



- SMART CONFIGURABLE
- SINGLE OR DUAL CHANNEL
- GALVANIC ISOLATION
- UNIVERSAL OR FREQUENCY INPUT
- mA AND RELAY OUTPUT
- REMOTE I/O VIA RS485
- OPC COMPLIANT
- EASILY CUSTOMIZED VIA TFML
- UNIQUE 'BUS JUMPER' SYSTEM



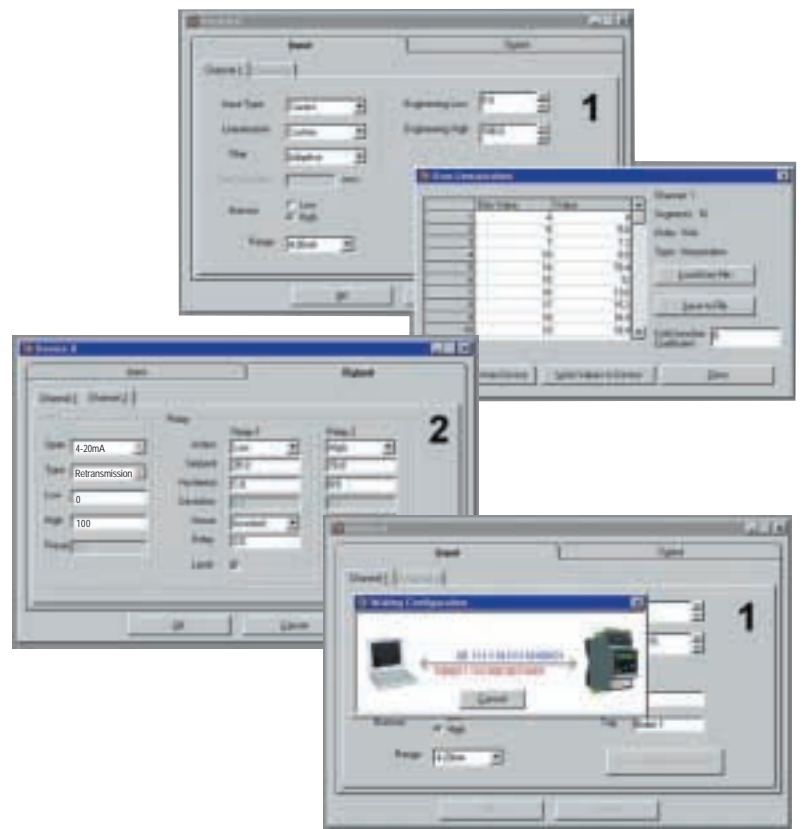
DIN RAIL SIGNAL CONDITIONERS, WITH TFML MEDACS® II

DESCRIPTION

The MEDACS II is a totally new concept in DIN rail signal conditioners. It consists of a family of modules that allow the user to select the input and output. Two basic input modules are available. The 2100 and 2200 series universal input units accept RTDs, TC, mA and DC volts. The 2300 and 2400 series accept frequency inputs. Output options include isolated 4-20 mA, single SPDT relay and dual N/C relays, in various combinations.

All units have RS485 Modbus serial communications which is used in conjunction with our M-Config software to configure the modules. The M-Config software is loaded into a PC and communication to the MEDACS is established through a comms port on the PC. This usually requires an RS232 to RS485 converter that is optionally available. The software program is very easy to use and intuitive using pull down menus and dialog boxes. Single channel units have a built-in keypad and digital display that can also be used to configure the units. More than 50 points of linearization can be programmed into the conditioners either via RS485 or by using the keypad on the single channel modules. Polynomials can also be programmed into the conditioners using RS485. In addition more complex functions can be programmed using our TFML.

SET-UP PROGRAM SCREENS



STATUS INSTRUMENTS INC.

