

# ALPHA-C

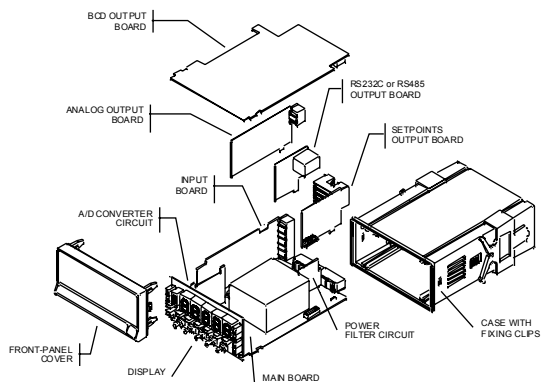
4.2 LOAD CELL

## DESCRIPTION

The ALPHA-C model is an instrument designed to measure forces (weight, load, pressure, torque ...) that admit connection to several bridge type transducers such as load-cells with small level signals up to  $\pm 300\text{mV}$  and excitation voltage (5V/10V @120mA). A full complement of standard functions include  $\pm 32000$  count display, direct access to the setpoints programming, 28 user programmable remote logic functions and signal linearization of up to 12 points. Two scaling methods, software selectable filtering level and last digit resolution makes easy and quickly the task of programming the meter to suit almost any process need.



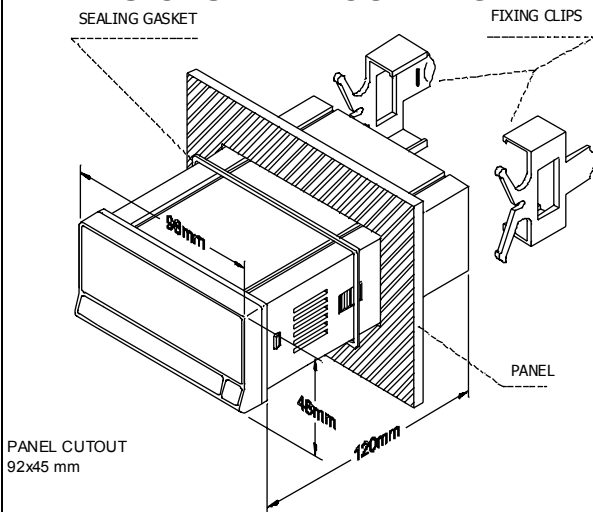
## STRUCTURE



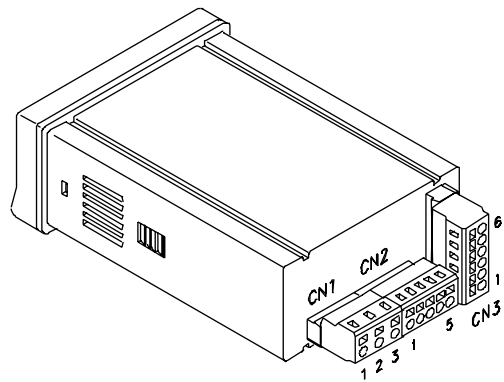
## STANDARD

- Panel-mounting 1/8 DIN case, depth 120 mm
- Electronics assembly :
  - Main board with supply power filtering card.
  - A/D conversion circuit.
  - Input card for load-cell or 0-100mV transducer.
  - Display and keyboard module.
- Single-part clips for panel mounting.
- Front panel sealing gasket.
- Plug-in terminal block connectors.

## DIMENSIONS AND MOUNTING



## CONNECTIONS



CN1		POWER SUPPLY	
PIN	AC VERSION	DC VERSION	
1	AC PHASE	DC POSITIVE	
2	GND (GROUND)	-	
3	AC NEUTRAL	DC NEGATIVE	
CN2		REMOTE FUNCTIONS	
1	RESET		
2	HOLD		
3	COMMON		
4	TARE		
5	PEAK / VALLEY		
CN3		INPUT SIGNAL	
1	POSITIVE INPUT mV		
2	NOT CONNECTED		
3	NEGATIVE INPUT mV)		
4	NOT CONNECTED		
5	+EXCITATION		
6	- EXCITATION		

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## OPTIONS

The ALPHA model can accept a variety of output options which are installed in the meter's main assembly by means of plug-in connectors:

• 2 SPDT Relays rating 8A @ 250V AC / 150V DC  
Ref ..... **2RE**

• 4 SPST Relays rating 0.2A @ 250V AC / 50V DC  
Ref ..... **4RE**

• 0 Outputs rating 50mA @ max.50V DC  
Ref ..... **4OP**

• 4 PNP Outputs rating 50mA @ max.50V DC  
Ref ..... **4OPP**

The setpoints are independently programmable for HI or LO action and time delay or hysteresis operation. They can also be made to track one another by a programmable or automatic offset.

