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USE, START-UP AND MAINTENANCE MANUAL

CONTROL AND REGULATION CABINET

WITH CONTROLLER 30633

PLEASE READ CAREFULLY AND FULLY THIS MANUAL BEFORE INSTALLING THE UNIT THIS MANUAL IS AN INTEGRAL PART OF THE PRODUCT AND SHOULD ACCOMPANY IT UNTIL ITS POSSIBLE DISASSEMBLY.

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CONTENTS

START-UP

- You are now the owner of a VULCANIC control and regulation cabinet.
  Check that the information on the nameplate corresponds to the parameters of your order and the delivery form. Check for the presence of, and refer to the contents of the accompanying technical file:
  - Commercial specifications,
  - Circuit diagrams and parts lists,
  - Manuals for the main regulation and safety equipment.

- Place the cabinet on its base, protected from impact and bad weather (except for the outdoor versions), ensuring that the ventilation orifices are kept clear,

- Carry out electrical connection to the interface terminal blocks in conformity with the state of the art rules and the current standards, using the circuit diagram. Except in special cases, the cables pass through a removable plate located on the inside, that you will provide with the necessary glands. It is mandatory to connect the ground terminal to the ground point.
  Check that the connections are tight.

- Check the connection of the wiring, wire by wire, and make sure that the voltage, current, power and external functions conform to those appearing in this file. Also check with the presence of and calibration of the fuses for protection devices (if necessary, pre-adjust the threshold of the latter).
  Disconnect the loads from the feeders by opening the fuse holders.

- Ensure the electric supply to the cabinet while preserving the head switch in the open position and checking the power supply voltage.

- Close the head isolating switch and pre-adjust the configurable or programmable (regulator) electric devices. Check the conformity of their operation with the attached manual or specifications. All the functions must be tested in this way, one by one.

CAUTION:

During the following live tests, the heating loads (electric resistors) or cooling loads (refrigerating unit) must be set to the normal operating situation: presence of fluids and nominal flow rates.

- Turn of the main electric power supply then connect the loads again (close the fuse holders). Reestablish the electric power supply to perform the first full-scale test. It is preferable to raise the values of the parameters gradually during this test (power and temperature, etc) while monitoring the performance of the various test and safety functions (fans or air conditioning, thermostats, limiters and safety devices, various alarms, etc).

- The check the performance of the installations at full load: all the switching sequences should be tested.

1. FUNCTIONAL ANALYSIS:

- Except in special cases involving particularly complex sequences, this analysis is implicitly contained in the commercial specifications or in the commercial manual of the corresponding product.

- The lighted "ON" selector that is used for switching on (position I) or off (position 0) the equipment. The indicator light comes on when the heating contactor is engaged.

- The green "ON" (option) pushbutton: used for heating the equipment.

- The red "OFF" (option) pushbutton: used for stopping the equipment.

- The lighted "LOCAL/REMOTE" (option) selector switch used as follows:
  In the "LOCAL" mode, the operation of the equipment using the front panel controls.
  In the "REMOTE" mode, with the orange indicator lights on, the cycle start by closing a potential-free contact.
  In the remote mode, the cabinet front panel controls are no longer operational.

- The black " FAULT RESET" pushbutton: fleeting action on this button is a way of acknowledging faults after they have disappeared; this operation is necessary each time the main power supply is cut off and reestablished.

- The white "HEATING" indicator lights come on when the three-phase voltage is present across the terminals of the heating elements. The breakdown of one or several phases results in the partial or permanent lighting, or the total extinguishing, of one or several indicator lights.

- The white "VOLTAGE PRESENCE" indicator light:
  The control voltage is present forward of the main isolating switch.

- Red "FAULT, OVERHEATING," indicator light, lighting up when:
- The respective contact of the thermostat, regulator, external safety loop, opens
- And after each cut off and re-establishing of the main power supply.

- The "LIMITATION" (option) indicator light comes on when the temperature of the heating elements has exceeded the pressure preset on the thermostat. This interrupts the regulation signal (automatic reset).

- The "EMERGENCY STOP" knob on the cabinet, to stop the operation of the equipment; to reset, turn this knob.

- The SAFETY EXTERNAL LOOP: used for connecting an external normally closed safety contact.

- The "HOUSING SAFETY" thermostat, irreversibly cutting off the heating when the housing temperature has exceeded the safety set point.

- The "HEATING ELEMENTS TEMPERATURE" limiting thermostat interrupts the regulation signal (automatic reset) when the surface temperature of the heating elements has exceeded the limitation set point.

