



## MIC 1407™

*Well-Featured, Easy to Setup  
and Use*

### **1/4 DIN Valve Motor Drive Controller**

#### **DESCRIPTION**

Partlow's MIC 1407 is a 1/4 DIN process controller with a unique VMD tuning algorithm, that is designed specifically to drive valve motors. It provides continuous on-line open loop tuning which gives stable control at all times. With pre-tune and auto-tune, the user set up is also much easier in what is generally considered to be a complex measurement area.

In addition to tuning the P and I terms, the auto-tune also reduces valve activity to an absolute minimum without compromising the control quality, thereby reducing wear and tear on mechanical components such as valves, contactors and relays.

This VMD incorporates the latest in surface-mount and CMOS technology to ensure reliable and accurate control in a wide variety of applications.

#### **APPLICATIONS:**

Ideal for temperature control applications requiring a value-priced, user-friendly, versatile and well featured general-purpose controller.

#### **INDUSTRIES:**

- Industrial and lab ovens/furnaces, plastics and thermal forming
- Form/fill and seal
- Packaging applications
- And any others where low costs, smaller size and unmatched connectivity are critical requirements.

#### **FEATURES/BENEFITS**

- Dual 4-digit LED displays
- 1/4 DIN panel mount
- Universal Input for Thermocouple, RTD, DC linear mA/V/mV, user selectable
- Sensor fault detection
- Up to 3 outputs; relay, DC linear, SSR driver, Triac
- Alarms (process, deviation/band) control
- PID Tune
- Optional RS-485 serial communications
- Program security

## 1/4 DIN Valve Motor Drive Controller

## SPECIFICATIONS\*

## STANDARD FEATURES

Up to 3 outputs via relay, 4-20 mA current, Triac or SSR driver  
Alarm and control outputs  
Available inputs for T/C, RTD, Voltage or Current  
Sensor fault detection  
Optional RS-485 Communications or Dual Setpoint

## ENVIRONMENTAL CHARACTERISTICS

**Operating Temperature:** 0 to 55°C, 32 to 131°F  
**Storage Temperature:** -20 to 80°C, -4 to 176°F  
**Humidity:** 20 to 95% RH, non condensing

## ELECTRICAL

**Line Voltage:** 90 to 264VAC, 50/60 Hz  
Optional 20 to 50VAC or 22 to 65VDC  
**Power Consumption:** 4 Watts  
**Transmitter Power Supply:** 24VDC ±20%;  
Load Impedance: 910 Ohms (22mA @ 22VDC)

## INPUTS

**Thermocouple types:** J, K, T, R, S, B, L and N  
**RTD:** 100 ohm platinum (.00385 Ohm/Ohm/C)  
**Volts:** 0 to 5VDC, 1 to 5VDC, 0 to 10VDC and 2 to 10 VDC  
**Millivolts:** 0 to 50mVDC, 10 to 50mVDC  
**Milliamps:** 0 to 20 or 4 to 20mADC  
**Sensor Fault Detection:** Display indicates **cLL** or **cHH** for thermocouple or RTD inputs and sensor break, SnSr. "Close Valve" input set to ON; alarms operate as if the process variable has gone over-range (TC & RTD) or under-range (V, mV, mA)  
**Dual Setpoint Selection:** Voltage-free or TTL compatible

## OUTPUTS

**Outputs 1 & 2**  
**Relay:** SPDT (Output 1 - Open Valve, Output 2 - Close Valve)  
2A @ 120V AC (Motor Drive)  
2A @ 240V AC (resistive or independent contactor drive)  
**Triac:** 1 amp @ 40°C derated to 1/2 amp @ 80°C  
**Output 3**  
**Relay:** SPDT, 2A resistive @ 120/240V AC  
**SSR Driver:** > 4.2V DC into 1 K ohms minimum  
**Current Output (retransmission only):**  
0 to 20mADC into 500 ohms max.  
4 to 20mADC into 500 ohms max.  
**Volts DC Output (retransmission only):**  
0 to 10VDC 500 ohms minimum  
0 to 5VDC 500 ohms minimum  
**Triac:** 1 amp @ 40°C derated to 1/2 amp @ 80°C

## DISPLAY

**Digital Display:** Dual, Four-digit, 7 segment LEDs. Top Display: 0.53" high; Bottom Display: 0.39" high; Individual LED indicators for function/mode status