PO Box 548, 456 Park Ave., Scotch Plains, NJ 07076
 Phone: (800) 700-3272 Fax: (800) 700-5468 (US & CA only)
 Phone: (908) 490-0232
 Email: rc@statinst.com Internet Address: www.statinst.com



MEDACS Series 2 7.02/PDF

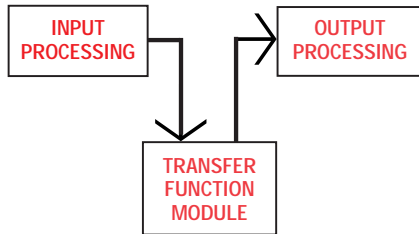
About TFML

In addition to the normal range of functions incorporated within the MEDACS instruments, there is the ability to program the software in order to customize its function.

The normal operation of a standard transmitter is as indicated below. The electrical input is processed to linearize and condition the sensor value. This value is used to create an output. The relationship between process input and output is referred to as the transfer function. In this case it is a simple relationship but more complex relationships are often required.



If the relationship between input to output can be broken, a programmable module can be inserted and be used to define a new transfer function as shown below.



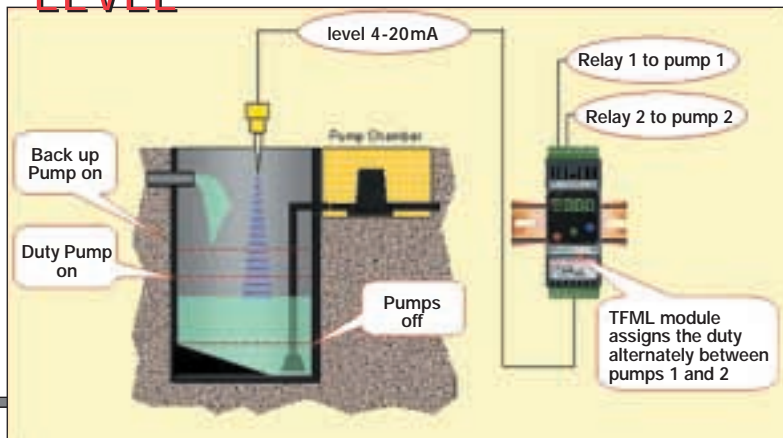
A transfer function is defined and a program written for it. These program modules can either be obtained pre-written for standard features such as A-B, or written for a specific requirement. These pre-written functions are available from a library of modules on our TFML web page, hence the name Transfer Function Module Library.

TFML'S Currently Available

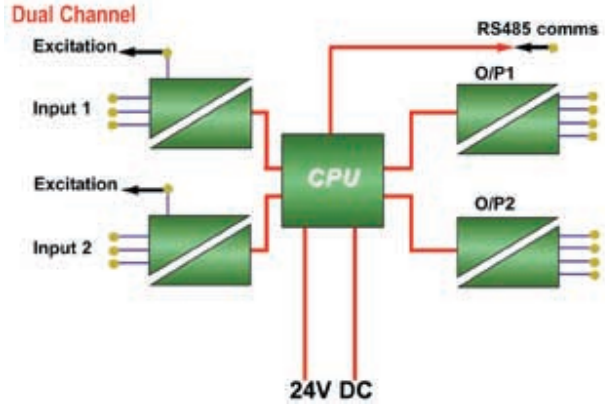
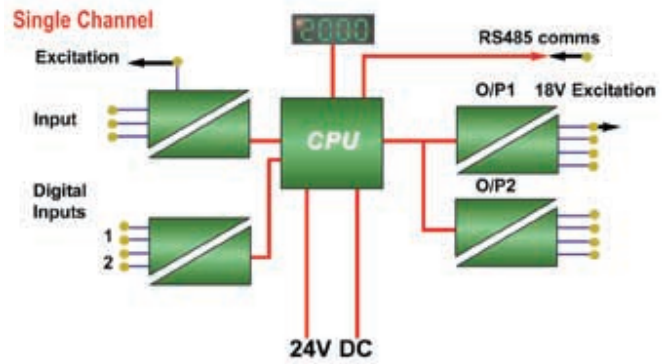
- Rate of change limiter
- Peak Pick/Hold
- Valley Pick/Hold
- (A+B)/2
- A-B
- Totalizer with relay pulse output
- PID function block
- Sensor Validation

Please contact the Sales Office for details of other custom programs. New ones are being added all the time.

