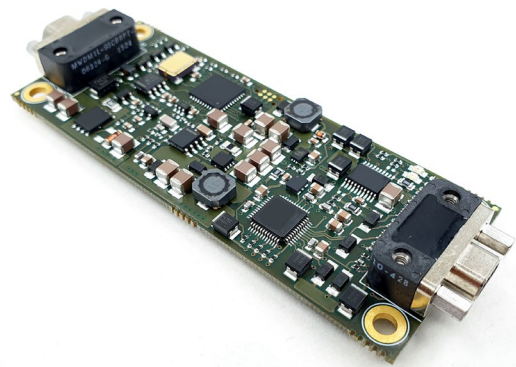




## Features

- Resolver interface with CANbus and Hall output
- Provides accurate speed and position outputs
- Wide Input range of 18 – 60Vdc
- High temperature rated +177°C
- Embedded temperature sensor
- Firmware selectable excitation frequency



## Product Description

The NSE HT Resolver Board is a high performance, high temperature resolver decoder. Resolver data are decoded to CANbus and Hall-effect signals – which mode that is used is up to the customer. The resolver is targeted downhole wireline tools, drilling tools, in addition to industrial- and automotive applications.

The PCB layout is designed with ruggedness in mind. The board can be delivered in a CNC machined aluminum chassis that provides maximum mechanical support to allow the board to operate in an environment where very high shock and vibration may occur. The board has rugged high temperature connectors.

# 1 Product Specification

## 1.1 Electrical Specifications

Parameter	Conditions / Comments	Min	Typ	Max	Unit
<b>SUPPLY VOLTAGE</b> Input Voltage	<i>Specified operational range</i>	18		60	Vdc
<b>RESOLVER INTERFACE</b> Excitation Voltage Excitation Frequency Input Voltage  Angular accuracy Angular offset  Angular resolution	<i>Can be digitally calibrated</i>	2 2	4  +/- 1	20  179.9	   Degrees Degrees  Degrees
<b>HALL OUTPUT</b> Output Type  Voltage requirement		2	Open Drain	24	V
<b>CANBUS INTERFACE</b> Baud Rate	<i>Configurable</i>	83.3	125	250	kbits/s
<b>MECHANICAL DIMENSIONS</b> Chassis Length Chassis Width Chassis Height			121.0 38.0 12.1		mm mm mm
<b>ENVIRONMENTAL AND THERMAL</b> Ambient temperature  Thermal Resistance	<i>Min and Max temperature on the surface of the outer housing given that thermal resistance is within the specification</i>  <i>Surface of OUTER HOUSING to NSE UNIT</i>  <i>*Refer to the Section "Thermal properties" for further definition</i>	-10		177  0.5	°C  °C/W
<b>OPERATIONAL LIFETIME</b> Expected Lifetime	<i>&lt; 125°C Ambient Temperature</i>  <i>125 - 150°C (4 x acc. factor)</i>  <i>150- 177°C (8 x acc. factor)</i>	2000  500  250			Hours  Hours  Hours

## 1.2 Thermal properties

The NSE HT Resolver Board is designed to operate in a 177°C environment.

In a typical assembly, the **NSE UNIT** is mounted to a **MOUNTING PROFILE** that is located inside an **OUTER HOUSING**.

The **OUTER HOUSING** surface temperature should not rise above the specified maximum ambient temperature, and the mechanical design and interface between the **OUTER HOUSING, MOUNTING PROFILE** and the **NSE UNIT** should be such that the thermal resistance specification is achieved.



