settings.
To return to these settings at any time, press **+** / **-** and **ENTER** together for at least 1 second ***boot*** message is displayed.

On this table are shown setting values at delivery, it is recommended to record the values of this settings table to have immediate feedback on the type of operation and the programmed setting mode.

ZONE 1

Parameter	Value on delivery	Value on customer
SEt.1	20.0°c	
Po._ _	0%	
Po.- -	100%	
SERVICE		
tYPE	=1	
nE.bA	0.2°c	
b.CLO	5.0°c	
b.OPE	5.0°c	
ti.on	1.0 "	
ti.OF	60.0 "	
b.Pro	5.0°c	

ZONE 2

Parameter	Value on delivery	Value on customer
SEt.2	20.0°c	
Po._ _	0%	
Po.- -	100%	
SERVICE		
tYPE	=1	
nE.bA	0.2°c	
b.CLO	5.0°c	
b.OPE	5.0°c	
ti.on	1.0 "	
ti.OF	60.0 "	
b.Pro	5.0°c	

ZONE 3

Parameter	Value on delivery	Value on customer
SEt.3	20.0°c	
Po._ _	0%	
Po.- -	100%	
SERVICE		
tYPE	=1	
nE.bA	0.2°c	
b.CLO	5.0°c	
b.OPE	5.0°c	
ti.on	1.0 "	
ti.OF	60.0 "	
b.Pro	5.0°c	

ZONE 4

Parameter	Value on delivery	Value on customer
SEt.4	20.0°c	
Po._ _	0%	
Po.- -	100%	
SERVICE		
tYPE	=1	
nE.bA	0.2°c	
b.CLO	5.0°c	
b.OPE	5.0°c	
ti.on	1.0 "	
ti.OF	60.0 "	
b.Pro	5.0°c	

Parametri INSt

Parameter	Value on delivery	Value on customer
SCAn	0 "	
PotE	=2	
Pc.nA	3%	
PErC	0%	
Ad._1	0.0°c	
Ad._2	0.0°c	
Ad._3	0.0°c	
Ad._4	0.0°c	
tEnP	=1	