

NM-251D-ZDA

ZDA Filter/Converter

User Guide

V1.00



Introduction

The NM-251D-ZDA is a part of the NM-251 Series family and is programmed to function as a GPS signal filter/converter that produces the \$GPZDA sentence from any GPS capable of transmitting the \$GPRMC string. The NM-251D-ZDA is designed to be used for interfacing a GPS that does not transmit the \$GPZDA sentence with systems such as the VDR or ECDIS that require the time and date to be processed from the \$GPZDA string only. The produced \$GPZDA sentence is appended to the rest of the transmitted GPS strings and distributed to each of the five buffered output ports.

Operation

The NM-251D-ZDA acquires the NMEA-0183 sentences from the first input port only. If the string is not the \$GPRMC it is immediately transmitted to the five outputs ports. In the case that a \$GPRMC sentence is received the NM-251D-ZDA processes the time and date data and produces the \$GPZDA string. Both the \$GPRMC and \$GPZDA are then transmitted to the five buffered outputs. If no \$GPRMC sentence is received the NM-251D-ZDA functions as a pass through one to five channel NMEA-0183 multiplier.

nuova marea ltd

marine electronics & design

26, Myrtiliotissis str. Kastella 185-33 Piraeus Greece

Tel +30 210 4134628 & +30 210 4134698 Fax +30 210 4134814

Web: <http://www.nuovamarea.com> e-mail: sales@nuovamarea.com

Input Port (listener)

The NM-251D-ZDA has one input port enabled that can be connected to any GPS capable to output NMEA-0183 signals. The input port is optoisolated as specified in the NMEA-0183 protocol, thus the data(-) pole should never be connected to the NM-251DZDA ground. If the GPS talker port is single ended, connect that terminal to the Ina(+) and tie the Ina(-) to the instrument's ground. If a RS-232 signal level is connected, the ground pole (GND) should be connected to Ina(+) and the data pole (TXD) to Ina(-).

The NM-251D-ZDA input port can acquire NMEA sentences carried in TTL, RS-232 and RS-485/422 signal levels.

Output Ports (Talkers)

Each of the four general purpose talker ports transmit the NMEA sentences in both RS422 and TTL signal levels, depending on the connection topology chosen (see figure 1, 2 and 3), and can fan out one instrument. Current drawn from every port can be up to 20mA, efficient enough to drive any NMEA compatible instrument.

The RS-232 port can deliver NMEA sentences to any modern computer running the appropriate software on Windows 98 and above provided that the serial communication follows the 4.800/8/N/1. This port is not optically isolated and should be used for testing purposes only to avoid DC leakage. It can be used though to interface a computer system if proper isolation is achieved or if the computer is supplied from an isolated power supply.

The Out5 port has two functionality modes that can be selected via jumper J6 located inside then NM-251D-ZDA (see figure 4). By shorting poles 1-2 on J6, Out5 converts the signals received from the computer to RS-422 signal level. By shorting the poles 1-3 on J6, Out5 is configured as a fifth output of the NM-251D-ZDA.

The NM-251D-ZDA can be connected as shown in figures 1,2 and 3 using all RS-422 outputs (figure 1), all TTL outputs (figure 2) or using either the RS-422 or TTL output of each port taking care not to connect the same port for both signal level outputting.

