ARUN MICROELECTRONICS LTD

真空电机

真空减速机

真空位移台

真空旋转台

真空离子规

英国AML中国总代理

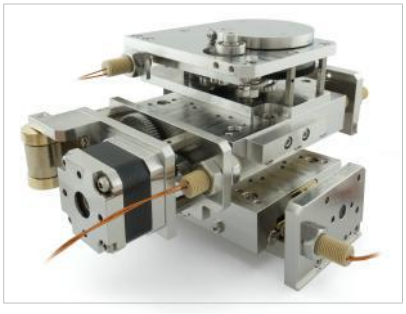
北京星微自动化科技有限公司

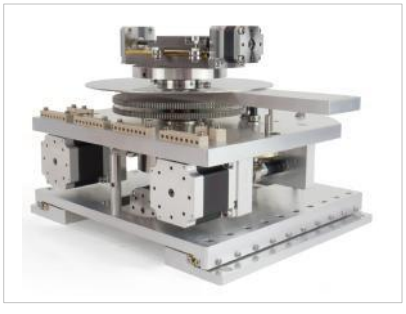
Beijing XIVI Automation Technology Co.,Ltd.

ARUN MICROELECTRONICS LTD

产品目录

CONTENT





超高真空步进电机

Ultra High Vacuum Stepper Motors

1.8°, two phase hybrid stepper motors

ARUN MICROELECTRONICS LTD

AML stepper motors are specifically designed for use in UHV environments making them ideally suited for low-speed precision in-vacuum manipulation without the use of particle generating motion feed-throughs. The considerable reduction in mechanical complexity, absence of metal to metal sliding surfaces and low outgassing characteristics make these motors especially suitable for sensitive handling applications.

The model D motors are two phase hybrid stepper motors, available in a range of standard sizes and torque ratings. Standard motors provide 200 full steps per revolution, are suitable for use below $1x10^{-10}$ mbar and temperatures between -65°C to +175°C. Extended low temperature range (-196°C) versions, radiation hard versions (1×10^6 Gy), shaft modifications and hybrid bearings are all available options.

All motors are designed, cleaned, hand assembled and conditioned to UHV standards in an ISO Class 7 cleanroom.

SPECIFICATIONS

Model	Holding Torque mNm	Detent Torque mNm	Rotor Inertia gcm^2	Max. Axial Force N	Max. Radial Force (1) N	Mass g	Current Per Phase A	Phase Resistance at 20 °C Ω	Phase Inductance mH
D35.1	70	8	10	9	15	190	1.0	4.7	3.8
D42.1	180	8	35	9	15	350	1.0	5.3	6.6
D42.2	360	14	68	9	15	470	1.0	6.8	10.5
D42.3	450	20	102	9	15	610	1.0	8.5	19.5
D57.1	800	30	300	13	40	700	1.0	10.5	27.0
D57.2	1700	50	600	13	45	1380	1.0	12.5	30.0

Vacuum environment	$<1x10^{-10}$ mbar
Operating temperature	-65°C to +175°C
Temperature sensor	Type 'K' thermocouple standard or PT100 optional
Bakeout temperature	200 °C
Step angle	1.8°
Step angle tolerance	±5%
Lead length	1.5m

