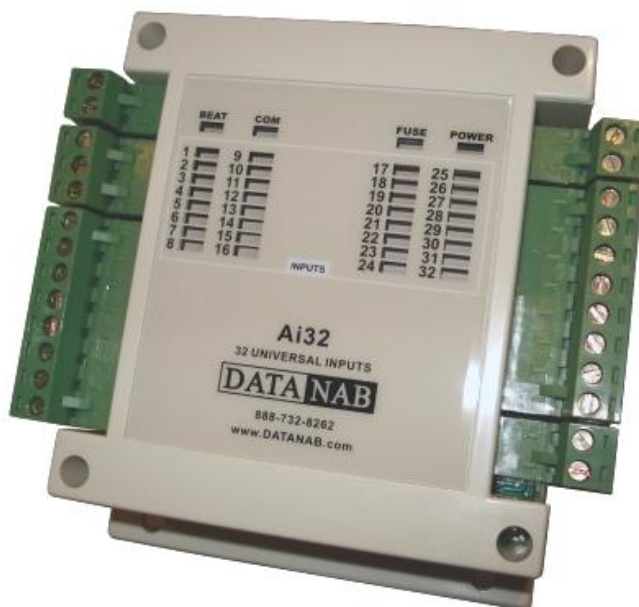


**DataNab Ai32: Modbus 32 Channel Analog Input Module - Configuration Manual – V39**

Each input of the Ai32 Module can be used in 1 of 4 ways: (Jumpers available on current hardware revisions)

- 0-5V signal (*remove jumper completely – disables 5V pull-up*)
- 0-10V signal (*disables 5V pull-up and enables internal voltage divider*)
- 0-20mA signal (*disables 5V pull-up and enables internal 250ohm parallel resistor*)
- Dry contact / thermistor – DEFAULT: (*enables a 5V pull-up through a 10kohm resistor*)

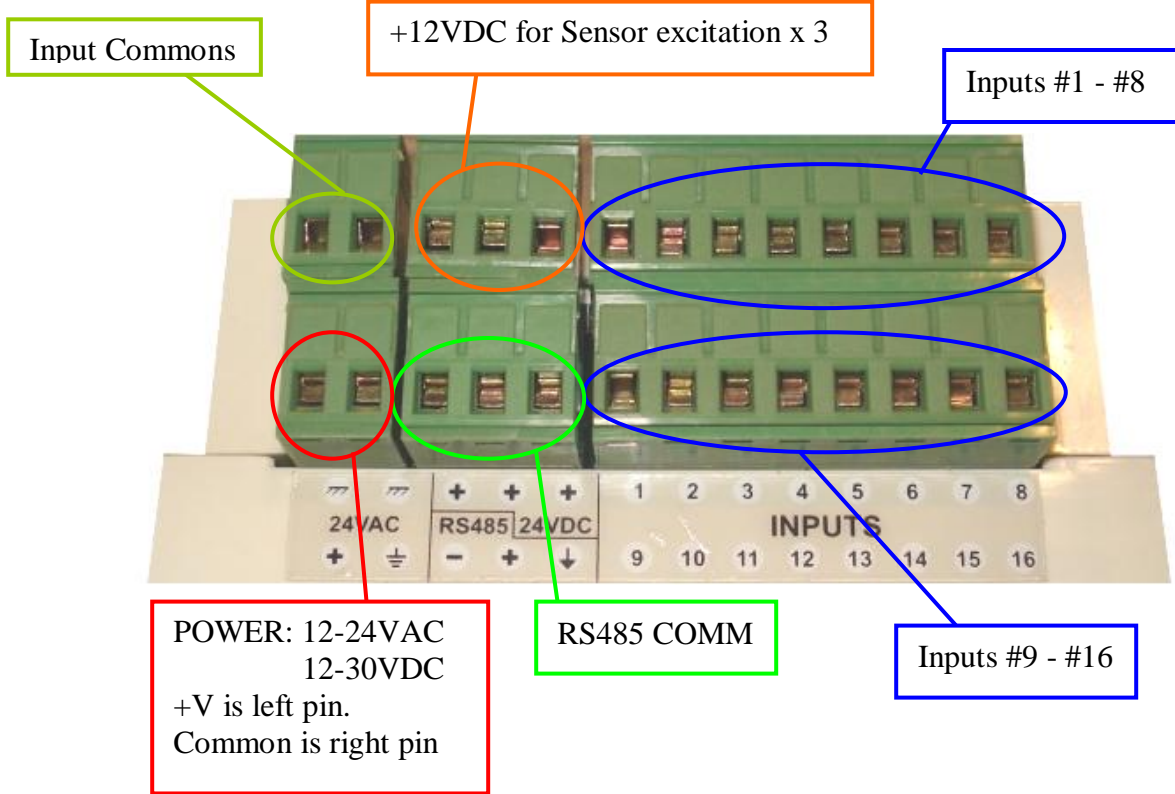
The value of each input is stored as a 10-bit number in the respective modbus register unless the input config registers are used (*registers 228-259*), in which case the device can pre-scale the values in a variety of formats such as DegF, DegC, 0-100%, etc.. You can see more details on the input config registers later in this manual.

The modbus register addresses for the inputs are 100 – 131.

