Synchro/Resolver - Synchros and Resolvers are transformer-type voltage/current transducers that convert a shaft or other rotating device's angular position and/or velocity to a multi-wire AC electrical signal. Both deliver signals proportional to the Sine and/or Cosine of the shaft angle. A Resolver-to-Digital or a Synchro-to-Digital simulator is used to convert digital angle/velocity commands to corresponding Synchro/Resolver AC signals.

Measurement

Module	Description
SD1	4 Ch. Input (2-28 RMS), Frequency 47 – 1,000 Hz
SD2	4 Ch. Input (2-28 RMS), Frequency 1,000 – 5,000 Hz
SD3	4 Ch. Input (2-28 RMS), Frequency 5,000 – 10,000 Hz
SD4	4 Ch. Input (2-28 RMS), Frequency 10,000 – 20,000 Hz
SD5	4 Ch. Input (28 - 90 RMS), Frequency 47 – 1000 Hz

Features

NAI offers five smart function modules that cover the range of excitation voltages/frequency, include extensive field-parameter programmability, and provide a full operating envelope choice for interfacing to virtually any type of Synchro or Resolver. A Resolver-to-Digital or a Synchro-to-Digital converter is used to convert these signals to a digital output corresponding to the shaft angle and/or velocity.

Built-In Test (BIT) / Diagnostic Capability

SD1-SD5 incorporate major diagnostics that ensure that the user is alerted to channel malfunction. This approach reduces bus traffic, because the Status Registers need not be constantly polled. Three different tests (one on-line and two off-line) can be selected.

The Online **(D2)** Test initiates automatic background BIT testing. Each channel is checked every 5° to a testing accuracy of 0.05° and each Signal and Reference is always monitored. User can periodically clear to 00h and then read Test (D2) verification register again, after a minimum of 20.48 µs, to verify that background bit testing is activated. Any failure triggers an Interrupt (if enabled) and the results are available in status registers. The testing is totally transparent to the user, requires no external programming, has no effect on the standard operation of the card, and can be enabled or disabled.

The Offline **(D3)** Test initiates a BIT test that disconnects all channels from the outside world and connects them across an internal stimulus that generates and tests 36 different angles to a test accuracy of 0.1°. Results can be read from registers and external reference is not required. Any failure triggers an Interrupt (if enabled). The testing requires no external programming and can be initiated or stopped.

The Offline **(D0)** Test is used to check the card and the system interface. All channels are disconnected from the outside world, allowing the user to write any angle to all channels on the card and then to read the data from the interface. External reference is not required.