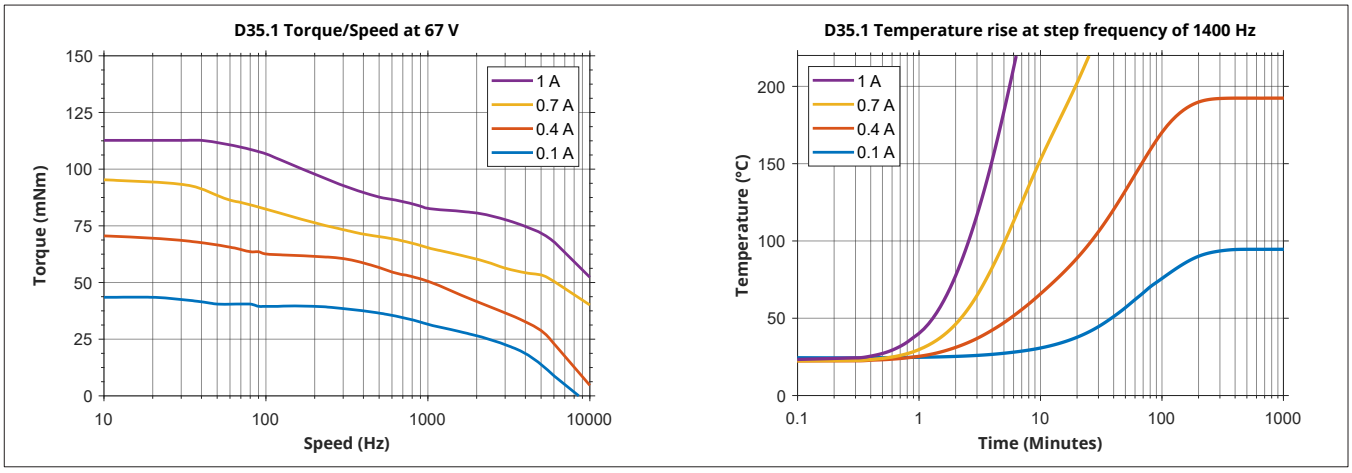
(1) 20 mm from the flange

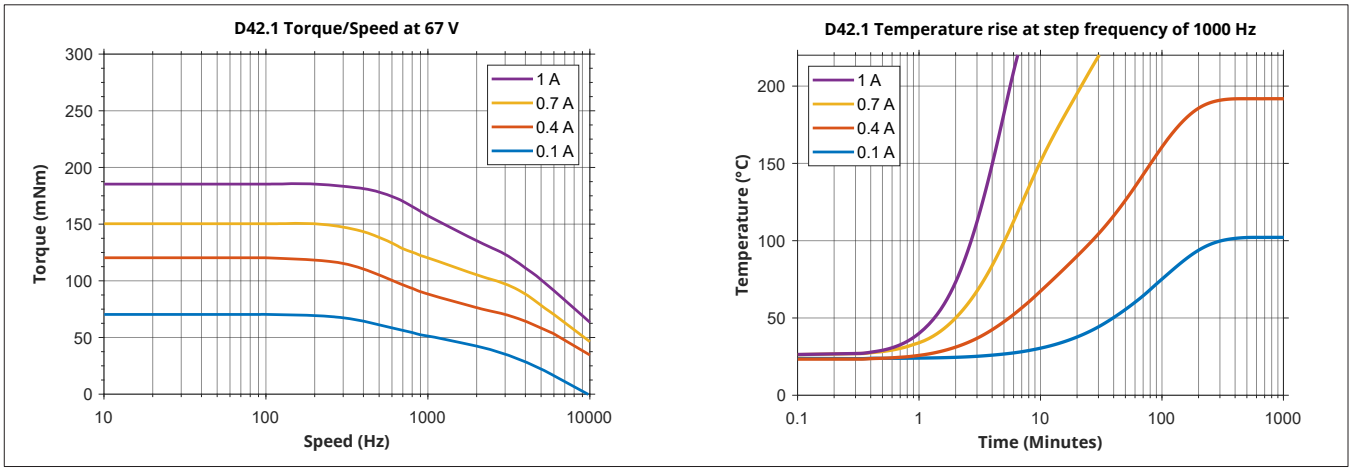
CHARACTERISTICS

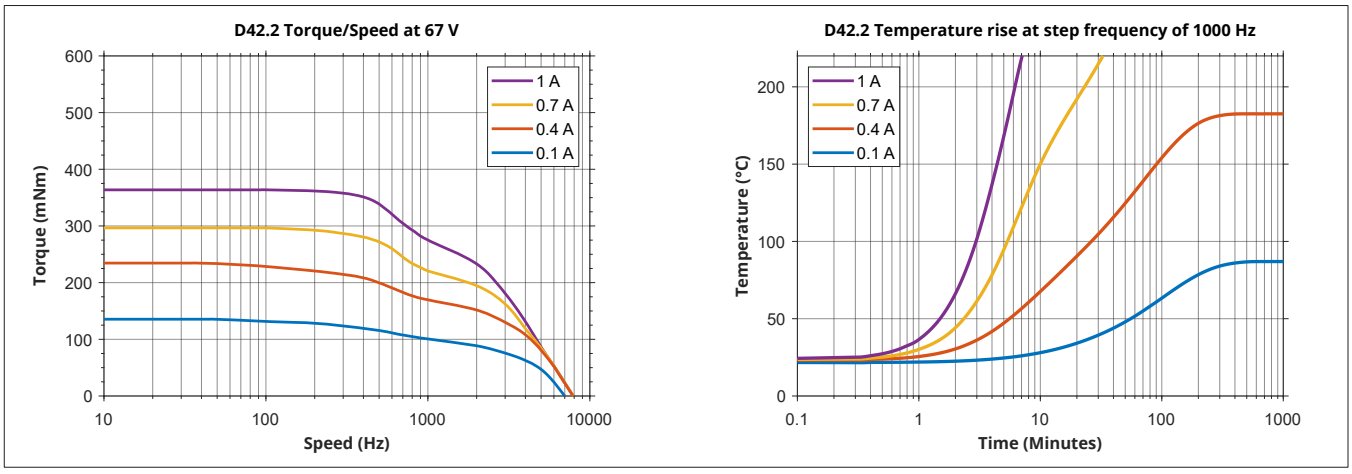
The performance shown on these graphs was obtained using an SMD3 drive configured for 256 step division up to a step frequency of 1000 Hz, and full step mode thereafter. Source voltage is 67 V.

The SMD3 stepper motor drive is a single-axis bipolar stepper motor drive, intended for use with AMLs range of vacuum compatible stepper motors (VCSMs), with maximum performance and minimal heat.

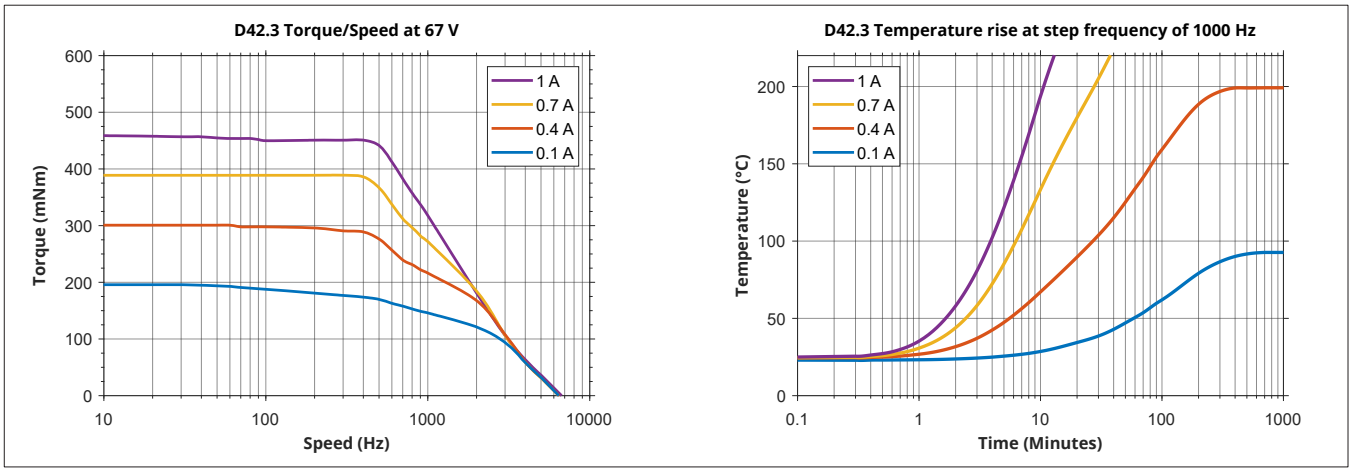
Different drives will produce different speed / torque curves. Drives producing phase currents greater than 1 A RMS may damage the insulation. Reducing the drive voltage may impair high speed performance. Use of the embedded temperature sensor is essential for motor protection.

