

Universal Series

MicroRegulator™ & MR55

TAC's Universal MicroRegulators™ are small, point count controllers that support free-form, modular DDC programming, an intelligent I/STAT for independent local control and interface to a TAC I/NET™ Distributed Control System.

MicroRegulator Features

- I/STAT Support Standard
 - Local Display–3-Digit & Decimal
 - Local Control–Analog or Digital
 - Local Override & Setpoint Adjustment
 - 4 Local or Global Points
 - User-Defined Passwords
- Integral 7-Day Start/Stop Schedule
 - Default if not connected to MRI
- “Standalone” Logic Sequences
 - Object Module Programming
- Universal Inputs
 - Thermistor
 - Voltage(0-5V or 0-10V)
 - Current (0-20 mA)
 - Contact (Discrete or Pulse)
- Relay or Low Voltage Triac Outputs
 - Control Floating Actuators
 - Two-Position Actuators
 - On/Off Control
 - PWM Proportional Control
- Analog Outputs
 - 0-10 Vdc Actuators
- Self-Test Diagnostics
- Input Point Parameters
 - Normal & Narrow Range
 - Outdoor & Indoor Temperature Ranges
 - Individual Calibration
- DIN Rail Mounting Option

MR55 Microregulator Specific Features

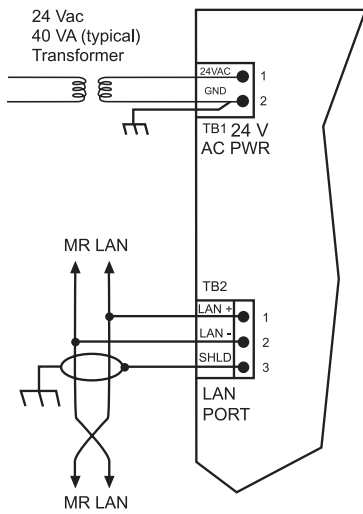
- Integral Velocity Transducer Option
- Universal Inputs
 - Thermistor
 - Contact (Discrete)

OPERATION

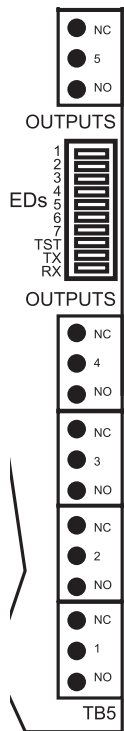
Database and logic sequences may be custom-developed on an I/NET PC and downloaded to the MicroRegulator. Database and critical parameters are stored in non-volatile NOVRAM for standalone operation thereafter. Database and parameters may be modified from the I/NET PC. Points may be displayed and controlled, and object module outputs may be displayed from either an I/NET PC or a locally connected I/STAT. The MicroRegulator contains “Object Modules” that are used to develop the local logic sequences. Object Modules are “linked” to create a wide variety of custom control sequences.

These Object Modules, which can scan at 1 to 255 seconds (individually selectable) include:

- PID: Proportional, Integral, Derivative, Direct or Reverse Acting, Setpoint, Offset, Input High & Low Limits, Output High & Low Limits, etc.
- FLOATING: Proportional, Integral, Derivative, Direct or Reverse Acting, Turn-Around Time, Throttling Range, Setpoint, Offset, Input High & Low Limits, etc.
- 2-POSITION: Setpoint, Offset, Differential, Input High & Low Limits, Direct or Reverse Acting, etc.
- RESET: Primary & Secondary Inputs, End-Point Values for both Primary & Secondary Inputs & Outputs, Output High & Low Limits, etc.
- RELAY: Dual-State Output, Time-Delay and Timer Function, Delay Before Break and Delay Before Make Options, etc.
- CALCULATION: Boolean, Relational, Math, Functions, etc. Parameter tables provide “normal” range thermistor support for outdoor temperatures of -40°F to 176°F (-40°C to 80°C), or “narrow” range thermistor support for indoor temperature of 32°F to 90°F (0°C to 32°C) for maximum resolution.

