Data sheet
L-9517-9834-02-A

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Advanced Diagnostic Tool ADTa-100



The ADTa-100 (A-6525-0100) is a set-up tool and diagnostic accessory specifically designed to be used with Renishaw absolute encoder products. It also allows for writing a new zero position [1].

It can be used in a stand-alone mode or in conjunction with a PC [2] running the ADT View software [3].

Function	Signal		Encoder input pins
Power	5 V		4, 5
	0 V		8, 9
Serial communications	REQ/SD	+	2
		–	3
Shield (case)	Outer		Cable screen
Not connected	-		1, 6, 7

1 The write zero command is available only for BiSS C, Yaskawa and Panasonic serial interfaces.

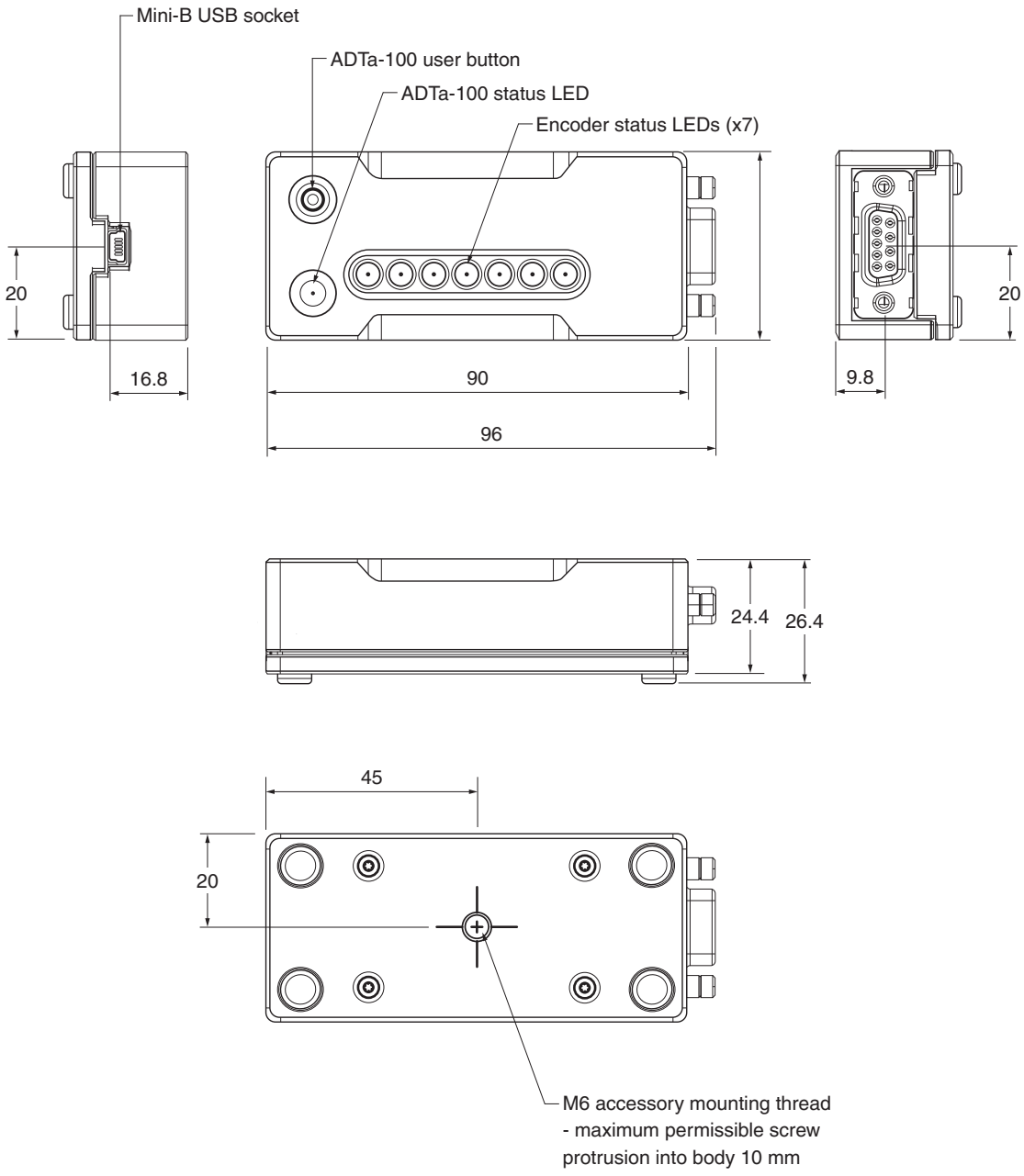
2 Supported operating systems: Windows® 10 (x86 or x64) or Windows 11 (x64).