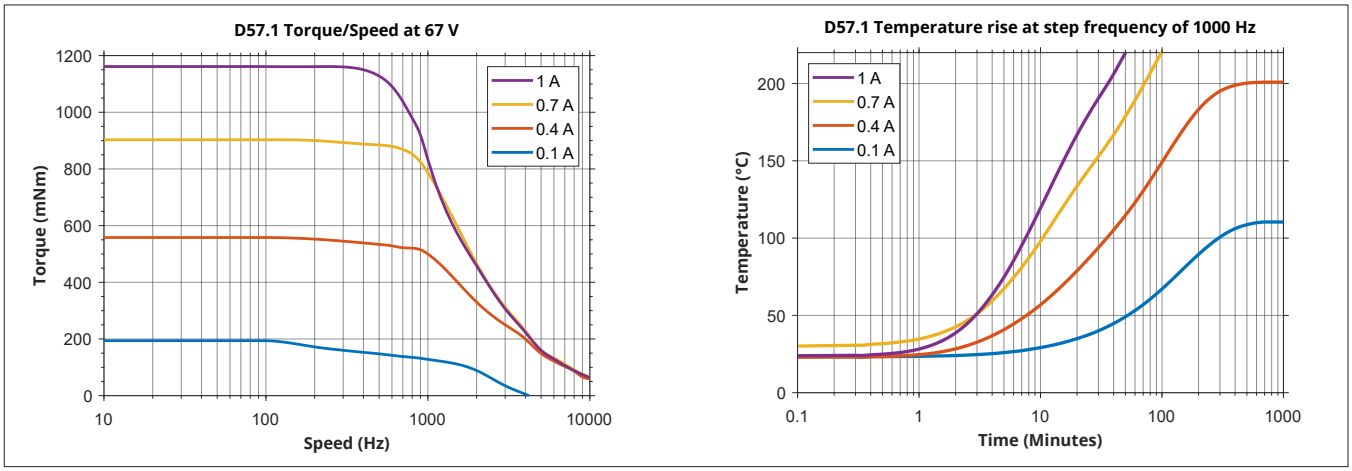




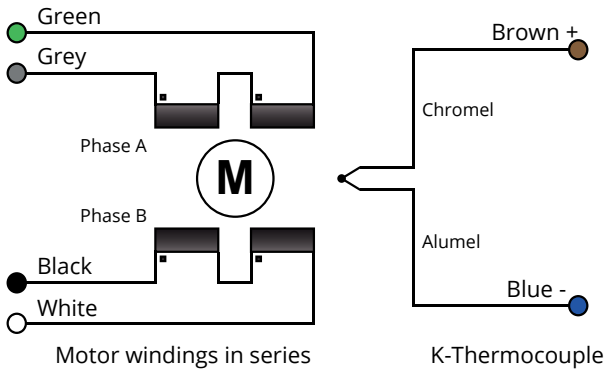


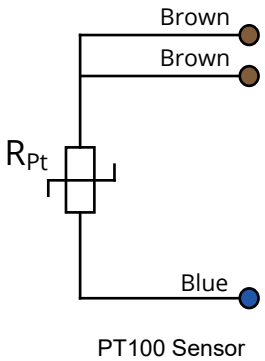
CHARACTERISTICS CONT.



