



An Oval Technologies Manual – Version Release1

Wiring Details for the IO Expansion Modules for the AD2000

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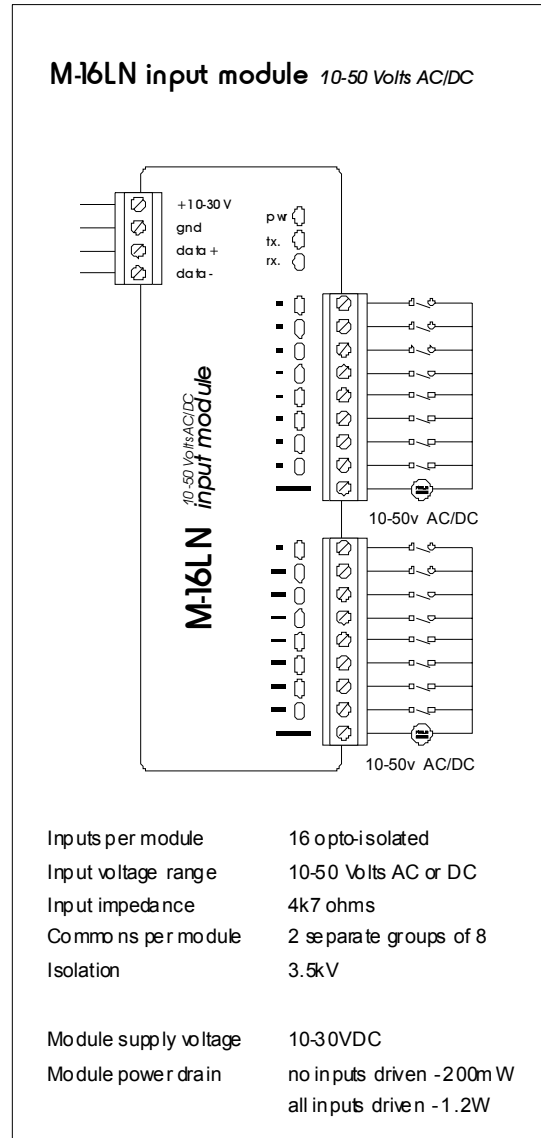
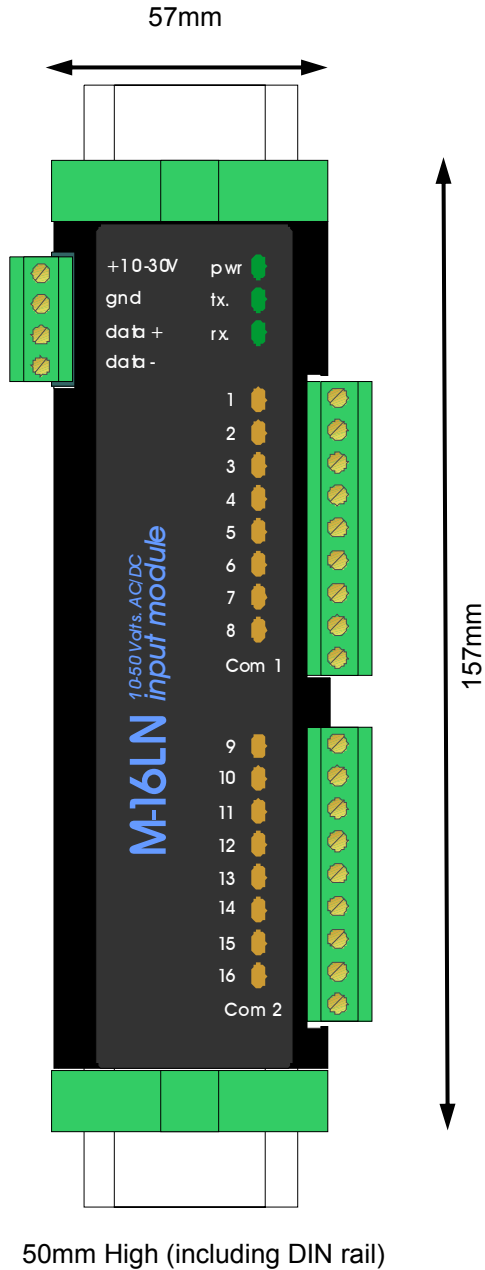
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AD2000 IO Expansion Module Specifications