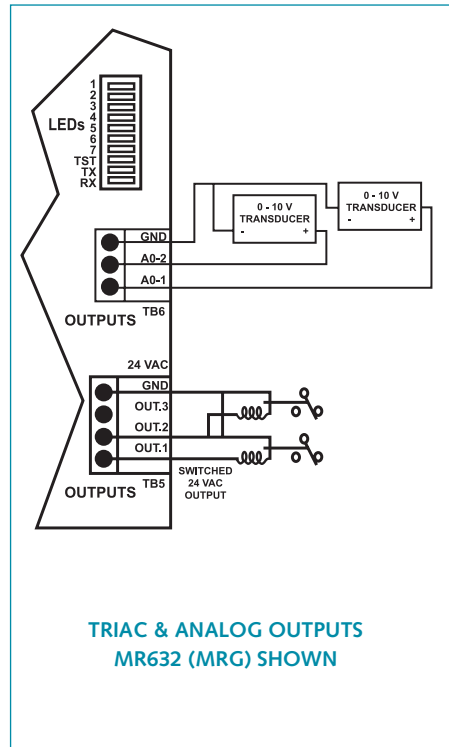


AC POWER & MR LAN

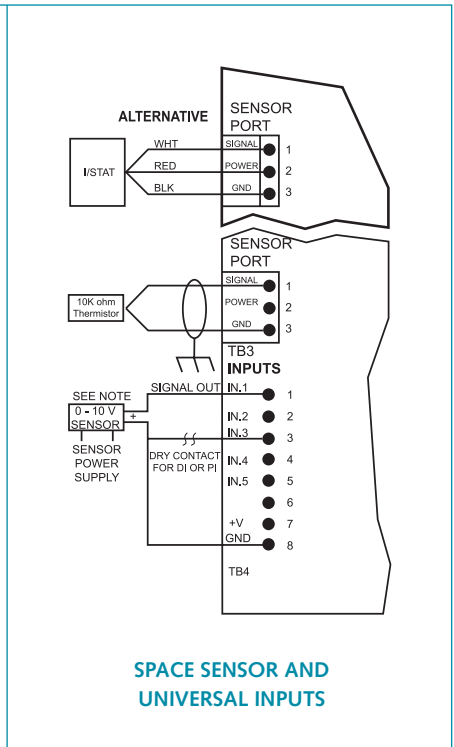


**RELAY OUTPUTS
MR88R (MRG) SHOWN**

MODEL NUMBER	DESCRIPTION	COMMENTS
MR160	MicroRegulator 1 I/STAT, 15UI, 24 Vac, [MR-H]	Metal Baseplate*
MR632	MicroRegulator 1 I/STAT, 5UI, 3DO (LV Triac), 2 AO (0 – 10 V), 24 Vac, [MR-G]	Metal Baseplate
MR88	MicroRegulator 1 I/STAT, 7UI, 8DO (LV Triac), 24Vac [MR-F]	Metal Baseplate
MR88R	MicroRegulator, 1 I/STAT, 7UI, 8DO (LV Relay), 24 Vac [MR-K]	Metal Baseplate
MRCOVERM	Microregulator Metal Cover	Required For UL Plenum Rating
100KRES	100K ohm 1/8W, 1% Resistor for 0 – 10 V Inputs	Bag of 100
1KRES	1K ohm 1/8W, 1% Resistor for Dry Contact (DI or PI) Inputs	Bag of 100
249RES	249 ohm 1/8W, 1% Resistor for 0 – 20 mA Inputs	Bag of 100
MR55	MicroRegulator, 1 I/STAT, 4UI, 5DO (LV Triac), 24Vac	Metal Baseplate
MR55X	MicroRegulator, 1 I/STAT, 4UI, 1VI (Velocity Input), 5DO (LV Triac), 24 Vac	Metal Baseplate Intergral Velocity Transducer
TCON126	MicroRegulator Controllers Installation Guide	
TCON130	MicroRegulator MR55, MR55X and I/STAT Installation Guide	



**TRIAC & ANALOG OUTPUTS
MR632 (MRG) SHOWN**



**SPACE SENSOR AND
UNIVERSAL INPUTS**

NOTE: Universal Inputs support 10K Ohm thermistors, by default. Resistors are added or removed from sockets to support other ranges, per input, as follows:

0-5 Vdc: Remove 10K Ohm

0-10 Vdc: Add 100K Ohm

DI or PI: Add 1K Ohm

0-20 mA: Add 249 Ohm

Units are shipped with 10K Ohm resistors in place for thermistor support.

SPECIFICATIONS

Universal Series MicroRegulator & MR55

COMMUNICATION PORTS

MICROREGULATOR LAN:

RS-485, 9600 baud, asynchronous, polling

NETWORK WIRING REQUIREMENTS

MR LAN LENGTH:

5000 ft. (1500 m)

CABLE SUPPORTED:

Twisted pair, shielded. 22 AWG or larger, 30 pF/ft or less between conductors, 55 pF/ft or less conductor to shield, 85 to 150 Ohm impedance. Belden 9184 or equivalent

NOTE: 24 AWG stranded cable (Belden 9841 or equivalent) may be used for MR LAN lengths not exceeding 4000 ft (1,220 m).

PROCESSOR

Zilog Z8

CLOCK/CALENDAR: Includes seconds, minutes, hours.

MEMORY

EPROM: 32KB

RAM: 236B

NOVRAM: 1024Bytes.