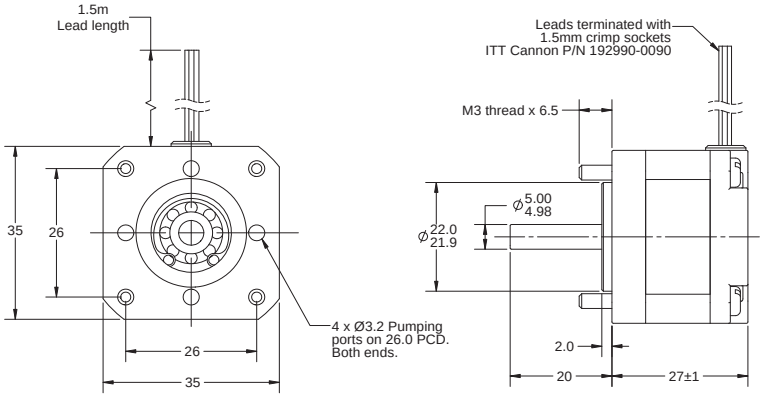


ELECTRICAL CONNECTION



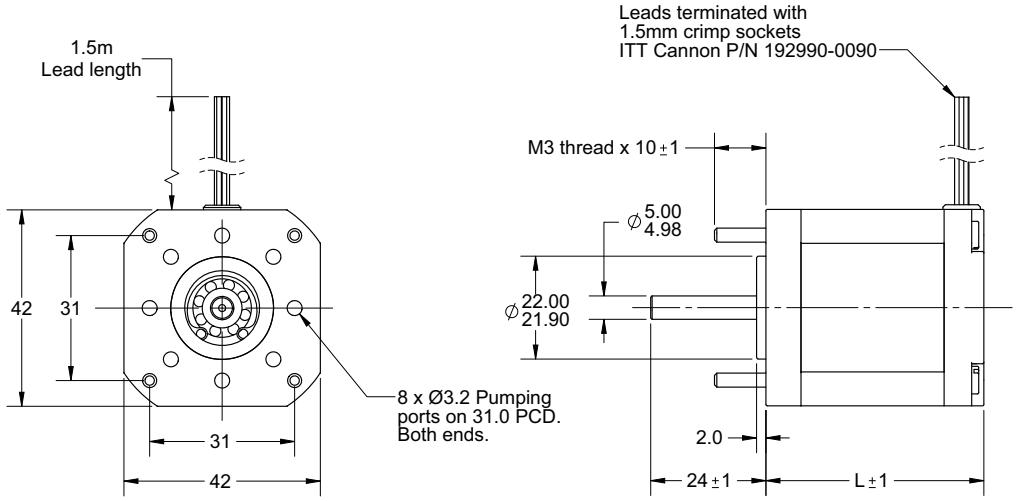


D35.1

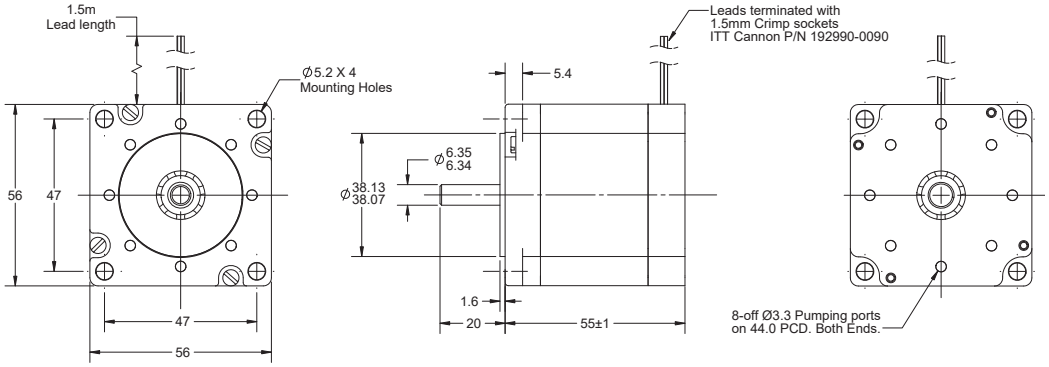


D42.X

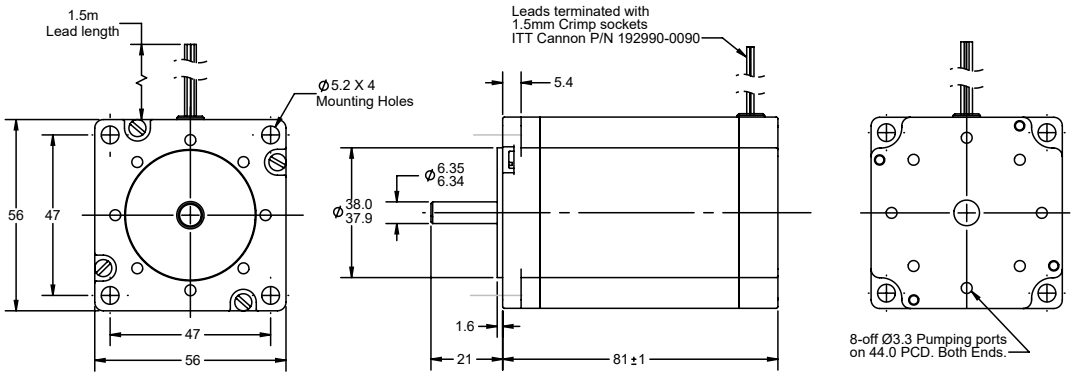
Motor	Length L
D42.1	33
D42.2	47
D42.3	60



D57.1



D57.2



SMD3 STEPPER MOTOR DRIVE

The SMD3 Stepper Motor Drive is a single-axis bipolar stepper motor driver that is engineered to drive vacuum-compatible stepper motors with maximum performance and minimal heat. It is optimised for use with AML UHV-compatible motors.

Powerful software is supplied with the SMD3 that enables you to control and configure multiple SMD3 devices simultaneously, in a single user-friendly graphical interface.

ORDERING INFORMATION

Bearings

Standard motors are fitted with open stainless steel bearings lubricated with NyeTorr® 6300 ultra low outgassing UHV grease.

For low duty applications where UHV grease is not permitted, specify option 'H' hybrid bearings. These have silicon nitride ceramic balls, dry lubricated with Tungsten disulfide. Please note that the life expectancy of dry lubricated bearings may, depending on the application, be significantly shorter than bearings lubricated with NyeTorr® UHV grease.

We would always recommend NyeTorr® UHV grease lubricated bearings if your application can accommodate it.

Options

H	Hybrid ceramic bearings (dry lubricated)
R	Gamma radiation hardened to $1x10^6$ Gy (dry lubricated bearings)
X	Shaft modification. Please provide a sketch of your requirement
C	Cryogenic. Extended operating temperature range. -196 °C to +175 °C (dry lubricated bearings)
P	PT100 temperature sensor in lieu of thermocouple

Order Code	
D35.1	70 mNm UHV Stepper Motor
D42.1	180 mNm UHV Stepper Motor
D42.2	360 mNm UHV Stepper Motor
D42.3	480 mNm UHV Stepper Motor
D57.1	800 mNm UHV Stepper Motor

Related Products	
SMD3	Stepper Motor Drive
MLF18F	18-way Electrical Feedthrough
MLF18SMD3	3 metre lead, SMD3 to MLF18F

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ARUN MICROELECTRONICS LTD

超高真空减速机

PG42 and PG57 Planetary Gearhead for use with D Series Stepper Motors

The PG42 series gearheads couple directly to AML D42 stepper motors and are suitable for use in UHV environments. Primarily used for increasing resolution, torque multiplication and inertia matching. They are designed for maximum torque capacity, high efficiency and low backlash.

The PG57 series gearheads couple directly to the AML D57 stepper motor and are suitable for use in UHV environments. Primarily used for increasing resolution, torque multiplication and inertia matching. They are designed for maximum torque capacity, high efficiency and low backlash.

