KOS215

PROGRAMMABLE DIN RAIL TEMPERATURE TRANSMITTER

Y2K YEAR 2000 COMPLIANT

CE

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WARRANTY

The instruments are warranted against defective materials and workmanship for a period of three years from date of delivery.

If a product appears to have a defect or fails during the normal use within the warranty period, please contact the distributor from which you purchased the product.

This warranty does not apply to defects resulting from action of the buyer such as mishandling or improper interfacing.

The liability under this warranty shall extend only to the repair of the instrument. No responsability is assumed by the manufacturer for any damage which may result from its use.

KOSMOS SERIES

1.0 GENERAL

The **KOS215** is a universal DIN Rail mounted temperature transmitter that accepts most commonly used temperature sensors, slide wire transducers or mV signals and transmits them as a 4-20mA signal to a host system. The unit can be programmed by the user from a selection of preset ranges selected by DIL switches or by computer if required.

2.0 SPECIFICATION @ 24ºC

2.11 RTD Input (Pt100)

Sensor Range	-200 to +850ºC (18 a 390 Ω)
Minimum Span[1]	25ºC
Linearisation	BS EN 60751 (IEC 751)
	BS1904 (DIN 43670)
	JISC 1604
Basic Measurement Accuracy [2]	±0.01% FRI [5] ±0.05% Rdg
Thermal Drift	Zero 0.008 ºC/ºC, Span 100 ppm / ºC
Excitation current	300µA a 550µA
Maximum lead resistance	50 Ω / leg
Lead resistance effect	0.002ºC / Ω
Preset ranges	Refer to section 3.3

2.12 Thermocouple Input

Sensor Ranges	Termocouple type	Measuring RangeºC[4]	Minimum Span[1]
	TC Tipo K	-200 a 1370	50
	TC Tipo J	-200 a 1200	50
	TC Tipo T	-210 a 400	25
	TC Tipo R	-10 a 1760	100
	TC Tipo S	-10 a 1760	100
	TC Tipo E	-200 a 1000	50
	TC Tipo F(L)	-100 a 600	25
	TC Tipo N	-180 a 1300	50

Linearisation	BS EN 60584-2, IEC 584-2 (BS 4937)
Basic measurement Accuracy[2]	±0.04% FE[5] ±0.04% L o 0.5ºC (Which ever is greater)
Thermal Drift	Zero 0.1µV/ ºC, Span 100 ppm/ºC
Cold junction error	±0.5ºC
Cold junction Tracking	0.05ºC/ºC
Cold junction Range	-40 to +85ºC
Preset Ranges	Refer to section 3.3

2.13 Millivolt input

Input	voltage source
Range	-10 to +75 mV
Minimum Span[1]	5 mV
Basic Measurement Accuracy[2]	±10µV ±0.07% Rdg
Input Impedance	10 M Ω
Thermal Drift	Zero 0.1µV/ºC, Span 100 ppm / ºC

2.14 Slidewire input

Input	3 Wire potentiometer
Resistence Range	10Ω to 390Ω (entre extremos) Para entrada a R > 390 los terminales 9 y 10 deben estar unidos
Characterisation	Linear.
Minimum Span[1]	5% of full range
Basic Measurement Accuracy[2]	0.1% FRI[5]
Thermal Drift	100 ppm / ºC

Notes.

1 Any Span may be selected, full accuracy is only guaranteed for spans greater than the minimum recomended.

2. Basic Measurement Accuracy includes the effects of calibration, linearisation and repeatability.

4. Consult thermocouple reference standards for thermocouple material limitation.

5. FRI = Full Range Input.

2.2 Output

Output range	4-20mA (<3.8 to >20.2 mA)
Maximum Output	23mA
Accuracy	±5µA
Voltage Effect	0.2µA /V
Thermal Drift	1µA / ºC
Supply voltage	10 to 35V
Maximum Output Load	[(V Supply -10)/20] KΩ (i.e. 700Ω @ 24V) Restricted to 300Ω Maximum for inloop programming
Protection	Reverse connection overvoltage 35V

2.3 General

Input/Output Isolation	500VAC rms (galvanically isolated)
Update time	250 mS Maximum
Time constant (Filter Off)	< 1 Second (Time to reach 63% of final value)
Filter factor Programmable	Off, 2sec, 10sec or Adaptative
Warm-up Time	2 minutes to full accuracy
Stability	0.1% FRI [5] or 0.1ºC/year

Environmental

ambient operating range	-40 to 60ºC
ambient storage temperature	-25 to 70ºC
ambient humidity range	10 to 90% HR non condensing

