

## MD-90 Series

### Precision Quartz Aircraft Clocks

- FAA PMA approved
- Precision quartz movement
- Compact 2 1/4" size
- Fits standard panel cutout
- Lighted dial optional
- Transient and reverse polarity protected
- Optional elapsed time hands
- Original equipment for major aircraft manufacturers

Designed for accuracy, these precision clocks are manufactured to meet rugged aircraft environmental standards. With a high-quality, solid-state quartz movement and a variety of lighting options, a 12-hour analog clock is an essential part of any instrument panel.



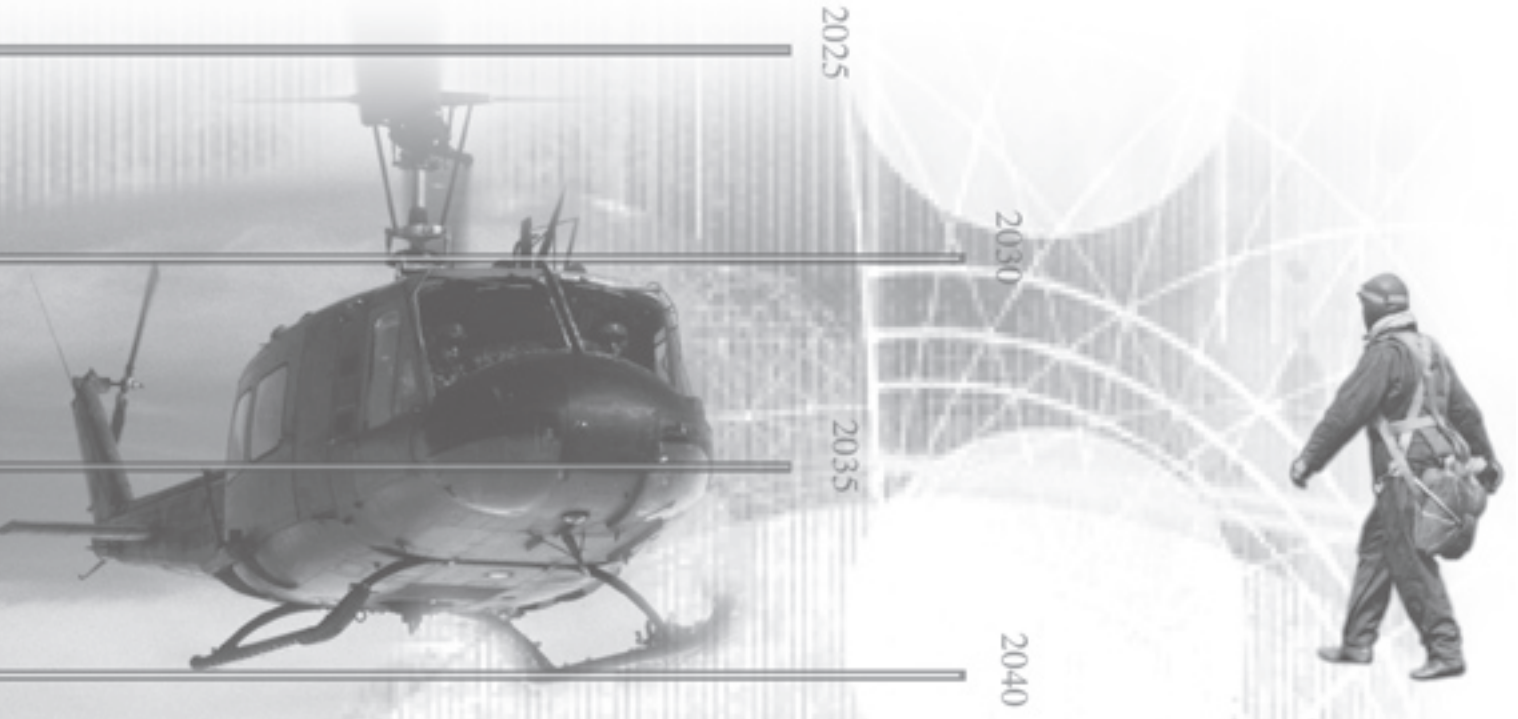
### Standard Clocks

P/N MD-90-1

P/N MD-90-L—Lighted

### Specifications

Electrical	
Voltage Input Range	8V to- 32VDC
Current Input	2.3 mA (nominal) @ 14VDC
Accuracy	±2.5 sec. in 24-hrs.
Dimensions	2.5 x 2.5 x 3.2" maximum
Weight	5 oz. maximum
Operating Temp.	-40° F to +180°F
Operation	
Operating Altitude	-1,000' to +40,000'
Operating Humidity	0 to 95% @ 25°C
Vibration	.02" DBL AMPS, 1.5g @ 5 to 50 Hz
Certification	FAA PMA approved
Mounting	Front or rear panel
Connector	Spade or terminals
Warranty	1-year limited