PHYSICAL DESCRIPTION

PCB DIMENSIONS:

7.0"L x 4.0"W x 1.5"H

(17.8 cm x 10.2 cm x 3.8 cm)

METAL BASEPLATE DIMENSIONS:

8.5"L x 5.5"W x 1.7"D

(21.6 cm x 14 cm x 4.3 cm)

PLASTIC BASEPLATE DIMENSIONS:

8"L x 4.3"W x 3.5"H

(19.6 cm x 10.5 cm x 8.6 cm)

DIN Rail mounting channel on base UL94VO rated enclosure

WEIGHT:

1 lb (1.31 lb for metal baseplate version)

POWER REQUIREMENTS:

24Vac, +10%, 50/60 Hz

- MR160: 8VA plus 1VA for I/STAT
- MR632: 8VA plus Triac load plus 1VA for I/STAT
- MR88: 8VA plus Triac load plus 1VA for I/STAT
- MR88R: 9VA plus 1VA for I/STAT
- MR55: 8VA plus 1VA for I/STAT

OPERATING TEMPERATURE:

32°F to 122°F

(0°C to 50°C)

OPERATING HUMIDITY:

10% -90% RH, non-condensing

SOFTWARE

POINT CAPACITY:

20 resident points. Hardware (external) points are a function of model selected, and software (internal or indirect) points activated. Indirect points are non-local reflections of any "global" point in the I/NET system.

OBJECT MODULES:

1 to 255 second scan rate, 16 modules max

- PID: Proportional, Integral, Derivative
- FLOATING
- 2 POSITION
- RESET
- RELAY
- CALCULATION

NOTE: Modules may be "linked" to other modules or points for complex cascade control sequences. Linked points may be local or global.

RESIDENT TIME SCHEDULE:

One On and One Off schedule with day-of-week assignment (seven-day). Local clock synchronization every minute by MRI when connected. Operates from local software clock when assigned and disconnected from MRI. Resident time schedule superseded by Automatic Time Scheduling in MRI when connected.

INPUT/OUTPUT

SPACE SENSOR INPUT:

- Supports I/STAT or 10K ohm NTC
- Thermistor (Dale 1M1002 - C3)
 - Accuracy: 1°F (0.6 °C)
 - Resolution: 0.25F (.14C)

UNIVERSAL INPUTS:

May be either Analog (MR55), Thermistor, Pulsed (MR55) or Discrete per the following specifications.

ANALOG INPUTS:

Normal or Narrow Range

- 0-5 Vdc (selectable to 2-4 Vdc) (not available on MR55)
- 0-10 Vdc (selectable to 4-8 Vdc) (not available on MR55)
- 0-20 mA (selectable to 8-16 mA) (not available on MR55)
- 10K ohm NTC Thermistor (Dale 1M1002-C3)
- Accuracy: 1%
- Resolution: 8-bit, dual range
- A/D Digital Filtering: Median value filter and 50/60 Hz notch filter
- Calibration Coefficients: Factory set in NOVRAM, field-adjustable, 8 individual pairs.

ANALOG INPUT PARAMETERS:

Normal range (255 counts across 0-5 V or 0-10 V range); Narrow range (255 counts across 2-4 V or 4-8 V range). Stored in NOVRAM
MR55: 255 counts across 1-5 to 4V
Span: Stored in NOVRAM

DISCRETE INPUTS:

Dry contact input

- Contact Excitation: 5 V @ 5 mA
- Pulse Input Rate: 9 Hz maximum
- Input Duration: 0.055 seconds minimum

DISCRETE OUTPUTS:

Triac or Relay

- Low Voltage Triac: 24Vac @ 0.25 A maximum (voltage sourcing), fused, optically isolated.
- Low Voltage Relay: 24Vac/dc @ 0.5A resistive, Form C, SPDT
- Modes: Latched or PWM proportional

ANALOG OUTPUTS (MR55):

0-10 Vdc @ 10 mA

- Accuracy: 1% typical, 3% min
- Resolution: 8-bit

SPECIFICATIONS

(Continued)

POINT SCAN INTERVAL:

1-225 seconds

OBJECT MODULE SAMPLE INTERVAL:

1-255 seconds

VELOCITY SENSOR (on MR55X):

- Range : 0" to 1.3" water column
- Connection: Dual barbed fittings for 1/8" ID tubing
- Resolution: 0.005" W.C.
- Single offset adjust on sensor plus factory-set calibration coefficients, field-adjustable

TERMINATIONS

TERMINAL BLOCKS:

Removable screw terminal connectors

INDICATION

LEDS:

MR LAN activity (transmitting & receiving), test mode (microprocessor check, EPROM check, NOVRAM check), each output

Dip Switch:

SW1-5: Address (0 to 31)
SW6-7: Baud Rate (9600 = on, on)
SW8: I/STAT (set to on, if used)
MicroRegulator Interface (MRI)

AVAILABLE PLATFORMS:

7792 MRI
7793 MCI
7798 I/SITE LAN

LISTINGS

- UL916
- UL916 plenum (with cover)

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SDS-INET-MR55-US
05/06



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