

# NM-251B Speed Log to NMEA-0183 Converter User Guide Ver.1.20



## Introduction

NM-251B is a Speed Log ppm output to NMEA-0183 converter that enables connection of every speed log that uses the "closing" contact interface with digital systems and instruments that comply with the NMEA-0183 standards. The NM-251B is capable of converting the speed log contact closures to a standard NMEA \$VWVHW and \$VMVBW strings with checksum error control and output at TTL, RS-422 and RS-232 signal levels.

## INPUT PORT

NM-251B has one input port for connecting to the speed log that can be configured to interface both "closing" contact and optocoupler output type Speed Logs. Further details on how to configure the NM-251B are shown on table Configuration shall be done prior to connecting to the Speed Log or else damage may occur to the instrument.

## OUTPUT PORTS

### General Purpose Output Port

NM-251B has five general purpose output ports that are able of transmitting NMEA sentences in both RS422 and TTL signal levels, depending on the connection topology and each one can fan out one instrument. Current drawn from each output port can be up to 20mA, efficient enough to drive any NMEA compatible instrument.

### RS-232 Interface

The RS-232 port can deliver NMEA sentences to any modern computer running the appropriate software on Windows 98 and above provided that serial communication follows the 4.800/8/N/1 standard. This port is not optically isolated and shall not be used for other than testing purposes.

## CONNECTIONS

The NM-251B can be connected as shown in figures 1, 2 and 3 using RS-422, TTL or both signal level type outputs.

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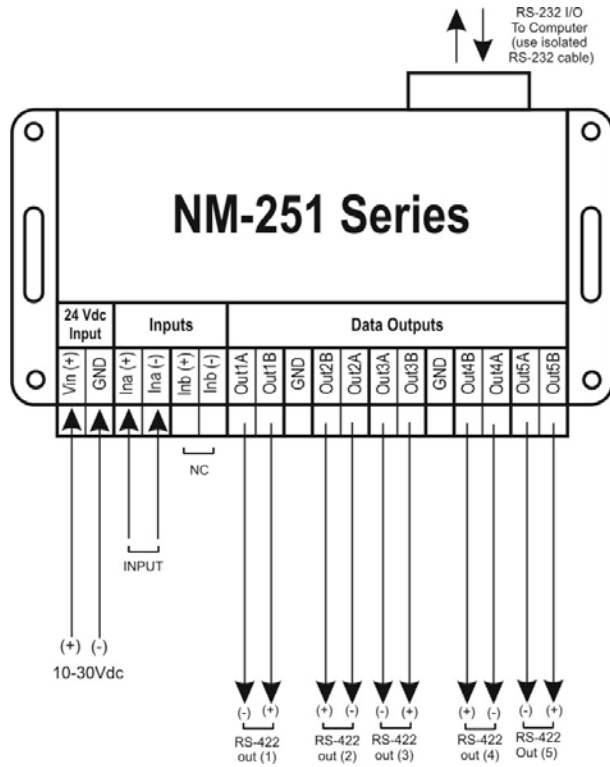