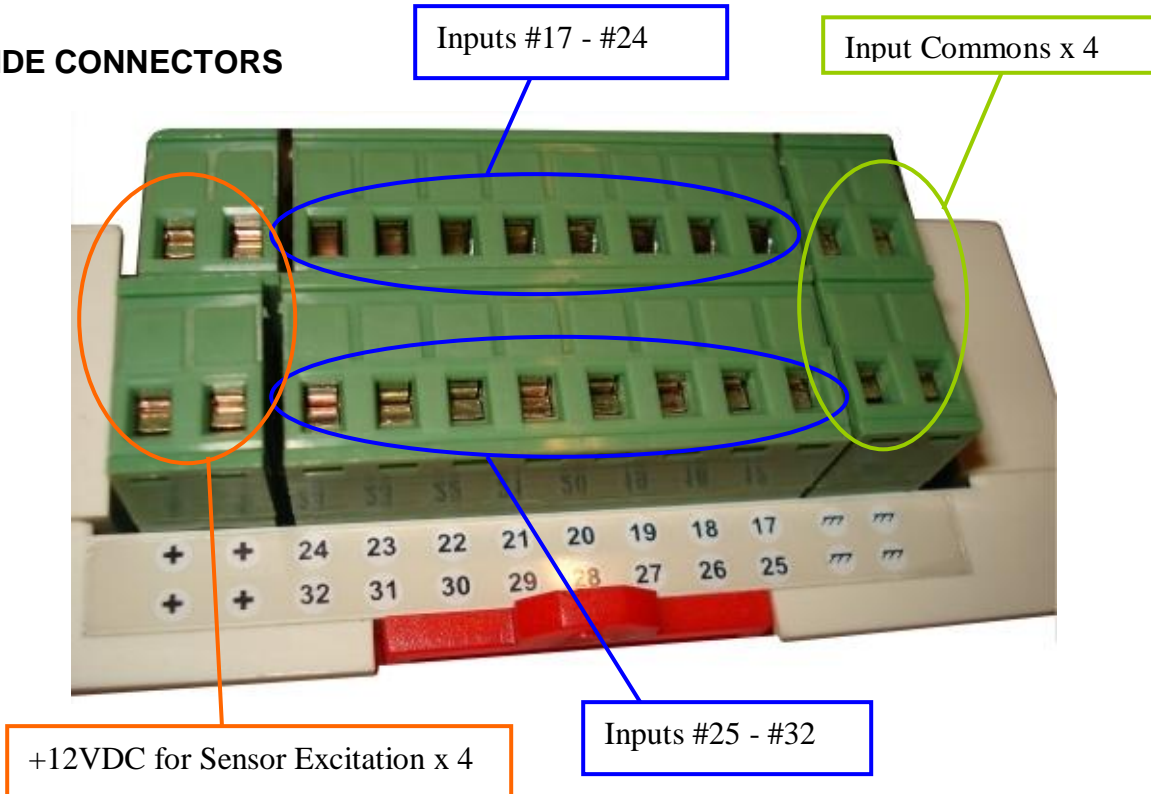
- If you short the input to ground, or apply a 0V or 0mA signal to the input, you will get an A/D reading of 0.
- If you apply a 5V, 10V or 20mA signal, you will get an A/D reading of 1023. If the circuit from input to ground is open (and the pull-up is enabled), you will also get an A/D reading of 1023.

Each input has a corresponding LED which will light up if the equivalent 10-bit value of the input is greater than 512.

## LEFT SIDE CONNECTORS



## RIGHT SIDE CONNECTORS



## RS485 Communication Parameters:

### Baudrate:

The Ai32 baudrate can be set by in MODBUS register 15. The default baudrate is 19.2kbps  
 Value 1 will set the baud to 19200 bps.  
 Value 0 will set the baud to 9600 bps.

### Other:

Default RS485 Address: 254  
 8 Data Bits, No Parity, 1 Stop Bit

## Accessing Ai32 Registers Via Serial Communications

The Ai32 has a built-in serial interface for communication over an RS485 network. Communication is implemented using the Modbus RTU Protocol.

### Modbus registers in the Ai32

Address	Bytes	Register and Description
0 to 5	6	RESERVED
6	1	ADDRESS. Modbus device address
7	1	Product Model: (20=Ai8 R13, 21=AiO8, 22=Ai32)
15	1	Baudrate: 0 will set 9600bps, 1 will set 19200bps
100	2	Input 1 Register
101	2	Input 2 Register
102	2	Input 3 Register
	2	
	2	
	2	
131	2	Input 32 Register
228	1	Input 1 Config: 0=raw 10-bit value, 1=DeqC, 2=DeqF, 3=0-100%, 4=On/Off, 5=Off/On
229	1	Input 2 Config: 0=raw 10-bit value, 1=DeqC, 2=DeqF, 3=0-100%, 4=On/Off, 5=Off/On
	1	
	1	
259	1	Input 32 Config: 0=raw 10-bit value, 1=DeqC, 2=DeqF, 3=0-100%, 4=On/Off, 5=Off/On
260	1	Input 1 filter: 0 = lowest filter, 20 = highest filter
261	1	Input 2 filter: 0 = lowest filter, 20 = highest filter
291	1	Input 32 filter: 0 = lowest filter, 20 = highest filter

### Modbus Poll examples:

If we would like to read the 2<sup>nd</sup> input register from an Ai32 module that has a node address of 1:

Slave Address	Function	Starting Address Hi	Starting Address Lo	No. of Points Hi	No. of Points Lo	CRC Hi Byte	CRC Lo Byte
1	3	0	101	0	1	xx	Xx

Or we read all 32 input values from module # 1:

Slave Address	Function	Starting Address Hi	Starting Address Lo	No. of Points Hi	No. of Points Lo	CRC Hi Byte	CRC Hi Byte
1	3	0	100	0	32	xx	xx