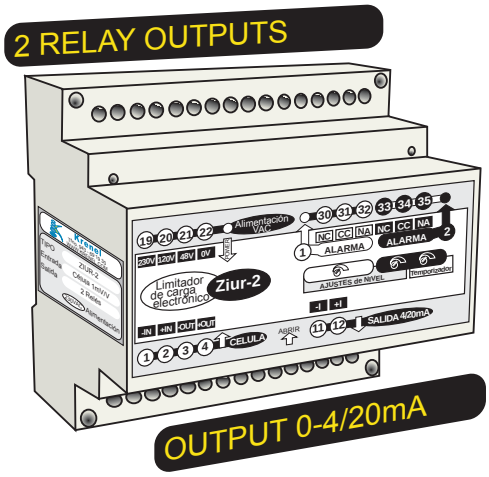
LOAD LIMITER FOR CRANES

OUTPUT 0 - 4/20mA CE



DESCRIPTION

This limiter prevents from break downs, accidents, rails and wires deformation, all of them produced by the crane overload.

With a 4/20mA output, proportional to the load weight, can be used in a LCD, PLC or PC.

This module for DIN rail, has 2 switched relay outputs, they work depending the adjusted limits. One of the outputs works with a delay to neutralize the peaks the other one is used like a safety limiter of instant action.

TECHNICAL CHARACT.

- LOAD CELL. - Limiting double shear model (single fixed placement branch).
- Valid for other cells: Shaft, strength, compressibility ...
- Internal cell sensitivity adjustment (SPAN and ZERO) by multi-turn potentiometer.

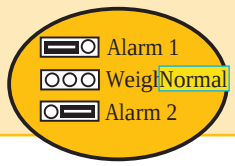
- POWER. 48 VAC, 120 VAC, 230 VAC / 3.5 VA (Indication LED connected)

- TRIGGER OUTPUT (2 relay)

- Potential free contact (NC and NA) 6A / 230 VAC.
- 2 adjustable levels for multi-turn potentiometer.
- Indication of the two shots by LEDs
- 2 relays with independent level adjustment:
  * Relay 1. Trigger maximum.
  * Relay 2. Trigger configurable maximum / minimum (selection by Strap) adjustable timer activation (0.5 ... 5sec.)

- Output loop 4/20 mA current assets. Capacity 500 W. Possible connection to weight display and alarm levels.

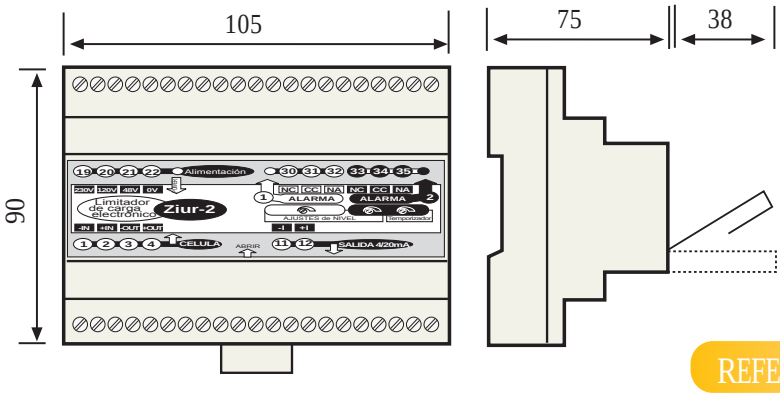
- ANALOG OUTPUT (4 / 20 mA)



Output selection for alarm adjustment

LEFT STRAP : 4/20 mA output of trigger value RELAY1.
WITHOUT STRAP: 4/20 mA output of load cell
RIGHT STRAP : 4/20 mA output of trigger value RELAY2.

DIMENSIONS



MECHANICAL CHARACT.