16 point low voltage digital input module

Part Number M16-LN

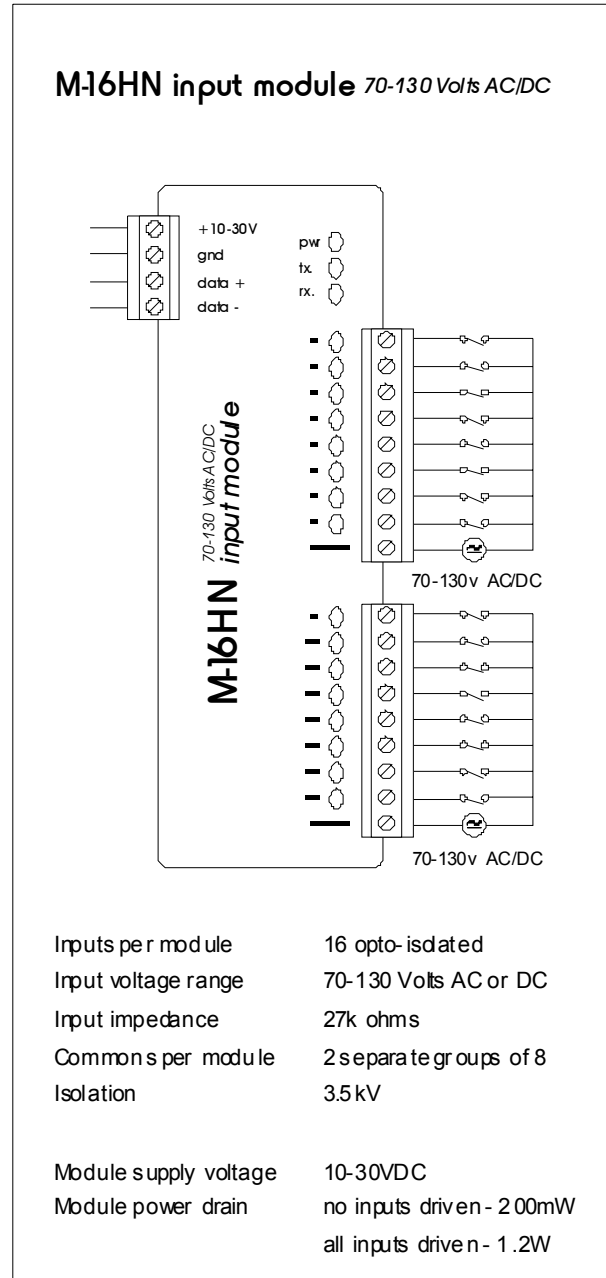
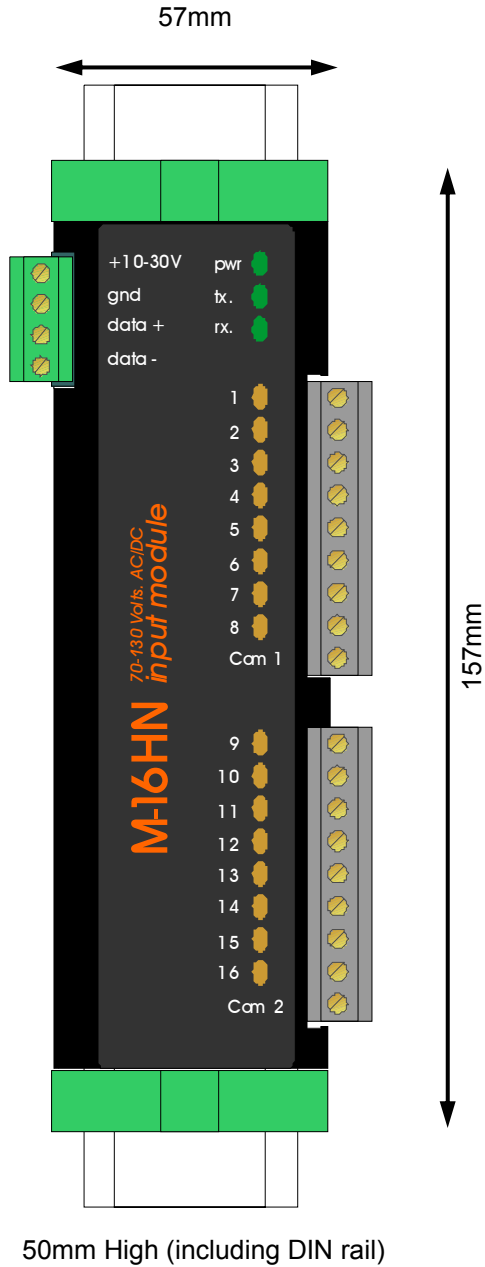