Figure 1: Connection diagram for NM-251B using only RS-422 outputs

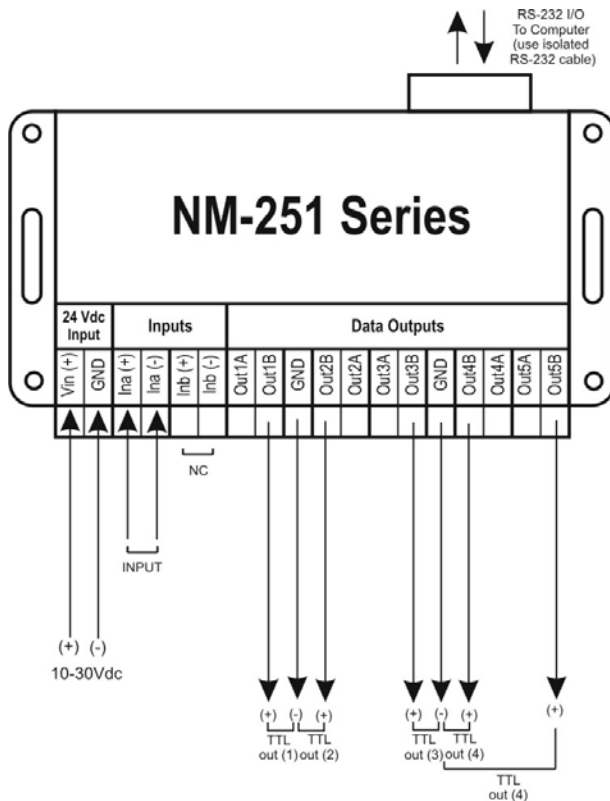


Figure 2: Connection diagram for NM-251B using only TTL outputs

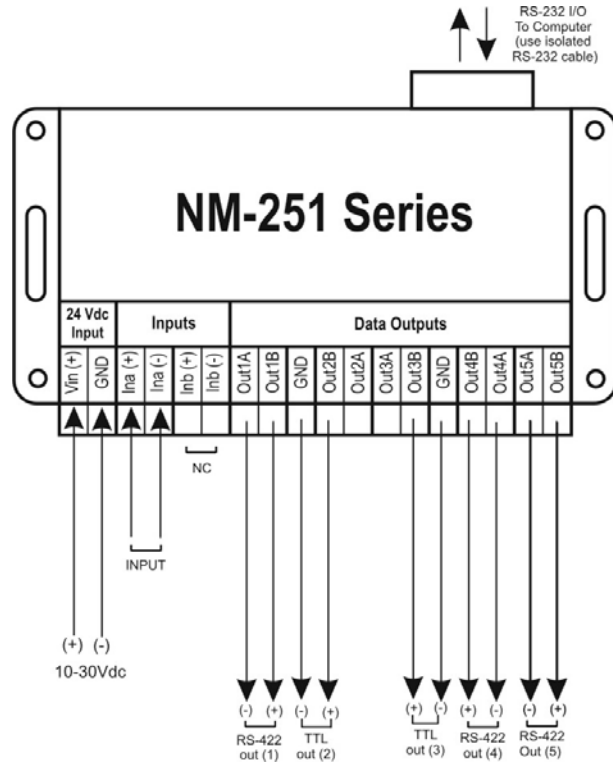


Figure 3: Connection diagram for NM-251B using RS-422 and TTL outputs

### NM-251B CONFIGURATION

ID	Status	Description
J1	Short	Configures input circuit for connection to a "closing" contact output (default). A 5V dc signal is applied then from the input to the Log's closing contact to evaluate its state. Isolation is achieved then via Log's closing contact interface (e.g. relay)
J2	Open	
J3	Short	
J4	Open	
J1	Open	Configures input circuit for connection to an optocoupler output Log. Input is then optically isolated from LOG.
J2	Open	
J3	Open	
J4	Open	
SW-1 to SW-4		Selection of ppm (user selectable: see table 2).
J5(1-2)	Short	Use of microcontroller (do not change)
J6(1-3)	Short	Use of Out5 (do not change)

Table 1: NM-251B jumper configuration

The NM-251B can be configured to be connected to speed logs with a 100/200/300/400/500 pulses per mile. This can be achieved by setting dip-switches 1-4 at SW1 (refer to composite assembly figure 4).

Description	SW1-1	SW1-2	SW1-3	SW1-4
Closing contacts 100ppm	OFF	OFF	OFF	OFF
Closing contacts 200ppm (default)	ON	OFF	OFF	OFF
Closing contacts 300ppm	OFF	ON	OFF	OFF
Closing contacts 400ppm	OFF	OFF	ON	OFF
Closing contacts 500ppm	OFF	OFF	OFF	ON

Table 2: Configuration of NM-251B conversion ratios



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**LED INDICATOR SEQUENCE**

Inb LED	ON: LOG Conversion Mode. Signal of Ina port is converted to NMEA signal. Inb input port is not available
Ina LED	Flashing indicates data transmission to output port 1 and 2
Out 1/2 LED	Flashing indicates data transmission to output port 3 and 4
Out 3/4 LED	Flashing indicates data transmission to output port 5