Material	ABS.self-exting. UL-94
Color	Gray RAL 7.035
Dimensions	105 x 90 x 75
Weight	400 gr
Mount	omega guide DIN EN 50022
Connections	screw connectors

REFERENCE ZIUR - 2

REGULATIONS COMPLIANCE

Electromagnetic Compatibility	**2004 / 108 / CE**
Low voltage for amb. industrial	**2006/95/CEE**
Electromagnetic emissions	**UNE-EN 50081-2**
Electromagnetic immunity	**UNE-EN 50082-2**
Waste electronics(WEEE)	**2002 / 96 / CE**

AMBIENTALS

Working temp.	**-10 / +60 ºC**
Storage temp.	**-40 / +80 ºC**
Tª coefficent	**50 ppm / ºC**
Warm up time	**5 min.**

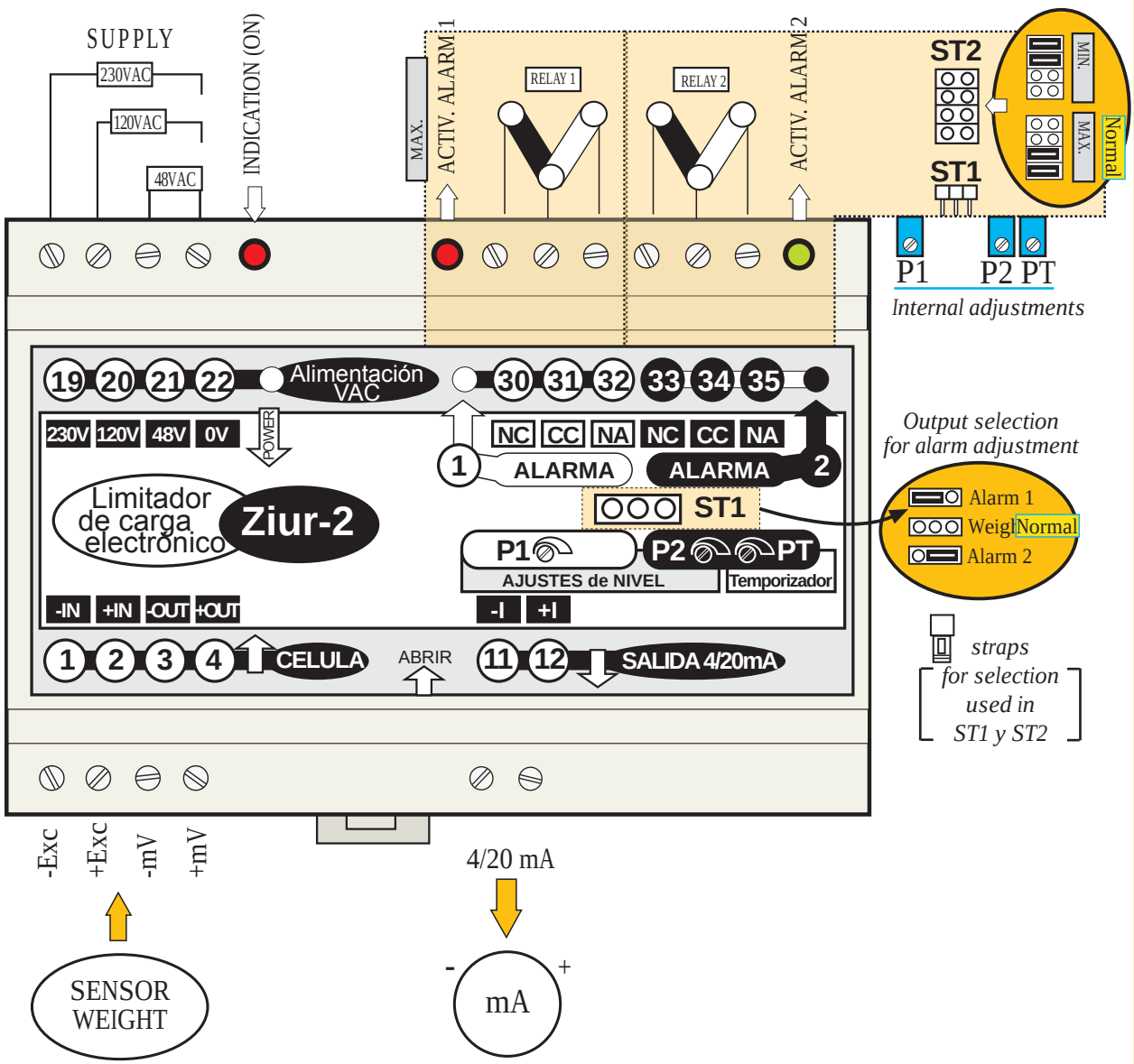
SAFETY. Protections:

- Main failure detection.