FEATURES

- Suitable for use below 1 x 10^{-10} mBar
- Operating temperature -65 to +175°C
- Multiple ratio options, 4:1 through 100:1
- Multiple ratio options, 3:1 through 100:1
- High efficiency, >94%
- Low inertia
- High precision, low backlash
- Service life >10,000 Hrs
- Bakeable to 200°C
- RoHS compliant

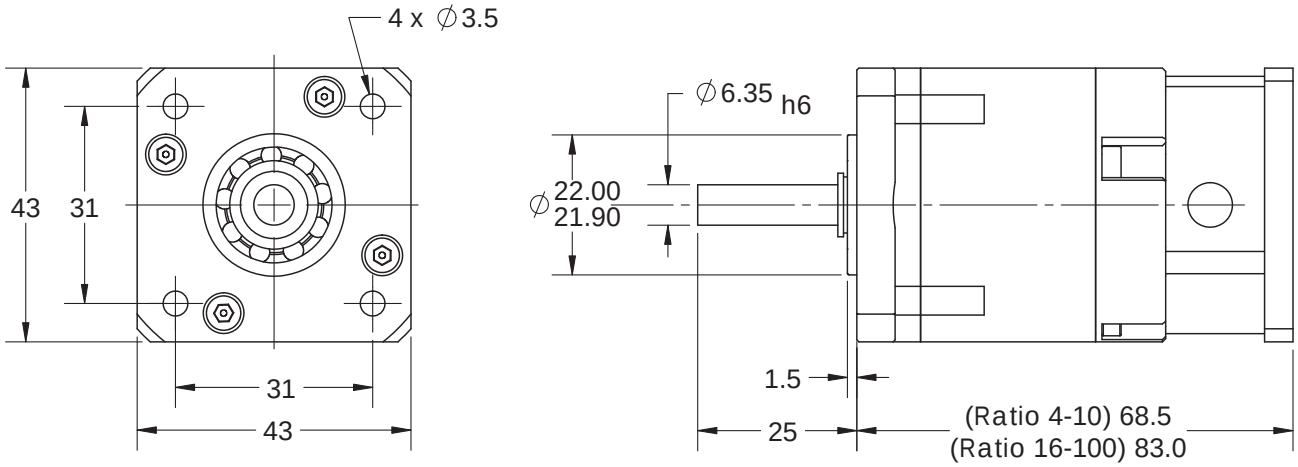
SPECIFICATIONS -PG42

Reduction Ratio (:1)	Nominal Output Torque Nm	Maximum Accelera-tion Torque Nm	Gear Inertia kg-cm²	Backlash[1] arc-min	Efficiency at nominal torque %	Radial Load[2] N	Axial Load[2] N	Mass kg	Lubrication
4	5.9	11.8	0.020	<15	96	200	196	0.60	Nyetorr 6300
5	6.2	11.8	0.018						
7	5.5	11.0	0.016						
10	3.5	7.0	0.016						
16	6.5	13.0	0.019	<18	94			0.90	
20	6.5	13.0	0.017						
25	6.7	13.0	0.017						
35	6.7	13.0	0.016						
40	6.5	13.0	0.016						
50	6.7	13.0	0.016						
70	5.5	11.0	0.016						
100	3.5	7.0	0.016						

Nominal input speed: 4500 rpm
Maximum input speed: 8000 rpm
Direction of rotation: Same as input
Vacuum environment: <1 x 10^{-10}
Max. temperature: +200°C

(1) Measured at 2% of rated torque
(2) @100rpm, radial load applied at centre of shaft

DIMENSIONS



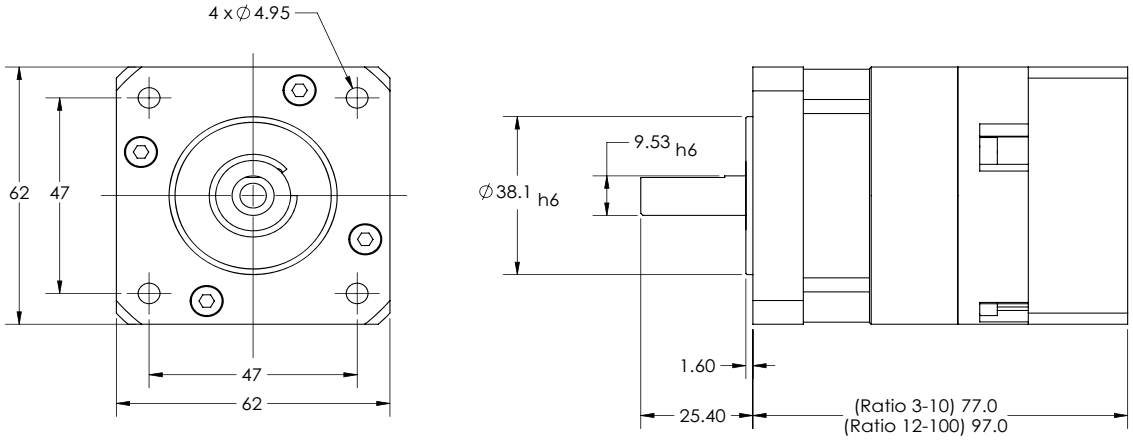
SPECIFICATIONS -PG57

Reduction Ratio (:1)	Nominal Output Torque Nm	Maximum Accelera-tion Torque Nm	Gear Inertia kg-cm²	Backlash[1] arc-min	Efficiency at nominal torque %	Radial Load[2] N	Axial Load[2] N	Mass kg	Lubrication
3	12.0	24.0	0.140	<12	96	665	765	1.2	Nyetorr 6300
4	18.9	36.4	0.100						
5	19.6	36.4	0.084						
7	16.7	33.4	0.075						
10	10.6	21.2	0.007						
12	18.2	36.4	0.097	<16	94			1.6	
15	19.4	36.4	0.083						
20	21.5	40.0	0.083						
25	20.0	40.0	0.083						
30	22.5	40.0	0.070						
40	21.5	40.0	0.070						
50	20.0	40.0	0.070						
70	16.7	33.4	0.070						
100	10.6	21.2	0.070						

Nominal input speed: 4500 rpm
Maximum input speed: 8000 rpm
Direction of rotation: Same as input
Vacuum environment: <1 x 10^{-10}
Max. temperature: +200°C

(1) Measured at 2% of rated torque
(2) @100rpm, radial load applied at centre of shaft

DIMENSIONS



超高真空运动平台-LTV系列

LTV Translation Stage

UHV Linear Sample Transporter

ARUN MICROELECTRONICS LTD

AML ultra high vacuum compatible linear translation stages provide long travel with minimum height for loads of up to several kilograms. They have widely spaced 'V' roller guides and are useful in simpler compound mechanisms where torsional loads are small. They are manufactured with UHV compatible material and construction methods and utilize AML UHV stepper motors.