LEVEL

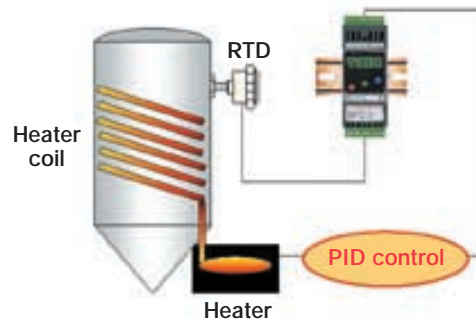


Application: Level control in sewage lift stations is normally provided by two or more pumps, with a level controller to tell the pumps when to start and stop. A MEDACS unit can field power a level gauge mounted in the lift station and provide the switching of the contactors for the pumps. Normally, the duty pump will lower the level, but in storm conditions, the back up pump may be called to assist. After each pump down cycle, a TFML module rotates the duty assignment to ensure both pumps remain active and with even running hours.

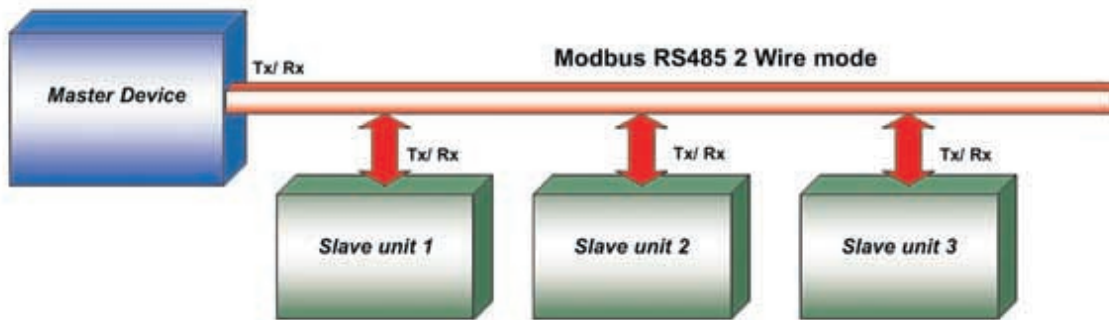


Input Options: Universal or Frequency
Output Options: Isolated Current, C/O Relay or Twin N/C Relays

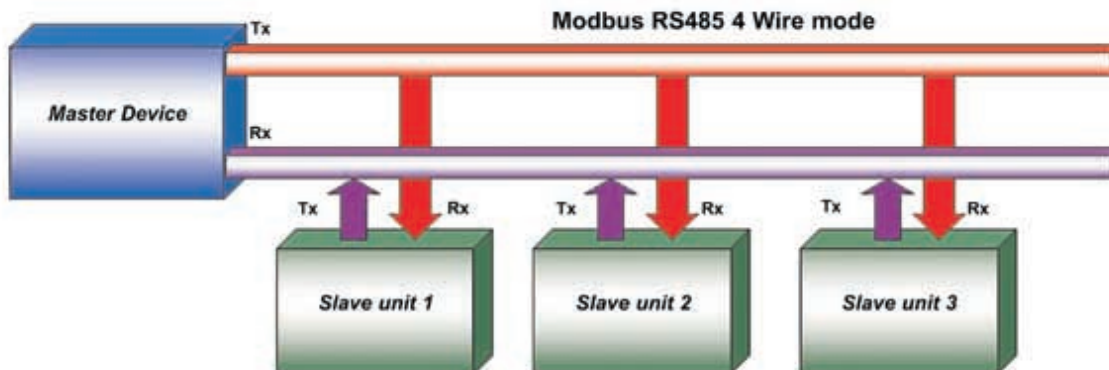
Closed Loop Temperature Control



Modbus Multi-Drop RS485 Serial Communications



If 4-wire mode is chosen, the network is wired as shown below and does not have the same critical requirements for device message timing as the Master has dedicated transmit and receive lines.