## MD26 Series DC/AC Inverter

P/N MD26-14

P/N MD26-28

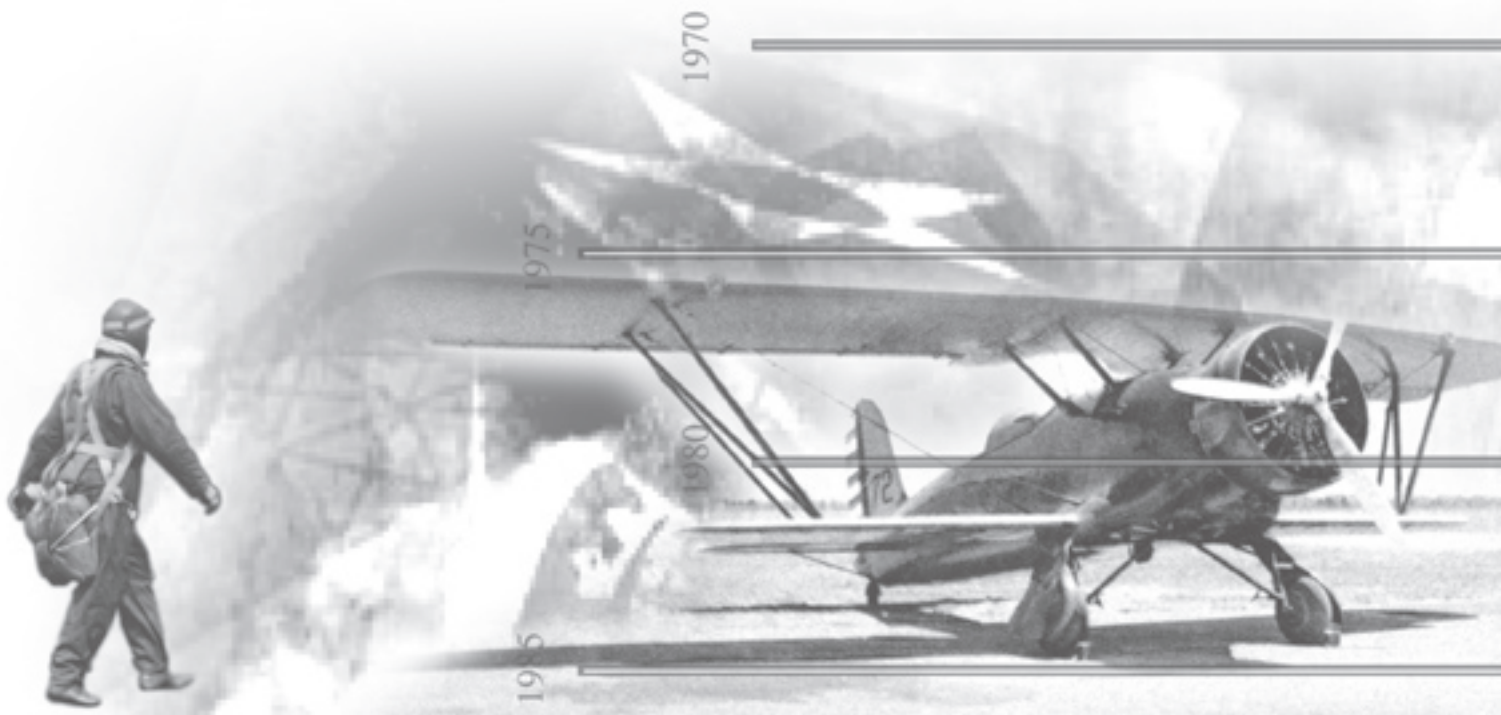
### Features

- Smoothed square wave output for reduced electromagnetic interference and high efficiency.
- Ideal for use with: Argus 5000 moving map display; Stormscope WX1000+; digital based heading systems.
- Input transient and reverse polarity protected.
- Will operate two Bootstrap synchro systems.
- Small size, light weight.
- 1-year limited warranty.