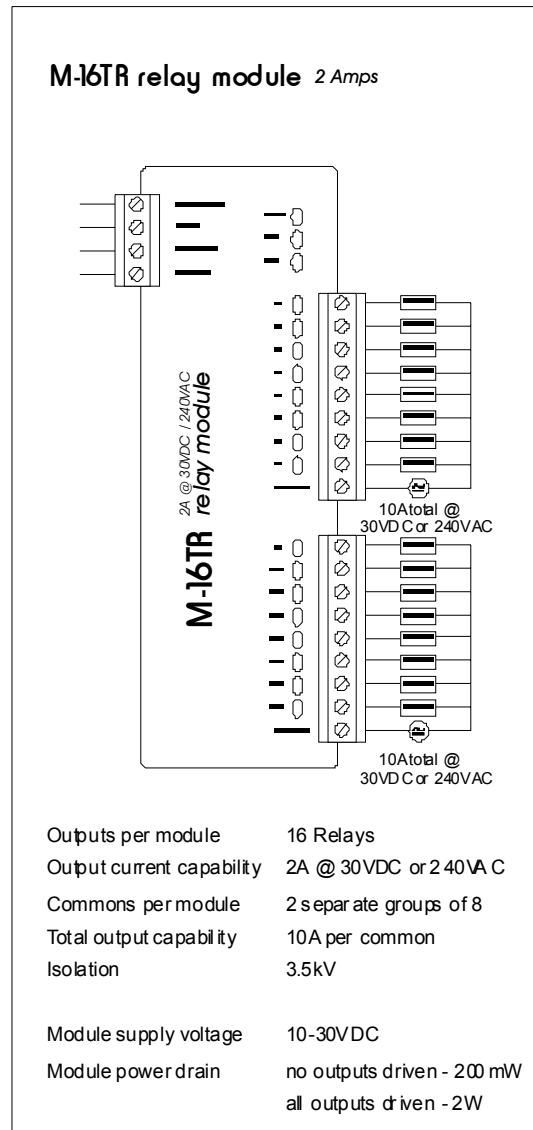
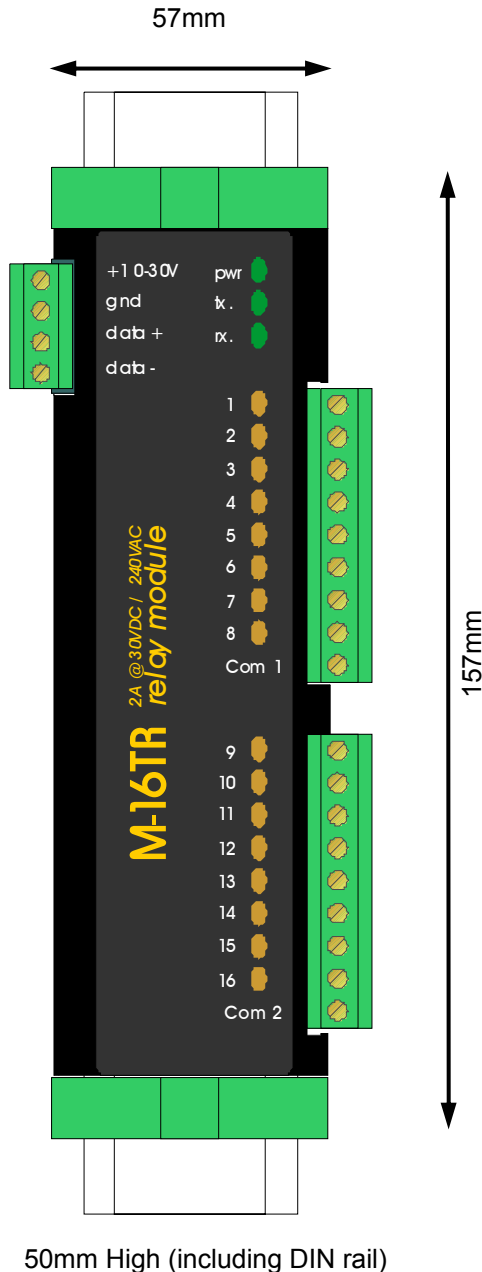
AD2000 IO Expansion Module Specifications