About Remote I/O

Modbus

Modbus is a Master-Slave protocol. This means all communications are initiated by the Master device (ex. Computer, PLC, DCS) and in general the Master communicates with one Slave device (ex. MEDACS II) at a time.

The RS485 mode determines the way that the network is connected together. The MEDACS II can be configured in either the 2-wire or 4-wire mode shown above. The 2-wire arrangement has both transmit and receive signals sharing the same wires. The 4-wire mode uses dedicated pairs of wire for both the transmit and receive signals. In comparison, the 2-wire mode makes the most efficient use of wire and connections while the 4-wire mode has the advantage of not relying on critical timing from the Master device.

The MEDACS II further simplifies installation of either a 2-wire or 4-wire system by using a unique Bus Jumper system which eliminates both the typical RS485 and power wiring from unit to unit.

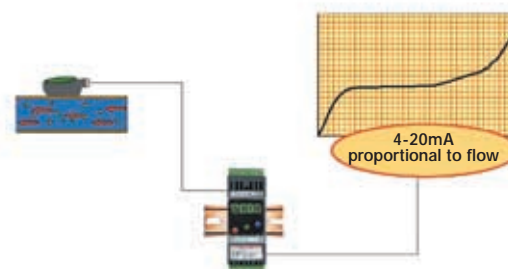
Multi-Drop and Device Addresses

The MEDACS II comes standard with one-to-one RS485 communications which allows the Master to be wired to and communicate with one Slave. With optional Multi-Drop Communications, the Master can be connected to and communicate with up to 32 Slaves. With Multi-Drop each Slave unit is assigned a unique address. This allows the Master to identify, transmit, and receive information from each specific slave.

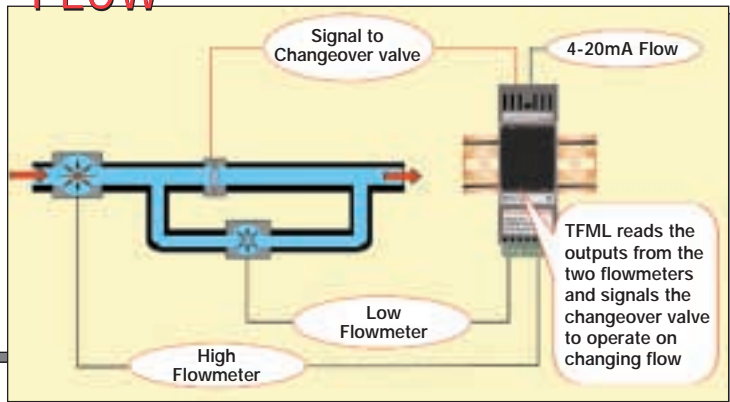
Gateways

Although each unit is equipped with an RS485 serial interface which can connect directly to a Modbus network, up to 64 channels can be connected to a gateway module. Gateways provide the physical layer and protocol conversion to common communication bus systems such as Ethernet, Profibus, Foundation Fieldbus etc. Contact the Sales Office for details about Gateways and their current availability.

