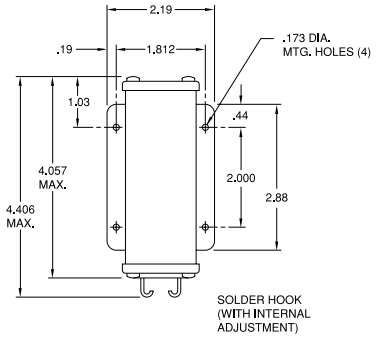
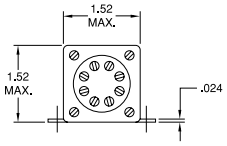
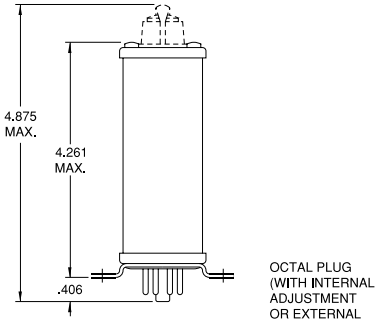
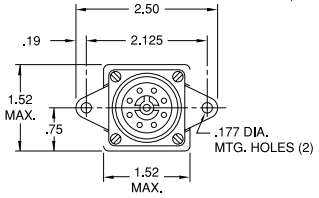
AGASTAT®

Electropneumatic Timing Relays – Series 2100 Miniature









DESIGN FEATURES

- ♦ High Repeat Accuracy over voltage and temperature extremes
- ♦ Hermetically sealed units are designed for high shock and vibration applications
- ♦ Instant recycling – easy linear adjustment
- ♦ Exclusive Dial Head adjustment – no needle valves
- ♦ Delay ranges from milliseconds to 3 minutes
- ♦ DPDT contacts
- ♦ Inherent transient immunity
- ♦ True Off-Delay timing

DESIGN & CONSTRUCTION

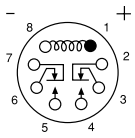
Sealed patented timing head circulates air under controlled pressure through a variable orifice to provide adjustable timing. Circular-path Dial Head principle replaces traditional needle valve.

Snap-action switch assembly provides sustained contact pressure during timing cycles. Specially designed over center mechanism assures flutter-free load transfer after extended delay periods.

Precision-wound solenoid assembly supplies the basic motive force when the control circuit is closed. These assemblies are mounted in a rigid self-supporting framework within a steel enclosure. This rugged construction assures permanent alignment of all operating members, the key to this unit's long trouble-free operation.

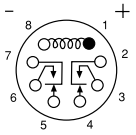
OPERATION

Series 2112 (On-Delay) - Applying rated voltage to the solenoid coil starts the preset time delay. At the end of the delay period the NC contacts break and the NO contacts make. Contacts remain in this position until the coil is de-energized, when the switch instantaneously returns to its original position. De-energizing the coil, either during or after the delay period, will immediately (within 25 msec.) recycle the unit. It will then provide another full delay period on re-energization.



Series 2112

Series 2122 (Off-Delay) - Applying a rated voltage to the coil for at least 75 msec. (for accurate timing) will instantaneously transfer the switch, breaking the NC contacts and making the NO contacts. Contacts remain in this position as long as the coil is energized. The preset time delay period begins as soon as the coil is de-energized, at the end of which the switch returns to its original position. **No power is required during the timing period.** Re-energizing the coil, either during or after the delay period, will immediately start a new cycle with full delay period.



Series 2122

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Electropneumatic Timing Relays – Series 2100 Miniature

SPECIFICATIONS

All values listed are at nominal operating voltage and 77°F (25°C) unless noted.

Operating Mode: Series 2112: On-Delay (Delay on Pull-in); Series 2122: Off-Delay (Delay on Drop-out)

Timing Adjustment: All standard models offer easy linear adjustment over one of nine timing ranges listed below. For applications requiring frequent readjustment, the external knob model with calibrated dial is recommended. For tamper-proof installation or where readjustment is infrequent, the internal key model may be preferred. This model requires removal of the cover plate for timing adjustment. Hermetically sealed models provide a slotted adjusting screw under the cap nut on the top cover.