3 Free ADT View software download is available directly from www.renishaw.com/adt.

ADTa-100 drawing

Dimensions and tolerances in mm





General specifications

Power	5V ±10%	Typically < 340 mA (ADTa-100 and readhead)
		Power from a 5 Vdc supply complying with the requirements for SELV of standard IEC 60950-1 or via PC's USB port
	Typical power consumption	< 1.25 W
	Ripple	200 mVpp maximum @ frequency up to 500 kHz
Temperature	Storage	–20 °C to +70 °C
	Operating	0 °C to +55 °C
Humidity		95% relative humidity (non-condensing) to IEC 60068-2-78
Sealing		IP20
Shock	Operating	500 m/s², 11 ms, ½ sine, 3 axes
Vibration	Operating	Sinusoidal 40 m/s² max @ 55 Hz to 2000 Hz
Mass		155 g
EMC compliance		IEC 61326-1

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ADT and accessory part numbers

Part description	Part number	Product image
ADTa-100	A-6525-0100	
USB cable (ADTa-100 to PC)	A-9572-0098	
ADT View software	Free to download from www.renishaw.com/adt	

Adaptor cables

Adaptor cables enable readheads with different terminations to be connected to the 9-way D-type input of the ADTa-100.

Readhead termination	Pin-out	Cable length (m)	Part number
H	20-way Honda (FANUC)	0.5 m	AA-0050-HAX
		3 m	AA-0300-HAX
N	15-way D-type	0.5 m	AA-0050-NAX
		3 m	AA-0300-NAX
P	10-way 3M (Mitsubishi)	0.5 m	AA-0050-PAX
		3 m	AA-0300-PAX
L	14-way LEMO	0.5 m	AA-0050-LAX
		3 m	AA-0300-LAX
Y	6-way Molex	0.5 m	AA-0050-YAX
		3 m	AA-0300-YAX
S	8-way M12	0.5 m	AA-0050-SAX
		3 m	AA-0300-SAX

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L-9517-9699-04-B

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ADTi-100 Advanced Diagnostic Tool





The ADTi-100 Advanced Diagnostic Tool acquires comprehensive real-time data from Renishaw's QUANTiC™, VIONiC™ and ATOM DX™ encoders, aiding installation and diagnostics, as well as allowing system optimisation. This information is displayed via the user-friendly Renishaw ADT View software [1] interface on a Windows™ tablet or PC.

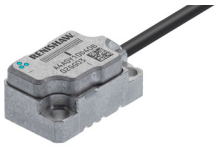
The set-up LED on the readhead is generally sufficient for setting up the encoder but Advanced Diagnostic Tools can be used to aid more challenging installations. The ADTi-100, in conjunction with ADT View, displays diagnostic information from the encoders, such as signal strength vs position along the axis, and can save this data in standard file formats such as CSV. This allows system performance to be tracked, assisting in planning scheduled preventative maintenance and system fault-finding, therefore helping avoid lengthy unplanned machine downtime.

The ADTi-100 can be connected in-line between an incremental encoder readhead and the motion controller to give continuous encoder data feedback in real time.

[1] Free ADT View software download is available directly from www.renishaw.com/adt.

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Compatible readheads

	QUANTiC	VIONiC	ATOM DX
			
Output	Analogue 1 Vpp. Digital resolutions from 10 µm to 50 nm.	Digital resolutions from 5 µm to 2.5 nm.	Digital resolutions from 10 µm to 5 nm
Readhead size (Length × Width × Height)	35 mm x 13.5 mm x 10 mm	35 mm x 13.5 mm x 10 mm	Cabled variant: 20.5 × 12.7 × 10.85 Top exit variant: 20.5 × 12.7 × 7.85
Pitch	40 µm	20 µm	20 µm or 40 µm
Sub-Divisional Error (typical)	Analogue: < ±120 nm Digital: < ±80 nm	< ±15 nm	20 µm version: < ±75 nm 40 µm version: < ±120 nm

ADTi-100 general specifications

Power supply	5 V –5%/+10%	Typical current consumption < 20 mA [1]
		The ADTi-100 can be powered from the USB port or an external 5 Vdc supply with the requirements for SELV of standard IEC 60950-1
	Ripple	200 mVpp maximum @ frequency up to 500 kHz
Temperature	Storage	–20 °C to +70 °C
	Operating	0 °C to +55 °C
Humidity		95% relative humidity (non-condensing) to IEC 60068-2-78
Sealing		IP20
Shock	Operating	500 m/s², 11 ms, ½ sine, 3 axes
Vibration	Operating	Sinusoidal 40 m/s² max @ 55 Hz to 2000 Hz, 3 axes
Mass		110 g
EMC compliance		IEC 61326-1: 2013

Minimum PC requirements

- Supported operating systems: Windows® 10 (x86 or x64) or Windows 11 (x64).
- Quad-core 1.44-1.92 GHz processor
- 2 GB DDR3 RAM
- 5 GB disk space (including 2.5 GB for .NET)
- 500 MHz GPU capable of 1024 x 600 resolution or higher

[1] For the current consumption of the encoder system refer to the relevant data sheet.

