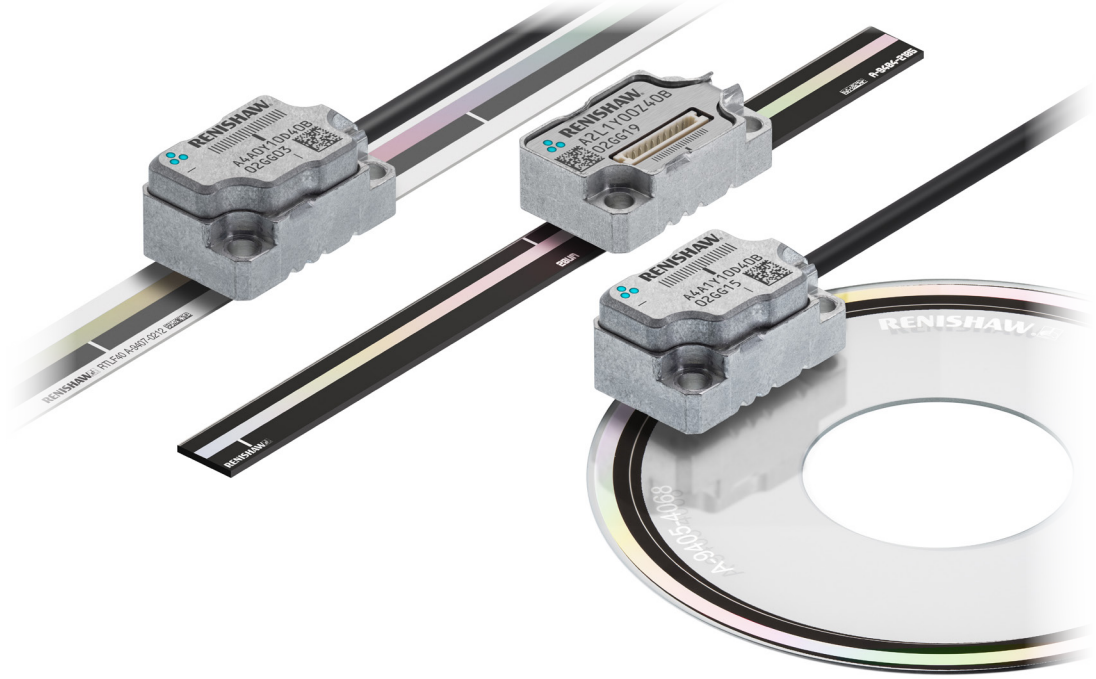
Data sheet
L-9517-9736-05-A

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ATOM DX™ miniature encoder system



The ATOM DX™ encoder series is Renishaw's smallest incremental optical encoder with digital output direct from the readhead, providing positional feedback, onboard interpolation, and filtering optics all in a miniature package.

ATOM DX incorporates the market proven filtering optical system of the ATOM™ encoder series, and integrates Renishaw's high-performance interpolation technology, reducing system size and removing the need for additional adaptors and interfaces. This makes ATOM DX suitable for the most space constrained applications where performance cannot be compromised.

Constructed with Renishaw's integrated set-up LED for an intuitive and simple installation process based on the well-established auto-calibration routine, ATOM DX is ready to install straight from the box. It is compatible with the optional ADTi-100 Advanced Diagnostic Tool and ADT View software to give in-depth advanced diagnostic information to aid optimisation of encoder installation and in-field fault finding to satisfy the most demanding motion control applications.

ATOM DX can be used with the ATOM series of linear, partial arc and rotary scales to meet most application requirements.

- Miniature, all-in-one, digital output optical encoder with resolutions down to 2.5 nm
- Class leading signal stability and dirt immunity due to filtering optics
- Long-term stability provided by integral Auto Gain Control (AGC) and Auto Offset Control (AOC)
- Low sub-divisional error (SDE) and jitter
- Integrated set-up LED for ease of installation
- Maximum speed up to 20 m/s
  (3.63 m/s @ 0.1 µm resolution)
- Available in 20 µm and 40 µm scale pitch versions
- Range of high accuracy linear, partial arc and rotary scales with auto-phase bi-directional optical reference mark
- Optional Advanced Diagnostic Tool ADTi-100 to optimize set-up and assist with system diagnostics
- Available in two variants; cabled and top exit, for the most demanding space constrained installations

www.renishaw.com/atomdxdownloads

#renishaw

System features

High performance

- **Performance in speed**

  ATOM DX encoders offer maximum speeds up to 20 m/s and a range of high-speed interpolation options.

- **Performance in scale**

  ATOM DX offers linear tape scales with specified overall accuracy to ±5 µm/m @20 °C, reducing the need for 2-point compensation.

- **Performance in velocity control**

  ATOM DX incorporates Renishaw's latest interpolation technology with updated signal processing algorithms to reduce sub-divisional error (SDE). This helps to reduce velocity ripple and improve closed loop feedback in motion control systems.

- **Performance in a miniature head**

  ATOM DX fits in to the smallest applications with heights as low as 7.85 mm. The top exit variant offers all the benefits and features of the cabled ATOM DX encoder, but in an even smaller package. The top exit variant is a component encoder with the cable assembly integrated separately to the readhead, making the ATOM DX top exit suitable for the smallest spaces.

- **Performance over contamination**

  ATOM DX features the proven filtering optics of the ATOM encoder range. This optical scheme is tuned to a specific spatial frequency, so it rejects other harmonics, including those caused by dirt or other contaminants. The result is a Lissajous with high purity, that retains its fidelity even when the scale is exposed to contamination: ideal for applications where reliability is critical.

Optional Advanced Diagnostic Tool ADTi-100





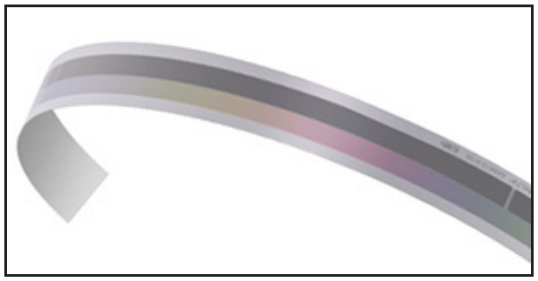
The ATOM DX encoder system is compatible with the Advanced Diagnostic Tool ADTi-100 and ADT View software, which provides comprehensive real-time encoder data feedback to aid more challenging installations and diagnostics. The intuitive software interface can be used for:

- Remote calibration
- Signal optimization over the entire axis length
- Reference mark indication
- Digital readout of encoder position (relative to scale)
- Monitoring velocity
- Exporting and saving data

Compatible scales

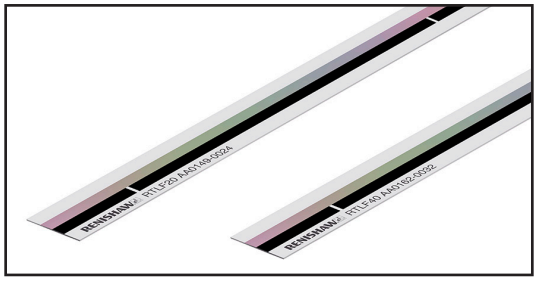
- **Stainless-steel tape scale (RKLF):**

  Self-adhesive mounted stainless steel tape scales that can be wrapped around drums, arcs or shafts with radii down to 26 mm.



- **Stainless-steel tape scale (RTLF):**

  High-accuracy scales with graduations directly marked onto the steel tape surface. Available on reels for cut-to-length convenience.



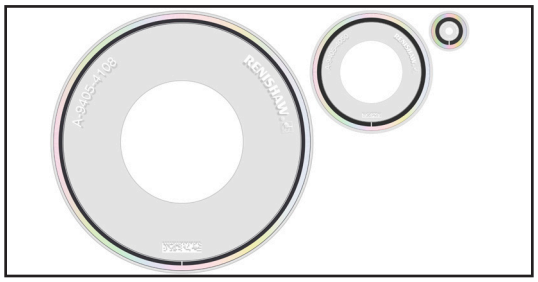
- **Glass linear spars (RCLC):**

  Conventional glass spars, available in lengths up to 130 mm.