### Specifications

Voltage Input	14VDC (MD26-14); 28VDC (MD26-28)	
Current Input	950 mA (MD26-14); 650 mA (MD26-28)	
Power Output	10V AMPS (nominal)	
Operating Temperature	-55°C to +70°C	
Operating Altitude	-1,000' to +50,000'	
Operating Humidity	0 to 95% @ 25°C	
Vibration	.02" dbl. AMPS, 3g @ 5 to 55 Hz	
Certification	FAA PMA approved	
Mounting	Solid mount	
Connector	Terminal strip	
Protection	Transient & reverse polarity	
	<b>MD26-14</b>	<b>MD26-28</b>
Input Voltage	28VDC @ .075 amps	14VDC @ .150 amps
Output	26VAC, 400 Hz, single phase 10V amps	



## MD 40 Series Mid-Continent Approach-Certified\* Course Deviation Indicators

- FAA TSO approved for use with all GPS systems
- Compact 2 1/4" size
- Models available with course selector resolver output
- Bezel lighting optional
- Annunciator lights operate from either 14 or 28VDC
- Mating connector included

\* Approach certification depends on certification status of each APS receiver.

### Electrical and Mechanical Specifications

Size/Weight	Standard 2.25"/0.5 lbs.
Case Material	Glass-filler, flame-retardant polycarbonate
Left-Right Meter	DC resistance: 1000 OHMS ±50 OHMS
Current Rating	Zero center, 150 µa, ±10 µa, full scale each side of center
TO-OFF-FROM Meter	DC resistance: 200 OHMS ± 50 OHMS
Current Rating	"Off" @ center, +200 ±25 µa for "To", -200 ±25 µa for "From"
Annunciator Lamps	Incandescent type; operation for either 14VDC or 28VDC
Current Rating	28VDC single lamp each—37 mA 14VDC single lamp each—40 mA 28VDC double lamp (per pair)—72 mA 14VDC double lamp (per pair)—80 mA

Manufacturer	Receiver	CDI	Features
ARNAV	Star 5000 GPS	MD40-27	T/F VFR APR alert
Freeflight	TNL2000APr, 2101 (all)	MD40-66	T/F MSG WPT HLD APR
	TNL2000T/2100T	MD40-62	T/F ADV WRN APR WPT
	TNL8100, HT9000	MD40-68	T/F MSG HLD WPT APR
Garmin	GPS-100AVD	MD40-22	T/F MSG
	GPS-150	MD40-39	T/F MSG WRN ARN
	GPS-155/165	MD40-242	T/F MSG WPT w/resolver
	GNC-300	MD40-242	T/F MSG WPT w/resolver
	GNC-250	MD40-42	T/F MSG WPT
Honeywell	KLN-89, 90A	MD40-32	T/F MSG WPT
	KLN-89B, 90B	MD40-232	T/F MSG WPT w/resolver
	KLX-135	MD40-42	T/F MSG WPT
Magellan	Skynav 5000	MD40-31	T/F NAV WPT GPS
Northstar	M2 (GPS), 600	MD40-29	T/F Alert WRN VFR PTK
	M3	MD40-41	T/F Alert WRN VFR PTK RAIM
	M3 IFR	MD40-61	T/F PTK WRN APR WPT
	60	MD40-43	OFF PTK WRN WPT
	M3 APR	MD40-64	T/F APR PTK WPT MSG
Terra	TPGS 400 D	MD40-38	T/F WRN ADV
UPS Aviation	Apollo 360, GX55, GX65	MD40-44	T/F MSG PTK
	GX50/60, 2001 GPS/TSO	MD40-65	T/F MSG PTK APR ACTV OBS HLD
	GX50/60, SL30	MD200-306	3"
	GX50/60, SL30	MD200-307	3" (course datum)
	GX50/60, SL30	MD200-303	3" (L/R course datum)
	GX50/60, SL30	MD200-302	3" (L/R only)
	SL50/60	MD40-67	T/F MSG WPT HLD APR
Miscellaneous	Various	MD40-09	Basic CDI