- Load cell, breakdown, desconnection, shortcut detection.
  REALY 1 alarm activation

CONNECTION

REFERENCE: ZIUR - 2



HOW IT WORKS

ALARM 1 OVER LOAD (RED LED)

- The trigger value adjustment of RELAY 1 is made with P1 (overload value).
- When the weight is higher than the overload value, the load cell or the relay will break, activating the alarm and the led 1.
- The alarm will not be deactivated untill the overload disappears and have also gone up 5 seconds (not adjustables).

MAX-MIN LOAD (Green LED)

ALARMA 2

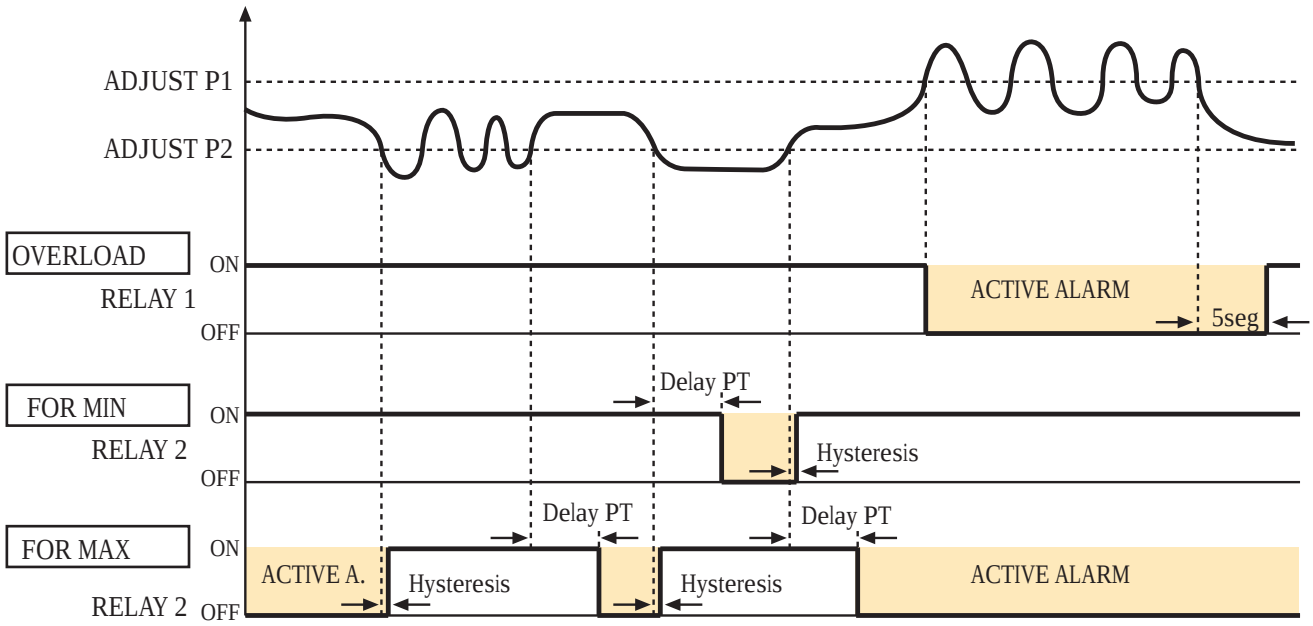
- This alarm can be configured to be activated by max or min with ST2.
- The trigger value adjustment of relay 2 is made with P2.
- To avoid fluctuations we have the delay adjustment PT (0,5 - 5 seconds),who makes the delay before relay2 is activated. the return to idle is nearly immediate (hysteresis).
- ACTUATION FOR MIN. when the weight lower than the adjusted value in P2, the alarm and led 2 will be activated.
- ACTUATION FOR MAX. when the weight higher than the adjusted value in P2, the alarm and led 2 will be activated.

CELL FAILURE

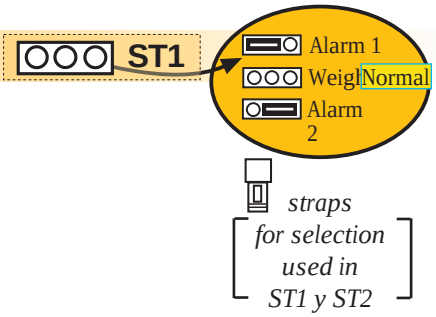
- Alarm 1 (red led) will be activated and the output will give about 27mA.

NOTES

- In idle there are no alarms, both leds are off, but the relays are activated, in case of failure in a relay the alarm will be activated.
- Both relays have an hysteresis of 8% for a stable switching.
- The hysteresis works when coming back to the idle state, doesn't affect the alarm detection.