- **Glass discs (RCDM):**

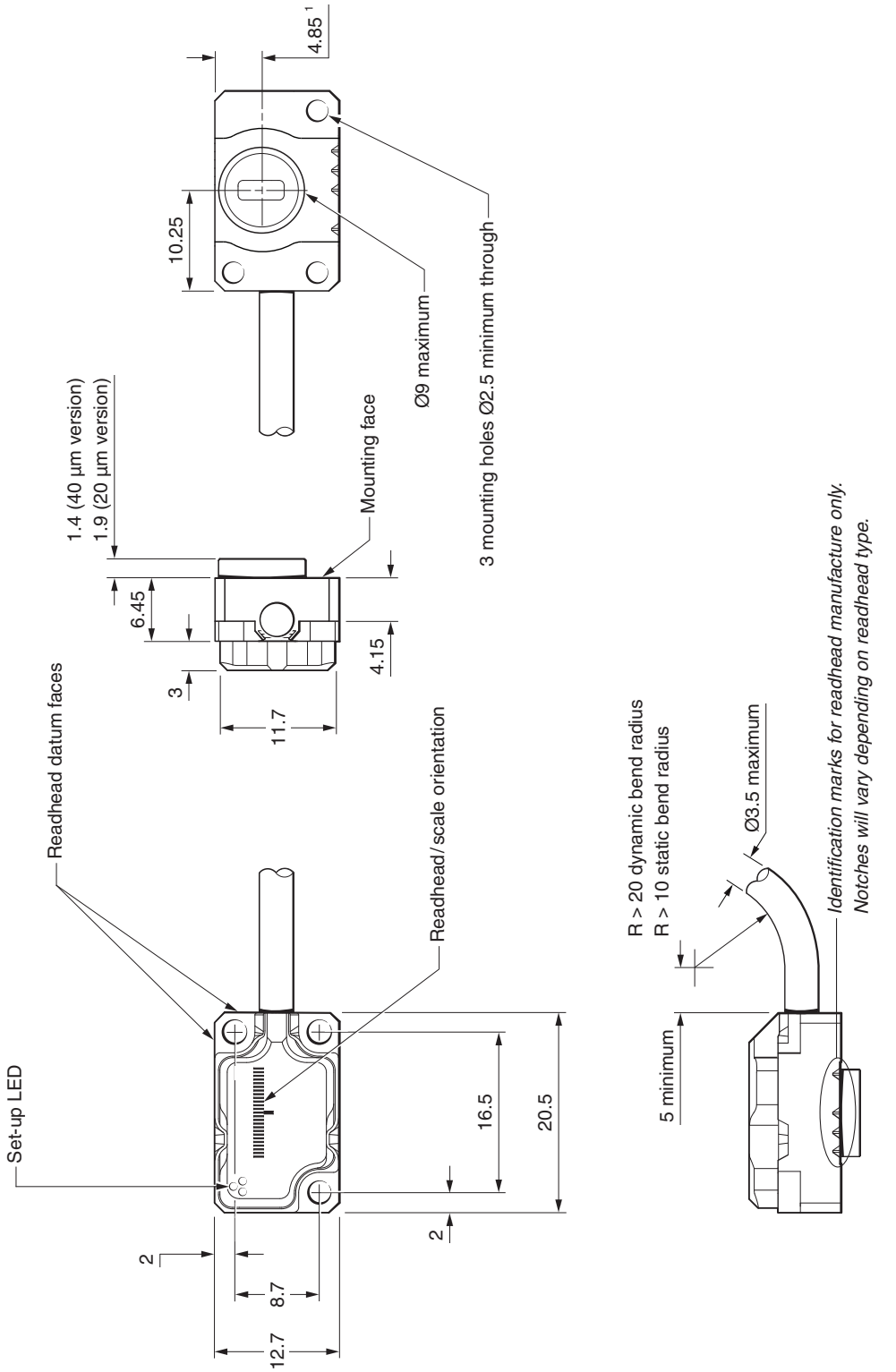
  High-accuracy rotary scales with outer diameters down to 17 mm.



ATOM DX cabled readhead dimensions

Dimensions and tolerances in mm



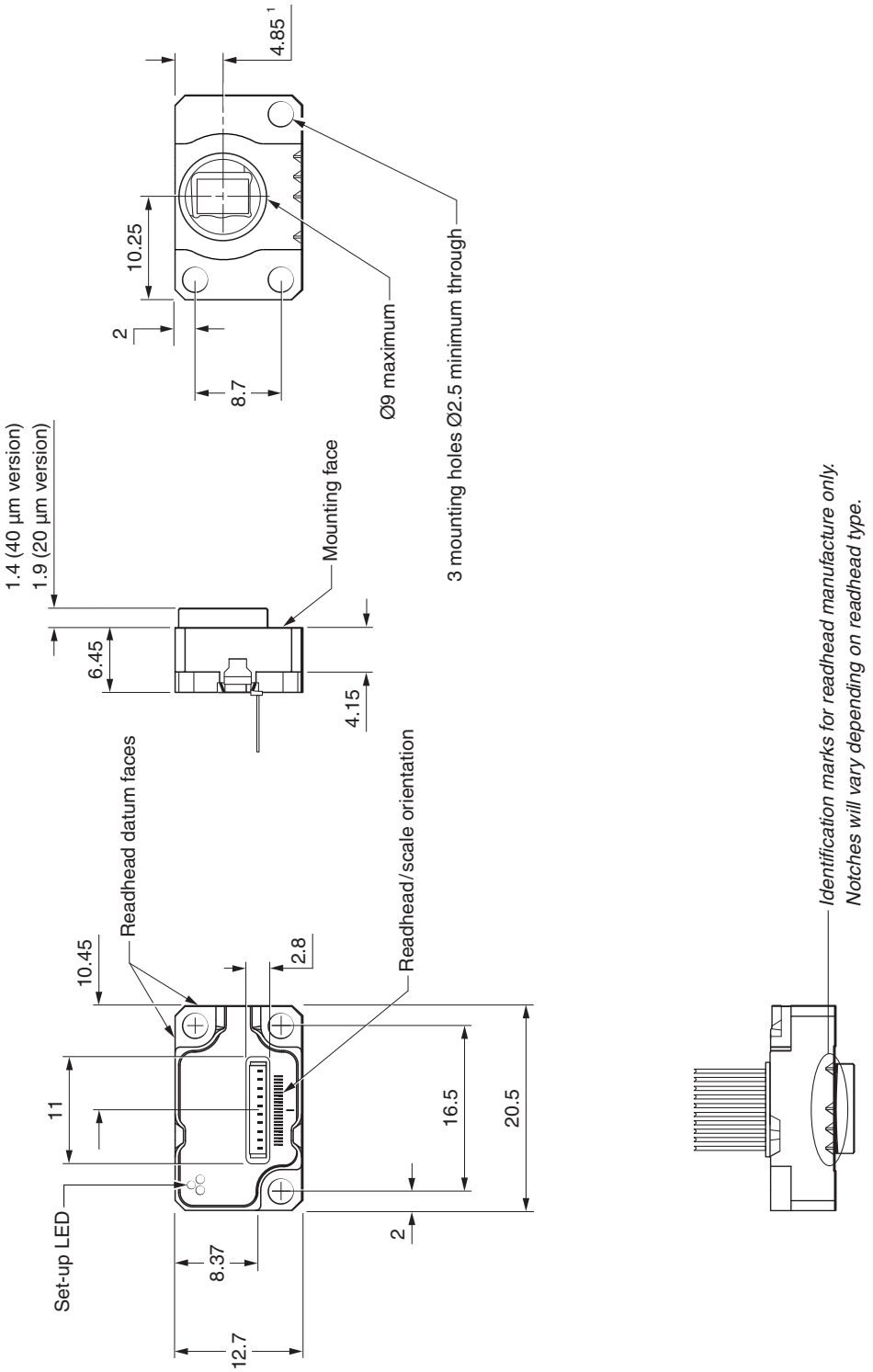


[1] Not the optical centreline.