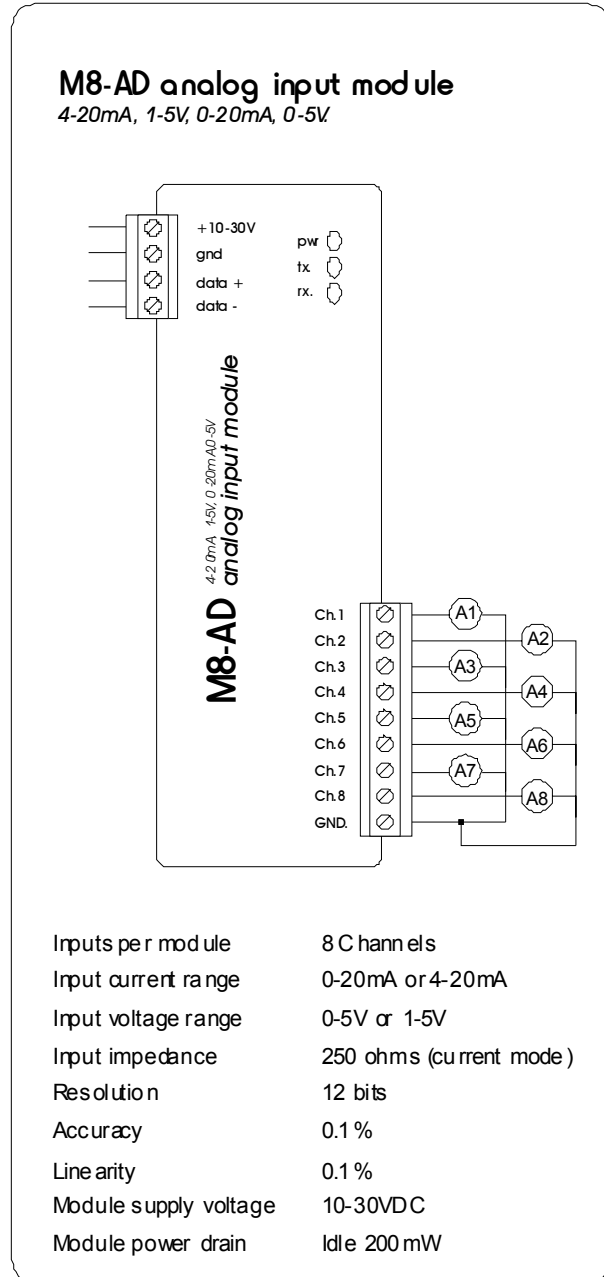
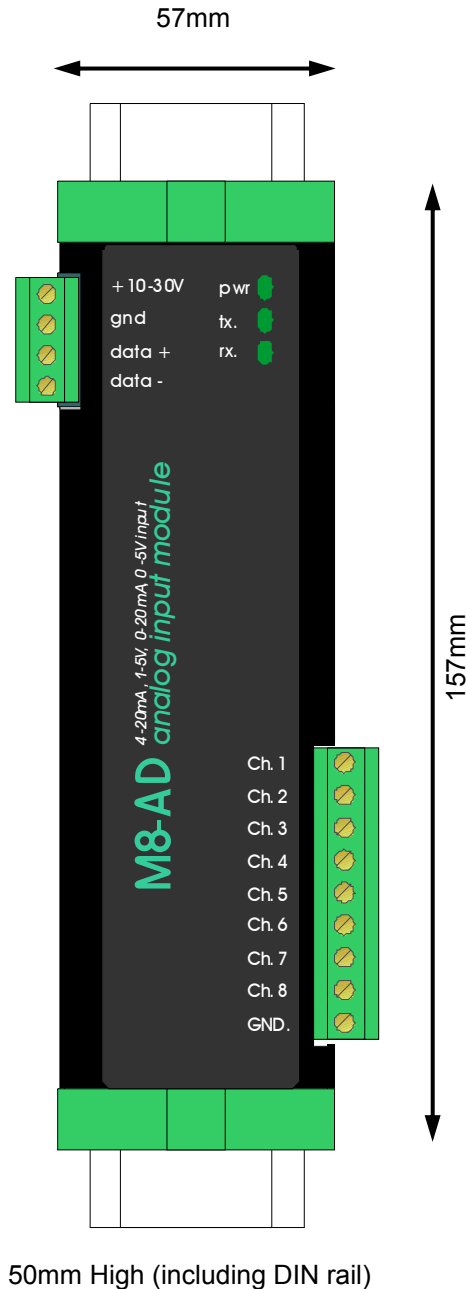
16 point high voltage digital input module