Timing Ranges -- Seconds:

Code				
	A	.03	to	.1
	B	.1	to	.3
	C	.15	to	1.0
	D	.375	to	3.0
	E	.750	to	10.0
	F	1.0	to	30.0
	G	2.0	to	60.0
	H	5.0	to	120.0
	J	5.0	to	180.0
	K	1.5	to	30.0 Cyc
	L	3.0	to	120.0 Cyc

Repeat Accuracy: NORMAL VERTICAL POSITION
±5% at 77°F (25°C) ±7% at 185°F (85°C)
±8% at -67°F (-55°C)

The average time between -67°F (-55°C) and 185°F (85°C) will be within ±20% of the average @ 77°F (25°C) with a proportionally reduced effect at lesser extremes.

In extremely short delay settings an additional 8 msec. variation may result on AC models due to "half cycle" alternating current effect.

SETTING TOLERANCE: Factory time setting, when specified, subject to additional +5% tolerance.

Position Sensitivity:
HORIZONTAL POSITION: Approximately 5% increase from the initial time in the vertical position.
INVERTED POSITION: Approximately 10% increase from the initial time in the vertical position.

Reset Time: 2112 Series: 25 msec.; 2122 Series: 75 msec.

Relay Release Time: 25 msec. (2112 Series)

Relay Operate Time: 75 msec. (2122 Series)

Operating Voltage: Coil Data

Code	Nominal Operating Voltage	Resistance Ohms ±10%
M	12VDC	30
N	28VDC	131
P	48VDC	500
R	110VDC	3200
S	120 V 60 Hz (2112 Series)	190
S	120 V 60Hz (2122 Series)	285
T	240 V 60Hz	765
U	115 V 400Hz	2600
Y	125VDC	3380

Transients: Insensitive to transients of ±1500 VAC for 10 milliseconds

Dielectric: 1000V RMS @ 60Hz between non-connected terminals.

Contact Rating (DPDT Contacts):

	30V DC	110V DC	120V 60Hz	120V 400Hz	240V 60Hz
Inductive (Amps)	2	.75	3	2	1.5
Resistive (Amps)	10	1	10	10	5

Based on 100,000 operations electrical, 1,000,000 mechanical. Inductive and capacitive load should not have inrush currents that exceed five times normal operating load.

Ambient Temperature Range: -55°F to 85°F (-67°C to 185°C)

Weight: Maximum, any unit - 17 ozs.

Mounting/Terminals: Chassis mounting tabs, octal plugs and external (-4) or internal (-5) adjustment. Panel mounting back plate, internal adjustment, and solder hook terminals (-9).

--4 **--5** **--9**

These are minimum standards; where more severe environmental conditions must be met, please consult the factory.

ORDERING INFORMATION -- INDUSTRIAL MODELS

21 — **Model Series**
2100 Timing Relay

1 — **Operation**
1-On-Delay
2-Off-Delay

2 — **Contact Arrangement**
2-Double Pole Double Throw

D — **Operating Current**
A - AC
D - DC

4 — **Physical Characteristics**

Enclosure	Adjustment	Connector	Mounting
4 - Unsealed	Ext. Knob	Octal Plug	Chassis Mount
5 - Unsealed	Internal Key	Octal Plug	Chassis Mount
9 - Unsealed	Internal Key	Solder Hook	Solder Hook

N — **Coil Voltage**
M - 12 VDC
N - 28 VDC
P - 48 VDC
R - 110 VDC
S - 120 VAC 50/60Hz
T - 240 VAC 60Hz
Y - 125 VDC

B — **Timing Range**
A - .03 to .1 sec.
B - .1 to .3 sec.
C - .15 to 1.0 sec.
D - .375 to 3.0 sec.
E - .750 to 10.0 sec.
F - 1.0 to 30.0 sec.
H -5.0 to 120.0 sec.
J - 5.0 to 180.0 sec.
K - 1.5 to 30.0 cyc.
L - 3.0 to 120.0 cyc.