### 3" CDI MD200 Series Course Deviation Indicator

- FAA/TSO approved for use with all GPS and VOR systems
- Fits standard 3 1/8" panel cutout
- High quality rectilinear meter movements
- Annunciations for NAV, GPS, and back course (BC)
- Automatic photocell annunciator dimming
- TSO C34e, C36e, C40c approved
- True course resolver output
- Internal 14 and 28V lighting
- Optional course datum synchro
- Quality MIL-SPEC connector included

P/N MD200



## MD 41 ACU TSO'd Annunciator/Control Unit for Approach-Certified GPS Receivers

The Perfect Solution for a New Approach to Flying

The MD 41 combines navigation source switching to the primary CDI and HSI with key GPS selection functions in a standard ATI panel-mount unit only 4.65" deep. Up to seven separate relays and three switches are replaced by this single, compact unit, making installation simpler, faster and more economical. Lighted push buttons and easy-to-read annunciators make the MD 41 popular with pilots as well as technicians. Push buttons provide plenty of tactile feedback, ensuring safe, accurate operation, even in bumpy IFR conditions.

Pilots can fly with confidence, knowing that the MD 41 has been certified to TSO C129 standards, meeting the new FAA field approval requirements.

### P/N MD 41ACU

#### Highlights

- TSO C129 approved to newest FAA standards
- Horizontal or vertical configuration
- Proven daylight readability
- Annunciators dim/brighten automatically
- Push-button brightness controlled by instrument lighting rheostat
- Connector/installation kit included
- 19-pole relays, gold-plated contacts
- ILS frequency override selectable
- Built-in annunciation self-test



#### Controls

- NAV/GPS. Alternate action switch. Selects either NAV or GPS navigational information of HSI or CDI
- GPS/APR. Momentary switch. Arm GPS approach mode
- OBS/LEG. Alternate action switch. Selects either OBS or LEG mode
- LAMP TEST. Momentary switch. Test annunciator lamps. How the MD 41 ACU operates

Pushing the NAV/GPS switch selects the navigation source (VOR/ILS/LOC or GPS) to be displayed on the HSI or CDI. Although it may be displayed on the GPS unit's built-in CDI, course information is also displayed on the panel-mounted HSI or CDI when executing an approach utilizing GPS navigational data.

Pushing the GPS/APR switch arms the GPS for the selected approach. Course guidance direct to the initial approach fix and automatic approach waypoint sequencing are then provided. The GPS receiver automatically switches from ARM to ACTV (Active) as the aircraft nears the final approach fix.

#### Specifications

Environmental	
TSO Approval	TSO C129
Applicable Documents	RTCA DO-160C, DO-208
Operating	
Temperature Range	-20°C to +70°C
Humidity	95%
Altitude Range	0 to 35,000'
Vibration	Cat M & N
Operational Shock	Rigid mounting, 6 G operational 15 G crash safety
Design	All solid-state
Power Requirements	
	MD 41-( ) 14VDC: .065 AMPS
	MD 41-( ) 28VDC: .40 AMPS
Relay Contact	
Current Rating:	2 AMPS DC
Available Relay	
Poles (SPDT):	19-poles

Physical	
Mounting	Panel-mount ATI
Width	3.5"
Height	1.350"
Depth	4.625"
Weight	0.75 lbs.

Pushing the OBS/LEG switch toggles between OBS and LEG. In OBS mode, the magnetic course to be flown "To" or "From" a waypoint is selected using the OBS knob on the HSI or CDI, similar to VOR navigation. In LEG mode, the GPS receiver automatically sequences between waypoints contained in the receiver's active flight plan.

The MSG annunciator is automatically lit when the GPS receiver initiates a message (airspace warnings, steep turns, etc.) MSG annunciation is automatically extinguished by the GPS receiver. The WPT annunciator flashes as the active waypoint in the GPS receiver is approached along the route of flight.

#### Vertical Mount for Flexibility

The MD 41 ACU is available in a convenient vertical mount for added installation flexibility. Also shown above are MD 41 versions for GPS systems not requiring the OBS/LEG or GPS/APR selector buttons.

#### P/N MD41

## MD 41-1000 Series

Introducing Our Newest Development In Gps Control, "Slim Line Pro" ACU

For technicians, this compact, lightweight system greatly simplifies the installation of IFR approach-certified GPS units. For pilots, the MD41-1000 helps get the most out of their GPS, both en route and on approach.