## 1.3 Conformal Coating

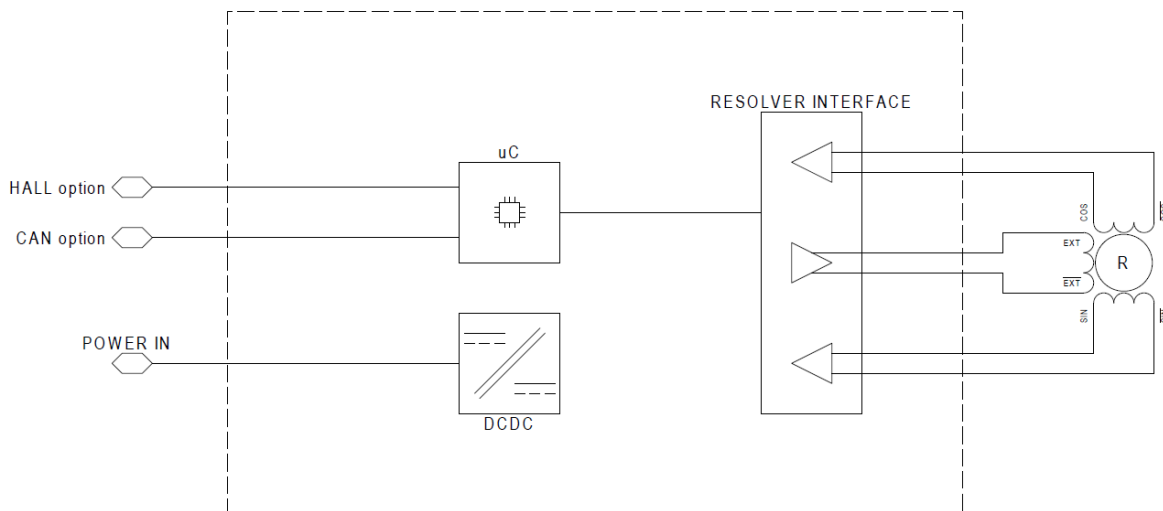
This product is delivered without conformal coating.

## 1.4 Environmental requirements

NSE boards must be installed in dry air at atmospheric pressure (1atm). Avoid humid atmosphere or under- / overpressure. Refer to general NSE installation guidelines for more information.

## 2 Connections

### 2.1 Overview



### 2.2 Input Connector

Board Connector: M83513/13-A type – 9 pin Connector

Mating connector: M83513/03-A Type

Pin	Signal name	Description / Function	Board Connector Pinout
1	Hall A	Hall Signal A	<p>Face View</p>
2	CAN H	CAN High	
3	CAN L	CAN Low	
4	Hall C	Hall Signal C	
5	GND	Ground	
6	+VHall	Hall pull-up Voltage	
7	Hall B	Hall signal B	
8	GND	Ground	
9	+Vin	Board Supply Voltage	

### 2.3 Output connector

Board Connector: M83513/10-A type – 9 pin Connector

Mating connector: M83513/04-A Type

Pin	Signal name	Description / Function	Connector Pinout
1	GND	Ground	
2	CAN H	CAN High	
3	CAN L	CAN Low	
4	EXT	Resolver Excitation+	
5	EXTLO	Resolver Excitation-	
6	COS	Resolver COS+	
7	COSLO	Resolver COS-	
8	SIN	Resolver SIN+	
9	SINLO	Resolver SIN-	

## 3 Functional Description

The Resolver Board is a separate HT node board for resolver interface and decoding.

The Resolver Board can decode the resolver data to CAN and Hall-Effect signals.

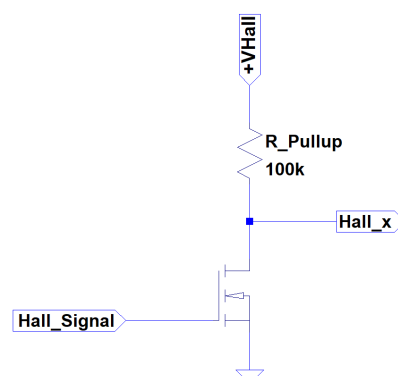
The Hall-Effect outputs are especially designed to work with the motor controllers that has no resolver interface.

The board can typically interface resolver that are placed on motors or gearboxes and provide accurate position and speed information. Multiple excitation frequencies can be set in the firmware.

The Resolver Board has an embedded temperature sensor for measuring ambient temperature that can be distributed over CANbus.