- The temperature regulator:
  PID regulator ensuring the regulation of the process temperature by comparison between the measurement made by the regulation probe and the set point chosen by the operator. These displays go out when the voltage is no longer present across the terminals.

- Cascade operation (option):
  - Main temperature regulator (on the front panel of the cabinet):
    PID regulator ensuring the regulation of the process temperature by comparison between the measurement made by the regulation probe and the set point chosen by the operator; its displays go out when the voltage is no longer present across the terminals.

  - Auxiliary temperature regulator:
    PID regulator ensuring the regulation of the instrumented rod temperature by comparison between the measurement made by the regulation probe and the set point chosen by the operator; its displays go out when the voltage is no longer present across the terminals.
    The auxiliary temperature regulator limitation set point is adjusted using the Sphi parameter.
    To optimize the main regulator/auxiliary regulator regulation cascade, it is necessary to:
    - Adjust the Sphi limitation set point of the auxiliary regulator,
    - Set the auxiliary regulator to all or nothing regulation (proportional band –0)
    - Set the main regulator to power proportioning (MANUAL) and choosing and power so that the process reaches a temperature for which auxiliary regulator limitation is active.
    - Optimize the PID parameters of the auxiliary regulator limiter using the habitual method as recommended in the specific manual of the regulator (or use the self-adapting PID mode)
    - Put the main regulator in a closed loop (REGULATION).

  - Optimize the main regulator PID parameters using the habitual method as recommended in the regulator specific manual (or use the self-adapting PID mode).

- Red LED “I” on the regulator:
  Lights up when the deviation between the measurement and the set point justifies the regulator giving a heating order to the contactors or thyristor power units (option) taking into consideration the settings of the P. I. and D. parameters. Even when OP1 is lighted, heating may be interrupted by the limiter or a safety device.

- Red “ALM” LED on the regulator:
  Lights up when the measurement deviates too far from the set point. This value is adjusted by the optional parameter P-AL (full scale), b-AL (band) or A-AL (deviation).

- Red “AT” LED on the regulator:
  Lights up when the optimization adjustment of the P.I.D. parameters is automatic (self-adaptive mode). Flashes in the self-regulating mode (and on the startup of the self-adaptive mode). It is unlit when the PID parameter optimization adjustment is carried out manually.

- Red “SET” LED on the regulator.
  Lights up in the adjustment mode reserved for qualified personnel; flashes during a change of modes.

2. PARAMETER SETTINGS MODE

See the regulator parameter(s), thermostat(s) in the appendix of the circuit diagram.

The adjustments made in the works for the “safety” functions (temperature, flow rate, pressure, etc) are theoretical and approximate. Their final value is obtained as follows:
- Decalibrate each function to the tripping threshold, in the case of the most unfavorable operation (maximum value or minimum value as applicable), without exceeding this threshold.
- Then increase (for maximum values) or decrease (for minimum values), this tripping threshold to between 3 and 10% of the full-scale.

3. MAINTENANCE

- Check that the interface connections are still tight after 50 hours of operation, then once each year. Clean the heat sinks, fans, filters and ventilation openings using compressed air, and at intervals adapted to the fouling rate

- Annually, check the performance of the safety equipment (thermocouples and various probes, thermostats, indicator lights, alarms, etc), and their calibration if necessary. Replace any defective elements.

4. TROUBLE-SHOOTING:

- Some standardized components may have a procurement time that is incompatible with the availability demands of your installation, including during the warranty period. Be sure to get the information about these times and order the necessary spares from VULCANIC.

5. WARRANTY:

- Unless stipulated otherwise in a contract, the warranty is compliant with the general conditions of sale by VULCANIC. In any case, no action on site under cover of the warranty will be accepted unless VULCANIC has initially received an assistance order on first commissioning, and rushed in the qualified personnel at that time.

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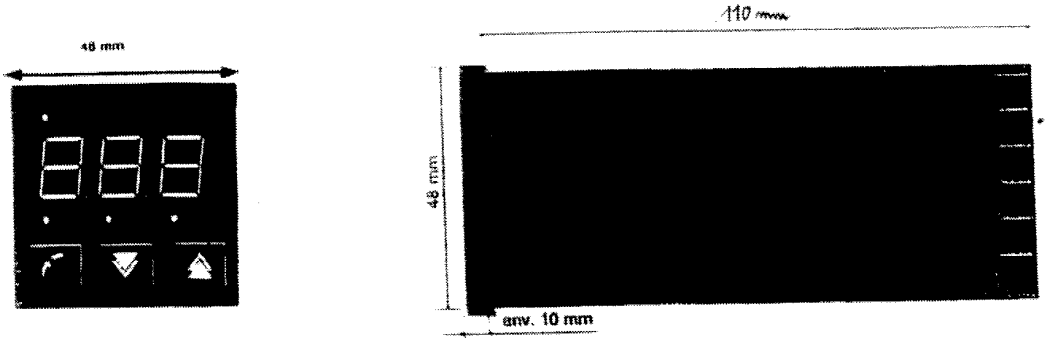
NOTICE D'UTILISATION