Flow Sensor with Customized Output

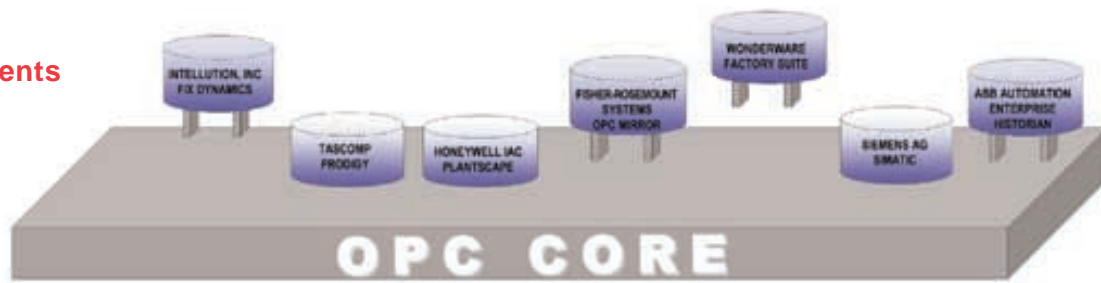


FLOW

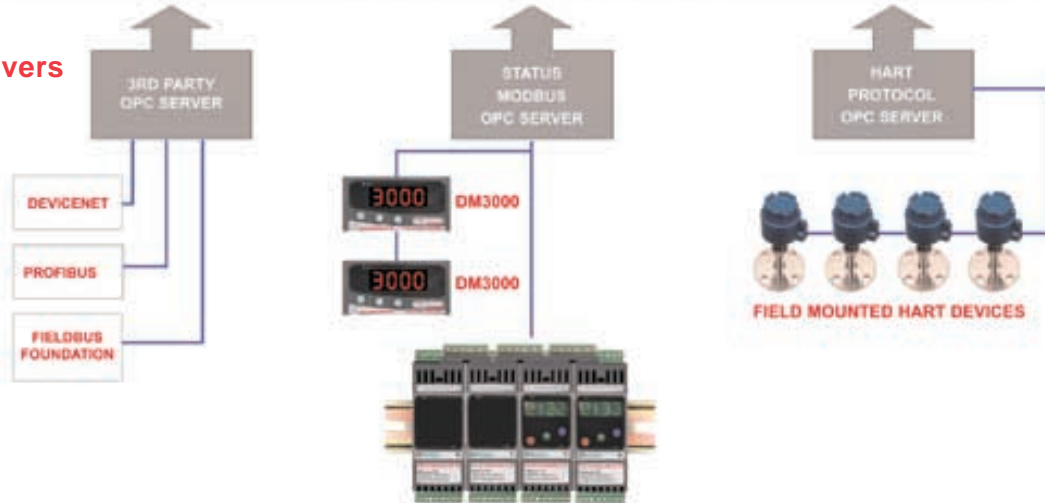


Application: Accurate measurement of flow over a wide flow range can be problematical due to the turn-down of the flowmeter providing inaccurate measurement at extremes of span. A two channel MEDACS can take the inputs from two correctly sized flowmeters, and by using a TFML function can select the most appropriate instrument for the conditions, signalling a changeover valve to divert flow to the selected instrument. A continuous 4-20mA output proportional to flow is maintained by the MEDACS Unit.

OPC Clients



OPC Servers



About OPC

Managed by the OPC Foundation, OPC (Object linking and embedding for Process Control) is an industry standard created with the collaboration of a number of leading worldwide automation and hardware/software suppliers working in cooperation with Microsoft. The MEDCAS II is designed to meet the OPC requirements.

The goal of the standard is 'Plug-and-Play'. By using the standard OPC client-server model, any OPC-compliant device (like the MEDACS II) will quickly, easily and seamlessly connect to another and immediately work without the need for lengthy installation procedures. The user can then concentrate more on the chosen client software package (e.g. DCS, SCADA, HMI, Plant Scheduling) rather than the problems of system integration.

The application of the OPC standard interface makes possible interoperability between automation/control applications, field systems/ devices and business/ office applications.

Hardware Platform

The minimum hardware requirements to run OPC are IBM compatible PC:

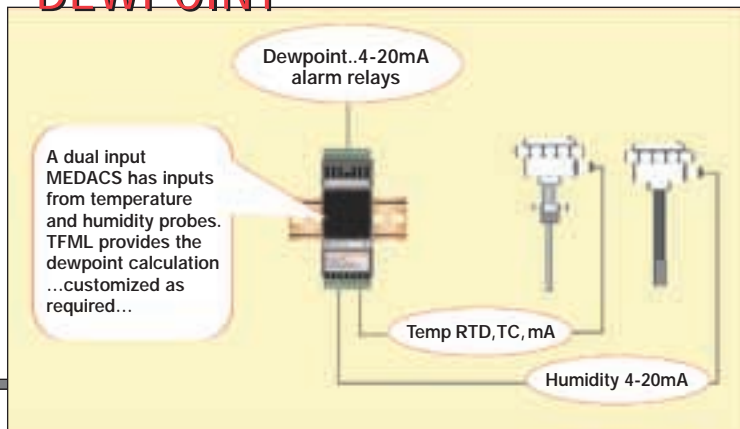
- P100 processor or higher**
- 64Mb Ram**
- 200Mb free disk space**
- Microsoft Windows**
- 95 (SR2)/ 98/ NT4/2000**

