

# AD2006 EXPANSION MODULES

## QUICKSTART MANUAL



**Note:** Before applying power, ensure that the power supply and all wiring is correctly connected. The product warranty does not cover installation error.

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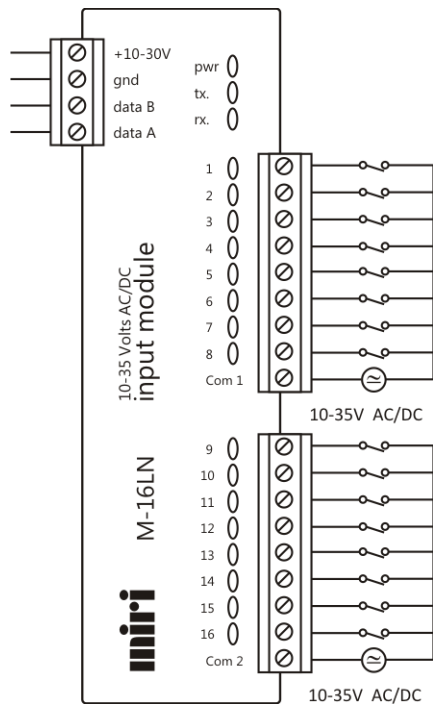
# 1. Specifications

Each module is DIN rail mounting so as to negate the need for additional DIN rail mounting terminals.

Overall dimensions - 160L x 60W x 50H

## M-16LN Input Module

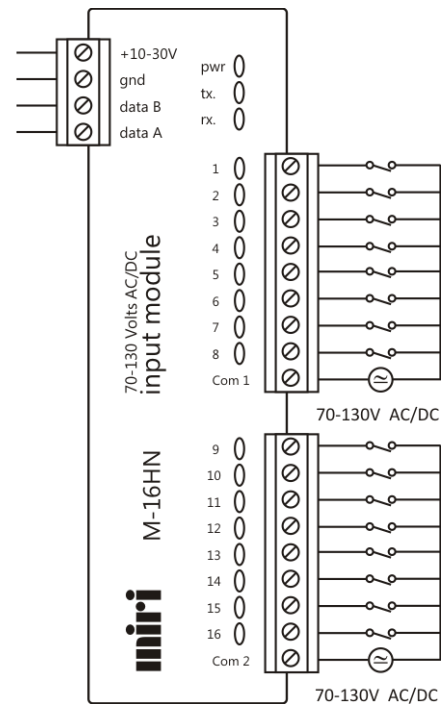
10-35 Volts AC/DC



<b>Inputs per Module</b>	16 Optically Isolated
<b>Input Voltage Range</b>	10-35 Volts AC or DC
<b>Input Impedance</b>	4k7 Ohms
<b>Commons per Module</b>	2 Separate Groups of 8
<b>Isolation</b>	3.5kV
<b>Module Supply Voltage</b>	10-30VDC
<b>Module Power Drain</b>	No Inputs Driven - 200mW All Inputs Driven - 1.2W

## M-16HN Input Module

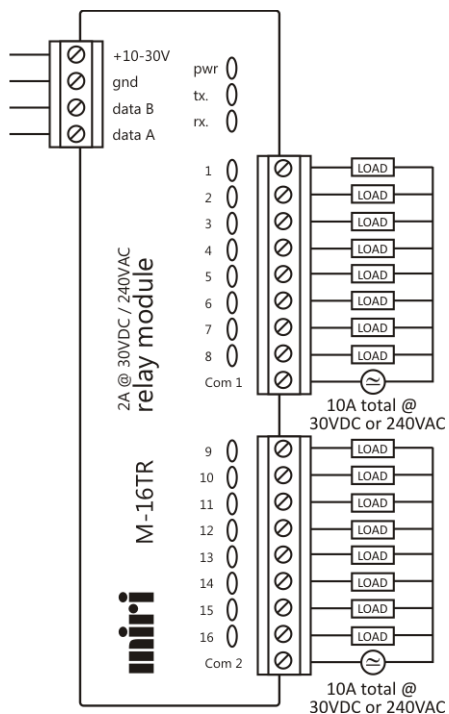
70-130 Volts AC/DC



<b>Inputs per Module</b>	16 Optically Isolated
<b>Input Voltage range</b>	70-130 Volts AC or DC
<b>Input Impedance</b>	27k Ohms
<b>Commons per Module</b>	2 Separate Groups of 8
<b>Isolation</b>	3.5kV
<b>Module Supply Voltage</b>	10-30VDC
<b>Module Power Drain</b>	No inputs driven - 200mW All Inputs Driven - 1.2W