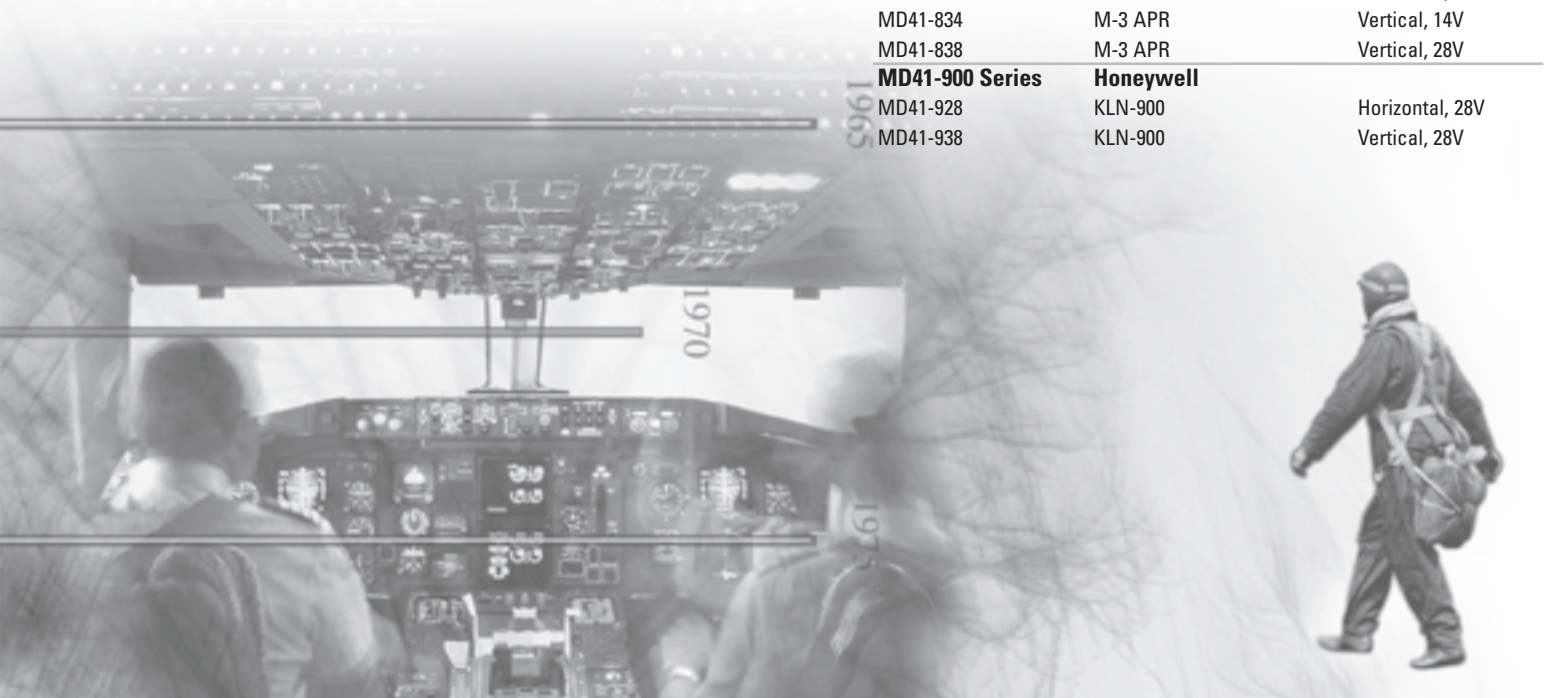
Only 2.25" or 2.75" wide and 3.25" deep, the MD 41-1000 is available for either horizontal or vertical installation and is approved under TSO C129 to 55,000'. What's more, 24 user-defined relay poles are available in the remotely mounted switching unit. A complete installation kit with MIL-spec connectors further adds to installation flexibility and simplicity.

All annunciators and push buttons are integrated in a single unit while the relay are remotely mounted, enhancing safety and minimizing pilot workload. Push buttons are internally lighted and annunciators are photocell dimmed, making them easy to see in any lighting condition. Models are available for all approach-certified GPS systems. When it's time to plan your next GPS installation, take a close look at the MD 41-1000 ACU.

