

# Technical Note

## Operating a Movidrive® B Using Two DIO11B Option Cards

Some applications require more inputs and outputs than a Movidrive® B with a single DIO11B option card can provide. It is possible to use two DIO11B cards in one Movidrive® B unit. This document explains how to access the input and output data of two DIO11B option cards installed in a single Movidrive® B frequency inverter. This procedure is possible only if the Movidrive® B is a size 1 or greater.

Configuring a Movidrive® B with two DIO11B cards allows the use of the following features:

- The standard I/O (inputs/outputs) of the Movidrive® B ([link](#))
- The digital I/O of both DIO11B option cards ([link](#))
- The analog input (AI21/AI22) of the DIO11B in the fieldbus slot ([link](#))
- Both analog outputs (AOV1/AOV2/AOC1/AOC2) of the DIO11B in the expansion slot ([link](#))

Refer to Figure 1, DIO11B Option Cards.

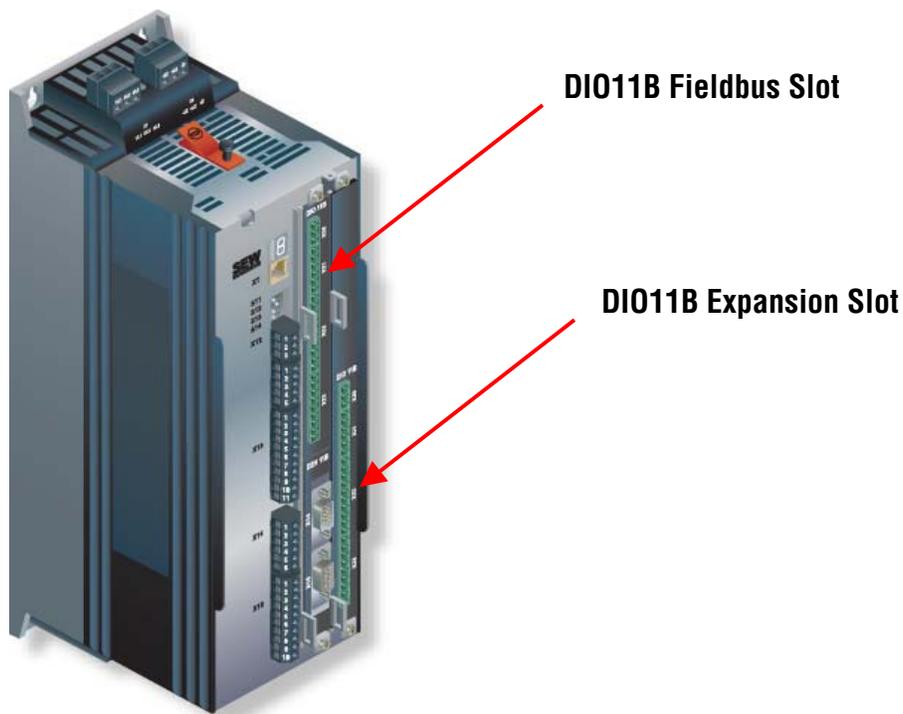


Figure 1: DIO 11B Option Cards

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## Binary Inputs

Access the status of the digital inputs through variable `H520 InpLevelB` in the IPOS Compiler or Assembler. The default view for the variable is decimal format. Access the expansion slot DIO11B I/O via IPOS. They are no longer freely programmable.

Change the view of variable `H520 InpLevelB` to binary format by right clicking in the variable and selecting Display Format / Binary. Refer to Figure 2, Variable H520.