REGULATEUR DE TEMPERATURE

TYPE 30633

UT. 30633 Indice A
le 02/10/2000

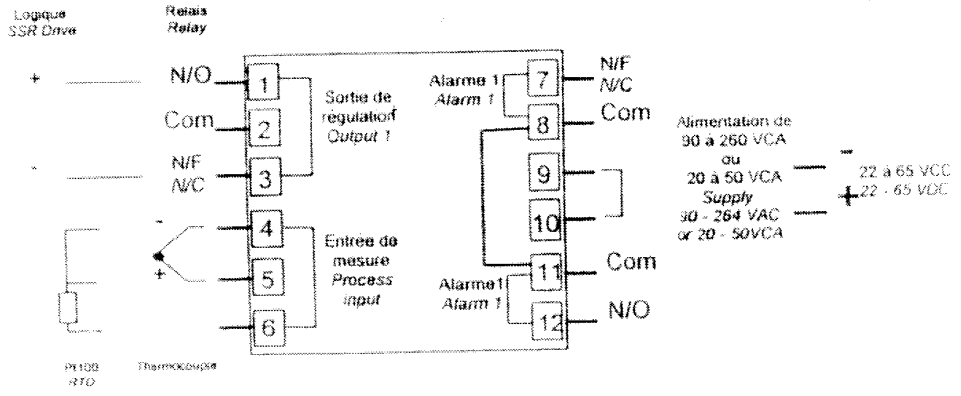
1. Dimensions - Main dimensions



Découpe pour montage en panneau : 45 x 45 mm

Cut-out for panel-mounting : 45 x 45 mm

2. Connexions et câblage - *Connections and wiring*

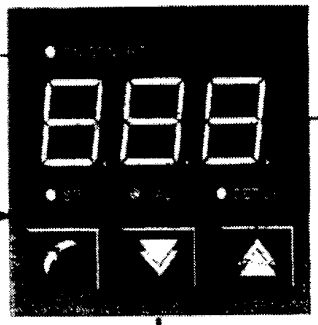


3. Mode opérateur - *Operator Mode*

LED SETUP éteinte
SETUP LED OFF

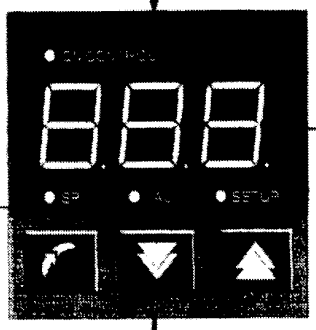
LED éteinte = température inférieure à la consigne
LED allumée = température égale à la consigne
LED clignotante = température supérieure à la consigne

OFF = Temperature is below setpoint
ON = Temperature matches setpoint
Flashing = Temperature is above setpoint



Affichage de la mesure
Process Input Display

Appuyer sur la touche
Press this key

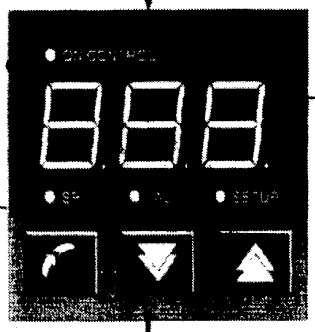


Affichage de la consigne
Setpoint Display

Voyant **Consigne** allumé
ON = setpoint displayed

Utiliser les touches ▲ ou ▼ pour régler la consigne de régulation (si elle n'a pas été bloquée en mode paramétrage)
Use the keys to regulate the Setpoint