ATOM DX top exit readhead dimensions

Dimensions and tolerances in mm





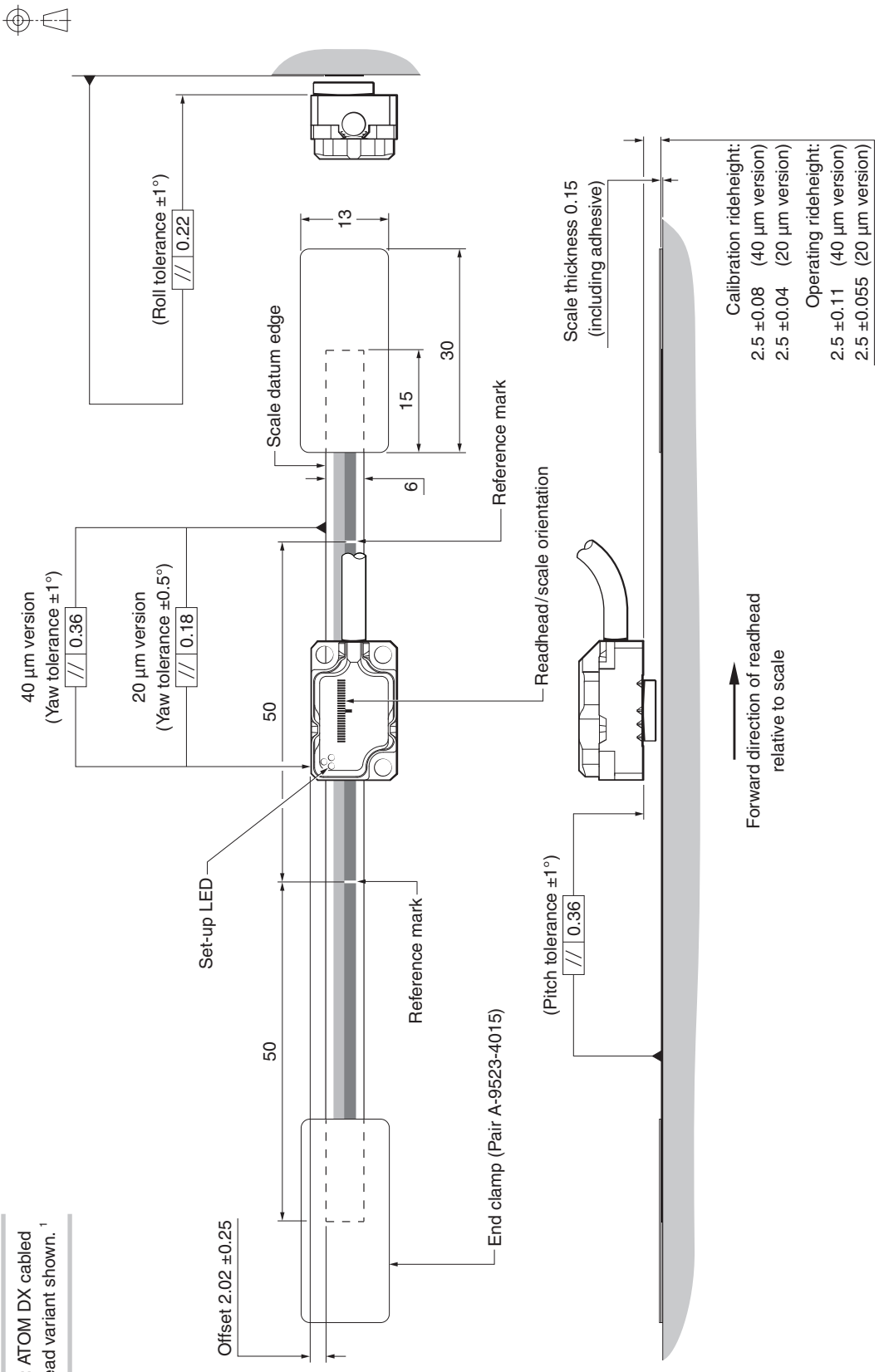
[1] Not the optical centreline.

General specifications

Power supply	5 V –5% /+10%	Typically < 200 mA fully terminated
		Power from a 5 Vdc supply complying 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 +70 °C
Humidity		95% relative humidity (non-condensing) to IEC 60068-2-78
Sealing		IP40
Acceleration (system)	Operating	400 m/s², 3 axes
Shock (system)	Operating	500 m/s², 11 ms, ½ sine, 3 axes
Vibration	Operating	100 m/s² max @ 55 Hz to 2000 Hz, 3 axes
Mass	Cabled readhead	3.2 g
	Top exit readhead	2.9 g
	Cable	18 g/m
EMC compliance		IEC 61326-1 (cabled readhead variant only)
Cable	Cabled readhead	10 core, high flex, EMI screened cable, outside diameter 3.5 mm maximum
		Flex life > 20 × 10^6 cycles at 20 mm bend radius, maximum length 3 m
		(Extension cable up to 25 m when using Renishaw approved extension cable)
		UL recognised component
	Top exit readhead	Cables available in lengths from 0.5 m to 3 m with 15-way D-type or 10-way JST (SH) connector options
Connector options	Cabled readhead	9-way D-type
		15-way D-type (standard and alternative pin-out)
		10-way JST (SH)
	Top exit readhead	10-way JST (SUR)
Typical sub-divisional error (SDE)	20 µm version	< ±75 nm
	40 µm version	< ±120 nm

RKLF tape scale installation drawing

Dimensions and tolerances in mm



NOTE: ATOM DX cabled readhead variant shown. [1]

For further information on the use of RKLF scale for partial arc applications, refer to the *RKL partial arc scale* data sheet (Renishaw part no. L-9517-9897).

[1] For readhead dimensions see pages 4 and 5.

RKLF tape scale technical specifications

Material		Hardened and tempered martensitic stainless steel fitted with a self-adhesive backing tape
Form (height × width)		0.15 mm × 6 mm (including adhesive)
Scale pitch [1]		20 µm and 40 µm
Reference mark		Auto-phase optical reference mark repeatable to unit of resolution throughout specified speed and temperature range Customer de-selectable reference marks at 50 mm spacing [2] Reference mark in the centre of scale for lengths < 100 mm
Accuracy (at 20 °C)	RKLF20-S/RKLF40H-S	±5 µm/m
	RKLF40-S	±15 µm/m
Linearity (at 20 °C)	RKLF20-S/RKLF40H-S	±2.5 µm/m achievable with two-point error correction
	RKLF40-S	±3 µm/m achievable with two-point error correction
Installation temperature [3]		+10 °C to +35 °C
Coefficient of thermal expansion (at 20 °C)		Matches that of substrate material when scale ends fixed by epoxy mounted end clamp
Length [4]		20 mm to 1 m in 10 mm increments 1 m to 10 m in 1 m increments Overall length = measuring length + 70 mm Scale length = measuring length + 40 mm
Mass		4.6 g/m
End fixing		Epoxy mounted end clamps (A-9523-4015) Approved epoxy adhesive (A-9531-0342) Scale end movement typically < 1 µm [5]

1 20 µm RKLF scale is not suitable for partial arc applications.

2 Only the selected reference mark is bi-directionally repeatable.

3 Ensure that the scale and end clamps are installed following the installation process described in the *ATOM DX™ linear encoder systems* installation guide (Renishaw part no. M-9414-9446).