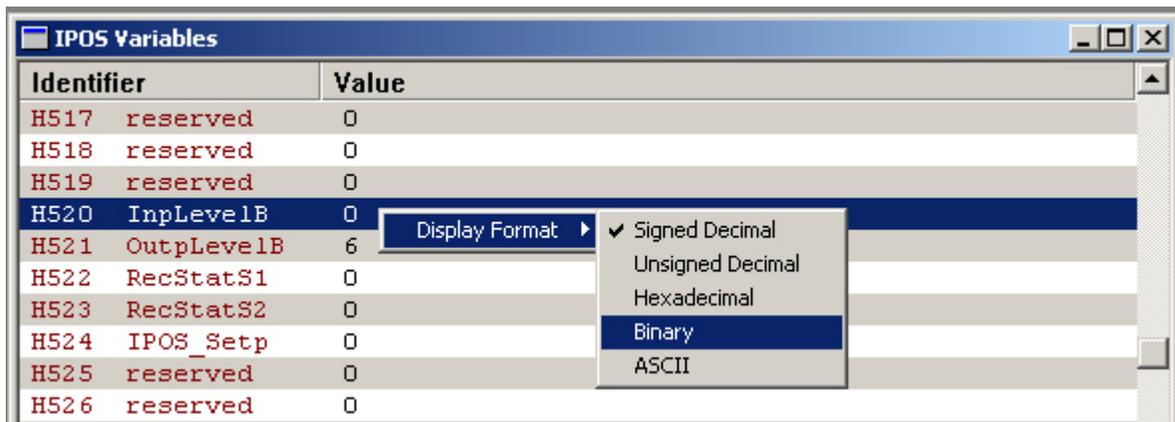


Figure 2: Variable H520

The least significant bit (bit 0 equaling  $2^0$ ) is the rightmost value; the most significant bit (bit 31 equaling  $2^{31}$ ) is the leftmost value. Refer to Figure 3, Bit Numbering System.

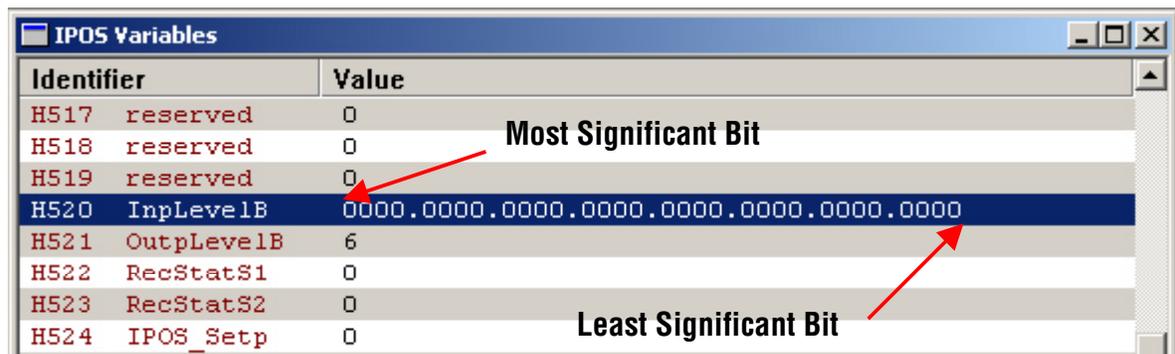


Figure 3: Bit Numbering System

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The status of each digital binary input is mapped to a specific bit in variable H520 InpLevelB. The IPOS program reads and uses the status of these bits to execute functions. Refer to Figure 4, Binary Input Mapping.