EMC

Emissions	EN50081-1
Inmunity	EN50082-2

Mechanical

Enclosure	Din rail EN 50022-35
Material	ABS
Weight	70g
Flammability	SEI UL 94-VI
Dimensions	90 x 99 x 18.5mm
Connections	Tension clamp two part terminals and 3.5mm jack for comms

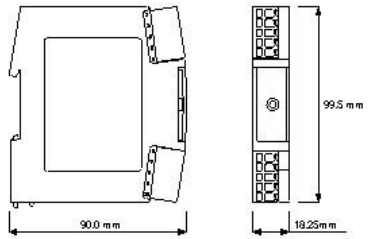
Communications

PC Interface	RS232 via PC
Loop Load	100-300Ω in loop programming (Available as quick selector or via PC)
Maximum cable length	1000 m
Configurable Parameters	Sensor type:Burnout: ºC/ºF: output: Available as quick selector or via PC : Hi/Lo: Filter: Tag: user Offset (available via PC programming only)
Comms protocol	ANSI X3.28 1976
Data Rate	1200 baud

3.0 INSTALLATION

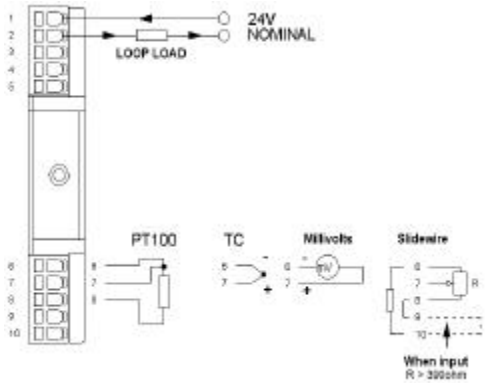
3.1 Mechanical

The transmitter is designed to mount onto a standard Din Rail. The transmitter should be installed with adequate protection from moisture and corrosive atmospheres. The transmitter may be mounted in any orientation.
Care must be taken when locating the transmitter to ensure the ambient temperature remains within the specified operating rang. The figure shows the mechanical layout of the transmitter.



3.2 Electrical

Connections to the transmitter are made to the tension clamp terminals provided on the front face. Output signal wiring should use screened twisted pair. It is recommended that the screened cable is used for the input signal wires for cable runs greater than one metre. For Pt100 inputs all three input wires must have the same core diameter to maintain equal resistance. If required the user may change the range of the transmitter by selecting one of the ranges from the table shown in section 3.3. Power must be switched OFF first. The selection switch is located at the rear of the transmitter between the Din rail mounting.



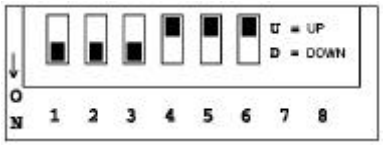
The figure shows the method of connection to provide a 4-20mA current loop output. The Pt100 sensor shown would normally take the form of a probe assembly with a three wire connection. The output loop has a voltage power supply used to provide loop excitation. The load symbol represents other equipment in the loop, normally indicators, controllers or loggers. Care must be taken when designing the 4-20mA circuit to ensure that the total voltage requirements of all the equipment in the loop added together , does not exceed the power supply voltage. If a number of instruments are connected in the loop, ensure that only one instrument is tied to ground. Grounding the loop at two points will cause a short circuit of part of the loop leading to measurement errors.
To maintain CE compliance the transmitter should be mounted in an enclosure to prevent access to the transmitter during normal operation.

3.3 **Preset Ranges**

WARNING- Power must be removed before changing DIP settings

Sensor and temperature ranges may be preset using table shown below.

Example shows 123 down 456 up



Range	1 2 3 4 5 6	Code
Computer Programmable		
Prog	UUUUUU	00
Use this code to configure unit using RCPW software		
Pt100, EN60751		
-100 to 100	DUUUUU	01
-50 to 50	UDUUUU	02
-50 to 100	DDUUUU	03
-50 to 150	UUDUUU	04
0 to 50	DUDUUU	05
0 to 100	UDDUUU	06
0 to 150	DDDUUU	07
0 to 200	UUUDUU	08
0 to 300	DUUDUU	09
0 to 400	UDUDUU	10
0 to 500	DDUDUU	11
0 to 600	UUDDUU	12
50 to 150	DUDDUU	13
Pt100, IEC 584-1		
-25 to 125	UDDDUU	14
0 to 100	DDDDUU	15
0 to 250	UUUUDU	16
250 to 500	DUUUDU	17
-50 to 150	UDUUDU	18
0 to 200	DDUUDU	19
50 to 150	UUDUDU	20
Pt100, JISC 1604		
-25 to 125	DUDUDU	21
0 to 100	UDDUDU	22
0 to 250	DDDUDU	23
250 to 500	UUUDDU	24
-50 to 150	DUUDDU	25
0 to 200	UDUDDU	26
50 to 150	DDUDDU	27