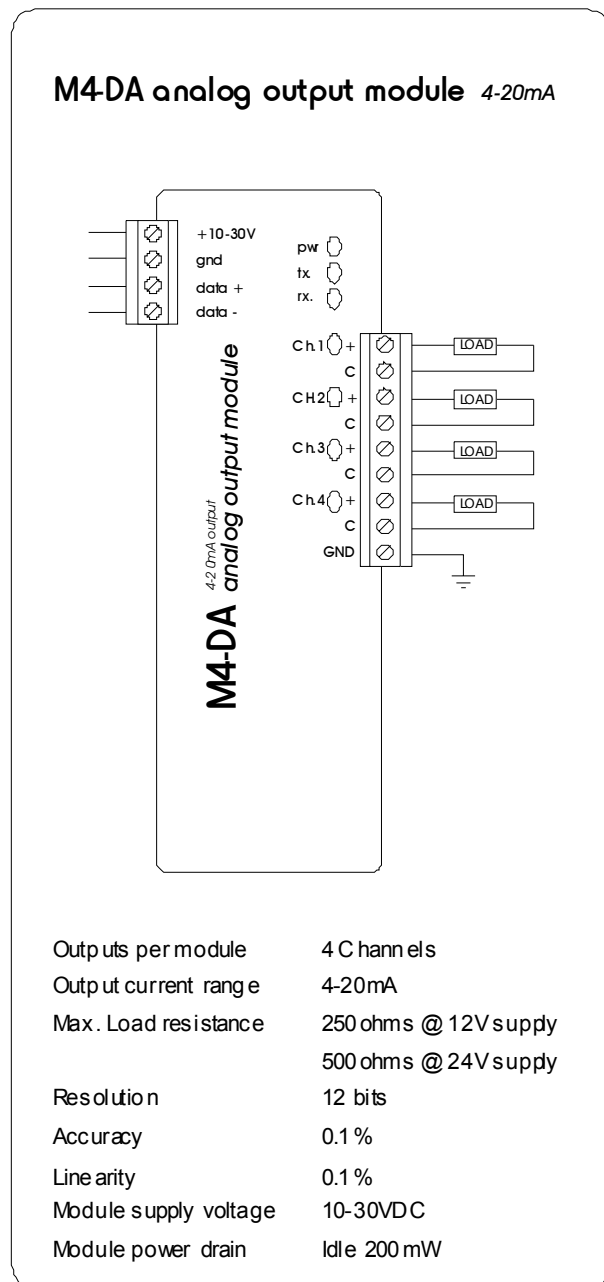
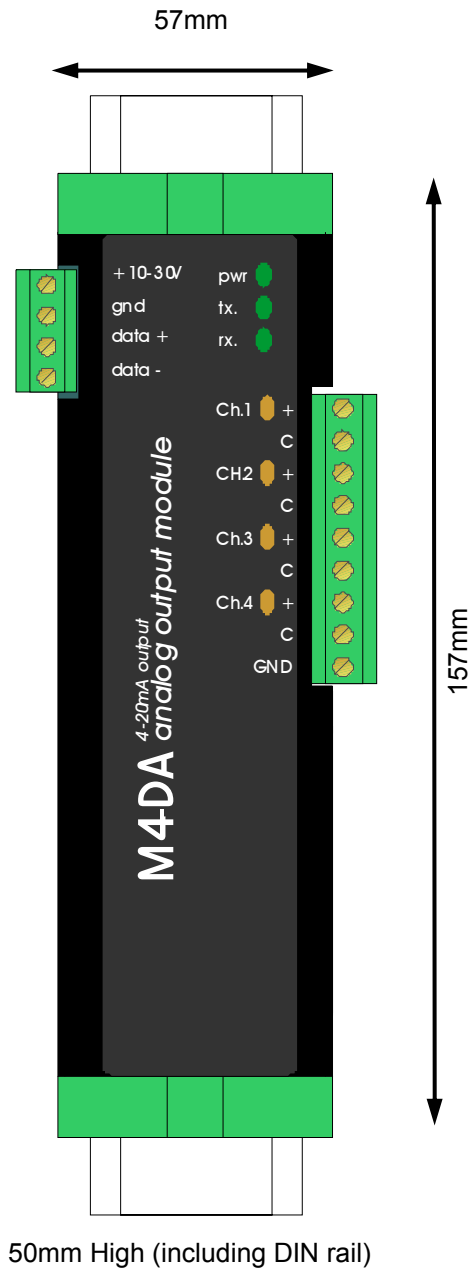
Part Number M16-HN