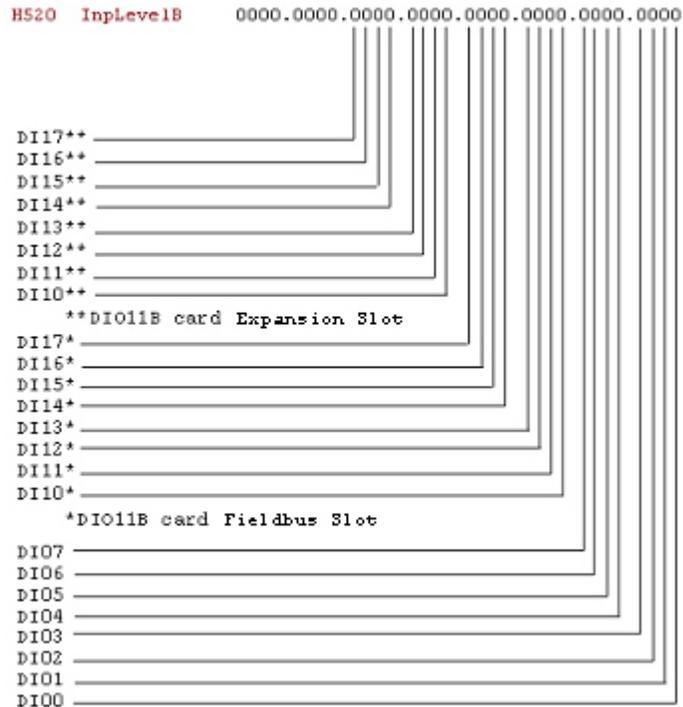


Figure 4: Binary Input Mapping

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**NOTE:** Do not use variable H483 InpLevel with a Movidrive® B unit. This variable may lead to errors. Variable H483 InpLevel is mapped for a Movidrive® A series unit.

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## Binary Outputs

IPOS maps each digital binary output to a system variable. To set the status of an output, use variable H480 OptOutIPOS. Refer to Figure 5, Binary Output Control Bit Mapping.

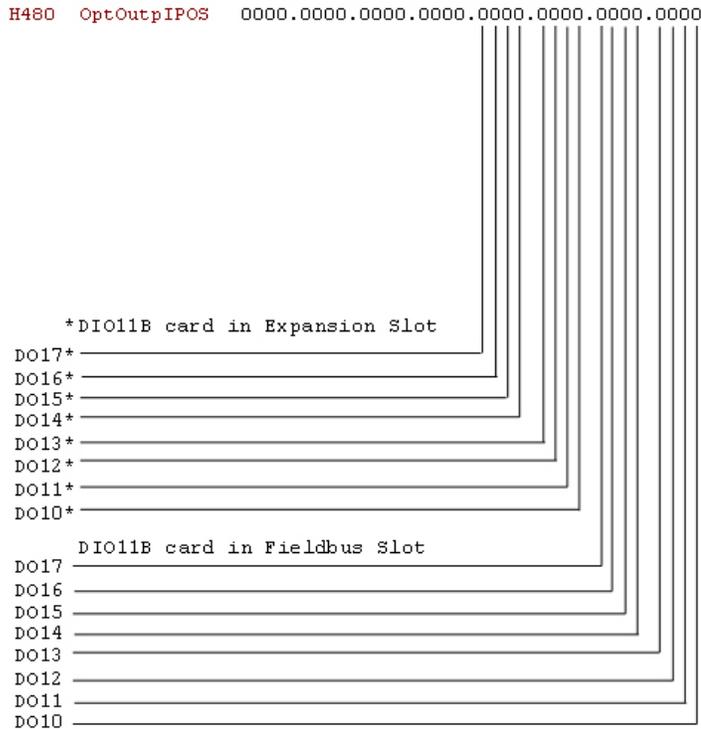


Figure 5: Binary Output Control Bit Mapping

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**NOTE:** In order to control a binary output from the IPOS program, set the terminal assignment parameter for the corresponding binary output (P63x Binary Output Doxx) to IPOS Output.

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**NOTE:** In order to power a binary output on a DIO11B card, supply 24Vdc to terminal X23:9 of that option card. When using two DIO11B option cards, supply 24Vdc to terminal X23:9 of both option cards.

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## Analog Inputs

When using two DIO11B option cards, use the analog input (AI21/22) on the DIO11B card in the fieldbus slot. The Movidrive® accepts the higher of the two analog input on the DIO11B cards in the fieldbus and expansion slots.

Access the analog input of the DIO11B in the fieldbus slot through an IPOS program. Figure 6a shows an example of Compiler coding. Figure 6b shows the values displayed in the IPOS variables.

```
GSAINPUT Ain;

/*=====
   Main Function (IPOS Entry
   =====
main()
{
  _GetSys ( Ain, GS_ANINPUTS );
}
```

Figure 6a: Example of Compiler Coding

IPOS Variables		
Identifier		Value
H420	Ain.Input1	7910
H421	Ain.Input2	9062

Figure 6b: Values Displayed in IPOS Variables

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## Analog Outputs

You can use both analog outputs on the DIO11B card in the fieldbus slot. The Movidrive® disables both analog outputs on DIO11B card number 2.