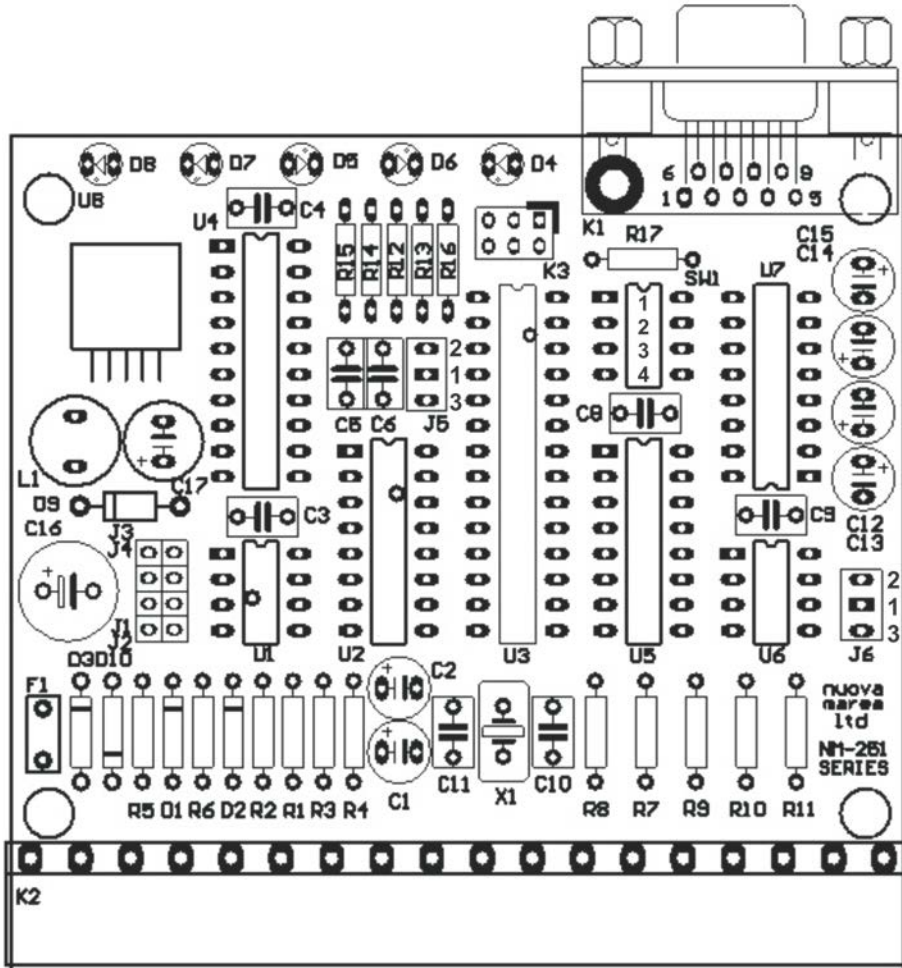


Figure 4: Composite Assembly of NM-251B

## SPECIFICATIONS

Supply Voltage	9 to 35 Vdc
Power Supply Protection	PTC Resettable 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 closing contact analog interface, optically isolated Common Mode Rejection: 10kV/usec Isolation: 480 Vrms
Input Resistance	1 KOhm
Outputs	5 x buffered RS-422/TTL (general purpose) 1 x RS-232
Output NMEA Sentence Format	\$VWVHW,,T,,M,x.x,N,x.x,K* <CS> \$VMVBW,x.x,A,,* <CS>
Output protection	Buffered for all RS-422 outputs
LOG input	100/200/300/400/500 ppm (user selectable)
Speed for NMEA outputs	4.800/8/N/1
Indicators	Input (Ina) – LOG input Input (Inb) – Not available 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 port 5
Dimensions	Width = 110mm/134,80 mm Depth = 82 mm Height = 43 mm
Housing	Styrene

Port ID	Wire ID / Color	Cable ID	Signal Description
Vin(+)			
GND			
Ina(+)			
Ina(-)			
Inb(+)			
Inb(-)			
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		
2		
3		
4		

\* Mark the positions that are occupied by the jumper

\*\* Mark the position for every switch

**NOTES:**



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CERTIFICATE NUMBER

08-PR299432-1-PDA

DATE

01 March 2013

ABS TECHNICAL OFFICE

Piraeus Engineering Department

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This is to Certify that a representative of this Bureau did, at the request of  
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PRODUCT: **Programmable Controller, I/O Units, Operator & Communication Interfaces**

MODEL: **NM-251 Series**

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