telemetry + control solutions





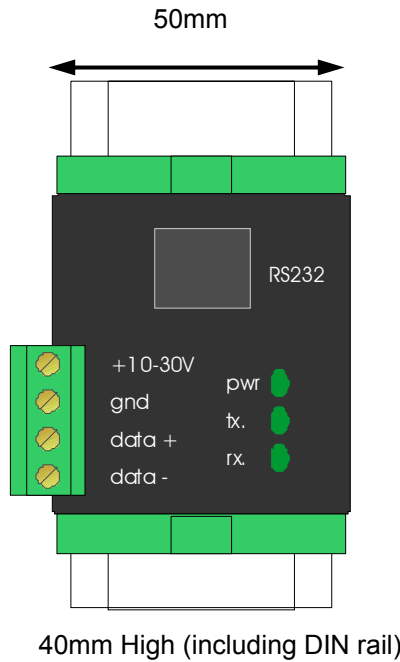




AD2000 IO Expansion Module Specifications

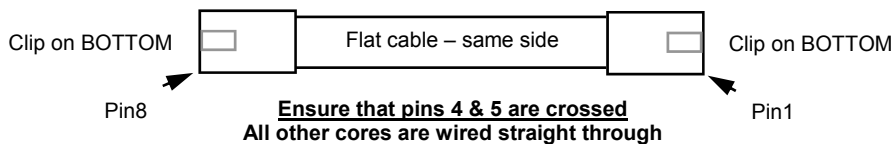
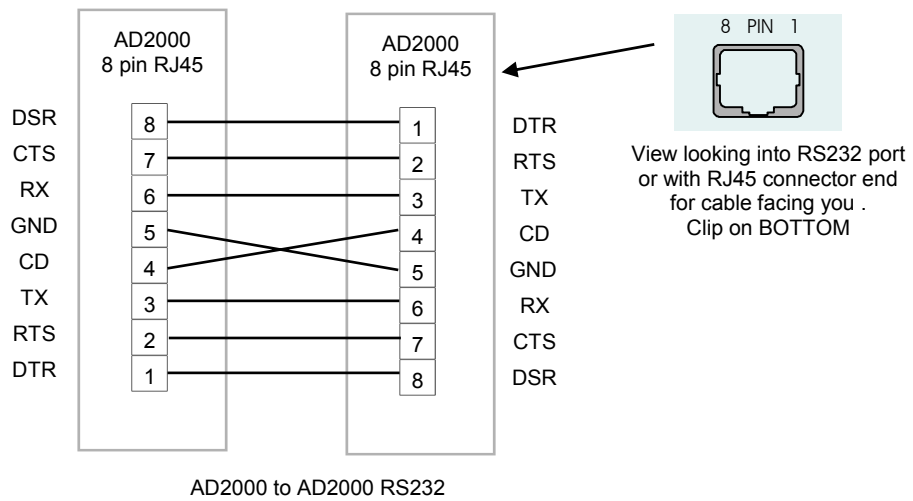
M232-485 RS232 to RS485 converter

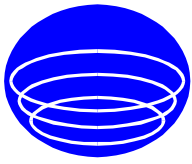
telemetry + control solutions



A 10-30VDC power supply is required for the M232-485 converter. This can be the same power supply as used by the IO Expansion modules.

See the following diagram for cable wiring detail between the AD2000 and the M232-485 converter.



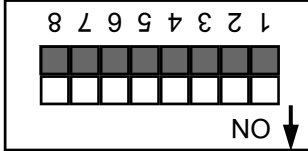


AD2000 IO Expansion Module Specifications DIP Switch settings

OVAL

The DIP switch settings are drawn as seen looking into the END of the IO Expansion module (hence they are drawn upside down)

■ Shaded indicates DIP switch position



- 1 – 2 Baud Rate
- 3 – Protocol
- 4 – 8 Unit Address

2 1

- 1 OFF, 2 OFF – 9600
- 1 ON, 2 OFF – 38400
- 1 OFF, 2 ON – 57600
- 1 ON, 2 ON – 115200

NO ↓

3

- 3 OFF, Default Protocol*
- 3 ON, Modbus RTU**

NO ↓

* Use the Default protocol setting for use with the AD2000 Programming software package.

** Modbus RTU is available for use with other devices as required (and all IO points are mapped to Holding Register 1 for read and write (input and output) devices, e.g. Modbus address 40001.