**P/N MD41-1000**

### MD41-ACU (Annunciator Control Unit)

Model	Application	Configuration
<b>MD41-300 Series</b>		
<b>Honeywell</b>		
MD41-324	KLN-90B	Horizontal, 14V
MD41-328	KLN-90B	Horizontal, 28V
MD41-334	KLN-90B	Vertical, 14V
MD41-338	KLN-90B	Vertical, 28V
<b>MD41-500 Series</b>		
<b>Honeywell</b>		
MD41-524	KLN-89B	Horizontal, 14V
MD41-534	KLN-89B	Horizontal, 28V
MD41-538	KLN-89B	Vertical, 14V
		Vertical, 28V
<b>MD41-600 Series</b>		
<b>Freeflight</b>		
MD41-624	2000 APR, 2101 (all)	Horizontal, 14V
MD41-628	2000 APR, 2101 (all)	Horizontal, 28V
MD41-634	2000 APR, 2101 (all)	Vertical, 14V
MD41-638	2000 APR, 2101 (all)	Vertical, 28V
<b>MD41-700 Series</b>		
<b>UPS Aviation</b>		
MD41-724	GX50/60, 2001 ( )/2101	Horizontal, 14V
MD41-728	GX50/60, 2001 ( )/2101	Horizontal, 28V
MD41-734	GX50/60, 2001 ( )/2101	Vertical, 14V
MD41-738	GX50/60, 2001 ( )/2101	Vertical, 28V
<b>MD41-800 Series</b>		
<b>Northstar</b>		
MD41-824	M-3 APR	Horizontal, 14V
MD41-828	M-3 APR	Horizontal, 28V
MD41-834	M-3 APR	Vertical, 14V
MD41-838	M-3 APR	Vertical, 28V
<b>MD41-900 Series</b>		
<b>Honeywell</b>		
MD41-928	KLN-900	Horizontal, 28V
MD41-938	KLN-900	Vertical, 28V



## MD41-1000 "SLIM-LINE PRO" Series ACU's (Annunciator Control Unit) With MD41-224/228 24 Pole Remote Relay Unit

Model	Application	Configuration
<b>MD41-1108 Series</b>	<b>Goodrich</b>	
MD41-1108		Horizontal, 28V
MD41-1108(5V)		Horizontal, 28V, 5V
MD41-1118		Vertical, 28V
MD41-1118(5V)		Vertical, 28V, 5V
MD41-1128		Horizontal, 28V
MD41-1124		Horizontal, 14V
MD41-1128(5V)		Horizontal, 28V, 5V
MD41-1138		Vertical, 28V
MD41-1134		Vertical, 14V
MD41-1138(5V)		Vertical, 28V, 5V
<b>MD41-1311</b>	<b>Honeywell</b>	
MD41-1310		Vertical, 28V
MD41-1310(5V)		Vertical, 28V, 5V
MD41-1311		Horizontal, 28V
MD41-1311(5V)		Horizontal, 28V, 5V
<b>MD41-1300 Series</b>	<b>Honeywell</b>	
MD41-1324	KLN-90B	Horizontal, 14V
MD41-1328	KLN-90B	Horizontal, 28V
MD41-1334	KLN-90B	Vertical, 14V
MD41-1338	KLN-90B	Vertical, 28V
<b>MD41-1348</b>	<b>Honeywell</b>	
<b>MD41-1368</b>	<b>Honeywell</b>	
<b>MD41-1400 Series</b>	<b>Garmin Int'l</b>	
MD41-1404A	GPS400, GNC4200, GNS430	Horizontal, 14V
MD41-1408	GPS400, GNC4200, GNS430	Horizontal, 14V
MD41-1414A	GPS400, GNC4200, GNS430	Vertical, 28V
MD41-1418A	GPS400, GNC4200, GNS430	Vertical, 28V
MD41-1424	GPS 155/165	Horizontal, 14V
MD41-1428	GPS 155/165	Horizontal, 28V
MD41-1434	GPS 155/165	Vertical, 14V
MD41-1438	GPS 155/165	Vertical, 28V
MD41-1444	GPS155XL/GNC300(XL)	Horizontal, 14V
MD41-1448	GPS155XL/GNC300(XL)	Horizontal, 28V
MD41-1454	GPS155XL/GNC300(XL)	Vertical, 14V
MD41-1458	GPS155XL/GNC300(XL)	Vertical, 28V
MD41-1464A	GNS430/530	Horizontal, 14V
MD41-1468A	GNS430/530	Horizontal, 28V
MD41-1474A	GNS430/530	Vertical, 14V
MD41-1478A	GNS430/530	Vertical, 28V
<b>MD41-1500 Series</b>	<b>Honeywell</b>	
MD41-1524	KLN-89B	Horizontal, 14V
MD41-1528	KLN-89B	Horizontal, 28V
MD41-1534	KLN-89B	Vertical, 14V
MD41-1538	KLN-89B	Vertical, 28V