• RS232C communication output, 1200 to 19200 baud  
Ref ..... **RS2**

• RS485 communication output, 1200 to 19200 baud  
Ref ..... **RS4**

Serial communication protocols: standard, ISO1745, Modbus

• Isolated analog output 0-10V / 4-20mA  
Ref ..... **ANA**

The analog outputs can be used to drive remote displays or for proportional control purposes.

• BCD parallel outputs with TTL/24V DC logic  
Ref ..... **BCD**

## STANDARD FUNCTIONS

### TARE

The tare operation is accomplished by a push of the TARE key on the front panel or by applying a low level signal to the corresponding logic input at the CN2 connector.

The tare memory is cleared to zero by a combination of the RESET and TARE keys (also at the CN2 connector).

### PEAK & VALLEY

The instrument detects and memorizes the max and min values reached for the variable after the last reset (peak and valley).

To display the peak value, press the MAX/MIN key. The second push calls up the valley value. The third push makes the display show the tare value.

A falling edge at the corresponding logic inputs of the CN2 connector causes the same effects.

### RESET PEAK & VALLEY MEMORY

The peak and valley memories can be reset back to their default values by simultaneously pressing the RESET and MAX/MIN keys.

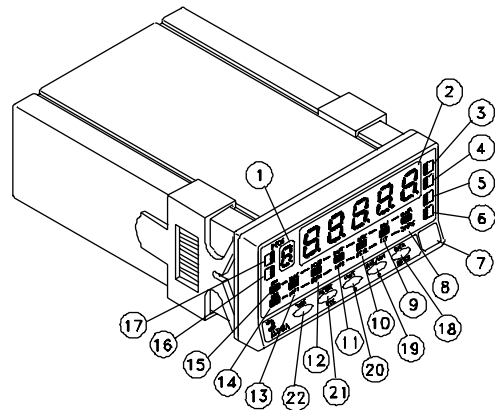
The same function is available at the CN2 connector.

### HOLD

The hold function is only accessible from the CN2 connector.

The hold condition (display frozen) is maintained as long as the corresponding logic input is kept at "0" level.

## FRONT-PANEL FUNCTIONS



MODE		RUN	PROG
Auxiliary Display	1	Displays polarity of reading	Displays programming module
Main Display	2	Displays the input variable	Displays programming
LED 1	3	Relay1 / Opto1 status	-
LED2	4	Relay2 / Opto2 status	-
LED 3	5	Relay3 / Opto3 status	-
LED 4	6	Relay4 / Opto4 status	-
Label	7	Measurement unit	
LED DATA	8	-	Indicates data memory storage
LED MIN	9	Indicates display of a valley value	Indicates input filtering programming
LED MAX	10	Indicates display of a peak value	Indicates DISPLAY 2 programming
LED LIMIT	11	Indicates display of setpoint value	Indicates INPUT 2 programming
LED HOLD	12	Indicates display hold	Indicates DISPLAY 1 programming
LED TARE	13	Indicates tare memory	Indicates INPUT 1 programming
LED PROG	14	-	Indicates programming mode
LED RUN	15	Indicates run mode	-
LED B	16	-	Indicates program step
LED A	17	-	Indicates program step
ENTER key	18	Enters in PROG mode. Displays data	Accepts data. Advances programm
MAX/MIN key	19	Calls up peak and valley values	Moves to right
LIMIT key	20	Calls up the setpoint values	Increments the value of the flashing digit
RESET key	21	Reset the display to offset	ESCAPE function
TARE key	22	Take on the display values as tare	-

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## Remote functions (CN2)

The rear connector CN2 provides 4 user programmable optocoupled inputs that can be operated from external contacts or logic levels supplied by an electronic system. Four different functions may be then added to the functions available from the front-panel keys. Each function is associated to one of the CN2 connector pins (PIN 1, PIN 2, PIN 4 and PIN 5) and is activated by applying a falling edge or a low level pulse to the corresponding pin with respect to common (PIN 3). Each pin can be assigned one of the 28 functions listed on the following pages.

### DISPLAY / MEMORY

N°	Function	Description	Activation
0	None	Deactivated. The pin has no function	None
1	TARE (*)	Adds the current display value to the tare memory. The display goes to zero	Falling edge
2	RESET TARE	Adds the tare memory contents to the display value and clears the tare memory	Falling edge
3	PEAK	Recalls peak value. A new falling edge returns to normal reading	Falling edge
4	VALLEY	Recalls valley value. A new falling edge returns to normal reading	Falling edge
5	RESET PEAK/ VALLEY	Clears the peak or valley memory (if the values are on display)	Falling edge
6	PEAK/ VALLEY (*)	1 <sup>st</sup> push recalls peak, 2 <sup>nd</sup> push recalls valley, 3 <sup>rd</sup> push brings the meter to the indication of the variable being measured	Falling edge
7	RESET (*)	Combined with (1) clears the tare memory Combined with (6) clears the peak or valley memories	Falling edge combined with (1) or (6)
8	HOLD1	Holds the display while the outputs remain active	Low level
9	HOLD2 (*)	Holds the display, the BCD and the analog outputs	Low level

### DISPLAY OF THE INPUT VARIABLE FUNCTIONS

N°	Function	Description	Activation
10	INPUT	Displays the actual input signal value in mV (flashing)	Low level
11	GROSS	Displays the measured value + the tare value = gross	Low level
12	TARE	Displays the amount of tare contained in the memory	Low level

(\*) Default configuration.