8 7 6 5 4 [Switches] 8 7 6 5 4	Address=1	8 7 6 5 4 [Switches] 8 7 6 5 4	Address=17
8 7 6 5 4 [Switches] 8 7 6 5 4	Address=2	8 7 6 5 4 [Switches] 8 7 6 5 4	Address=18
8 7 6 5 4 [Switches] 8 7 6 5 4	Address=3	8 7 6 5 4 [Switches] 8 7 6 5 4	Address=19
8 7 6 5 4 [Switches] 8 7 6 5 4	Address=4	8 7 6 5 4 [Switches] 8 7 6 5 4	Address=20
8 7 6 5 4 [Switches] 8 7 6 5 4	Address=5	8 7 6 5 4 [Switches] 8 7 6 5 4	Address=21
8 7 6 5 4 [Switches] 8 7 6 5 4	Address=6	8 7 6 5 4 [Switches] 8 7 6 5 4	Address=22
8 7 6 5 4 [Switches] 8 7 6 5 4	Address=7	8 7 6 5 4 [Switches] 8 7 6 5 4	Address=23
8 7 6 5 4 [Switches] 8 7 6 5 4	Address=8	8 7 6 5 4 [Switches] 8 7 6 5 4	Address=24
8 7 6 5 4 [Switches] 8 7 6 5 4	Address=9	8 7 6 5 4 [Switches] 8 7 6 5 4	Address=25
8 7 6 5 4 [Switches] 8 7 6 5 4	Address=10	8 7 6 5 4 [Switches] 8 7 6 5 4	Address=26
8 7 6 5 4 [Switches] 8 7 6 5 4	Address=11	8 7 6 5 4 [Switches] 8 7 6 5 4	Address=27
8 7 6 5 4 [Switches] 8 7 6 5 4	Address=12	8 7 6 5 4 [Switches] 8 7 6 5 4	Address=28
8 7 6 5 4 [Switches] 8 7 6 5 4	Address=13	8 7 6 5 4 [Switches] 8 7 6 5 4	Address=29
8 7 6 5 4 [Switches] 8 7 6 5 4	Address=14	8 7 6 5 4 [Switches] 8 7 6 5 4	Address=30
8 7 6 5 4 [Switches] 8 7 6 5 4	Address=15	8 7 6 5 4 [Switches] 8 7 6 5 4	Address=31
8 7 6 5 4 [Switches] 8 7 6 5 4	Address=16	8 7 6 5 4 [Switches] 8 7 6 5 4	Address=32

NO ↓

NO ↓

telemetry + control solutions



AD2000 IO Expansion Module Specifications Typical Wiring layout and Arrangement

telemetry + control solutions

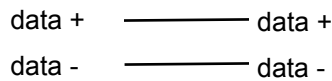
One M232-485 converter is required between the AD2000 port and the IO Expansion modules to convert between RS232 and RS485 signals. RTS control must be available on the RS232 port for correct operation.

The AD2000 port must be configured in the configuration software Port Properties with the interface set to:

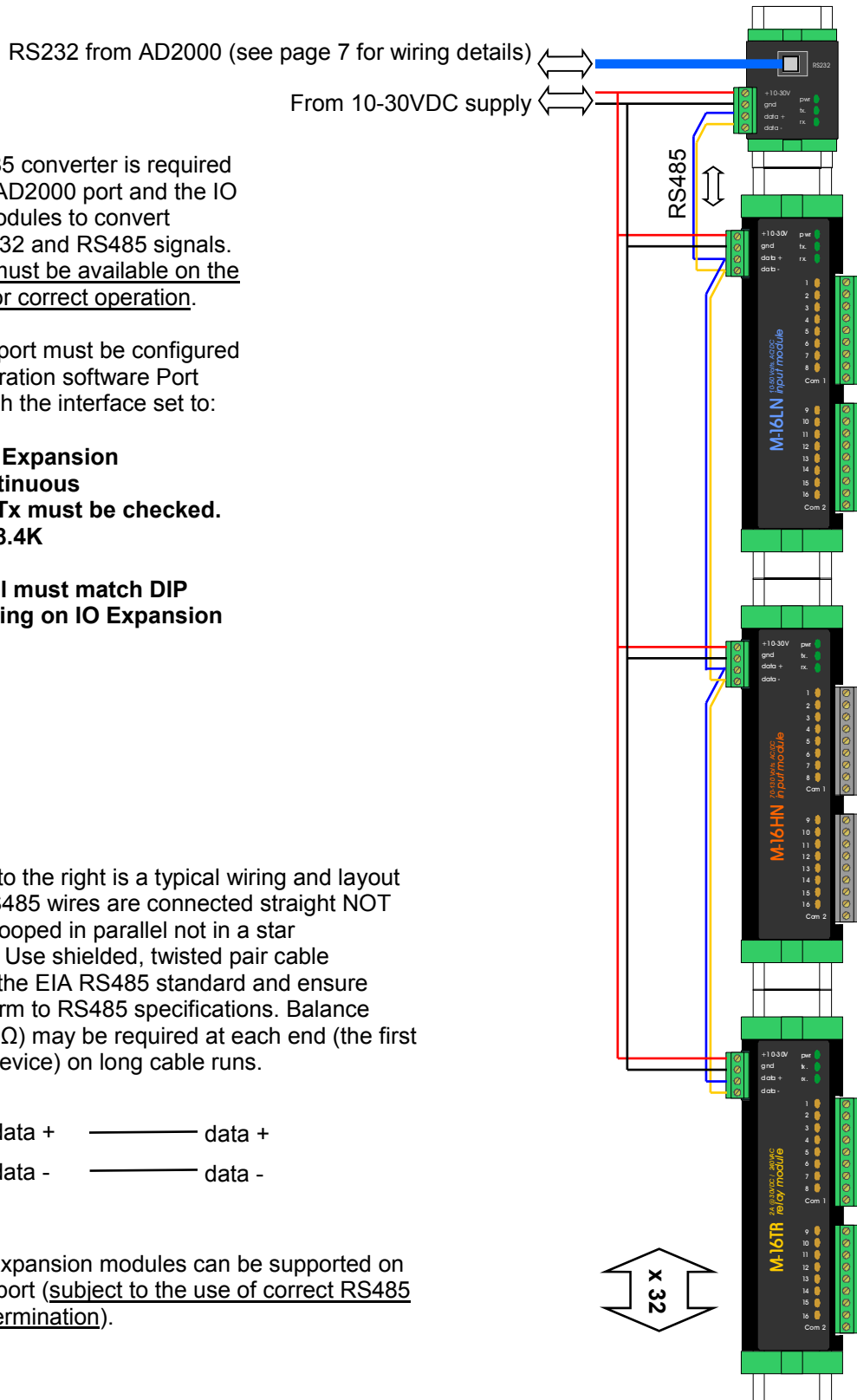
Interface: IO Expansion
Polling: Continuous
RTS During Tx must be checked.
Baud Rate 38.4K