ADTi-100 pinouts

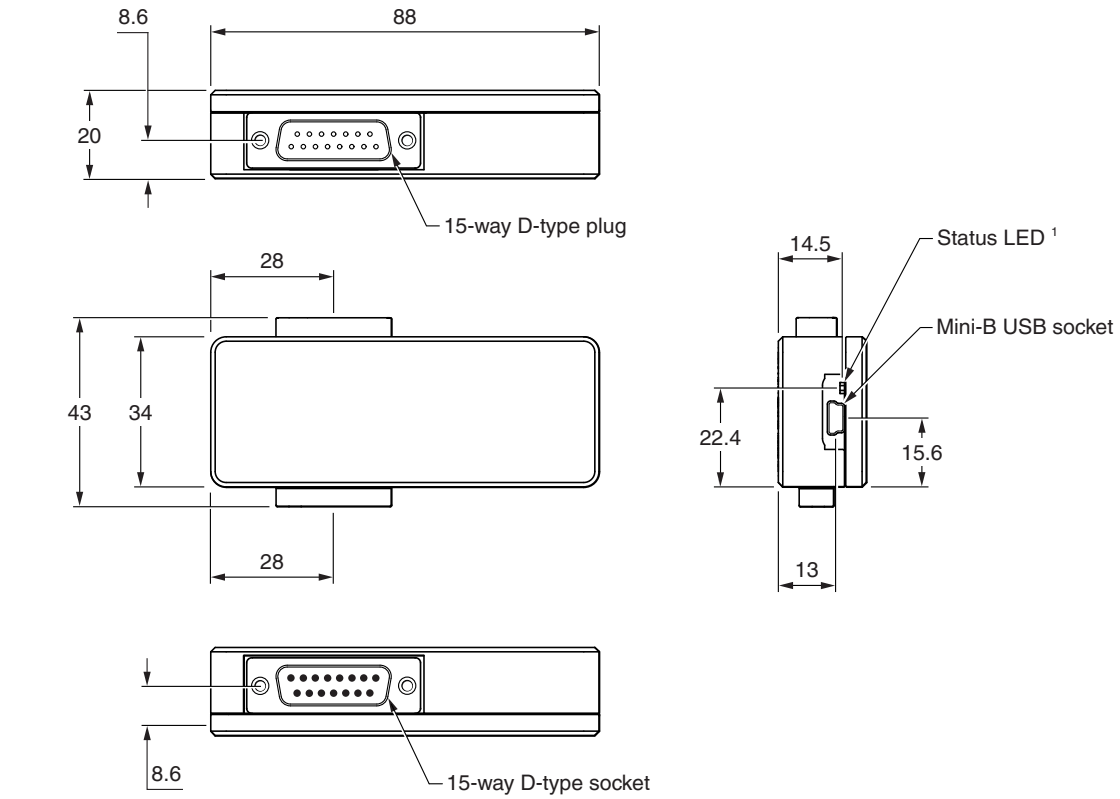
Function	Signal		Input pins (15-way D-type socket)	Output pins (15-way D-type plug)
Power	5 V		7, 8	7, 8
	0 V		2, 9	2, 9
Incremental	A	+	14	14
		–	6	6
	B	+	13	13
		–	5	5
Reference mark	Z	+	12	12
		–	4	4
Limits [1]	P		11	11
	Q		10	10
Alarm	E	–	3	3
CAL/Comms	CAL		1	-
Not connected	-		15	15
Shield	-		Case	Case

NOTE: Adaptor cables required when connecting the analogue variant of QUANTiC.

[1] Limits are not available with ATOM DX systems.

ADTi-100 dimension drawing

Dimensions and tolerances in mm



[1] **Status LED indication:**
Red - ADT connected to controller or PC.
Green - ADT View software communicating with ADT.

ADTi-100 and accessory part numbers

Part description	Part number	Product image
ADTi-100	A-6195-0100	
USB cable Connects the ADTi-100 to a PC	A-9572-0098	
ADT View software	Free to download from www.renishaw.com/adt	

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Adaptor cables

The listed adaptor cables enable readheads with different terminations to be connected to the 15-way D-type input of the ADTi-100. Each kit consists of two cables. One connects the readhead cable to the ADTi-100. The other, if required, connects the ADTi-100 to the controller cable.

Digital readheads

Readhead cable termination [1]	Pin-out	Part number
D	15-way D-type (standard pin-out)	The readhead plugs directly into the ADTi-100.
A	9-way D-type	A-6195-0102
K	10-way JST	A-6195-2074
H	15-way D-type (alternative pin-out)	A-6195-0103
X	12-way circular	A-6195-0104
J	14-way JST	A-6195-2073

Analogue readheads

NOTE: The ADT will require 120 Ω termination. This must be provided by, either the controller, or the termination tool. Refer to the *Advanced Diagnostic Tools and ADT View software* user guide (Renishaw part no. M-6195-9413) for more information.

Readhead cable termination [1]	Pin-out	Part number
L	15-way D-type (standard pin-out)	A-6637-1540
H	15-way D-type (alternative pin-out)	A-6637-1560
J	14-way JST	A-6195-2073

Part description	Product image	Part number
Termination tool For use with the analogue variant of QUANTiC		A-6195-2132

[1] Determined from readhead nomenclature. Refer to the relevant readhead series data sheet for full readhead nomenclatures.

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