### M-16TR Relay Module

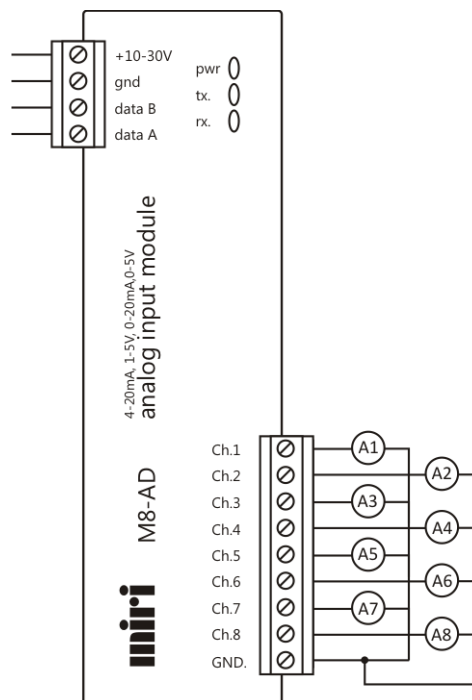
2 Amps



<b>Outputs per Module</b>	16 Relays
<b>Output Current Capability</b>	2A @ 30VDC or 240VAC
<b>Commons per Module</b>	2 Separate Groups of 8
<b>Total Output Capability</b>	10A per Common
<b>Isolation</b>	3.5kV
<b>Module Supply Voltage</b>	10-30VDC
<b>Module Power Drain</b>	No Outputs Driven - 200mW All Outputs Driven - 2W

### M8-AD Analog Input Module

4-20mA, 1-5V, 0-20mA, 0-5V



<b>Inputs per Module</b>	8 Channels - Common Ground
<b>Input Current Range</b>	0-20mA or 4-20mA
<b>Input Voltage Range</b>	0-5V or 1-5V
<b>Input Impedance</b>	250 ohms (current mode)
<b>Resolution</b>	12 bits
<b>Accuracy</b>	0.1%
<b>Linearity</b>	0.1%
<b>Module Supply Voltage</b>	10-30VDC
<b>Module Power Drain</b>	Idle 200mW

## 2. Wiring Detail

The expansion modules are driven from the RS485 port on the AD2006 module, or via an M232-485 converter if using the RS232 port of an AD2000 module.

Any combination of up to 32 expansion modules can be driven from the one AD2006 module.

Standard RS485 parameters apply to the expansion module bus and thus the modules do not have to be located in close proximity to the AD2006 but can be up to 1.5km from the AD2006 telemetry module.

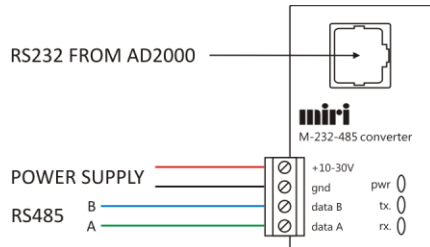
An option to run Modbus on the RS485 bus is provided. This means that the expansion modules can be operated in conjunction with third party Modbus devices on a multi-drop RS485 bus.

**Note:** The protocol selection in MiriMap must match the DIP switch settings on the expansion modules.

The other settings selected in software typically are;

- Interface - Expansion Modules,
- Polling – Continuous,
- RTS during Tx must be checked &
- Baud rate - 38.4k (default).

When using an AD2000 RS232 port, you will require an M232-485 converter connected as shown below.