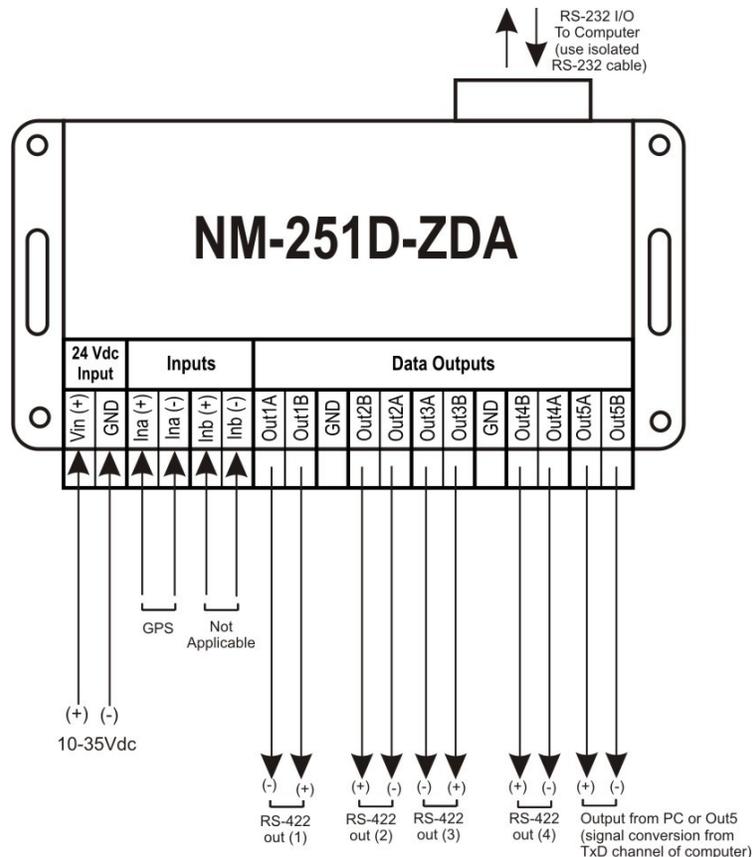


Figure 1: Connection to RS-422 Outputs

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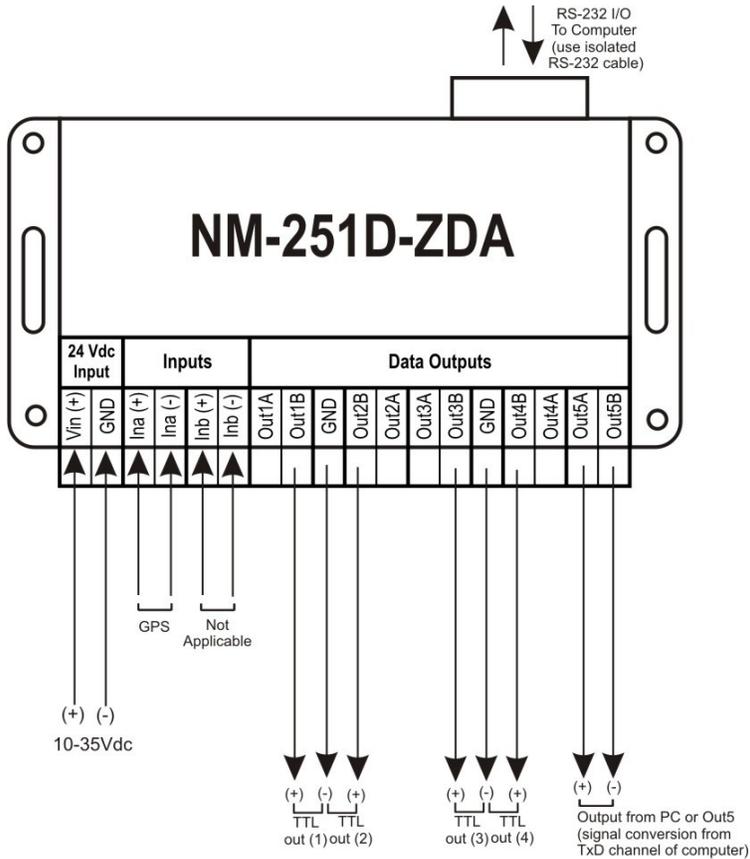


Figure 2: Connection to TTL outputs

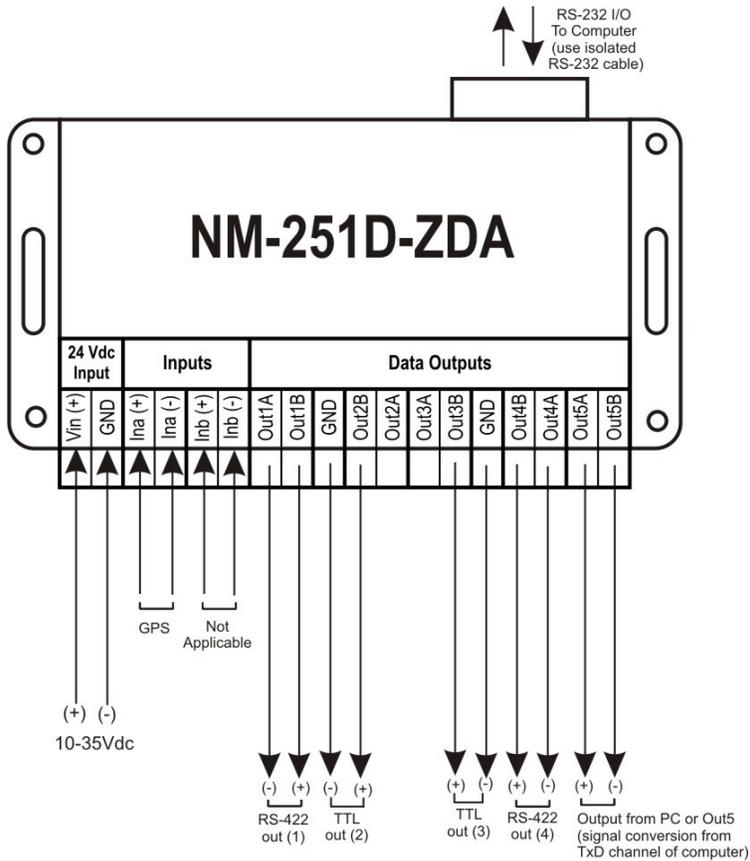


Figure 3: Combined use of TTL and RS-422 outputs

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Power Supply

The NM-251D-ZDA can be powered within the range of 10-35 VDC. The nominal voltage of 24 Vdc is advised for powering the device in normal operation.

Power input port has a protection for incorrect polarity connection of the supplying voltage.

