

## Rack Mounted Amplifier/Digitiser

### Features

- 'Plug in' Input Modules
- Mixed Channel Inputs
- Isolated Analogue Outputs 4-20mA and 20mA Outputs
- Excitation for each Input Type
- Easy Access to Electronics via front of panel
- High Accuracy / Low Drift
- 2 set points/relays
- A choice of power supplies
- 3µ 19" rack frame
- 10 year data retention
- Digital programming, calibration & display
- Communications -20mA, RS485, RS232 per channel



### Introduction

The universal input amplifier offers both 4 to 20mA and 0 to 10 volt analogue outputs, from a range of inputs. Ease of calibration and setting of the analogue output range, make the modules extremely user friendly; being set up by a simple

hand held plug in programmer or an on board programmer/display.

Peak Hold (if set) on the analogue output are operated via volt free contact closures.

### Output Options Include

- Relay Set Points (RR1)  
Programmed in engineering units, with Latching, Inversion and Hysterisis Settings available for control or alarm purposes.
- Communications  
To read any value, change set points or any other parameter via:  
20mA Current loop (RC1)  
RS232/RS485 (RC3)  
Formats MANTRABUS, ASCII, MODBUS RTU
- Printer  
Activated by a contact closure, prints the current display value, with header message, engineering units, auto incrementing batch number and a real time if required.

### Specifications

#### Inputs

Fast Strain Input Gauge Compensation	The input is of the load cell/strain gauge type. A transducer excitation voltage 9.6 volts 1.0A (common to all channels) by ± sense wires for cable connection, voltage drops and any variation in the 10 volt supply.
Load cell sensitivity	is preset via DIL switches to 0.5, 0.8, 1.0 1.25, 1.5, 2.0, 2.5, 3.5, 5, 10, 20, 50, 100 or 200mV/V.
Initial offset	is no greater than ± 0.15mV (15µV/V) which is cancelled during auto calibration.
Speed	is 100 readings per second with a digital filter to reduce speed.
Accuracy	is 90 days ± 0.08% of reading, +/- 0.05% FSD being typical
Drift	is 0.002% per degree C @ 2.5mV/V typical
Resolution	15 bit/ 4.5 digits.
Contact inputs	are available for auto tare, print and peak hold reset and are volt free.

#### DC Volts/Amps Input

Order Code	Range Minimum	Range Maximum	Range	+	±
UADCA1	+4.000mA	+19.999mA	400mA	0.1	2µA
UADCV1	0V	+10V	250µV	0.1	750µV

*Scaling* Full keypad scaling by setting minimum display points using IPL and IPH. Factory preset calibration by 15- turn timers for offset and gain

#### LVDT Input

UALVDT1	2.26 volt RMS ±/ 0.15 volts
Excitation voltage	1,2,3,4 or 5 KHz selected by jumper ±15%
Excitation frequency	20mV, 50mV, 100mV 200mV, 500mV, 1V, 2V. 5V and 10V. Full range operation for a full scale reading preset to within 5%, (selected by jumper link).
Sensitivity	75 ppm per degree C typical, 200 ppm per degree C, maximum
Gain drift	± 0.05% FS typical, ±0.1% FS
Non linearity	68ohms minimum. A dual input LVDT option is available, having common sensitivity and excitation frequency settings.
Drive impedance	

## Temperature Inputs

Order Code	Probe Type	Range Min °C	Range Max °C	Resolution 90 day Accuracy °C	Resolution 90 day Accuracy ±%	Resolution 90 day Accuracy ±°C
UAT1	K	-230.0	+1300.0	0.1	0.05	0.6
UAT2	J	-170.0	+760.0	0.1	0.07	0.6
UAPT	Pt100	-190.0	+850.0	0.0	0.08	1.3
Adjustment and Trim Calibration	Zero /offset adjustment via keypad. Calibration set at factory by internal 15-turn trimmers. Set at factory by internal 15-turn trimmers					
Thermocouple Cold Junction Compensation	By rear sensor, range -10 to +80 °C, accuracy + 0.5 °C over range 0 to 50 °C.					
Thermocouple Sensor Current	Open circuit by upscale over range, or down scale by fitting rear link. 20mA for upscale (1mA for RTD)					

2 Versions are available to mount in the standard 19" rack

Version 1 (RUA1)

an amplifier which is programmed via a hand held, plug in programmer. This version allows for the fitting of the 12 amplifiers.

Version 2 (RUA2)

an amplifier which has a front panel mounted LCD display; program buttons are accessed through 2.2mm apertures in the panel. This version allows for the fitting of 8 amplifiers.

## Analogue Outputs

Drive	4-20mA up to 1Kohm and 0-10 volts up to 2mA.
Accuracy	4-20mA ± 0.15% of range, typical.
Resolution	as for display up to 13 bits/4.5 digits. Settling time 0.25 secs to 1% of step change.
Isolation	±130V RMS or DC max to analogue input or any other port. Common to other analogue outputs in the same rack.

## Data Retention/Protection

Retention:	10 years for set up values, minimum of 100,000 write cycles.
Protection of data and function(s):	Watchdog timer giving repeat auto resets. Impending power detection and hold off. Keypad security and time out.

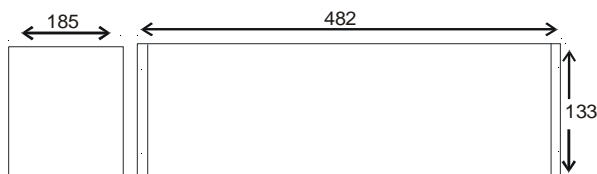
## CE & Environmental

Storage temperature	-20 to +70°C	EMC Emissions	BS EN 55011:1998
Operating temperature	-10 to 50°C		
Relative humidity	95% maximum non condensing	EMC Immunity	BS EN 61000-4-2:1995
Safety/Low Voltage Directive	73/23/EEC amended by 93/68/EEC		BS EN 61000-4-3:2002
	BS EN 61010-1:2001, IEC 1010-1-1990		BS EN 61000-4-4:2004
EMC Directive	89/336/EEC		BS EN 61000-4-11:2004
	Basic Standard BS EN 61326:1998		

## Other Options & Accessories

2 Set Points	Output through 5A, 230V AC SPCO relays, with a latching option
Communications Port	For data transfer or print via:-
20mA loop	Enabling up to 254 units to be multi dropped to 1 x RS232 via IF25 interface(s)
RS485	Enabling up to 25 units to be multi dropped.
RS232	For 1 to 1 connection and standard printer drive.
Printer Operation	By front panel function key.
Baud Rates	300, 600, 1200, 2400, 4800, 9600 (19200 MANTRABUS only) 9600 for MODBUS
Back Lighting	For the LCD display
DIN Rail Mounting	For the CPU, PSU and output option modules
Remote Mounting	Display module, for panel mounting

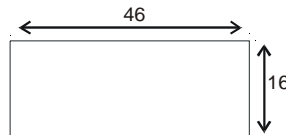
### Mechanical Dimensions



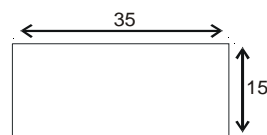
### Liquid Crystal Dimensions

#### Version 1 (RUA1)

Hand Held Programmer



#### Version 2 (RUA2)



All dimensions in mm.

CE In the interest of continued product development, Mantracourt Electronics Limited reserves the right to alter product specifications without prior notice.