Directly control the optional analog outputs from the parameters in the submenu 64.Analog Outputs Option; or use the IPOS system variables. When using an IPOS program to control the optional analog output(s), verify that the parameters for the output(s) are set correctly. Remember to set P64x Analog Output AOx to IPOS OUTPUT when controlling the optional analog output(s) via IPOS. Figure 7a shows the Analog Outputs Option Parameters. Figure 7b shows the analog output system variables.

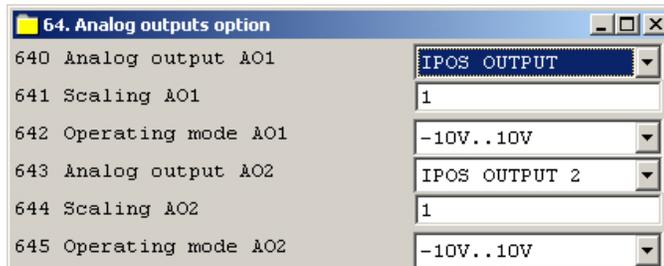


Figure 7a: Analog Outputs Option Parameters

```
H478 AnaOutIPOS2 0
H479 AnaOutpIPOS 0
```

Figure 7b: Analog Output System Variables

Figure 7c shows an example of the Compiler coding used to control the analog outputs of the DIO11B card in the fieldbus slot. It also shows the values that will be displayed in the IPOS variables.

Sample IPOS Code	Values in System Variables
<pre>AnaOutpIPOS = 9876; AnaOutIPOS2 = 5432;</pre>	<pre>H478 AnaOutIPOS2 5432 H479 AnaOutpIPOS 9876</pre>

Figure 7c: Example of Compiler Coding

# Technical Note

## Quick Reference Digital I/O Mapping Chart

Basic unit I/O			
Inputs		Outputs	
Physical*	Memory**	Physical*	Memory**
X13:1 (DI00)	H520.0	X10:3 (DB00)	H481.0
X13:2 (DI01)	H520.1	X10:4 / 5 (D001)	H481.1
X13:3 (DI02)	H520.2	X10:7 (D002)	H481.2
X13:4 (DI03)	H520.3	X16:3 (D003)	H481.3
X13:5 (DI04)	H520.4	X16:4 (D004)	H481.4
X13:6 (DI05)	H520.5	X16:5 (D005)	H481.5
X16:1 (DI06)	H520.6		
X16:2 (DI07)	H520.7		
DI011B Fieldbus Slot I/O			
Inputs		Outputs	
Physical*	Memory**	Physical*	Memory**
X22:1 (DI10)	H520.8	X23:1 (DO10)	H480.0
X22.2 (DI11)	H520.9	X23.2 (DO11)	H480.1
X22.3 (DI12)	H520.10	X23.3 (DO12)	H480.2
X22.4 (DI13)	H520.11	X23.4 (DO13)	H480.3
X22.5 (DI14)	H520.12	X23.5 (DO14)	H480.4
X22.6 (DI15)	H520.13	X23.6 (DO15)	H480.5
X22.7 (DI16)	H520.14	X23.7 (DO16)	H480.6
X22.8 (DI17)	H520.15	X23.8 (DO17)	H480.7
DI011B Expansion Slot I/O			
Inputs		Outputs	
Physical*	Memory**	Physical*	Memory**
X22:1 (DI10)	H520.16	X23:1 (DO10)	H480.8
X22.2 (DI11)	H520.17	X23.2 (DO11)	H480.9
X22.3 (DI12)	H520.18	X23.3 (DO12)	H480.10
X22.4 (DI13)	H520.19	X23.4 (DO13)	H480.11
X22.5 (DI14)	H520.20	X23.5 (DO14)	H480.12
X22.6 (DI15)	H520.21	X23.6 (DO15)	H480.13
X22.7 (DI16)	H520.22	X23.7 (DO16)	H480.14
X22.8 (DI17)	H520.23	X23.8 (DO17)	H480.15
*Physical wire location as defined by (terminal strip number: terminal number)			
**Memory location as defined by (variable number. bit number)			