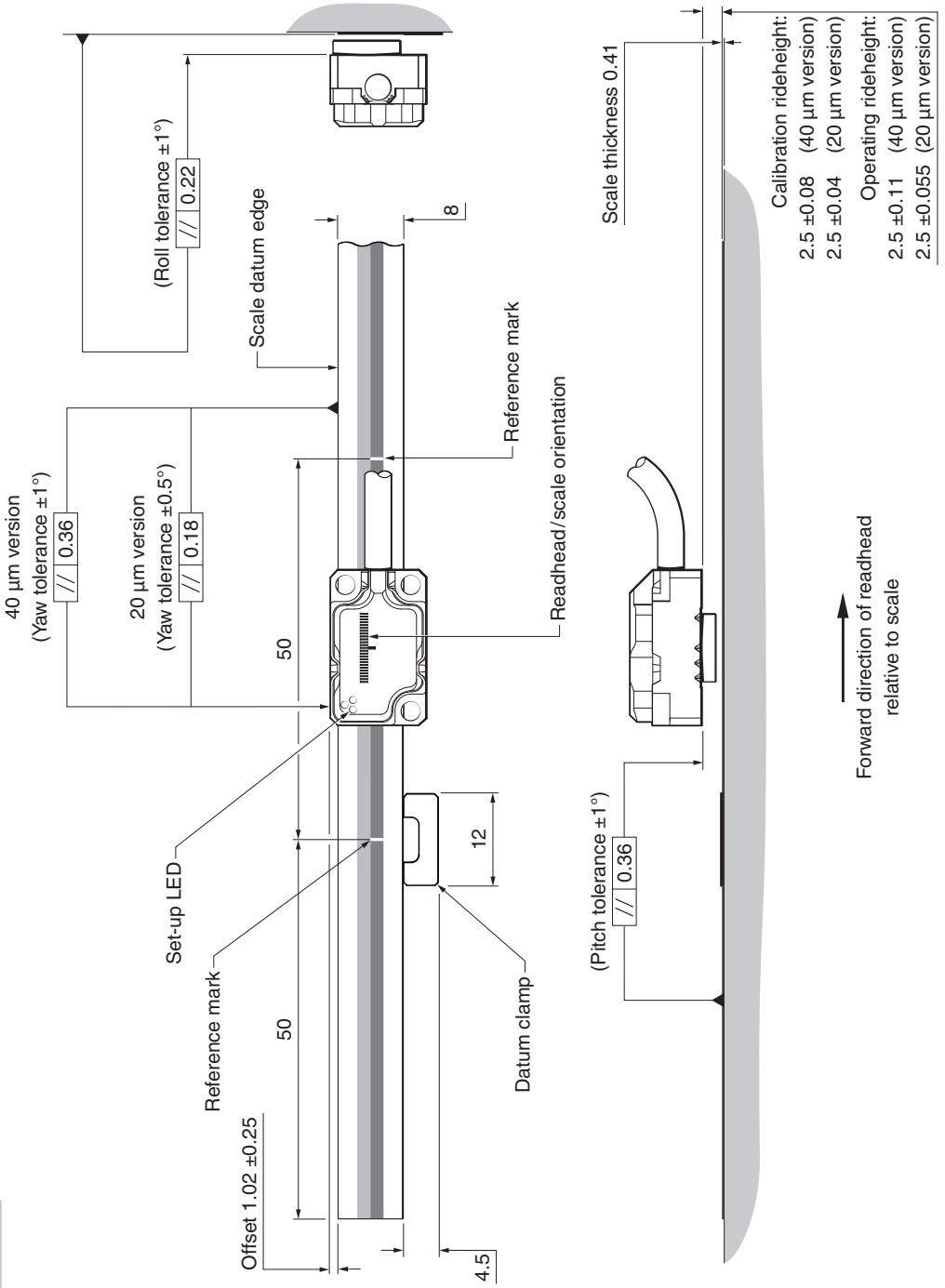
4 The maximum recommended axis length is 1 m for 20 µm RKLF systems.

5 To limit the maximum tension in the scale $(CTE_{substrate} - CTE_{scale}) \times (T_{use\ extreme} - T_{install}) \leq 550$ µm/m where $CTE_{scale} = \sim 10.1$ µm/m/°C.

RTLF tape scale installation drawing

Dimensions and tolerances in mm





NOTE: ATOM DX cabled readhead variant shown. [1]

[1] For readhead dimensions see pages 4 and 5.

RTLF tape scale technical specifications

Material		Hardened and tempered martensitic stainless steel fitted with a self-adhesive backing tape
Form (height × width)		0.41 mm × 8 mm (including adhesive)
Scale pitch		20 µm and 40 µm
Datum fixing		Adhesive datum clamp A-9585-0028 secured with Loctite® 435
Reference mark		Auto-phase optical reference mark repeatable to unit of resolution throughout specified speed and temperature range Customer deselectable reference marks at 50 mm spacing [1] Reference mark in the centre of scale for lengths < 100 mm
Accuracy (at 20 °C)	RTLF20-S/RTLF40H-S	±5 µm/m
	RTLF40-S	±15 µm/m
Coefficient of thermal expansion (at 20 °C) [2]		10.1 ±0.2 µm/m/°C
Length [3]		20 mm to 1 m in 10 mm increments 1 m to 10 m in 1 m increments Scale length = measuring length + 6 mm (without optional end covers)
Mass		12.2 g/m

1 Only the selected reference mark is bi-directionally repeatable.

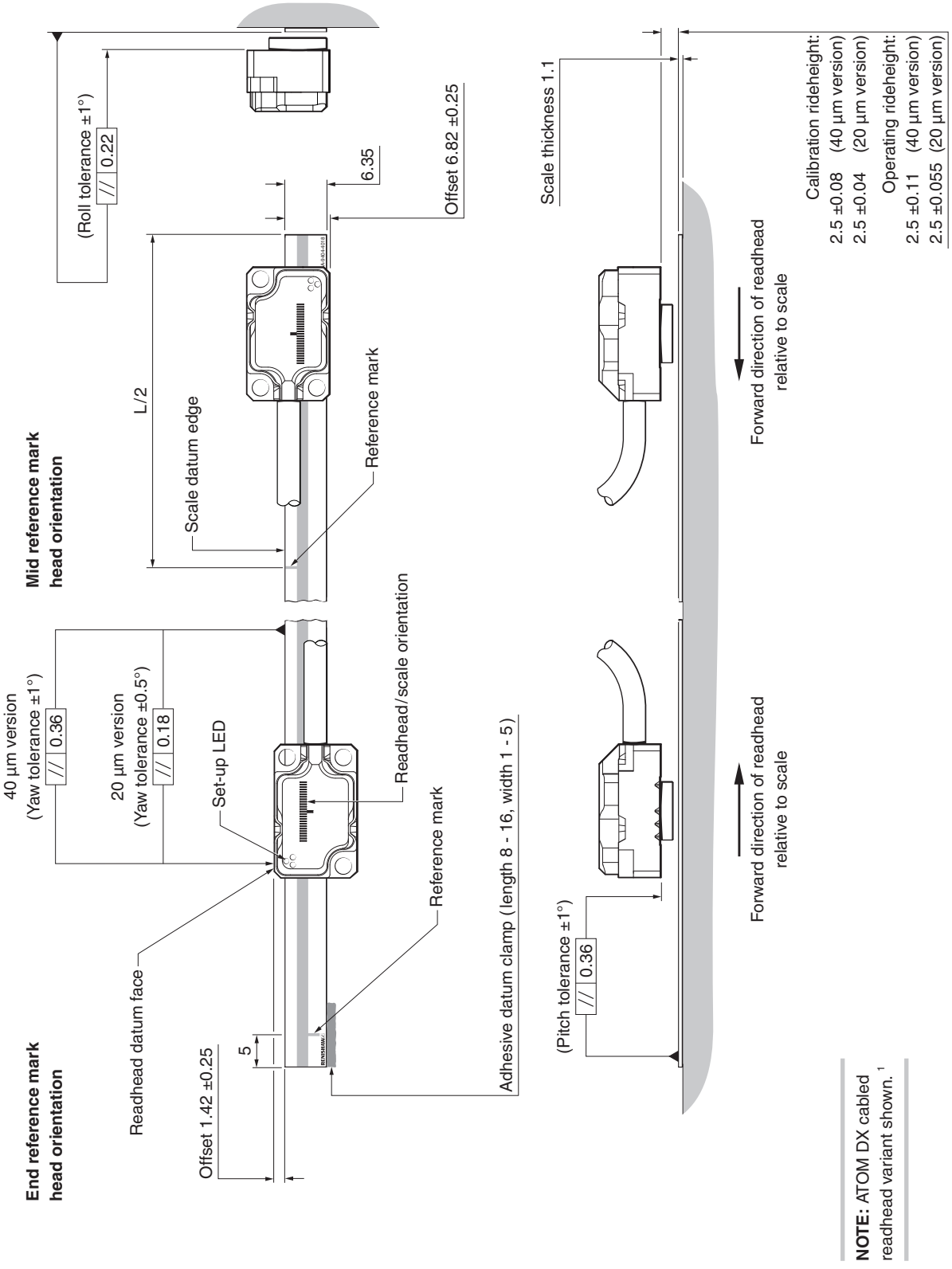
2 The substrate coefficient of thermal expansion does not need to match that of the scale.