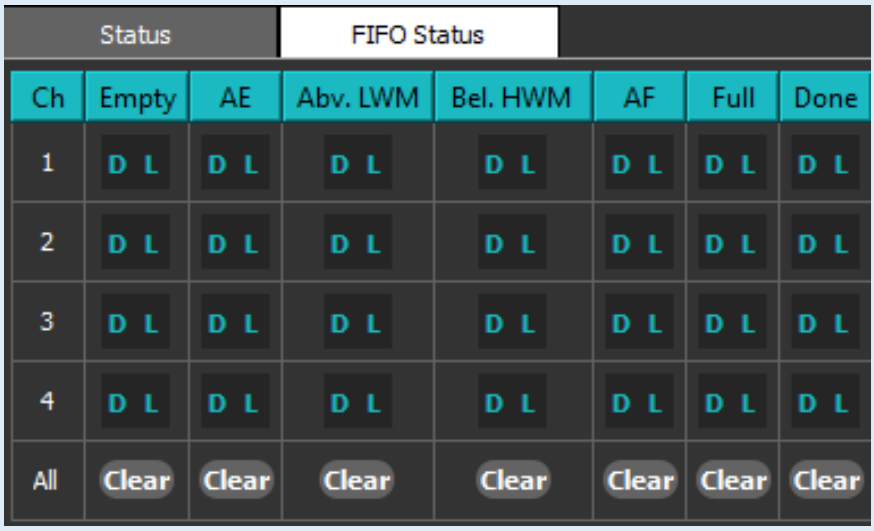
New Embedded Soft Panel

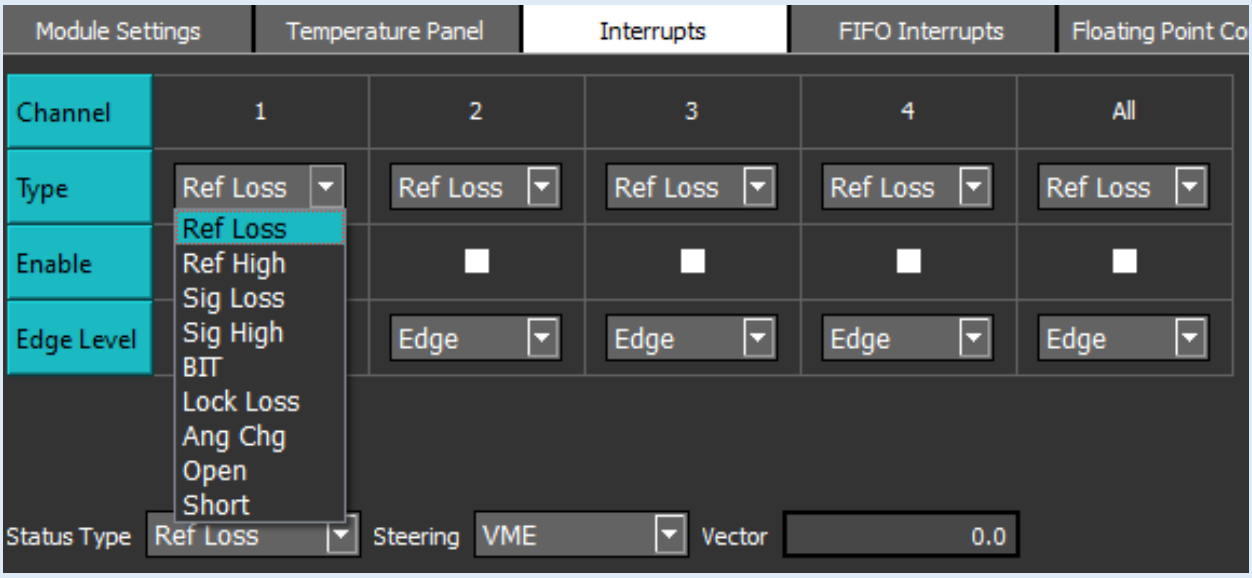
North Atlantic Industries offers the newest cross platform (Windows and Linux) GUI for our Gen 5 products that allows a user to quickly interact with our broad range of modular, I/O cards and rugged embedded computing products. Embedded Soft Panel 2 (ESP 2) is coherent and easy to use with a clean, fleshed out UI with features such as drag and drop dock able windows, a dark and light theme, and multi-language support. Multiple ways to open a board are offered, including saving board opening settings for future use. Interacting with and collecting information on hardware

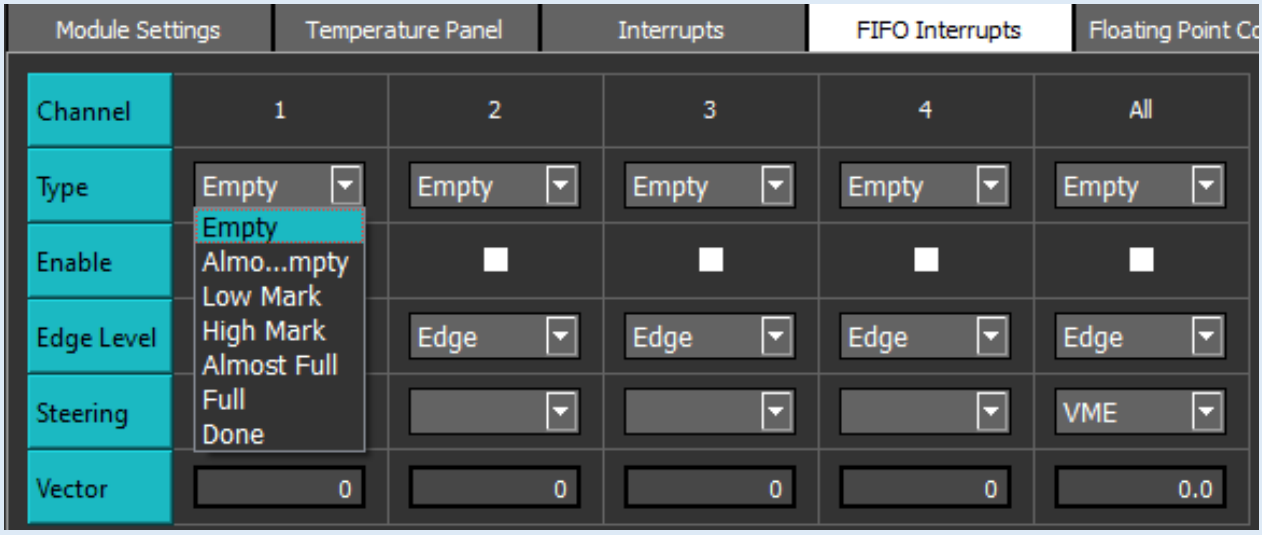
is simple to do with the register editor for reading and writing specific addresses, and the API logger which logs all API library calls including their return status and parameters. ESP 2 has many new features and provides an organized and effortless interface for NAI's next generation products. Available for CentOS 7.4 and 8.2 and Windows 10 x64

Synchro/Resolver Measurement Example - Module SD1 Demo Mode Screen Shots


Status
FIFO Status
Ch
Ref Loss
Ref High
Sig Loss
Sig High
BIT
Lock Loss
Ang Delta
Open
Short
1
2
3
4
D L
All
Clear


Status
FIFO Status
Ch
Empty
AE
Abv. LWM
Bel. HWM
AF
Full
Done
1
2
3
4
D L
All
Clear


Module Settings
Temperature Panel
Interrupts
FIFO Interrupts
Floating Point Co
Channel
1
2
3
4
All
Type
Ref Loss
Ref High
Sig Loss
Sig High
BIT
Lock Loss
Ang Chg
Open
Short
Enable
Edge Level
Edge
Status Type
Steering
VME
Vector
0.0



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Rev. A