

## **Digital Weight** Control Module

# KD3Series

The KD3 Series is a high performance, multifeatured digital controller. It is designed as a companion instrument for load cells, force transducers, torque transducers, pressure transducers and weighing systems.

The KD Series is a high performance, multi-featured digital controller designed as a companion instrument for load cells, force transducers, torque transducers and weighing systems. Two calibration options are available: Digital (keypad entry), or analog (reference signal). RS232/422/485 serial interfaces are supported. MODBUS® RTU protocol is standard and Ethernet TCP is an available option. A high resolution, 16-bit D/A analog output is also standard with ± 5 VDC, ± 10 VDC or 4-20 mA user selectable formats. The digital I/O consist of two optically-isolated logic inputs and two optically-isolated logic outputs. Remote sensing is supported, which is particularly beneficial where long cable runs or Intrinsic Safety barriers are employed. The KD series operates on 18-28 VDC and provides 5 VDC excitation to the transducers. The durable ABS enclosure is a DIN rail mount configuration, and is rated IP20. The KD Series family of products include AC to DC power supplies, Network Gateway Controllers and Analog Transmitters. ProfiBus and DeviceNet communications protocols are available. Optional Innovation<sup>®</sup> is an MS Windows-based software, providing an intuitive and convenient format for PC Setup/Control/ Networking. The attributes of the KD Series are ideal for measurements in the laboratory, manufacturing, process applications, weighing situations, and for general measurement and control.



## For more information call **1-888-545-8988**



## **APPLICATIONS**

- Process Control
- Weighing Applications
- I.S. Hazardous Areas
- Laboratory Measurements
- Force, Torque or Pressure
- O.E.M. Requirements

## **FEATURES**

- 24–Bit A/D
- Analog or Digital Calibration
- HI-Res 16-Bit Analog Output
- MODBUS<sup>®</sup> RTU Over RS 485
- Ethernet/Profibus/DeviceNet
- RS 232 & 422/485 Interfaces
- USB Interface
- 10 Point Linearization
- 0.01% Accuracy Class
- Peak Hold
- Four Digital I/O

## **KD3 Series Specifications**

Innovative Measurement Solutions



Display: Status Annunciation: Keypad: Display Resolution: Display Increments: Decimal Point: Digital Filter: Zero Tracking: Motion Detection: Operating Modes: Calibration Method: LED; 6 Digit; Numeric; 7-Segment Digits; .55" High; Red 4 (LED); Red; Indicate "SP1", "SP2", "NET", "Center of Zero" 4-Key; Tactile Feedback; Multi-function 60,000 dd (max.) 1, 2, or 5; Selectable 0.0, 0.00, 0.000; Selectable Keypad Programmable; .1 to 25 Hz 0, 1, 2, 3 or 4 digits; Selectable 0, 1, 2, 3 or 4 digits; Selectable Net, Gross, Peak Hold, Mode 1, Mode 2 Digital; Keypad; Enter/Store Zero and span value; PC

## FUNCTION

Linearity: Internal Resolution: Measurement Rate: Signal Sensitivity: Span Range @ Full Scale: Excitation Voltage: Current Rating: Power: Warranty: Better Than Or Equal To 0.01% Full Scale (FS) 24-Bit A/D; >16,000,000 Graduations 50 Updates Per Second .02 mV/Graduation -3.9 mV/V to +3.9 mV/V 5 VDC (Nominal); Short circuit protected 60 mA (Nominal); Up To 6 Summed 350 W Bridges 24 VDC ±15%; 5 Watts 1 Year; Limited

#### **ANALOG OUTPUT**

Type:16-Bit D/A; > 65,000 GraduationsOutput Formats:Voltage: ± 5 or ± 10 VDC (10Kohm min load); Current: 0-20 or 4-20 mADC (300 Ohm max load)Software Selectable Parameters:Output format; Full Scale and Zero Offset Values; Net, Gross, Peak or Test Modes

### COMMUNICATION

Serial Port Interfaces: Standard Baud Rates: Standard Protocols: Addresses: Recommended Cable Lengths: Fieldbus Protocol: TWO Ports: 1) USB/RS-232; 2) RS422 or RS485 2400, 9600, 19,200 38,400 or 115,200 Baud; Full Duplex; Selectable (RS232) ASCII; MODBUS® RTU, Continuous, Demand, Slave (Port 2) Up to 32 RS-232 is 50 ft. (max); RS-422 & RS-485 is 3200 ft (max)I/0 ETHERNET 10/100 with protocols TCP, MODBUS/TCP, IP