3 The maximum recommended axis length is 1 m for 20 µm RTLF systems.

RCLC glass spar installation drawing

Dimensions and tolerances in mm





NOTE: ATOM DX cabled readhead variant shown. [1]

[1] For readhead dimensions see pages 4 and 5.

RCLC glass spar technical specifications

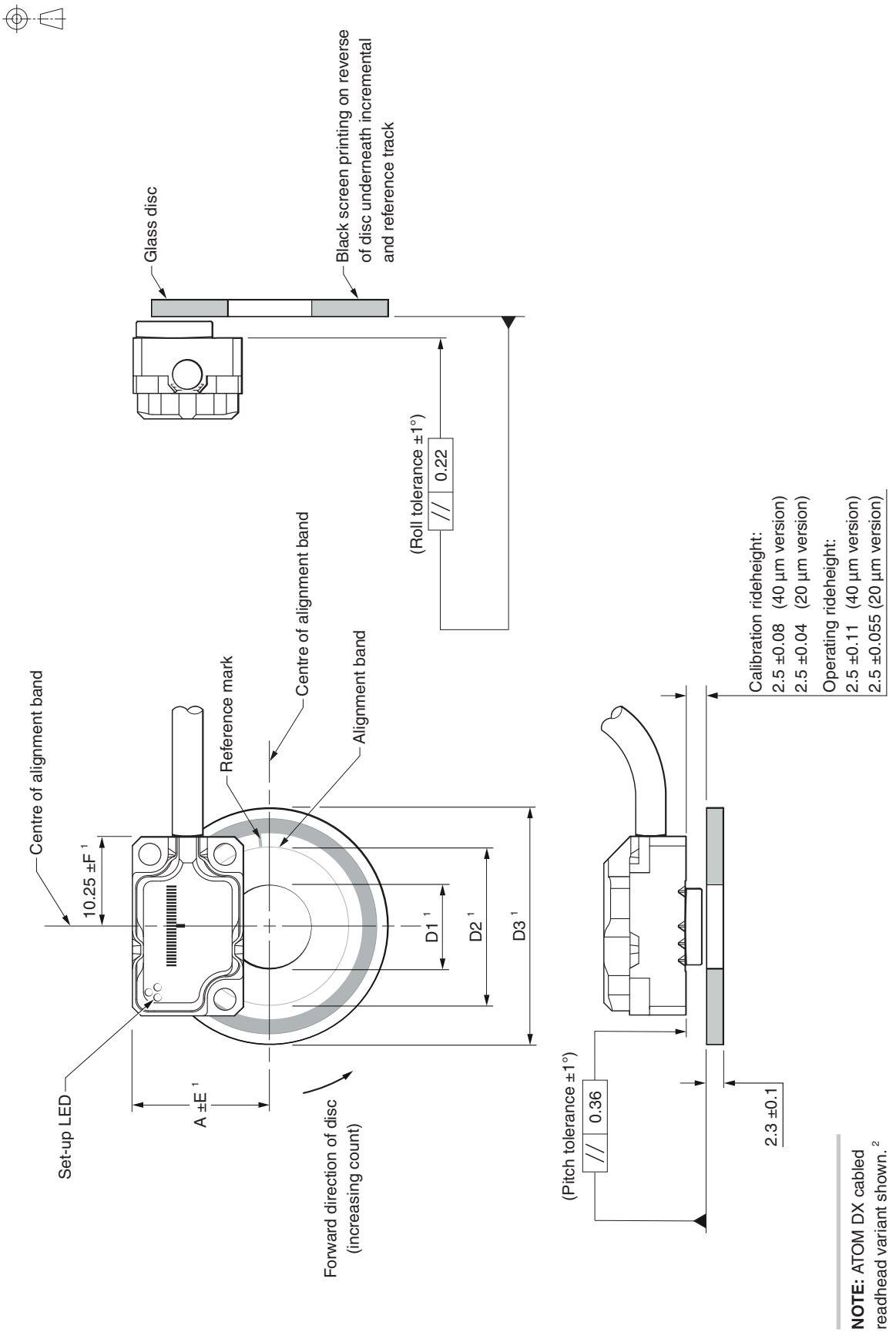
Material	Soda-lime glass fitted with a self-adhesive backing tape
Form (height × width)	1.1 mm × 6.35 mm (including adhesive)
Pitch	20 µm and 40 µm
Datum fixing	Fillet of adhesive (A-9531-0342) on one side of the scale
Reference mark	Auto-phase optical reference mark repeatable to unit of resolution throughout specified speed and temperature range Either mid or one end of travel; determined by orientation of the readhead
Accuracy (at 20 °C)	±3 µm
Coefficient of thermal expansion	~8 µm/m/°C
Mass	13.9 g/m

RCLC glass spar lengths

Overall length L (mm)	Measuring length ML (mm)
10	7
18	15
30	27
55	52
80	77
100	97
105	102
130	127

RCDM rotary disc installation drawing

Dimensions and tolerances in mm



NOTE: ATOM DX cabled readhead variant shown. [2]

[1] The dimensions and tolerances are defined on page 14.

[2] For readhead dimensions see pages 4 and 5.

RCDM rotary disc dimensions and tolerances

20 µm discs

Optical diameter (mm)	Line count	Nominal outer diameter (mm) [1]	D1 (mm)	D2 (mm)	D3 (mm)	A (mm)	Radial tolerance E (mm)	Longitudinal tolerance F (mm)
26.08	4 096	30	12.8	21.15	29.9	17.15	0.1	0.075
31.83	5 000	36	12.8	26.9	35.9	20.03	0.125	0.075
45.84	7 200	50	25.5	40.9	49.9	27.03	0.125	0.075
52.15	8 192	56	25.5	47.25	55.9	30.19	0.125	0.1
63.66	10 000	68	25.5	58.55	67.9	35.94	0.15	0.125
104.3	16 384	108	50.9	99.2	107.9	56.26	0.2	0.225

40 µm discs

Optical diameter (mm)	Line count	Nominal outer diameter (mm) [1]	D1 (mm)	D2 (mm)	D3 (mm)	A (mm)	Radial tolerance E (mm)	Longitudinal tolerance F (mm)
13.04	1 024	17	3.275	8.1	16.9	10.63	0.1	0.1
15.92	1 250	20	3.275	11	19.9	12.07	0.1	0.1
21.01	1 650	25	6.46	16.1	24.9	14.62	0.125	0.1
22.92	1 800	27	9.625	18	26.9	15.57	0.125	0.1
26.08	2 048	30	12.8	21.15	29.9	17.15	0.125	0.1
31.83	2 500	36	12.8	26.9	35.9	20.03	0.175	0.15
45.84	3 600	50	25.5	40.9	49.9	27.03	0.2	0.2
52.15	4 096	56	25.5	47.25	55.9	30.19	0.2	0.2
63.66	5 000	68	25.5	58.55	67.9	35.94	0.2	0.3
104.3	8 192	108	50.9	99.2	107.9	56.26	0.2	0.3

[1] Special disc sizes are available on request

RCDM rotary disc technical specifications

Material	Soda-lime glass
Form	2.3 mm thick
Pitch	20 µm and 40 µm
Reference mark	Single reference mark
Coefficient of thermal expansion	~8 µm/m/°C

RCDM rotary disc graduation accuracy

Optical diameter (mm)	Nominal outer diameter (mm)	Graduation accuracy (arc seconds)
13.04	17	15.81
15.92	20	12.95
21.01	25	9.82
22.92	27	9
26.08	30	7.91
31.83	36	6.49
45.84	50	4.5
52.15	56	3.95
63.66	68	3.24
104.3	108	2.78