N.B. Protocol must match DIP switch 3 setting on IO Expansion module.

The diagram to the right is a typical wiring and layout diagram – RS485 wires are connected straight NOT crossed and looped in parallel not in a star arrangement. Use shielded, twisted pair cable complying to the EIA RS485 standard and ensure lengths conform to RS485 specifications. Balance resistors (220Ω) may be required at each end (the first and the last device) on long cable runs.



Up to 32 IO Expansion modules can be supported on one AD2000 port (subject to the use of correct RS485 cabling and termination).





Itech Control and Engineering Ltd.

16 Digital Inputs

There are two ranges of input voltage available :-

10 - 50 Volts AC/DC	Impedance 10k
50 -130 Volts AC/DC	Impedance 47k

All inputs are optically isolated to 2.5kV

Pulse Inputs

All Digital Inputs can operate as pulse counters. The first input is referred to the supply common and acts as a fast pulse counter.

Input #1 Counter to 5kHz. into 4k7
Inputs 2 - 16 Counter to 5hz.

8 Analog Inputs

The Analog Inputs are configurable as either :-

4 - 20mA / 1 - 5 Volts	Resolution - 12 bits
0 - 20 mA / 0 - 5 Volts	Accuracy - 0.1%
0 - 1 Volt	Linearity - 0.1%

4 Digital Outputs

The Digital Outputs can be configured as either :-

Isolated Relays	2 form A 2 form C 5 Amps @ 30VDC or 240VAC
Isolated or common ground transistors.	Vcc max.- 35VDC Current - 100mA Isolation 2.5kV.

4 Analog Outputs

The last four analog channels can be configured as outputs in 4 - 20mA form :-

Max. load resistance - 250 ohms
Resolution - 16 bits
Accuracy - 0.1%
Linearity - 0.1%

Please note that the Analog Output facility is an optional extra and is not included in the standard model.

AD2000 Specifications

Communications

Internal Radio

450 - 460MHz band
471MHz band
800 - 900MHz band

Modulation is FFSK 2400 or 4800 baud.
Others frequency bands available on request.

External Radio

4 wire FFSK interface 2400 or 4800 baud
or RS232 interface to 38.4 kb

RS232 Port

RS232 interface to 38.4kb via any supported protocol.

PCMCIA Port

Supports :-
Dial-up Modem
Additional Serial Interface card
Ethernet (UDP & TCP/IP)

Protocols

The AD 2000 supports many standard third party products and protocols including :-

Allen Bradley AB5 & SLC500 (DF1)

DNP3

GE Fanuc CCM

Greenspan Smart Sensor

Koyo 205, 305, 405.

Modbus

SDI-12

Simatic 305,405

TI 305, 405, 505.

TI Task Codes (545)

Custom requirements may be accommodated on request.

General

Power Supply

10.5 - 15 Volts DC (24VDC available)
200mA idling current (including data radio)
1.5A max. peak current on transmit.

Operating Temperature

-10 to +70 degrees C.

Dimensions

202 x 178 x 60 mm
(Mounting by custom plate supplied)

Weight

960 grams (including data radio)