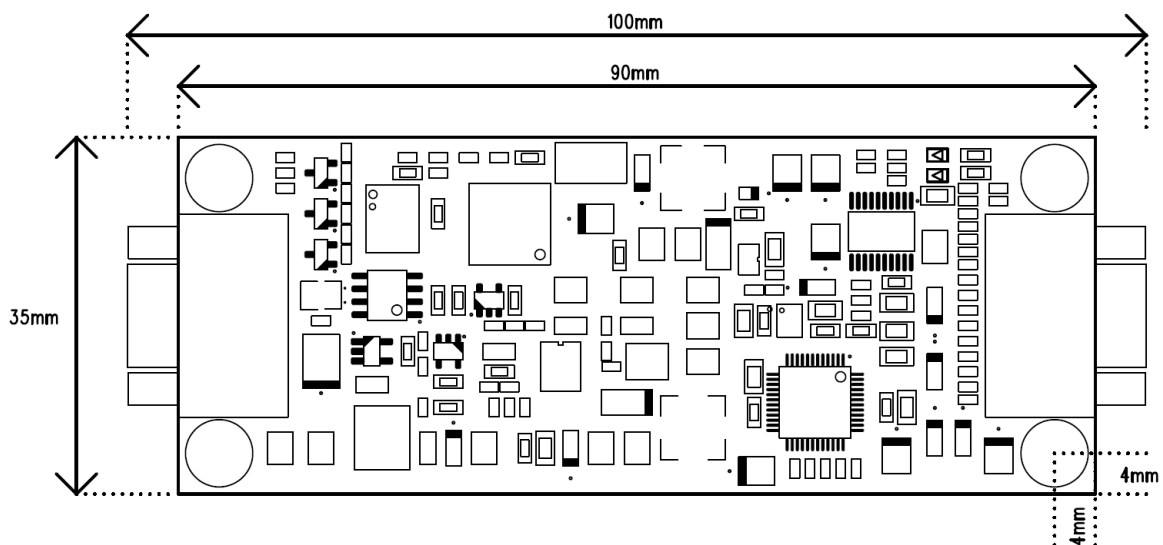
### 3.1 Hall output

The output of the board emulates a typical hall sensor outputs with open drain configuration. The circuit of the output is shown below:

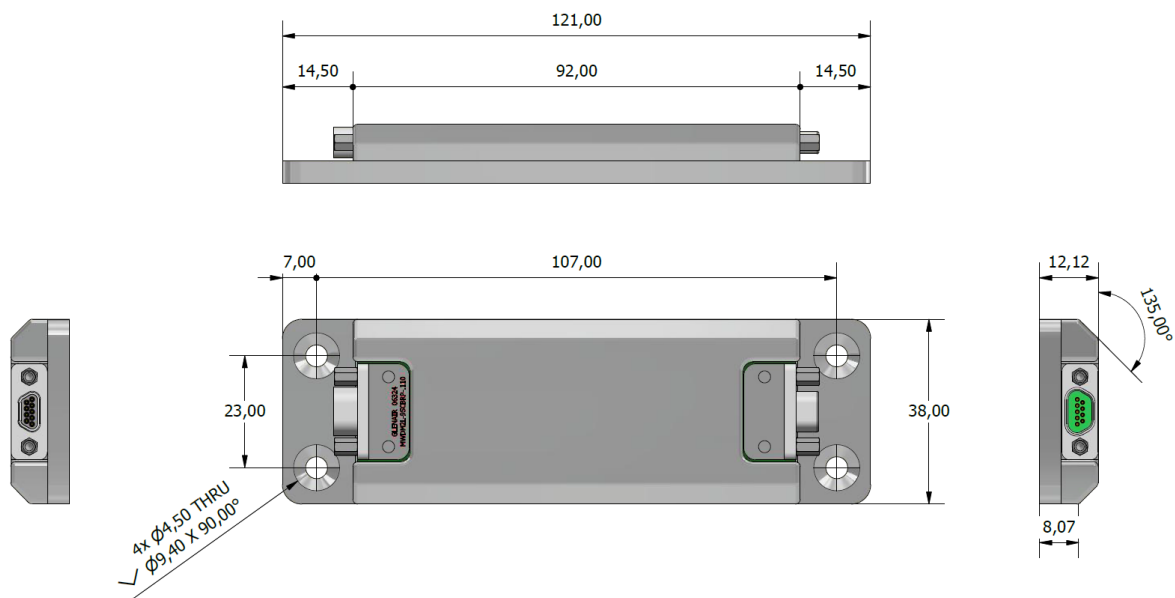


## 4 Mechanical Dimensions

### 4.1 PCB variant



### 4.2 Housing variant



## 5 Datasheet Revision History

REV	DATE	DESCRIPTION	PREP	APPR
A	10.01.2019	Initial release	RFY	GLK
B	26.06.2020	Updated descriptions in some sections, updated datasheet template. Change of document number.	RFY	GLK
C	14.01.2021	Updated accuracy data. Added description of output drain drivers	RFY	GLK
D	21.06.2024	Fixed typo in ordering code. A = Chassis	GLK	RFY

## 6 Ordering

### 6.1 Order code

<b>Order code:</b>		<b>NSE-5001</b>	<b>-09</b>	<b>-X</b>
<b>Category</b>	NSE-5001	= NSE Motor Controllers		
<b>Model</b>	-09	= Resolver Node		
<b>Chassis option</b>	-PCBA	= No chassis (PCBA only)		
	-A	= Aluminum chassis		

### 6.2 Where to buy

Email: [sales@nse.no](mailto:sales@nse.no)  
 Web: [www.nse.no](http://www.nse.no)  
 Phone: +47 406 48 400