

# RAA100

## Rudder Angle Adapter

The RAA100 is used to adapt commercially available resistive rudder senders to the NMEA 2000® network. This allows you to observe rudder angle anywhere on the vessel where there are NMEA 2000 compatible displays such as the Maretron DSM Series.

The RAA100 is compatible with both the American standard (240-30 ohms) and European standard (10-180 ohm) resistive senders. In fact, the RAA100 can be calibrated for any resistance between 0 and 300 ohms.

You can also use the RAA100 with analog gauges at the same time as NMEA 2000 so you don't have to give up existing analog gauges to enjoy the advantages of digitally networked information.

### Product Features

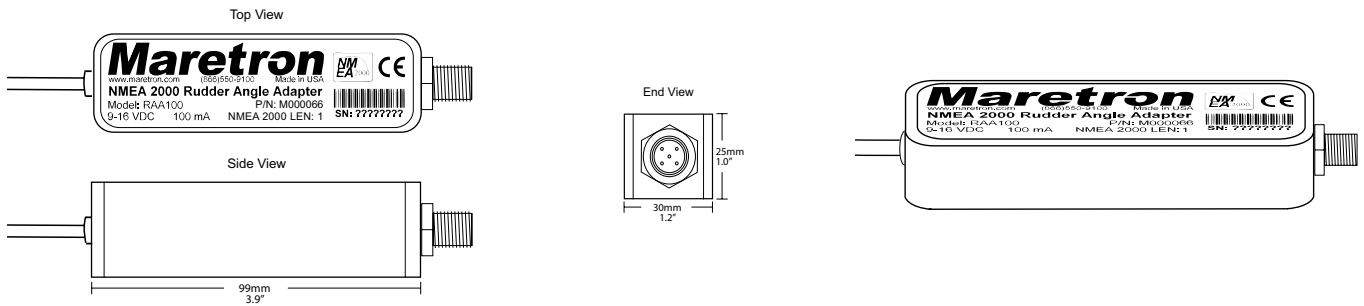
- NMEA 2000® Interface
- Adapts American standard (240-30 ohm) resistive senders to NMEA 2000 Network
- Adapts European standard (10-180 ohm) resistive senders to NMEA 2000 Network
- Can be calibrated for any resistive sender ranging from 0-300 ohms or 300-0 ohms
- Three Point Electronic Calibration eliminates need for mechanical adjustment or calibration
- Can be used stand alone without analog gauges



DSM Series Screen Shots

### PRODUCT

PART NUMBER	DESCRIPTION
RAA100-01	Rudder Angle Adapter



## SPECIFICATIONS

PARAMETER	VALUE	COMMENT
Accuracy	+/-2%	Does not include inaccuracies of analog gauge or sender
Resolution	+/-1%	Worst case (resolution better at high resistance values)
American Standard Senders	240–30 ohms	Standard sender types are User selectable
European Standard Senders	10–180 ohms	Standard sender types are user selectable
Calibration Resistance Range	0–300 ohms	Non-standard sender calibration
Electronic Calibration	Yes	Eliminates need to mechanically adjust or calibrate
Analog Gauge Support	Yes	Can be used with or without analog gauges

## NMEA 2000® PARAMETER GROUP NUMBERS (PGNs)

DESCRIPTION	PGN#	PGN NAME	DEFAULT RATE
Periodic Data PGNs	127245	Rudder	10 Times/Second
Response to Requested PGNs	126464	PGN List (Transmit and Receive)	N/A
	126996	Product Information	N/A
	126998	Configuration Information	N/A
Protocol PGNs	059392	ISO Acknowledge	N/A
	059904	ISO Request	N/A
	060928	ISO Address Claim	N/A
	065240	ISO Address Command	N/A
	126208	NMEA Request/Command/Acknowledge	N/A
Maretron Proprietary PGNs	126720	Device Configuration Information	N/A
	130818	Device Label	N/A

## ELECTRICAL

PARAMETER	VALUE	COMMENT
Operating Voltage	9 to 16 Volts	DC Voltage
Power Consumption	<50mA	Average Current Drain
Load Equivalence Number (LEN)	1	NMEA 2000® Spec. (1LEN = 50mA)
Reverse Battery Protection	Yes	Indefinitely
Load Dump Protection	Yes	Energy Rated per SAE J1113

## MECHANICAL

PARAMETER	VALUE	COMMENT
Size	3.9" x 1.2" x 1.0" (99mm x 30mm x 25mm)	Excluding NMEA 2000® Connector & Cable
Weight	9 oz. (255 g)	
Mounting	Any Orientation	

## ENVIRONMENTAL

PARAMETER	VALUE
IEC 60945 Classification	Exposed
Degree of Protection	IP67
Operating Temperature	-25°C to 55°C
Storage Temperature	-40°C to 70°C
Relative Humidity	93%RH @40° per IEC60945-8.2
Vibration	2-13.2Hz @ ±1mm, 13.2-100Hz @ 7m/s² per IEC 60945-8.7
Solar Radiation	Ultraviolet B, A, Visible, and Infrared per IEC 60945-8.10
Corrosion (Salt Mist)	4 times 7days @ 40°C, 95%RH after 2 hour Salt Spray Per IEC 60945-8.12
Electromagnetic Emission	Conducted, Radiated Emission per IEC 60945-9
Electromagnetic Immunity	Conducted, Radiated, Supply, and ESD per IEC 60945-10
Safety Precautions	Dangerous Voltage, Electromagnetic Radio Frequency per IEC 60945-12

## CERTIFICATIONS

PARAMETER	COMMENT
NMEA 2000® Standard	Level B+
Maritime Navigation and Radio Communication Equipment & Systems	IEC 61162-3
Maritime Navigation and Radio Communication Equipment & Systems	IEC 60945
FCC and CE Mark	Electromagnetic Compatibility