Appuyer sur la touche
Press this key



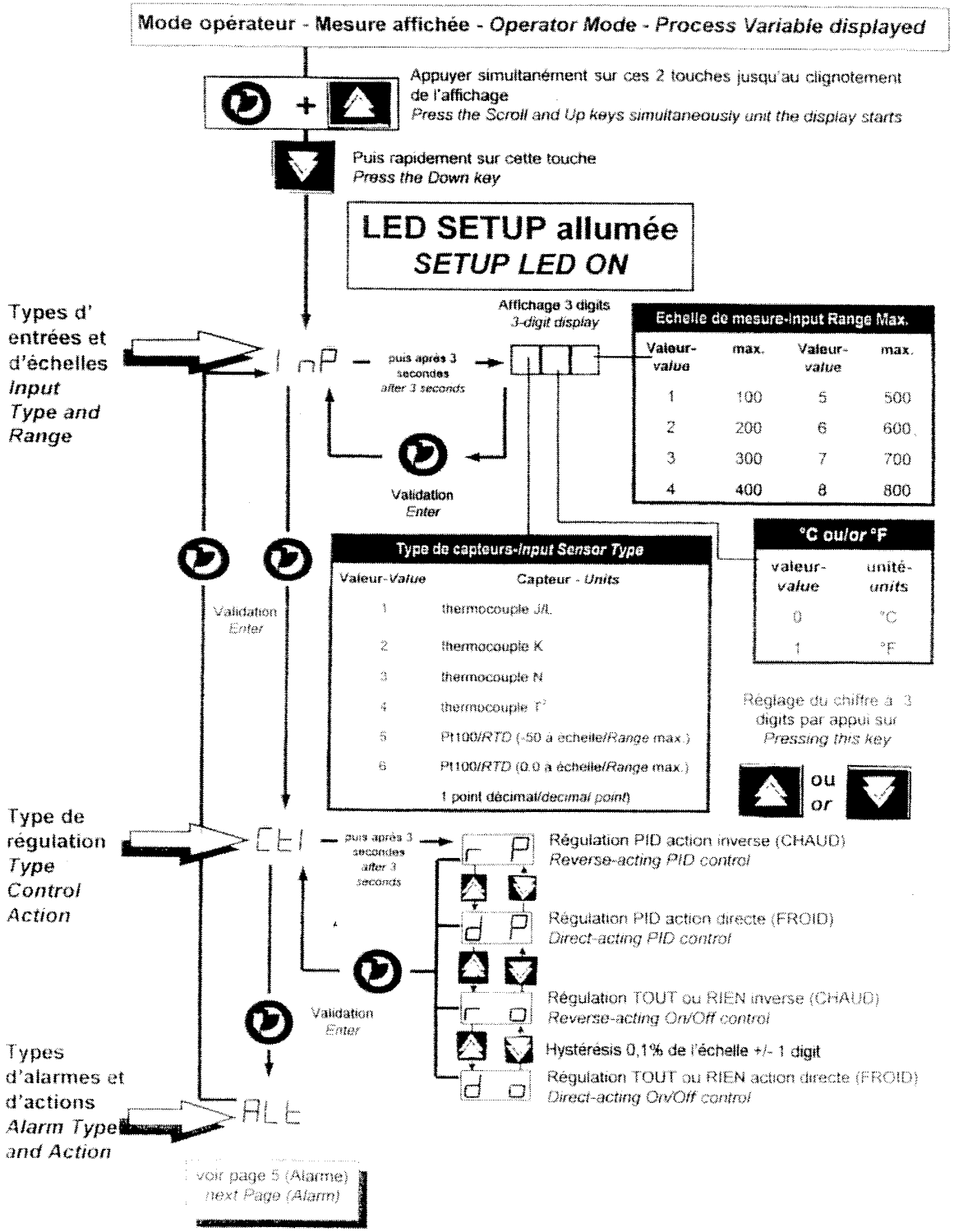
Affichage de la valeur du seuil d'alarme
Threshold Alarm Value Display

Voyant **Alarme** allumé
ON = Alarm value displayed
Flashing = Alarm active

Utiliser les touches ▲ ou ▼ pour régler la valeur du seuil (si elle n'a pas été bloquée en mode paramétrage)
Use the keys to regulate the Threshold Alarm Value

Appuyer sur la touche
Press this key

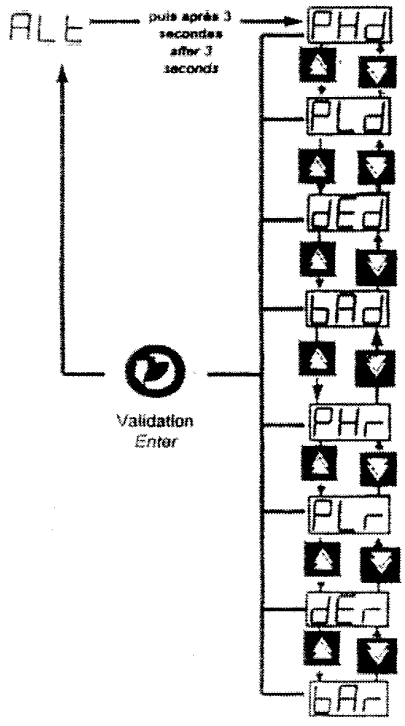
4. Mode configuration - *Configuration Mode*