### ANALOG OUTPUT

N°	Function	Description	Activation
13	ANA GROSS	Makes the analog output follow the gross value (measured value + tare)	Low level
14	ZERO ANA	Puts the analog output to the zero state (0V for 0-10V, 4mA for 4-20mA)	Low level
15	ANA PEAK	Makes the analog output follow the peak value	Low level
16	ANA VALLEY	Makes the analog output follow the valley value	Low level

### PRINTER VIA THE RS OUTPUTS

N°	Function	Description	Activation
17	PRINT NET	Prints the net value	Falling edge
18	PRINT GROSS	Prints the gross value	Falling edge
19	PRINT TARE	Prints the tare value	Falling edge
20	PRINT SET1	Prints the setpoint1 value and its output status	Falling edge
21	PRINT SET2	Prints the setpoint2 value and its output status	Falling edge
22	PRINT SET3	Prints the setpoint3 value and its output status	Falling edge
23	PRINT SET4	Prints the setpoint4 value and its output status	Falling edge

### SETPOINTS AND RS OUTPUTS

N°	Function	Description	Activation
24	FALSE SETPOINTS	Exclusively for instruments without relays/ transistors control outputs card. Allows programming and operation of 4 setpoints	Low level
25	RESET SETPOINTS	Exclusively for instruments with 1 or more setpoints programmed as "latched setpoints" (That is, the setpoints that once energized remain on the ON status although the alarm condition disappears). Deactivates the setpoints output	Falling edge

### SPECIAL

N°	Function	Description	Activation
26	ROUND RS	The display value as sent via the RS output, includes no filtering or rounding	Low level
27	ROUND BCD	Makes the BCD output follow the display value without rounding	Low level
28	SEND ASCII	Send the four last digits to a remote display (MICRA-S). With low level the sending is made every second.	Low level or Falling edge

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## INPUT SIGNAL

- Configuration .....differential asymmetrical
- Input .....  $\pm 300\text{mV DC}$
- Resolution .....  $0.5\mu\text{V}$
- Input impedance .....  $100\text{M}\Omega$
- Excitation .....  $10\text{V @ } 120\text{mA}$ ,  $5\text{V @ } 120\text{mA}$

## FUSES (DIN 41661) (Recommended)

- ALPHA-C (115/230V AC) ..... F 0.2A/ 250V
- ALPHA-C1 (10-30V DC) ..... F 2A/ 250V
- ALPHA-C2 (24/48V AC) ..... F 0.5A/ 250V

## POWER SUPPLY

- AC voltages .....  $115/230\text{V } 50/60\text{Hz } (\pm 10\%)$   
 $24/48\text{V } 50/60\text{Hz } (\pm 10\%)$
- DC voltages .....  $10\text{-}30\text{V DC}$
- Consumption .....  $5\text{W}$  without options,  $10\text{W max}$

## DISPLAY

- Main .....  $-32000/+32000$ , 14 mm red digits
- Auxiliary ..... 10 mm one digit green
- LEDs ..... 14 for programming and output status
- Decimal point ..... programmable
- Display update time ..... 62ms
- Positive over range indication ..... +oVFL0
- Negative over range indication ..... -oVFL0

## FILTERS

### Filter P

- Cut-off frequency ..... from 4Hz to 0.05Hz
- Slope ..... from 14 to 37dB/10

### Filter E

- Programmable ..... 10 levels

## ACCURACY

- Max error .....  $\pm (0.1\%$  of the reading +2 count)
- Temperature coefficient ..... 100ppm/°C
- Warm-up time ..... 5 minutes

## A/D CONVERSION

- Technique ..... dual slope
- Resolution .....  $\pm 16$  bits
- Read rate ..... 16/s

## ENVIRONMENTAL

- Operating temperature .....  $-10^\circ\text{C}$  to  $60^\circ\text{C}$  ( $0^\circ\text{C}$  to  $50^\circ\text{C}$ ) s/UL
- Storage temperature .....  $-25^\circ\text{C}$  to  $80^\circ\text{C}$
- Relative humidity .....  $<95\%$  at  $40^\circ\text{C}$

## MECHANICAL

- Dimensions ..... 1/8 DIN case, depth 120 mm
- Weight ..... 600g
- Case material ..... UL 94 V-0 polycarbonate
- Max. Altitude ..... 2000 m
- Sealed front panel ..... IP65 (indoor use)

## ORDERING REFERENCES

- 115/230V AC 50/60Hz powered ..... ALPHA-C
- 10-30V DC powered ..... ALPHA-C1
- 24/48V AC 50/60Hz powered ..... ALPHA-C2