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# Technical information

## General

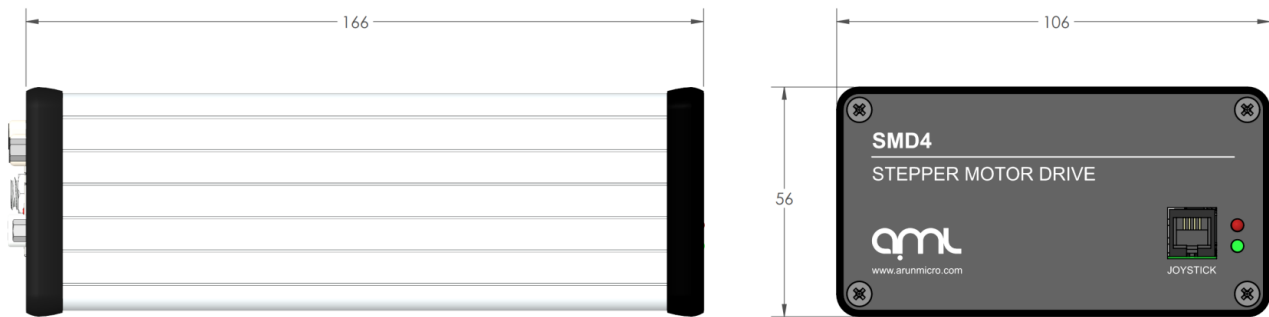
| General            |  |
|--------------------|--|
| Dimensions         | 166 mm x 106 mm x 56 mm<br>(excluding connectors and feet)   |
| Weight             | 0.5 kg   |
| Protection class   | IP 20  |
| Temperature        | Operation 10°C to 60°C,<br>Storage -10°C to 85°C   |
| Power requirements | 48 Vdc $\pm$ 5%<br>Power supply is included.   |
| Power consumption  | 48 W max.  |
| Safety compliance  | EN 61010-1-2010  |
| EMC compliance     | Emissions EN61800-3:2018, EN55032 Class B,<br>3m (As 61800-3:2018, Table 17, Category C1,<br>first environment)<br>Immunities, EN55035, basic electromagnetic en-<br>vironment |
| Motor driver       |  |
| Type               | 2 phase bipolar stepper motor driver for 4-lead<br>motors  |
| Phase current      | Up to 1 A RMS, adjustable in 30 mA steps   |
| Source voltage     | 67 Vdc maximum<br>48 Vdc supply is boosted to 67 Vdc.<br>Boost function can be disabled if required.   |
| Resolution         | Full, 8, 16, 32, 64, 128, 256 micro-stepping<br>Stops on full step positions only, micro-stepping is<br>used for control of resonance and smoother step<br>transition.         |
| Step frequency     | 1 Hz to 15 kHz   |
| Protection         | Short to ground and phase to phase   |

| <b>Encoder (Where fitted)</b>   |   |
|---|---|
| Supported types   | Digital incremental and BiSS absolute   |
| Power   | 5V at 250 mA max. is available to power the encoder, protected by self-resetting fuse.  |
| Connection  | Female 26 way high density D-Sub.<br>Encoder connects via adapter cable according to encoder type.<br>Adapter cables for supported encoders are available from AML.     |
| Incremental encoder support   | Digital (RS422) incremental encoders having differential A, B and Z signals.<br><br>Single ended P and Q limits signals are supported.<br><br>Maximum clock rate 1 MHz. |
| Absolute encoder support  | 26 bit BiSS-C (support for other bit depths may be added via firmware update)   |
| <b>Motor temperature measurement</b>  |   |
| Type  | Selectable PT100 RTD or K-Type thermocouple   |
| Range   | -200°C to 240°C   |
| Accuracy  | ±15 °C for thermocouple, ±5 % for RTD   |
| Fault detection   | RTD: Open and short-circuit<br>Thermocouple: Open circuit only  |
| <b>Operating modes</b>  |   |
| <ul style="list-style-type: none"> <li>• Remote – Control and configure via USB, Ethernet or Serial</li> <li>• Step, Direction Enable (SDE) – For connection to an external motion controller or PLC</li> <li>• Bake – Programmed cycle to heat the motor while stopped to drive off adsorbed gasses</li> </ul> |   |
| <b>Control interfaces</b>   |   |
| USB   | USB 2.0 Full Speed via USB-C connector<br>Virtual COM port and firmware update interface  |
| Ethernet  | 10/100 Base-T, auto MDI-X, RJ45 8P8C connector<br>Telnet (port 11312)   |

|   |  |
|---|--|
| Serial communication                          | Selectable RS232 or RS485 mode (shared pins)<br>Dual RJ45 8P8C connectors allow daisy chaining multiple devices in RS485 mode<br>User selectable termination in RS485 mode<br>115200 default and maximum baud rate |
| <b>Software</b>                               |  |
| Compatibility                                 | Windows 10 or later  |
| API   | C# and Python APIs are available   |
| <b>SDE (step, direction enable) interface</b> |  |
| Type  | Optocoupled, common cathode  |
| Levels  | 3.3 Vdc to 5 Vdc maximum<br>Higher voltages require external current limiting resistor   |
| Maximum frequency                             | 2 MHz at 50% duty<br>Maximum full-step rate limited to 7.8 kHz for micro-step resolution of 256.   |
| <b>Limits</b>                                 |  |
| Quantity                                      | 2  |
| Compatible switch types                       | Mechanical NO or NC (polarity selectable)  |
| Protection                                    | Withstands continuous short to 12 V maximum  |
| <b>Joystick</b>                               |  |
| Connection                                    | Front panel mounted 4P4C jack with auto-detection of connection state  |
| Input type                                    | Active low, short to ground to activate function   |
| Miscellaneous                                 | Open circuit voltage 3.3 V, source current < 3.5 mA  |

## Mechanical

All dimensions are in millimetres.



## Scope of delivery

| Qty. | Item                          |
|------|-------------------------------|
| 1    | SMD4                          |
| 1    | USB Type-A to USB Type-C lead |
| 1    | Power supply                  |

## Accessories

The following accessory items are available from AML.

| Order Code  | Item   |
|-------------|--|
| SMD3JOY     | Joystick (compatible with SMD4)  |
| CAB-D15D9   | SMD4 Motor Cable, 3m, D-Sub 15 Male to D-Sub 9 Female                    |
| CAB-D15MLF  | SMD4 Motor Cable, 3m, D-Sub 15 Male to MLF18                             |
| CAB-3D15MLF | SMD4 Motor Cable, 3m, 3X D-Sub 15 Male to MLF18                          |
| CAB-D26D15  | SMD4 Encoder Cable, Incremental, 3m, HD D-Sub 26 Male to D-Sub 15 Female |
| CAB-D26D9   | SMD4 Encoder Cable, Absolute, 3m, HD D-Sub 26 Male to D-Sub 9 Female     |