SELF DOCUMENTATION

Thanks to the digital nature of Medacs II transmitters, self-documentation (not feasible with earlier analog transmitters) becomes possible. In addition to the standard configuration data stored within the transmitters, are data related to the instrument itself such as Manufacturer, Part No., Serial No., Software revision No., Hardware revision No., Date (which can be used to advise when re-calibration is required), Final Assembly No. and Sensor Serial No. A 32 character message facility enables additional information, such as the name of the engineer who last serviced the instrument, to be recorded within the instrument itself.

By using the appropriate software tools, a complete device history can be maintained automatically thus ensuring cost savings and reduced downtime due to better programmed maintenance.

DEWPOINT



Application: Dewpoint measurement can be critical a to number of manufacturing processes. A MEDCAS with a TFML module can take inputs from an RTD or thermocouple (without need for a transmitter) and combine it with the input from a humidity sensor to provide warning of the onset of Dewpoint.

Alarms, serial communication, etc are all standard.

SPECIFICATION @ 68°F

INPUTS

Universal Input Overview

Sensor	Range
mA	4-20, ±20, ±10
RTD	Pt100, Ni120
T/C	K, J, T, R, S, E, N, F, B
Volts	±0.1, ±10, ±5, 1-5

Current input

Base accuracy	0.05% FS ± 0.05% of reading
Thermal drift	300ppm/°F
Input impedance	20Ω
Linearization	Linear, Square root, Power ³ / ₂ , Power ⁵ / ₂ , Custom

Two isolated and regulated 19V power supplies are available to power the current loops, and are capable of sourcing 24mA for each channel.

RTD

Sensor range	-328 to 1562°F
Linearization	BS EN 50751/ JISC 1604/ DIN 43760.1, Custom
Basic accuracy	0.2°F ± 0.05% of reading
Thermal drift (zero)	±0.006Ω /° F
Thermal drift (span)	200ppm /° F
Excitation current	300mA to 550mA
Lead resistance effect	0.004 °F/Ω
Max lead resistance	50Ω/leg

Thermocouple

Type	Range (°F)
K	-328°F TO 2498°F
J	-328°F TO 2192°F
T	-328°F TO 752°F
R ¹	-15°F TO 3200°F
S ¹	-15°F TO 3200°F
E	-328°F TO 1832°F
F	-148°F TO 1112°F
N	-292°F TO 2306°F
B ²	-15°F TO 3002°F
Custom	-1999 TO 9999
Accuracy	±0.04% FS ± 0.04% reading or ±0.5°F, whichever is greater
Linearization	BS4937 / IEC 584-3 / Custom
Cold junction error	±0.050°F
Cold junction tracking	0.1°F/°F
Cold junction range	-4°F TO 158°F
Thermal drift (zero)	6μV/°F
(span)	300PPM/°F

Notes: 1. Accuracy true for 1472°F to 3200°F 2. Accuracy true for 752°F to 3002°F

Voltage input

Range	±100mV, ±5V, ±10V, 1-5V
Accuracy	0.04% FS ±0.04% of reading
Thermal drift	330ppm/°F
Input impedance	1MΩ
Linearization	Linear, Square root, Power ³ / ₂ , Power ⁵ / ₂ , Custom

Frequency Inputs

A wide range of input types and frequencies can be accommodated without the need for Switches or Jumpers. Totalize functions can be achieved via TFML.

Input Types	Namur, low Voltage (>10mV), TTL, Open Collector, PFC
Frequency range	0.1Hz to 10KHz.
Accuracy	0.003% FS

Digital Inputs

Single channel units can also accept two external digital inputs which can be TTL, Open Collector, 24V DC Logic or Potential Free Contacts. Dig 1 is dedicated to a reset/clear function enabled by the configuration software while Dig 2 is reserved for use with TFML. Both digitals can be read via the communications and used to signal events.