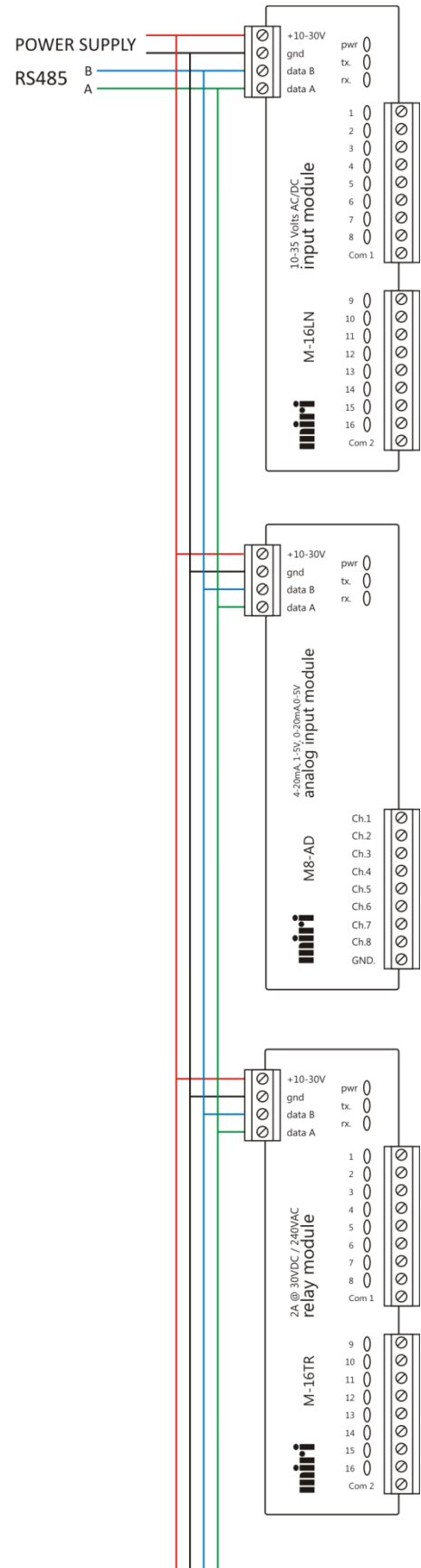
(view looking into RS232 port)

Pin	Function
1	DTR
2	RTS
3	TX Data
4	PTT
5	GND
6	RX Data
7	CTS
8	DSR

AD2000 to M232-485 Cable

RJ45	RJ45
1	8
2	7
3	6
4	4
5	5
6	3
7	2
8	1

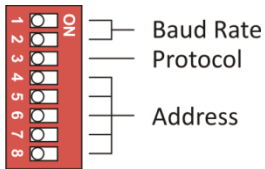
Note that pins 4→4, 5→5!



### 3. Dip Switch Settings

The baud rate, protocol and module address are selected via the DIP switches located at the top of each expansion module.

The functions of the switches are as shown below.



#### Set the Baud Rate



9K6



38K4



57K6



115K2

#### Select the Protocol



DEFAULT/MIRI

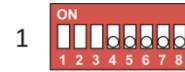


MODBUS RTU

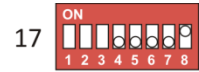
**DEFAULT** - The default setting is Miri protocol which would normally be used when driving only expansion modules via RS485.

**MODBUS** - Modbus protocol is used where other third party Modbus devices are also connected in an RS485 in a multi-drop regime.

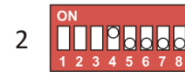
#### Set the Module Address



1



17



2



18



3



19



4



20



5



21



6



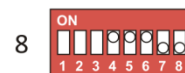
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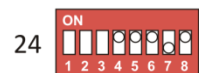
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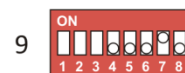
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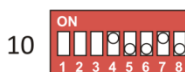
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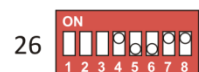
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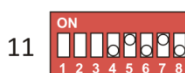
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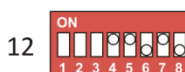
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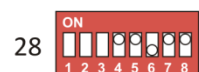
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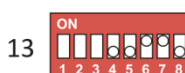
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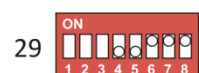
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31



16



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