Nota 1 L'échelle Pt100 0.0 sera toujours 0.0 à 99.0 quelque soit la valeur d'échelle maximum réglée
2 Echelle maximale 400°C ou 700°F

Notes 1 The RTD 0.0 range will always be 0.0 - 99.0 whatever Range Maximum setting may be
2 Absolute range maximum = 400°C (700°F)

suite de la page précédente
suite page 4



Alarme haute action directe (contact N/O fermé en alarme).
Process High alarm, direct-acting

Alarme basse action directe
Process Low alarm, direct-acting

Alarme d'écart action directe
Deviation alarm, direct-acting

Alarme de bande action directe
Band alarm, direct-acting

Alarme haute action inverse (contact N/F fermé en alarme)
Process High alarm, reverse-acting

Alarme basse action inverse
Process Low alarm, reverse-acting

Alarme d'écart action inverse
Deviation alarm, reverse-acting

Alarme de bande action inverse
Band alarm, reverse-acting

Pour retourner au mode opérateur, appuyer sur ces 2 touches + simultanément pendant env. 5 secondes.
Si aucun appui de touche n'est effectué durant 1 minute, l'appareil repasse automatiquement en mode opérateur. Si un ou plusieurs paramètres ont été modifiés en configuration, des points apparaissent en chaque digit de l'affichage. Pour les supprimer, il suffit d'entrer dans le mode réglage et de modifier l'un des paramètres.

Press simultaneously the Up/Down keys for three seconds to return operator mode.
An automatic return to normal operation occurs if there is no key activity in Range/Alarm Selection Mode for one minute.

Message d'erreur

O.P.M	Rupture capteur de température ou mauvaise configuration
[H]	Dépassement échelle Haut
[L]	Dépassement échelle Bas

5. Réglage des valeurs - *Setting up*

Mode opérateur - Mesure affichée - ***Operator Mode - Process Variable displayed***

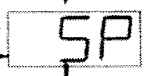
La valeur numérique du paramètre visualisé apparaît automatiquement au bout de 3 secondes.
After 3 seconds, the Parameters numeric Value displayed automatically.

Appuyer simultanément sur ces 2 touches pendant environ 3 secondes.
Press both keys for three seconds.

LED SETUP allumée
SETUP LED ON

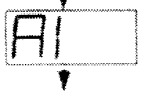
Pour retourner à l'affichage du paramètre, appuyer sur
Press this Schroll key for displayed the Parameters.

Point de consigne
Setpoint value



Affichage réglable sur toute l'échelle.
Numeric in the range. Range max. to range min.

Valeur de l'alarme
Alarm value



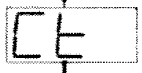
La valeur numérique dépend du type d'alarme:
Alarme haute/basse action - Echelle maxi. à échelle mini. - Ecart action/ bande action - +/- plage échelle d'entrée.
Numeric, depending on alarm type :
Process high/low - range max. to range min.
Deviation/band - +/- input range span

Validation
Enter

Offset

Décalage de l'affichage mesure (+/- sur la valeur affichée).
Numeric - +/- input range span

Temps de cycle de la sortie de régulation
Control output cycle time



Apparaît uniquement si la régulation a été configurée en PID.
Valeur réglable de 1 s à 512 s pour une sortie relais.
Valeur de base de 0,5 s à 512 spour une sortie logique
Numeric : - 0,5 s to 512 s if SSR
- 1 s to 512 s if relay

Validation
Enter

Verrouillage de la consigne
Setpoint lock

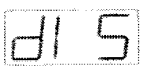
Consigne réglable
Setpoint change allowed in normal position

Consigne verrouillée
Setpoint change prevented in normal position

Validation
Enter

Verrouillage de la valeur du seuil d'alarme
Alarm value enable

Alarme ajustable
Adjustment/display enabled in normal position



Alarme verrouillée
Adjustment/display disabled in normal position

Pour retourner au mode opérateur, appuyer sur ces 2 touches simultanément pendant env. 3 secondes. L'appareil retourne automatiquement au mode opérateur, au bout d'une minute, si aucune touche n'a été actionnée.
Press both keys for three seconds to return to normal operation. An automatic return is made if there is no key activity for one minute.