OUTPUTS

Two output option types are available per channel; relay or current retransmission. The configuration of these will vary depending upon whether they are fitted on the single or dual channel transmitter.

Current Retransmission Outputs

Output Range	Single Channel 0-10, 0-20, 4-20 mA source or sink
	Dual Channel 4-20mA sink
Maximum current output	<23mA
Accuracy	0.07% or 5μA, whichever is greater
Max power supply	30V (In SINK mode)
Temperature stability	8μA/°F

Note: Max source load 750R

Relay Outputs

Two relay options are available; a single changeover or twin independent relays with Normally closed contacts.¹

Alarm Action	Off, High, Low, Deviation, Test
Hysteresis	Programmable 0 to 100%
Delay Time ²	Programmable
Start-up Delay	Programmable
	AC DC
Max switching voltage	48V RMS 48V
Max current	1A @ 48V 1A @ 30V
Max power	60VA 30W
Contact resistance	<100mΩ
Electrical life @ full load	100,000 operations
Mechanical life	10,000,000 operations

Notes

- Contacts are Normally Closed i.e. the contact is closed at power off and when operating in an alarm condition. The contact opens in the absence of an alarm condition. The active function can be reversed in the software.
- Alarm must be continuously present for this period in order to be recognized.

GENERAL

Response Time	300mSec
Filter	Programmable or Adaptive
Power Requirements	24V DC ±10% @ 200 mA
Isolation	500V AC I/P-O/P-PSU
Ambient operating range	-22 to 140°F
Ambient storage	-58 to 185°F
Ambient humidity	10 to 90% RH
EMC emissions	BS EN50081-1
EMC immunity	BS EN50082-2
Display Range	-1999 to 9999

SERIAL COMMUNICATIONS

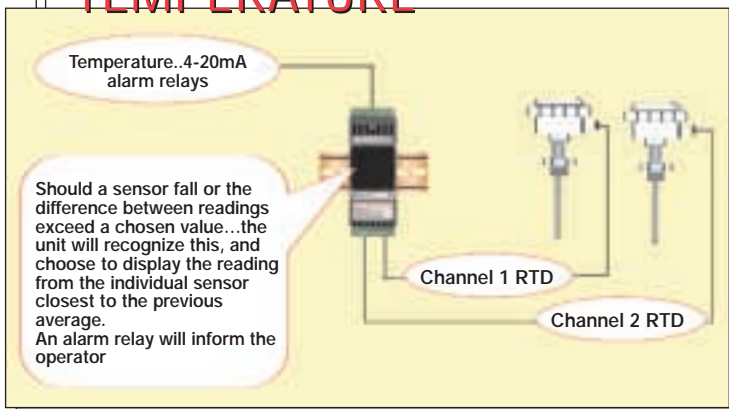
Each MEDACS 2000 module comes supplied with RS485 serial communications using MODBUS rtu protocol as standard

Baud rate	19.2KB, 9.6KB or ;1.2KB
Mode	2 wire or 4 wire available
Device Address	Network unique address 1-255