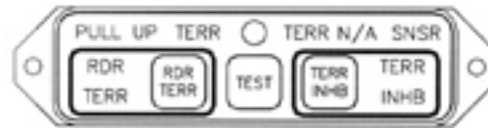
Model	Application	Configuration
<b>MD41-1500 Series</b>	<b>Honeywell</b>	
MD41-1524	KLN-89B	Horizontal, 14V
MD41-1528	KLN-89B	Horizontal, 28V
MD41-1534	KLN-89B	Vertical, 14V
MD41-1538	KLN-89B	Vertical, 28V
<b>MD41-1600 Series</b>	<b>Freeflight</b>	
MD41-1624	2000 APR, 210(ALL)	Horizontal, 14V
MD41-1628	2000 APR, 210(ALL)	Horizontal, 28V
MD41-1634	2000 APR, 210(ALL)	Vertical, 14V
MD41-1638	2000 APR, 210(ALL)	Vertical, 28V
MD41-1648	TNL-8100, HT-9000	Horizontal, 28V
MD41-1658	TNL-8100, HT-9000	Vertical, 28V
<b>MD41-1700 Series</b>	<b>UPS Aviation</b>	
MD41-1724	GX50/60	Horizontal, 14V
MD41-1728	GX50/60	Horizontal, 28V
MD41-1734	GX50/60	Vertical, 14V
MD41-1738	GX50/60	Vertical, 28V
<b>MD41-1800 Series</b>	<b>Northstar</b>	
MD41-1824	M-3APR	Horizontal, 14V
MD41-1828	M-3APR	Horizontal, 28V
MD41-1834	M-3APR	Vertical, 14V
MD41-1838	M-3APR	Vertical, 28V
<b>MD41-1900 Series</b>	<b>Honeywell</b>	
MD41-1928	KLN-900	Horizontal, 28V
MD41-1938	KLN-900	Vertical, 28V

## TAWS/EGPWS Terrain Awareness Annunciation/Control Systems

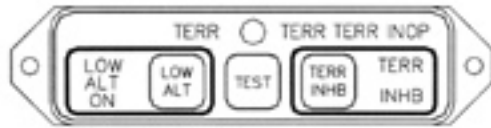
Designed by Mid-Continent Instruments to work specifically with the following TAWS/EGPWS systems. All units have the same quality features that are listed on the front of this spec sheet.



**MD41-1311 | Honeywell Mark VIII**



**MD41-1108 | Goodrich Avionics TAWS 8000**



**MD41-1368 | Honeywell Mark XXI**  
PMA Pending



**MD41-1348 | Honeywell Mark XXII**  
PMA Pending

System	Switching	Annunciators	Input	Lighting	Mounting	Part Number
<b>Honeywell (Bendix King) KGP-560 GPWS</b>	TEST	TERR/NA (Amber)	14	14	Horizontal	MD41-1204
	TERR/INHB	TERR (Amber)	14	14	Vertical	MD41-1214
		TERR (Red)	28	28	Horizontal	MD41-1208
		TERR/INHB (White)	28	5	Horizontal	MD41-1208(5V)
				28	28	Vertical
			28	5	Vertical	MD41-1218(5V)
<b>Honeywell (Bendix King) KGP-560 GPWS With Radar Indicator</b>	RDR/TERR	TERR/NA (Amber)	14	14	Horizontal	MD41-1304
	TEST	TERR (Amber)	14	14	Vertical	MD41-1314
	TERR/INHB	TERR (Red)	28	28	Horizontal	MD41-1308
	TERR/INHB (White)		28	5	Horizontal	MD41-1308(5V)
	RDR/TERR (Green)		28	28	Vertical	MD41-1318
			28	5	Vertical	MD41-1318(5V)
<b>Honeywell MK VII Enhanced Ground Proximity Warning System (EGPWS)</b>	GS/INHB	NO/TERR (Amber)	28	28	Vertical	MD41-1310
	GPWS/TEST	GS/INHB (Amber)	28	5	Vertical	MD41-1310(5V)
	TERR/INHB	OVERRIDE (Amber)	28	28	Horizontal	MD41-1311
	GPWS/FLAP		28	5	Horizontal	MD41-1311(5V)
<b>Goodrich 8000 Series TAWS with Radar Indicator</b>	RDR/TERR	SNSR (Amber)	28	28	Horizontal	MD41-1108
	TEST	PULL UP (Red)	28	5	Horizontal	MD41-1108(5V)
	TERR/INHB	TERR (Amber)	28	28	Vertical	MD41-1118
		TERR N/A (Amber)	28	5	Vertical	MD41-1118(5V)
		TERR INHB (Amber)				
		RDR TERR (White)				
<b>Goodrich 8000 Series TAWS</b>		SNSR (Amber)	28	28	Horizontal	MD41-1128
	TEST	PULL UP (Red)	14	14	Horizontal	MD41-1124
	TERR/INHB	TERR (Amber)	28	5	Horizontal	MD41-1128(5V)
		TERR N/A (Amber)	28	28	Vertical	MD41-1138
		TERR INHB (White)	14	14	Vertical	MD41-1134
			28	5	Vertical	MD41-1138(5V)