Smooth motion is provided by a diamond corrected lead screw and a matched, precision lapped nut to ensure good positional stability and incorporate a preloaded leadscrew nut to eliminate backlash.

Can optionally be fitted with limit switches or optical encoder.

FEATURES

- Travel ranges 50 to 400 mm
- Resolution to 1 µm per step
- Negligible backlash
- Low profile construction
- Load capacity to 20 kg
- Directly stackable for XYZ
- Suitable for use below 1 x 10^{-10} mBar
- Bakeable to 200°C
- "V" roller guide bearing motion
- Diamond corrected leadscrew and matched nut
- Gamma radiation hard to 1 x 10^{6} Gy versions available
- Limit switch or optical encoder options available
- May be customised
- Cryogenic. Extended operating temperature range. -196°C to +175°C

SPECIFICATIONS

Specification	Unit	LTVL	LTVH
Travel	mm	50 / 100 / 150 / 200 / 250 / 300 / 350 / 400	
Resolution in full steps	µm	5	1
Maximum speed	mm/s	15	4
Recommended loaded speed in UHV	mm/s	2	0.8
Repeatability	µm	1	0.2
Centred Load Capacity (Normal)	kg	20	
Load moment	Nm	<5	
Axial load force @ 500Hz, 1A phase current	kg	3	10
Backlash	µm	Negligible	
Roll, Pitch & Yaw (Unloaded)	µrad	<25	
Roll, Pitch & Yaw Compliance	µrad/Nm	33	
Straightness of Travel	µm	<1.3 µm / 100 mm	
Stepper Motor		D35.1	
Vacuum	mBar	1×10^{-10}	
Maximum temperature	°C	200 (reduces to 120 when an optical encoder is fitted)	
MTBF (5 kg load and 30% duty cycle)	hrs	15,000	10,000
Total mass for 50 mm travel	kg	1.2	1.5
Increase in total mass per additional 50 mm of travel	kg	0.35	

NOTES

BACKLASH: Backlash in the gearbox of LTVH is controlled by special gearing and is negligible. Backlash between the nut and leadscrew is controlled by a pre-loaded nut and is much less than the resolution. If the transporter is used for motion with a significant vertical component (>45°), the load provided by the carriage weight is sufficient to eliminate backlash and a plain nut can be specified. In these cases mount with the motor at the top. Since speeds are low, acceleration forces are negligible.

CARRIAGE COMPLIANCE: The carriage will deflect under load moments about the principal axes by 33 µrad/Nm. In most applications the load deflection will be constant and can be compensated for in the sample mount. For stacked XY motions in a horizontal plane the movement of the carriage and load on the upper transporter will produce a varying moment about the axis of the lower transporter. Minimise this by stacking the shorter transporter on the longer.

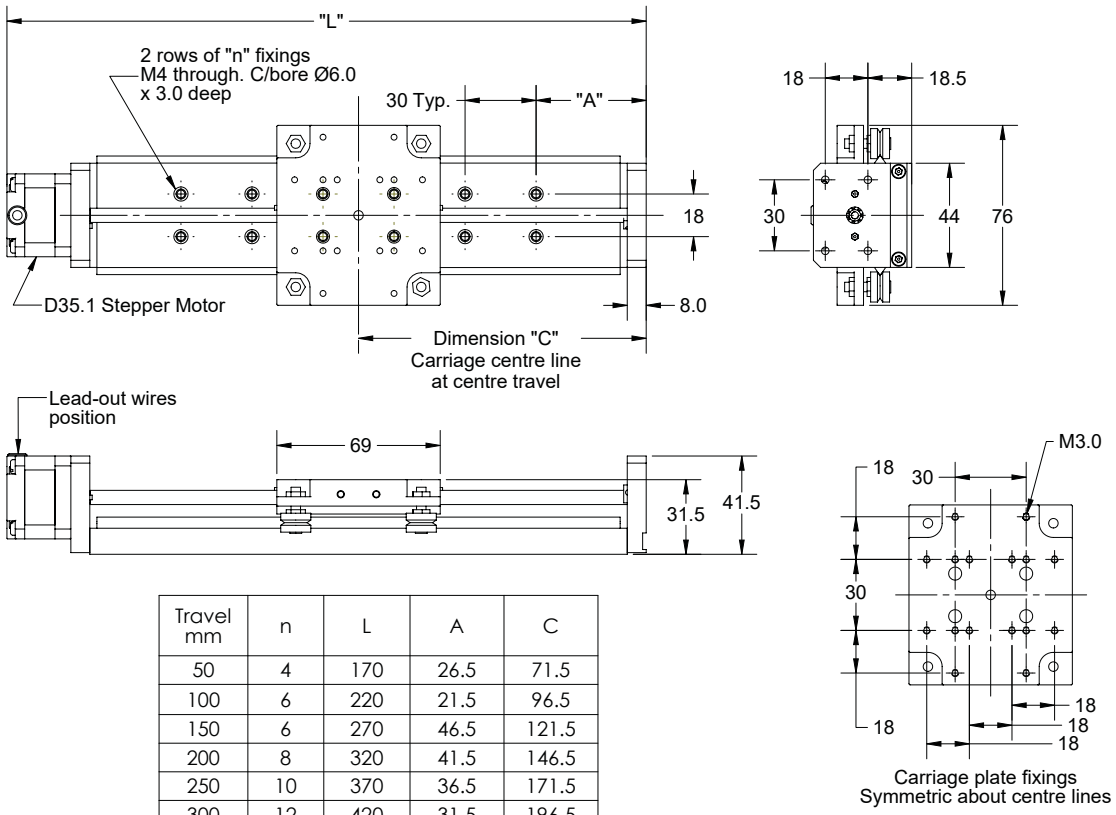
LUBRICATION: Running surfaces are dissimilar materials or dry lubricated with molybdenum disulfide. Leadscrews are lubricated with Nyetorr® 6300 UHV grease. Dry lubrication can be specified.