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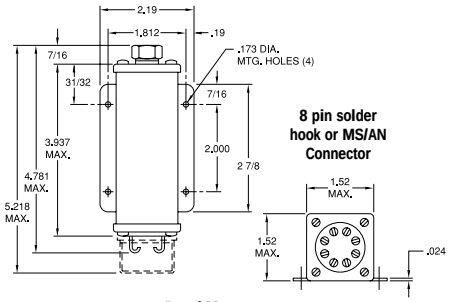
Electropneumatic Timing Relays – Series 2100 MIL-Spec and Hermetically-Sealed

SPECIFICATIONS

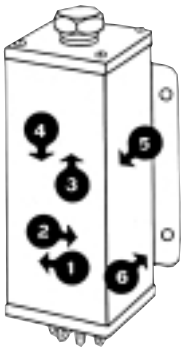
Dielectric: In accordance with specification MIL-R-6106E (ASG). Also withstands 1,000 Volts RMS at 60 Hz between non-connected terminals.
Other: Agastat Miniature Timing Relays also conform to applicable Mil-Spec. requirements covering:

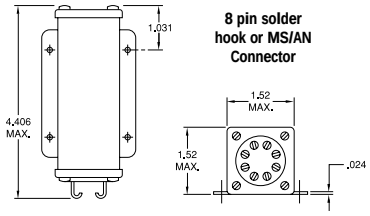
Moisture	Ozone
Humidity	Sunshine
Sand/Dust	Acoustic Noise
Salt Spray	Prolonged Storage

Agastat timing relays perform to military specifications in patriot missiles.

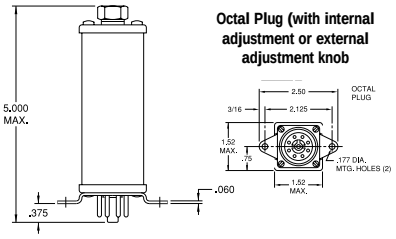


Panel Mount —H1, —H3

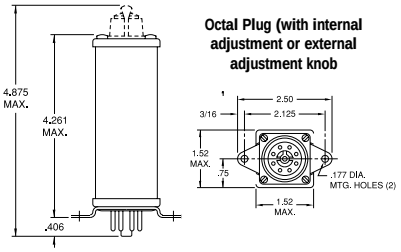




Panel Mount —9



Chassis Mount —H2



Chassis Mount —4, —5

ORDERING INFORMATION – MIL-SPEC & HERMETICALLY SEALED

21	1	2	D	H1	N	B

Model Series
2100 Timing Relay

Operation
1-On-Delay
2-Off-Delay

Contact Arrangement
2-Double Pole Double Throw

Operating Current
A - AC
D - DC

Physical Characteristics

Enclosure MIL-SPEC	Adjustment	Connector	Mounting
H1 Hermet. Seal	Ext. Screw	Solder Hook	Panel Mount
H2 Hermet. Seal	Ext. Screw	Octal Plug	Chassis Mount
H3 Hermet. Seal	Ext. Screw	"AN" Conn.	Panel Mount
4 - Unsealed	Ext. Knob	Octal Plug	Chassis Mount
5 - Unsealed	Internal Key	Octal Plug	Chassis Mount
9 - Unsealed	Internal Key	Solder Hook	Panel Mount

Coil Voltage
M - 12 VDC
N - 28 VDC
P - 48 VDC
R - 110 VDC
S - 120 VAC 60Hz
T - 240 VAC 60Hz
U - 115 VAC 400Hz
Y - 125 VDC

Timing Range
A - .03 to .1 sec.
B - .1 to .3 sec.
C - .15 to 1.0 sec.
D - .375 to 3.0 sec.
E - .750 to 10.0 sec.
F - 1.0 to 30.0 sec.
G - 2.0 to 60.0 sec.
H -5.0 to 120.0 sec.
J - 5.0 to 180.0 sec.
K - 1.5 to 30.0 cyc.
L - 3.0 to 120.0 cyc.