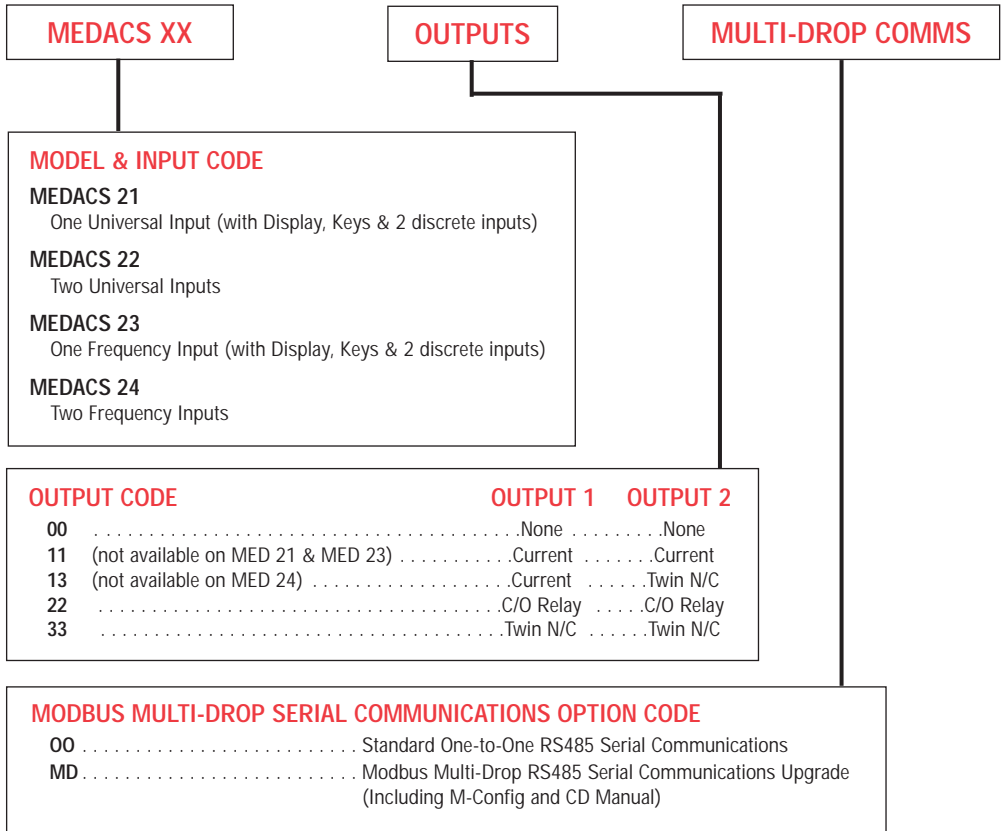
(Note that maximum device no. for Modbus is 247)

Application: Critical control or monitoring of a process variable may require "dual validation" or redundancy where two sensors are used to ensure contingency in the event of a sensor failure. MEDACS and a TFML module can read the input from two sensors, averaging them to provide an output. Should a sensor fail or the difference between readings exceed a chosen value...the unit will recognize this, and choose to display the reading from the individual sensor closest to the previous average. An alarm relay will inform the operator.

TEMPERATURE



ORDER CODE



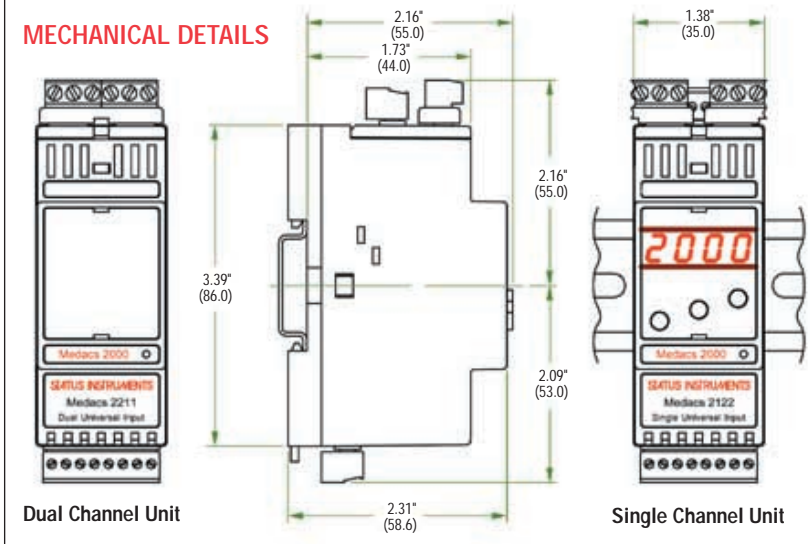
ADDITIONAL ITEMS:

- M-Config Configuration Software on CD with Manual
- M-Config Configuration Software and Manual from Web Site
- M-OPC OPC Server Software

INTRINSICALLY SAFE APPROVED UNITS

Agency Approvals Pending

MECHANICAL DETAILS



MEDACS II UNITS CAN EASILY BE FITTED IN TO A WALL MOUNTED WATERPROOF ENCLOSURE.