Range	1 2 3 4 5 6	Code
Tipo K, IEC 584-3 BS 4937		
0 to 100	UUDDDU	28
0 to 200	DUDDDU	29
0 to 500	UDDDDU	30
0 to 600	DDDDDU	31
0 to 800	UUUUUD	32
0 to 1000	DUUUUD	33
0 to 1200	UDUUUD	34
Tipo J, IEC 584-3 BS 4937		
0 to 100	DDUUUD	35
0 to 150	UUDUUD	36
0 to 200	DUDUUD	37
0 to 400	UDDUUD	38
0 to 600	DDDUUD	39
Tipo T, IEC 584-3 BS 4937		
-50 to 50	UUUDUD	40
-50 to 100	DUUDUD	41
0 to 100	UDUDUD	42
-100 to 100	DDUDUD	43
0 to 200	UUDDUD	44
0 to 400	DUDDUD	45
Tipo R, IEC 584-3 BS 4937		
0 to 1000	UDDDUD	46
0 to 1600	DDDDUD	47
Tipo S, IEC 584-3 BS 4937		
0 to 1000	UUUUDD	48
0 to 1600	DUUUDD	49
Tipo N, IEC 584-3 BS 4937		
0 to 100	UDUUDD	50
0 to 200	DDUUDD	51
0 to 400	UUDUDD	52
0 to 600	DUDUDD	53
0 to 800	UDDUDD	54
0 to 1000	DDDUDD	55
0 to 1200	UUUDDD	56
Tipo E, IEC 584-3 BS 4937		
0 to 1000	DUUDDD	57

Temperature units and Burnout options may be preset using table shown below. Example shows 7 and 8 UP.

Temperature units, Switch 7		Burnout, Switch 8	
U=	ºC	U=	Bajo
D=	ºF	D=	Alto

4. CONFIGURATION

The following transmitter parametres can be reconfigured by the user:

Units	ºC, ºF, mV or %
Low Range	Corresponds to 4mA output
High Range	Corresponds to 20mA output
Tag Nº	Transmitter identifier
Offset	User calibration adjustement
Filter	None, 2sec, 10sec, adaptive

Configuration of the trasnmitter is achieved by connecting a PC running RCPW configuration software to the transmitter via the Configurator Unit. Range switch must be set to all positions up before programming a non standard unit.

4.1 Connection of Configuration Module

When configuration is performed using an existing loop, the loop power must be capable of supplying 30mA and the load resistor chosen so that at least 10V remains across the transmitter, taking into account all other volt drops within the loop. The configurator is connected by plugging the 3.5mm jack plug in to the socket located in the front panel behind the transparent window.

4.2 PC Installation of RCPW

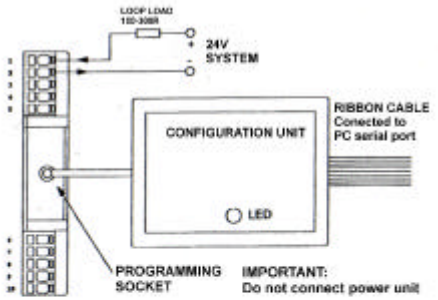
Minimum PC operating system: Windows™ 3.1
Minimum PC requirement: IBM® 386 or above with 4Mb RAM and available serial port.

To install RCPW, log File Manager on to drive A: (or as appropriate) and run the installation program. Note: if no "Product License Number" is entered when prompted the program will operate in Demonstration mode only.

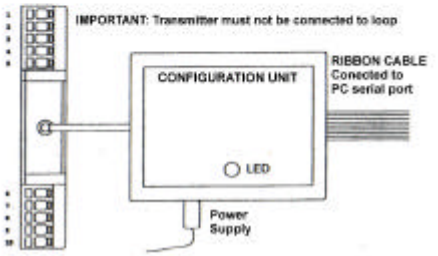
4.3 Operation of RCPW

The configuration software has a list of main menu options which are:File, View, Option, Devices and Help. These options can be selected by the mouse or by sinultaneously depressing <ALT> and the letter underlined as above. Once a menu option has been selected, the status bar shows a brief description of functions.
For more details see RCPW onscreen help.

Programming using Loop Power



Programming using Configurator Power



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