Speed

20 µm encoder

Clocked output option (MHz)	Maximum speed (m/s) Readhead type						Minimum edge separation [1] (ns)
	D (5 µm)	X (1 µm)	Z (0.5 µm)	W (0.2 µm)	Y (0.1 µm)	H (50 nm)	
50	10	10	10	7.25	3.63	1.813	**25.1**
40	10	10	10	5.80	2.90	1.450	**31.6**
25	10	10	9.06	3.63	1.81	0.906	**51.0**
20	10	10	8.06	3.22	1.61	0.806	**57.5**
12	10	10	5.18	2.07	1.04	0.518	**90.0**
10	10	8.53	4.27	1.71	0.85	0.427	**109**
08	10	6.91	3.45	1.38	0.69	0.345	**135**
06	10	5.37	2.69	1.07	0.54	0.269	**174**
04	10	3.63	1.81	0.73	0.36	0.181	**259**
01	4.53	0.91	0.45	0.18	0.09	0.045	**1038**

Clocked output option (MHz)	Maximum speed (m/s) Readhead type					Minimum edge separation [1] (ns)
	M (40 nm)	I (20 nm)	O (10 nm)	Q (5 nm)	R (2.5 nm)	
50	1.450	0.725	0.363	0.181	0.091	**25.1**
40	1.160	0.580	0.290	0.145	0.073	**31.6**
25	0.725	0.363	0.181	0.091	0.045	**51.0**
20	0.645	0.322	0.161	0.081	0.040	**57.5**
12	0.414	0.207	0.104	0.052	0.026	**90.0**
10	0.341	0.171	0.085	0.043	0.021	**109**
08	0.276	0.138	0.069	0.035	0.017	**135**
06	0.215	0.107	0.054	0.027	0.013	**174**
04	0.145	0.073	0.036	0.018	0.009	**259**
01	0.036	0.018	0.009	0.005	0.002	**1038**

Angular speed depends on disc optical diameter. Use the following equation to convert to rev/min.

$$\text{Angular speed (rev/min)} = \frac{V \times 1000 \times 60}{\pi D}$$ Where V = maximum linear speed (m/s) and D = optical diameter of chosen disc in mm

[1] For a readhead with a 1 m cable

40 µm encoder

Clocked output option (MHz)	Maximum speed (m/s)						Minimum edge separation [1] (ns)
	Readhead type						
	T (10 µm)	D (5 µm)	G (2 µm)	X (1 µm)	Z (0.5 µm)	W (0.2 µm)	
50	20	20	20	20	18.13	7.25	**25.1**
40	20	20	20	20	14.50	5.80	**31.6**
25	20	20	20	18.13	9.06	3.63	**51.0**
20	20	20	20	16.11	8.06	3.22	**57.5**
12	20	20	20	10.36	5.18	2.07	**90.0**
10	20	20	17.06	8.53	4.27	1.71	**109**
08	20	20	13.81	6.91	3.45	1.38	**135**
06	20	20	10.74	5.37	2.69	1.07	**174**
04	20	18.13	7.25	3.63	1.81	0.73	**259**
01	9.06	4.53	1.81	0.91	0.45	0.18	**1038**

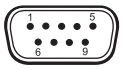
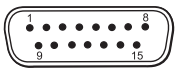
Clocked output option (MHz)	Maximum speed (m/s)						Minimum edge separation [1] (ns)
	Readhead type						
	Y (0.1 µm)	H (50 nm)	M (40 nm)	I (20 nm)	O (10 nm)	Q (5 nm)	
50	3.63	1.813	1.450	0.725	0.363	0.181	**25.1**
40	2.90	1.450	1.160	0.580	0.290	0.145	**31.6**
25	1.81	0.906	0.725	0.363	0.181	0.091	**51.0**
20	1.61	0.806	0.645	0.322	0.161	0.081	**57.5**
12	1.04	0.518	0.414	0.207	0.104	0.052	**90.0**
10	0.85	0.427	0.341	0.171	0.085	0.043	**109**
08	0.69	0.345	0.276	0.138	0.069	0.035	**135**
06	0.54	0.269	0.215	0.107	0.054	0.027	**174**
04	0.36	0.181	0.145	0.073	0.036	0.018	**259**
01	0.09	0.045	0.036	0.018	0.009	0.005	**1038**

Angular speed depends on disc optical diameter. Use the following equation to convert to rev/min.

$$\text{Angular speed (rev/min)} = \frac{V \times 1000 \times 60}{\pi D}$$ Where V = maximum linear speed (m/s) and D = optical diameter of chosen disc in mm

[1] For a readhead with a 1 m cable

Output signals

				Cabled			Top Exit
							
Function	**Signal**		**Colour**	**9-way D-type (A)**	**15-way D-type (D)**	**15-way D-type alternative pin-out (H)**	**10-way JST [1] (K)**	**10-way JST [2] (Z)**
Power	5 V		Brown	5	7, 8	4, 12	10	10
	0 V		White	1	2, 9	2, 10	2	9
Incremental	A	+	Red	2	14	1	9	5
		–	Blue	6	6	9	7	6
	B	+	Yellow	4	13	3	4	8
		–	Green	8	5	11	1	7
Reference mark	Z	+	Violet	3	12	14	8	4
		–	Grey	7	4	7	5	3
Alarm	E	–	Orange	-	3	13	6	2
Remote CAL [3]	CAL		Clear	9	1	5	3	1
Shield	-		Screen	Case	Case	Case	Ferrule	-

NOTE: Top exit cables are terminated with the 'K' pin-out or the 'D' pin-out dependent upon which top-exit readhead cable is used. See available top exit readhead cables on page 26.

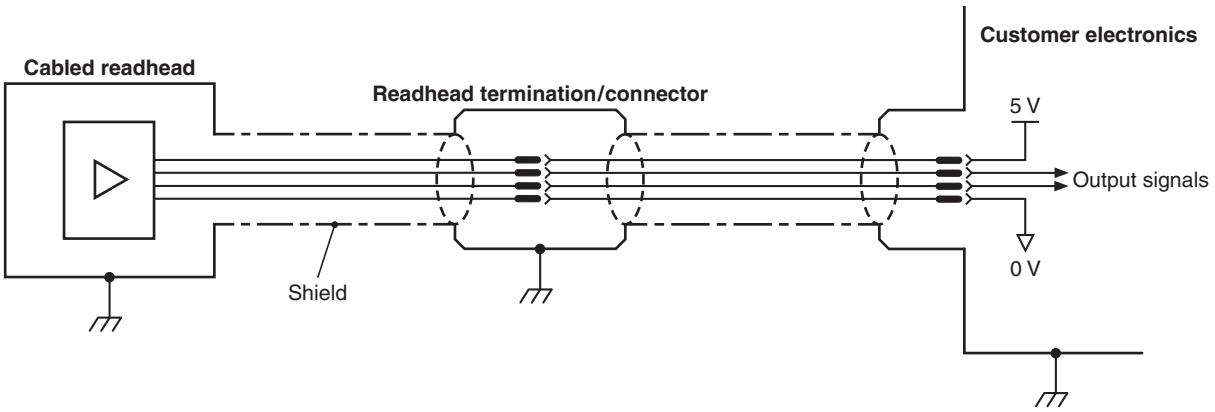
1 PCB mount mating connectors: Top entry (BM10B-SRSS-TB); Side entry (SM10B-SRSS-TB).