ADJUSTMENTS



Steps to follow

1 - Connect the load cell (weight sensor).
2- Connect the ammeter in the 4/20mA output.
3- Open the cover and put the strap in the position, alarm 1 or alarm 2, depending the value to adjust.
4- With the adjustables P1 or P2, depending the case,
we'll make the triggering value adjustment of the selected Alarm.

Calculating the max. value

- With the load cell, without weight, measure and write down the 4/20mA output value (A0).
(If the output gives 0mA, change the connection between (3)+mV and (4)-mV, this way the measure will be positive).
- Put in the load cell a known weight (K1) in Kg. Measure and write down the 4/20mA output value(A1).
- Make the next operation, to calculate the value in mA (Amax) when the cell is subjected to his full scale (Kmax):

Calculate the mA to full scale (without 4mA offset): **Amax = [(A1-A0) * Kmax] / K1**

Example:

With a 2Tn(Kmax) load cell and 100Kg (K1) of known weight.
In empty we have a reading of A0 = 5mA, and with K1, a reading of A1 = 5,6mA.
So, Amax =[(5,6-5)*2000]/100 =12mA (plus the offset, 4mA, will be a total of 16mA)

ALARM 1 OVERLOAD (RED LED)

- The triggering value adjustment of relay 1, is made with P1.
- Put the strap ST1 in the left.
- With P1, adjust the output in mA, to the desired triggering value, commonly Amax(e.g. 16mA).
- Once activated the alarm 1, will not be deactivated untill the overload disappears and have also gone up 5 seconds (not adjustables).

ALARM 2 LOAD MAX - MIN (GREEN LED)

- This alarm can be configured to be activated for max. or for min with ST2.
- The triggering value adjustment of relay 2, is made with P2.
- Put the strap ST1 in the right.
- With P2, adjust the output in mA, to the desired triggering value.
The value in mA to adjust can be calculated with a rule of three.

! Important ! After the Alarms (1 and 2) adjustment
ST1 should be in the "Normal weight" position (without STRAP).

Como comprobar el convertidor y la célula de carga

-- Consideraciones:

- *Las mediciones en bornas, deben ser con los* **tornillos bien apretados, para asegurar un buen contacto**.
- *Una célula de carga tiene 4 hilos básicos, 2 corresponden a la alimentación (+Vexc y -Vexc), y 2 corresponden a la señal de salida, en mV (+Vseñal y -Vseñal).*
- *La señal en mV, varia proporcionalmente al esfuerzo aplicado a la célula de carga, y a su tensión de alimentación.*
  p.e.: Una célula de sensibilidad 2mV/V, con 10V de Vexc, dará 20mV para un esfuerzo equivalente a su fondo de escala.

1- Comprobar que la alimentacion auxiliar del convertidor es la correcta, *p.e.: 24VDC, 230VAC.*

2- Conectar los 2 hilos de alimentación de la célula de carga a las bornas correspondientes del convertidor (+Vexc y -Vexc), dejando los dos hilos de señal de la célula (+Vseñal y -Vseñal) al aire, sin conectar al convertidor.

- Medir la alimentación de la Célula de Carga esta debe ser de aprox. 10VDC estables.
  Si no hay alimentación, ó esta varía ó no es estable, el módulo puede estar averiado.

- Medir la señal de mV en los dos hilos de la célula sin conectar al convertidor (+Vseñal y -Vseñal), esta señal debe ser proporcional al esfuerzo en la célula de carga, por lo que variando el esfuerzo, deberán variar los mV.
  Si no hay variación de mV, la célula puede estar averiada.
  En situación de reposo, sin carga, la célula debe tener una salida en mV próxima a 0mV, para poderla compensar con el ajuste de Zero (balance de zero tipico 1-2% del Fondo de Escala de la célula).

- Conectar los 4 hilos de la célula al convertidor, si la alimentación y la señal en mV de la célula son correctas.
  Respetar la polaridad, ya que con una señal negativa, podría aparecer "0" en la salida, aparentando que no funciona.

3- Medir la salida que corresponda con un multímetro. Esta deberá ser proporcional al esfuerzo de la entrada.
Si la salida está al máximo, y esta no corresponde con los mV de la entrada, el convertidor puede estar averiado.
Si la salida dá "cero", revisar las conexiones de la célula de carga, ya que las polaridades pueden estar invertidas.