VERNIER STOP: These transporters may be driven to the vernier stops at the limits of their travel and stalled without damage.

STACKED MECHANISMS: For 3-axis motion mount the stage moving the load vertically on top of the others to avoid adding their weight to its load.

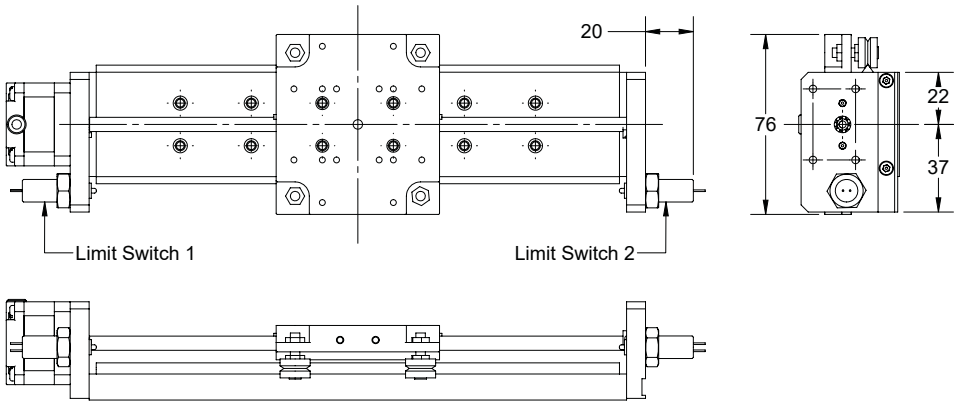
DIMENSIONS

LTVL

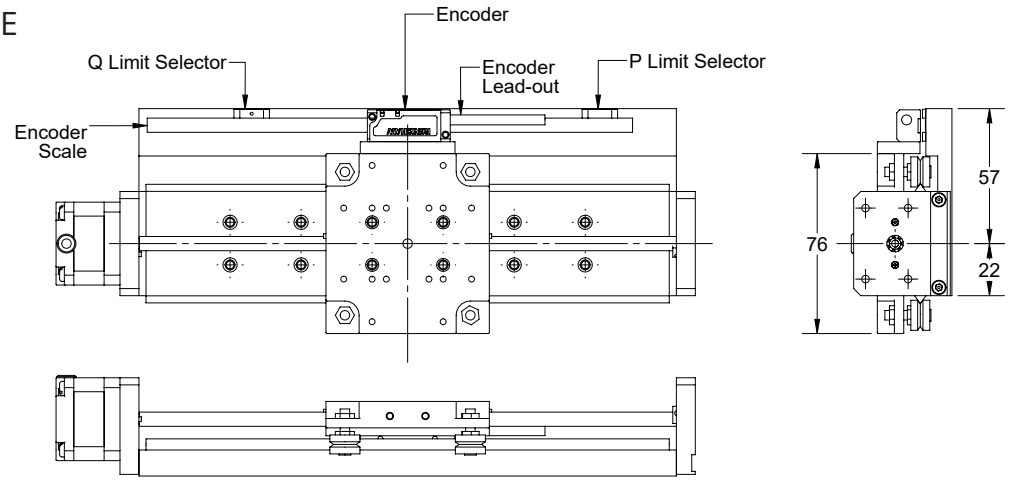


Travel mm	n	L	A	C
50	4	170	26.5	71.5
100	6	220	21.5	96.5
150	6	270	46.5	121.5
200	8	320	41.5	146.5
250	10	370	36.5	171.5
300	12	420	31.5	196.5
350	14	470	26.5	221.5
400	16	520	21.5	246.5