2 Connector on top exit readhead only: Mating connector (10SUR - 32S).

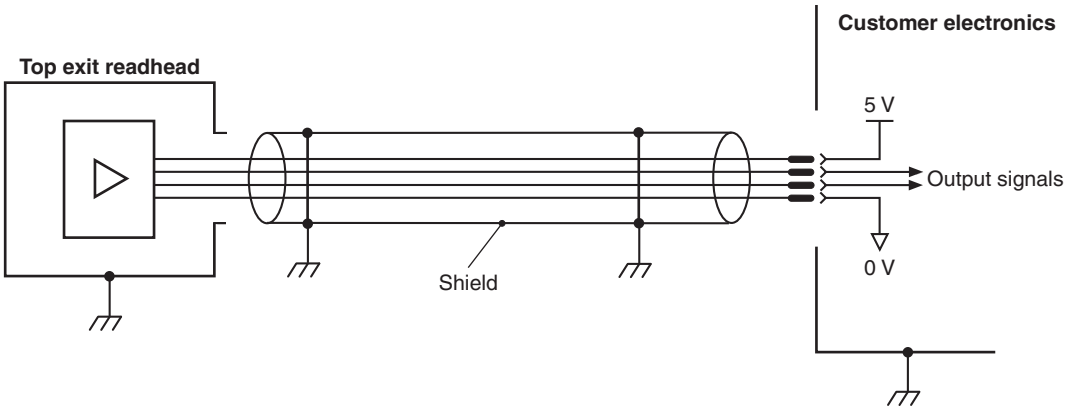
3 Remote CAL line must be connected for use with the ADTi-100.

Electrical connections

Grounding and shielding



IMPORTANT: The shield should be connected to the machine earth (Field Ground). For JST variants the ferrule should be connected to the machine earth.



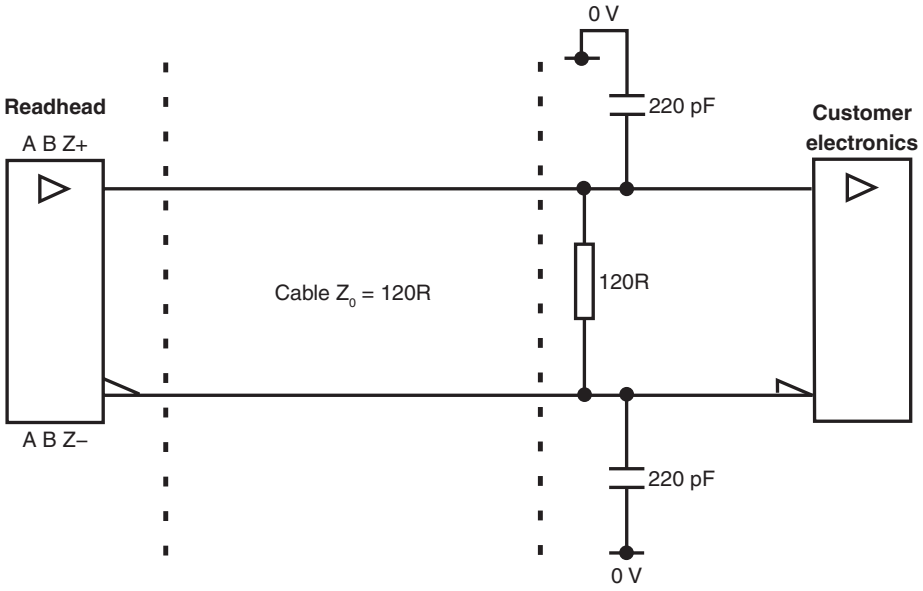
For more information on top exit readheads refer to the relevant ATOM DX installation guide.

Maximum readhead cable length:	3 m
Maximum extension cable length:	Dependent on cable type, readhead cable length and clock speed. Contact your local Renishaw representative for more information.

NOTE: The maximum cable length between the readhead and the ADTi-100 is 3 m.

Recommended signal termination

Digital outputs

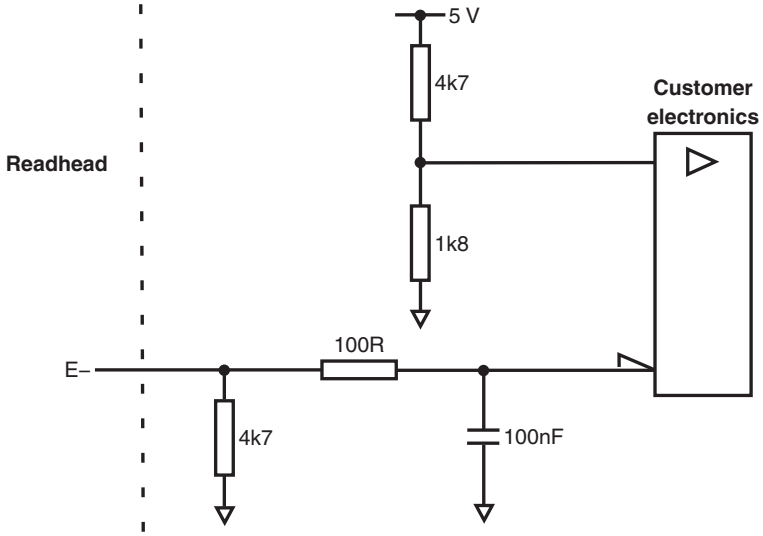


Standard RS422A line receiver circuitry.

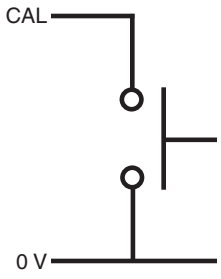
The capacitors are recommended for improved noise immunity.

Single ended alarm signal termination

(Not available with 'A' cable termination)



Remote CAL operation



Remote system calibration (CAL) is possible via the CAL pin.

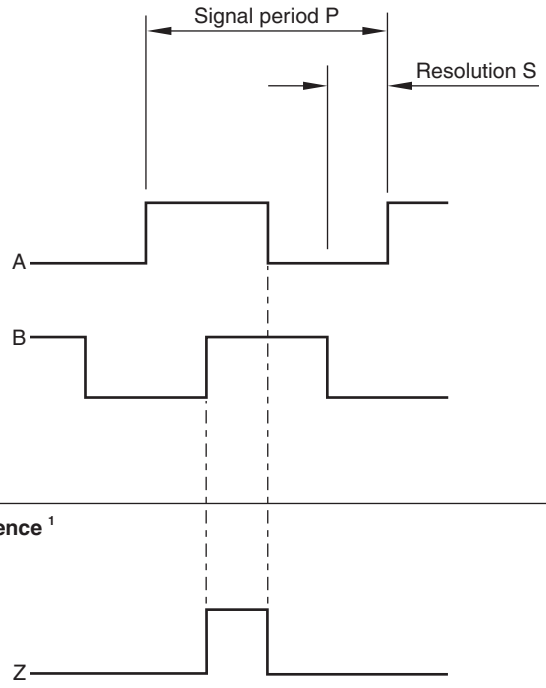
Output specifications

Digital output signals

Form – Square wave differential line driver to EIA RS422A

Incremental [1]

2 channels A and B in quadrature (90° phase shifted)



Resolution option code	P (µm)	S (µm)
T [2]	40	10
D	20	5
G [2]	8	2
X	4	1
Z	2	0.5
W	0.8	0.2
Y	0.4	0.1
H	0.2	0.05
M	0.16	0.04
I	0.08	0.02
O	0.04	0.01
Q	0.02	0.005
R [3]	0.01	0.0025

Reference [1]

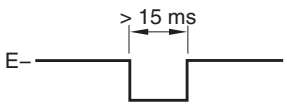
Synchronised pulse Z, duration as resolution.

Bi-directionally repeatable. [4]

Alarm

Line driven (Asynchronous pulse)

(Not available with 'A' cable termination)



Alarm asserted when:

- Signal amplitude < 20% or > 135%
- Readhead speed too high for reliable operation

or 3-state alarm

Differentially transmitted signals forced open circuit for > 15 ms when alarm conditions valid.