#### I/0

Logic Inputs:Two; Opto-Isolated; 24 VDC PNP (requires external power source)Logic Outputs:Two; Opto-Relays; (maximum load 24 VDC/100 mADC each

#### **ENVIRONMENTAL**

Operating Temperature Range: Storage Temperature Range Humidity Range: Temperature Effect on Output: Regulatory Compliance:

## ENCLOSURES

Enclosure Construction: Enclosure Dimensions: Wiring Connections: Weight: DIN Rail Mount; NORYL Auto-extinguishing; IP20 KD3: 4.17" wide X 3.54" high X 2.28" deep Screw Terminal Blocks; Pitch of 0.196" 8 Ounces

-10° To +50° C / 14 To 122°F

-20° To +70° C / -4° To 158° F

0 To 85% RH; Non-condensing

<.0005% FS/°F (<.001% FS/°C)

EN 61326-1, EN55011 and EN55014 for EMC; EN61010-1 for Electrical Security

# **KD3 Series Dimensions**



# **Typical Weighing System**



www.sentranllc.com

## **KD3 Series Specifications**

e splay Net Weight Gross Weight C Peak Hold

O Net

ION MAIN SETUP

✓ Edit Config.

1500

Exit Setup Instrument Software Ver. 2.0

0 599

155740

-

3500

Setpoint 1 value Setpoint 2 value

Input 1 status

Input 2 status

6

0 Send

Instrument Software Ver

Setpoint 2 value Input 1 status Input 2 status

Setup

## CONFIGURATION USING Inovation<sup>™</sup> SOFTWARE

The KD Series can be configured by using the front panel keys to navigate through a series of menus, or by sending configuration and calibration data via the RS-232 port with Innovation an MS Windows based program provided for the KD Series on request. Innovation simplifies the configuration and calibration procedure and facilitates easy networking of up to (48) units.

#### **CONNECTIONS DIAGRAM**



INOVATION MAIN SETUP SCREEN

oss Weight

Status II

a Weight C Net Weight C Net Weight G Gross Weight C Peak Hold

Total capacity of transdi Full scale output value ( Net weight (value) Dead load (value)

put signal (mV/V) (Belg

nal counts (Beference only

• Stable

Parameters Calibration Filters/ztrack Output config Serial Ana. output Test

## **KD3 Series Specifications**

6

## HAZARDOUS AREA SCHEMATIC



## **APPLICATION INFORMATION: REMOTE SENSING (6-WIRE) COMPENSATION**

Load cell output sensitivity will be affected by the addition or subtraction of resistance as measured at the end of the factory supplied cable and/or connector. Changes in this measured resistance most often occurs as the result of adding or subtracting cable length. Another common cause is the introduction of intrinsic safety barriers or similar resistive influences. Connection junctions introduced to the measurement circuit can introduce unwanted resistance, so take care in making these connections secure and clean.

- Resistance changes of 0.37% per 10 feet of 28 gauge cable can be expected.
- Resistance changes of 0.09% per 10 feet of 22 gauge cable can be expected.

The affects of these resistance changes can be virtually eliminated with the use of the Remote Sensing feature (6-wire) found in many better measurement amplifiers/indicators, such as the KD Series.

## Legal Disclaimer



#### ALL PRODUCTS, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Sentran, LLC, Incorporated, its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Sentran, LLC"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product. The product specifications do not expand or otherwise modify Sentran, LLC's terms and conditions of purchase, including but not limited to, the warranty expressed therein. Sentran, LLC makes no warranty, representation or guarantee other than as set forth in the terms and conditions of purchase. To the maximum extent permitted by applicable law, Sentran, LLC, disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability. Information provided in datasheets and/or specifications may vary from actual results in different applications and performance may vary over time. Statements regarding the suitability of products for certain types of applications are based on Sentran, LLC's knowledge of typical requirements that are often placed on Sentran, LLC products. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular applications. No license, express, implied, or otherwise, to any intellectual property rights is granted by this document, or by any conduct of Sentran, LLC products shown herein are not designed for use in such applications do so entirely at their own risk and agree to fully indemnify Sentran, LLC for any damages arising or resulting from such use or sale. Please contact authorized Sentran, LLC personnel to obtain written terms and conditions regarding products designed for such applications.



**SENTRAN, LLC** 4355 LOWELL STREET ONTARIO, CA 91761-2225, U.S.A. T: 909-605-1544 F: 909-605-6305

www.sentranllc.com

Innovative Measurement Solutions