## Approach-Certified\* Course Deviation Indicators

Course Deviation Indicators (TSO C60a)

Manufacturer	Receiver	CDI	Features
AlliedSignal	KLN-89A, 90A	MD40-32	T/F MSG WPT
	KLN-89B, 90B	MD40-232	T/F MSG WPT w/Resolver
	KLX-135/A	MD40-42	T/F MSG WPT
<b>MD40-232</b>			
ARNAV	Star 5000 GPS	MD40-27	T/F VFR APR ALERT
Garmin	GNC250	MD40-42	T/F MSG WPT
	GPS100AVD	MD40-22	T/F MSG
	GPS150	MD40-39	T/F MSG ARV
	GPS155/165, GNC300	MD40-242	T/F MSG WPT w/Resolver
<b>MD40-42</b>			
II Morrow	2001/GPS/TSO/APR	MD40-65	T/F MSG PTK APR ACTV OBS HLD
	820 Flybuddy	MD40-37	T/F WRN ALERT
	Apollo 360, GX55	MD40-44	T/F MSG PTK
	GX50/60	MD40-65	T/F MSG PTK APR ACTV OBS HLD
	SL50/60	MD40-67	T/F MSG PTK OBS HLD
Magellan	Skynav 5000	MD40-31	T/F NAV WPT GPS
<b>MD40-64</b>			
Northstar	60	MD40-43	OFF PTK WRN WPT
	M2, 600	MD40-29	T/F ALERT WRN VFR PTK
	M3	MD40-41	T/F ALERT WRN VFR PTK RAIM
	M3 APR	MD40-64	T/F APR PTK WPT MSG
	M3 IFR	MD40-61	T/F PTK WRN APRT WPT
Terra	TGPS 400D	MD40-38	T/F WRN ADV
<b>MD40-65</b>			
Trimble	TNL1000, 1000DC	MD40-38	T/F WRN ADV
	TNL2000/A, 2100	MD40-61	T/F PTK WRN APR WPT
	TNL8100, HT9000	MD40-68	T/F MSG HLD WPT APR
	TNL2000APR/2101(all)	MD40-66	T/F MSG WPT HLD APR
	TNL2000T, 2100T	MD40-62	T/F ADV WRN APT WPT
<b>MD40-66</b>			
Miscellaneous	Various	MD40-09	T/F Basic CDI

\*Approach certification depends on certification status of each GPS receiver.

### Specifications

#### Electrical and Mechanical

Size/Weight	Standard 2.25"/0.5 lbs.
Case Material	Flame-Retardant Polycarbonate
Altitude	Certified to 55,000'
Left-Right Meter	DC Resistance: 1000 OHMS $\pm$ 50 OHMS
Current Rating	Zero Center, 150 $\mu$ A $\pm$ 10 $\mu$ A, full scale each side of center
TO-OFF-FROM Meter	DC Resistance: 200 OHMS $\pm$ 50 OHMS
Current Rating	OFF at Center, +200 $\pm$ 25 $\mu$ A for TO, -200 $\pm$ 25 $\mu$ A for FROM
Annunciator Lamps	Incandescent type; operation from either 14VDC OR 28VDC
Current Rating	28VDC single lamp each—37 mA; 14VDC lamp each—40 mA; 28VDC

MD40-09—double lamp (per pair)—72 mA; 14VDC double lamp (per pair)—80 mA