1 For clarity, the inverse signals are not shown.

2 40 µm ATOM DX only

3 20 µm ATOM DX only

4 Only the calibrated reference mark is bi-directionally repeatable.

ATOM DX 20 µm part numbers

A2 A 0 X 10 D 50 B

Series

A2 - 20 µm ATOM DX

Variant

A - Cabled

L - Top exit ('00' cable length and 'Z' cable termination only)

Scale type compatibility

Linear	Rotary RCDM20 glass disc Optical diameter
0 - RTLF20	1 - ≥ 77 mm
0 - RKLF20 [1]	2 - ≥ 42.4 mm to < 77 mm
1 - RCLC20 glass spar	3 - ≥ 31.4 mm to < 42.4 mm
-	4 - ≥ 26 mm to < 31.4 mm

Resolution

D - 5 µm	Y - 0.1 µm	O - 10 nm
X - 1 µm	H - 50 nm	Q - 5 nm
Z - 0.5 µm	M - 40 nm	R - 2.5 nm
W - 0.2 µm	I - 20 nm	

Cable length

00 - no cable ('L' variant and 'Z' cable termination only)	15 - 1.5 m
02 - 0.2 m	20 - 2.0 m
05 - 0.5 m	30 - 3.0 m
10 - 1.0 m	

Cable termination

A - 9-way D-type	K - 10-way JST
D - 15-way D-type (standard pin-out)	Z - 10-way JST readhead connector ('L' variant and '00' cable length only)
H - 15-way D-type (alternative pin-out)	

Clocked output option [2]

50 - 50 MHz	12 - 12 MHz	04 - 4 MHz
40 - 40 MHz	10 - 10 MHz	01 - 1 MHz
25 - 25 MHz	08 - 8 MHz	
20 - 20 MHz	06 - 6 MHz	

Alarm format

B - Line driven alarm [3]

F - 3-state alarm

NOTE: Not all the combinations are valid. Check valid configurations online at www.renishaw.com/epc.

1 RKLF20 is not suitable for partial arc applications.

2 Additional clocked output options available. Contact your local Renishaw representative for further details.

3 No alarm output on readheads with 'A' cable termination

ATOM DX 40 µm part numbers

A4 A 0 X 10 D 50 B

Series

A4 - 40 µm ATOM DX

Variant

A - Cabled

L - Top exit (‘00’ cable length and ‘Z’ cable termination only)

Scale type compatibility

Linear	Rotary RCDM40 glass disc Optical diameter
0 - RTLF40	1 - ≥ 30.6 mm
0 - RKLF40	2 - ≥ 19.7 mm to < 30.6 mm
1 - RCLC40 glass spar	3 - ≥ 15.2 mm to < 19.7 mm
-	4 - ≥ 13.0 mm to < 15.2 mm

Resolution

T - 10 µm	Z - 0.5 µm	M - 40 nm
D - 5 µm	W - 0.2 µm	I - 20 nm
G - 2 µm	Y - 0.1 µm	O - 10 nm
X - 1 µm	H - 50 nm	Q - 5 nm

Cable length

00 - no cable (‘L’ variant and ‘Z’ cable termination only)	15 - 1.5 m
02 - 0.2 m	20 - 2.0 m
05 - 0.5 m	30 - 3.0 m
10 - 1.0 m	

Cable termination

A - 9-way D-type	K - 10-way JST
D - 15-way D-type (standard pin-out)	Z - 10-way JST readhead connector (‘L’ variant and ‘00’ cable length only)
H - 15-way D-type (alternative pin-out)	

Clocked output option [1]

50 - 50 MHz	12 - 12 MHz	04 - 4 MHz
40 - 40 MHz	10 - 10 MHz	01 - 1 MHz
25 - 25 MHz	08 - 8 MHz	
20 - 20 MHz	06 - 6 MHz	

Alarm format

B - Line driven alarm [2]

F - 3-state alarm

NOTE: Not all the combinations are valid. Check valid configurations online at www.renishaw.com/epc.

1 Additional clocked output options available. Contact your local Renishaw representative for further details.

2 No alarm output on readheads with ‘A’ cable termination

Linear scale part numbers

RTLF tape scale

Scale type	Scale pitch	Length	Increments	Part number (where xxxx is the length in cm) [1]	ATOM DX readhead scale type compatibility
RTLF20-S	20 µm	20 mm to 1 m	10 mm	A-9406-xxxx	0
		1 m to 10 m [2]	1 m		
RTLF40H-S	40 µm (high accuracy)	20 mm to 1 m	10 mm	A-9408-xxxx	0
		1 m to 10 m [2]	1 m		
RTLF40-S	40 µm	20 mm to 1 m	10 mm	A-9407-xxxx	0
		1 m to 10 m [2]	1 m		

RKLF mastered tape scale

Scale type	Scale pitch	Length	Increments	Part number (where xxxx is the length in cm) [3]	ATOM DX readhead scale type compatibility
RKLF20-S	20 µm [4]	20 mm to 1 m	10 mm	A-6767-xxxx	0
		1 m to 10 m	1 m		
RKLF40H-S	40 µm (high accuracy) [4]	20 mm to 1 m	10 mm	A-6771-xxxx	0
		1 m to 10 m	1 m		
RKLF40	40 µm	20 mm to 1 m	10 mm	A-6769-xxxx	0
		1 m to 10 m	1 m		

RCLC glass spar

Length (mm)	20 µm	40 µm	ATOM DX readhead scale type compatibility
10	A-9404-2010	A-9404-4010	1
18	A-9404-2018	A-9404-4018	1
30	A-9404-2030	A-9404-4030	1
55	A-9404-2055	A-9404-4055	1
80	A-9404-2080	A-9404-4080	1
100	A-9404-2100	A-9404-4100	1
105	A-9404-2105	A-9404-4105	1
130	A-9404-2130	A-9404-4130	1

1 Ordering A-9408-0070 for example will result in a 70 cm length of RTLF40H-S scale.

2 Lengths greater than 10 m are available on request.

3 Ordering A-6767-0070 for example will result in a 70 cm length of RKLF20-S scale.

4 Not recommended for partial arc applications.

Rotary disc part numbers

RCDM rotary discs (20 µm version)

Optical diameter (mm)	Nominal outer diameter (mm)	Part number	ATOM DX readhead scale type compatibility
26.08	**30**	A-9405-2030	4
31.83	**36**	A-9405-2036	3
45.84	**50**	A-9405-2050	2
52.15	**56**	A-9405-2056	2
63.66	**68**	A-9405-2068	2
104.3	**108**	A-9405-2108	1

RCDM rotary discs (40 µm version)

Optical diameter (mm)	Nominal outer diameter (mm)	Part number	ATOM DX readhead scale type compatibility
13.04	**17**	A-9405-4017	4
15.92	**20**	A-9405-4020	3
21.01	**25**	A-9405-4025	2
22.92	**27**	A-9405-4027	2
26.08	**30**	A-9405-4030	2
31.83	**36**	A-9405-4036	1
45.84	**50**	A-9405-4050	1
52.15	**56**	A-9405-4056	1
63.66	**68**	A-9405-4068	1
104.3	**108**	A-9405-4108	1

NOTE: Other disc diameters are available; contact your local Renishaw representative for more information.

Top exit readhead cable part numbers

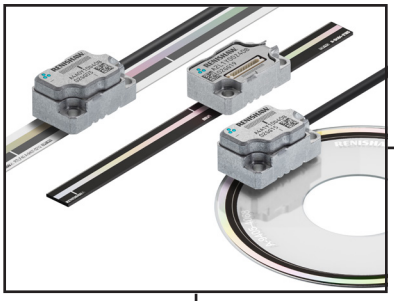
Cable length (m)	Cable termination	Part number
0.5	15-way D-type connector [1]	A-9414-1223
1.0		A-9414-1225
1.5		A-9414-1226
3.0		A-9414-1228
0.5	10-way JST connector [2]	A-9414-1233
1.0		A-9414-1235
1.5		A-9414-1236
3.0		A-9414-1238

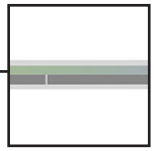
[1] Provided with 'D' pin-out

[2] Provided with 'K' pin-out

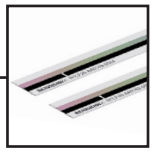
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ATOM DX compatible products:





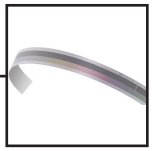
RKLF-S self-adhesive mastered tape scale



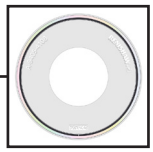
RTLF-S self-adhesive tape scale



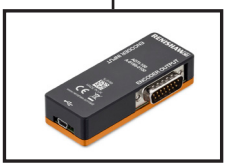
RCLC glass spar



RKLF40-S partial arc scale



RCDM glass disc



Optional Advanced
Diagnostic Tool
ADTi-100 (A-6195-0100)

www.renishaw.com/contact

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