LED Indicator sequence

Inb LED	ON: The NM-251D-ZDA is in operation mode processing the \$GPRMC strings
Ina LED	OFF or ON/OFF: Uploaded firmware not correct or NM-251D-ZDA malfunction
Out 3/4 LED	Flashing indicates data transmission to output port 3 and 4
Out 1/2 LED	Flashing indicates data transmission to output port 1 and 2
Out5 LED	Flashing indicates reception from RS-232 port and transmission to Out5 port

Printed Circuit Board composite layout

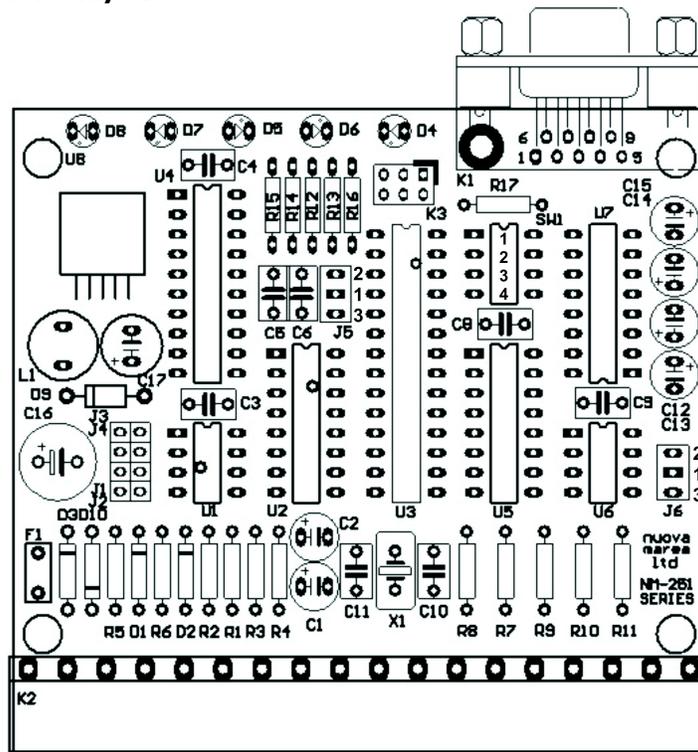


Figure 4: Composite layout of NM-251D-ZDA printed circuit board

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Specifications

Supply Voltage	9 to 35 Vdc	
Power Supply Protection	PTC Resetable Fuse Vmax: 60V, Imax: 40A, Ihold: 0,25A (23°C), Itrip:0,5A (23°C), Max time to trip (23°C): 2,2sec for 1,25A	
Current Consumption	50mA in idle state/ 150mA in full output mode	
Inputs	1 x NMEA-0183, optically isolated Common Mode Rejection: 10kV/usec, Isolation: 480 Vrms	
Input Resistance	1,5 KOhm	
Outputs	4 x buffered RS-422/TTL (general purpose) 1 x RS-232 1 x RS-422 signal conversion from RS-232 RXD channel or as fifth output	
Output protection	Buffered for all RS-422 outputs	
Speed for NMEA inputs	<ul style="list-style-type: none"> input priority encoding mode is selected 	4.800/8/N/1 when
Speed for NMEA outputs	<ul style="list-style-type: none"> input priority encoding mode is selected 	4.800/8/N/1 when
Indicators	Functionality mode (Ina)/ (Inb) Data transmission from output ports 1 and 2 (Out 1/2 LED) Data transmission from output ports 3 and 4 (Out 3/4 LED) Data reception from RS-232 interface or output 5 port (Out 5 LED)	
Dimensions	Width = 110mm/134,80 mm Depth = 82 mm Height = 43 mm	
Housing	Styrene	

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Port ID	Wire ID / Color	Cable ID	Signal Description
Vin(+)			
GND			
Ina(+)			
Ina(-)			
Inb(+)	N/A	N/A	N/A
Inb(-)	N/A		
Out1A			
Out1B			
GND			
Out2B			
Out2A			
Out3A			
Out3B			
GND			
Out4B			
Out4A			
Out5A			
Out5B			

SETTINGS

J5*

2	1	3

J6*

2	1	3

Dip Switches**

ID	OFF	ON
1	N/A	N/A
2	N/A	N/A
3	N/A	N/A
4	N/A	N/A

* Mark the positions that are occupied by the jumper

** Mark the position for every switch

NOTES:

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CERTIFICATE NUMBER

08-PR299432-PDA

DATE

20 March 2008

ABS TECHNICAL OFFICE

Piraeus Engineering Services

CERTIFICATE OF Design Assessment

This is to Certify that a representative of this Bureau did, at the request of
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assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate. It will remain valid as noted below or until the Rules or specifications used in the assessment are revised (whichever occurs first).

PRODUCT: Programmable Controller, I/O Units, Operator & Communication Interfaces

MODEL: NM-251 Series

ABS RULE: 2008 Steel Vessel Rules 1-1-4/7.7, 4-8-3/1.7, 4-8-3/1.9 and 4-8-3/Table 2

OTHER STANDARD: IEC 60945 (2002 edition);

AMERICAN BUREAU OF SHIPPING

Ion G. Koumbarelis
Ion G. Koumbarelis
Engineering Type Approval Co-ordinator



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