## ALARM ADJUSTMENT

**Process Alarm:** ± Input Span  
**Deviation Alarm:** ± Input Span  
**Deviation Band Alarm:** 0 to Input Span

## CONTROL ADJUSTMENTS

**Proportional Band:** 0.5% to 999.9% of Input Span  
**Auto Reset:** 1 sec to 99 min 59 sec/repeat  
**Rate:** 0 sec to 99 min 59 sec  
**Motor Travel Time:** 5 sec to 5 min

## PERFORMANCE

**Measurement Accuracy:** ± 0.25% of span, ± 1 LSD at 20 deg C

Note: Reduced performance with Type "B" thermocouple between 100-600C (212-1112F)

**Ambient Temperature Error:** 0.01% of span /deg C change in ambient

**Linearization Accuracy:** Better than ± 0.2 deg C any point, (TC and RTD) any 0.1 deg C range (± 0.05 deg C typical). Better than ± 0.5 deg C any point, any 1 deg C range

**Cold Junction Compensation:** Better than ± 0.7 deg C

## Noise Rejection:

Common mode: >120dB at 50/60Hz giving negligible effect at up to 264V 50/60Hz

Series Mode: >500% of span (at 50/60 Hz) causes negligible effect

**Source Resistance:** 1000 ohm maximum (thermocouple)

**Lead Resistance:** 50 ohm per lead maximum balanced (Pt100)

**EMI Susceptibility:** Designed to meet EN50082 Part 2

**EMI Emissions:** Designed to meet EN50081 Part 2

## PHYSICAL DIMENSIONS

**Dimensions:** 1/4 DIN front panel, 100mm (3.9") deep  
480 gm. (16.9 oz.) maximum

## COMMUNICATIONS

**Type:** RS-485 serial communication port:

**Protocol:** Modbus RTU

**Bit Rate:** User configurable to 1200, 2400, 4800, 9600

**Address:** User configurable 1 to 32

## RATINGS/AGENCY APPROVALS

CE, UL & cUL recognized (E67237)

## WARRANTY

3 years

\* Specifications are for base models with standard features only unless otherwise noted. Specifications subject to change without notice in accordance with our DBS policy of continuous improvement. All product and brand names are trademarks of their respective owners. All rights reserved.

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Partlow Brand MIC 1407 Data Sheet (7/05)

**PARTLOW™ brand**

# MIC 1407™

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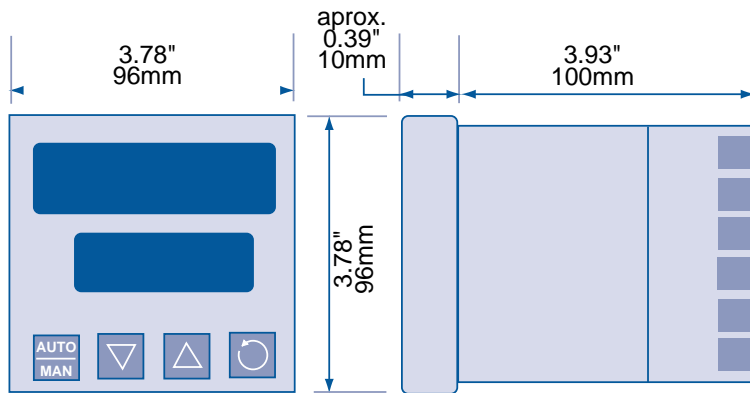
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## MODELS

Code 1: Model #	Code 2: Outputs 1 and 2	Code 3: Output 3	Code 4: Options	Code 5: Suffix
<b>1407</b>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
I/4 DIN VMD Controller	<b>11</b> Relay <b>88</b> Triac	<b>0</b> None <b>1</b> Relay* <b>2</b> SSR Driver* <b>3</b> 4-20mA Driver <b>4</b> Transmitter Power Supply <b>8</b> Triac‡	<b>0</b> None <b>1</b> RS485 Communications <b>2</b> Dual Setpoint	<b>(Blank)</b> None <b>02</b> Line Voltage 24 V AC/DC

\* For alarm output only.  
 ‡ Not available if Code 2 is 88

## DIMENSIONS - 1/4 DIN



Panel Cutout: 92.0mm x 92mm (3.62" x 3.62")