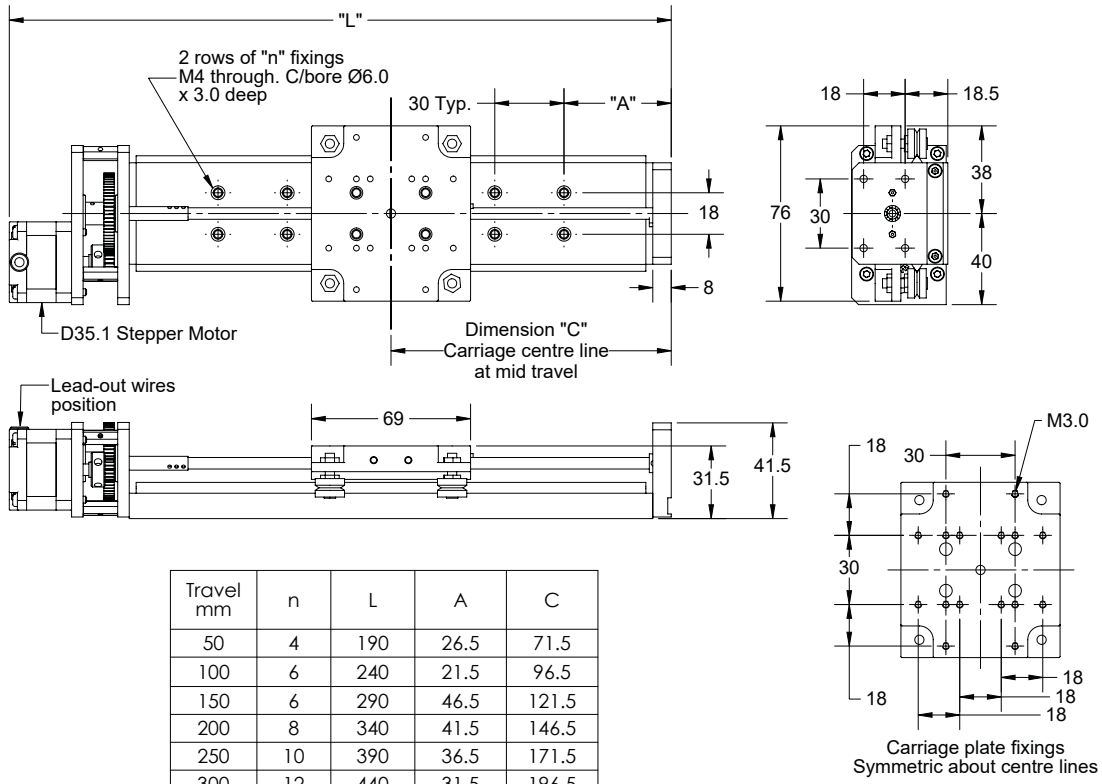
LTVL-LS



LTVL-E

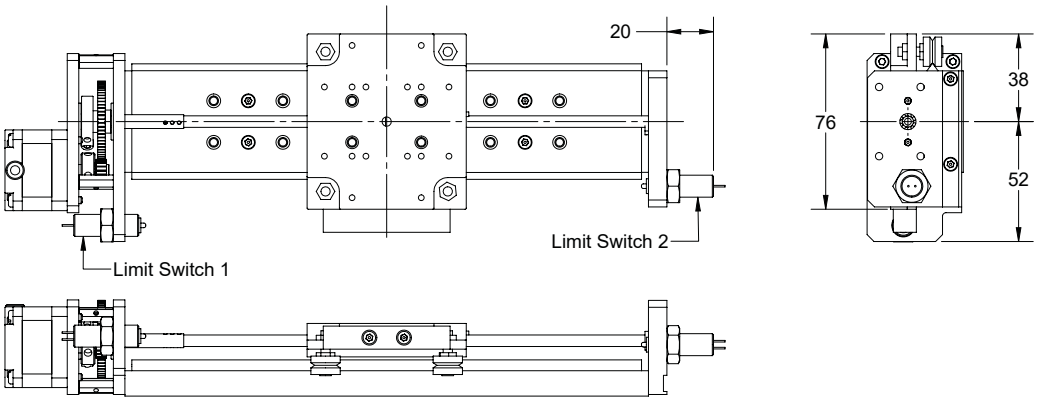


LTVH

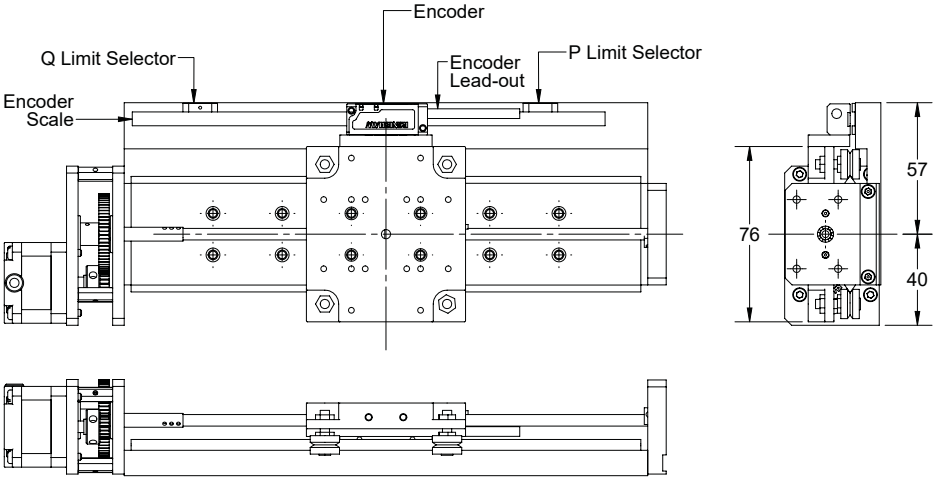


Travel mm	n	L	A	C
50	4	190	26.5	71.5
100	6	240	21.5	96.5
150	6	290	46.5	121.5
200	8	340	41.5	146.5
250	10	390	36.5	171.5
300	12	440	31.5	196.5
350	14	490	26.5	221.5
400	16	540	21.5	246.5

LTVH-LS



LTVH-E



ORDERING INFORMATION

Order Code	
LTVL-xxx	Translation stage, 5 µm (xxx = travel in mm)
LTVL-xxx-LS	Translation stage, 5 µm with 2 x limit switches
LTVL-xxx-E	Translation stage, 5 µm with optical encoder
LTVH-xxx	Translation stage, 1 µm (xxx = travel in mm)
LTVH-xxx-LS	Translation stage, 1 µm with 2 x limit switches
LTVH-xxx-E	Translation stage, 1 µm with optical encoder

Related Products	
SMD210	Stepper Motor Controller
SMD3	Stepper Motor Drive
MLF18NBL	18-way Electrical Feedthrough
MLF18NBL	3 metre lead, SMD210 to MLF18F

超高真空运动平台-LTX系列

LTX Translation Stage

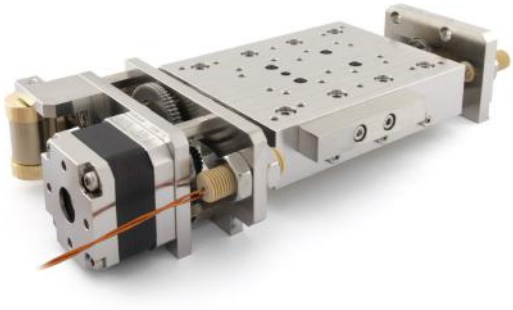
UHV Linear Sample Transporter (Rigid)

ARUN MICROELECTRONICS LTD

AML ultra high vacuum compatible rigid linear translation stages provide translation for loads of up to several tens of kilograms. They are generally similar to the AML LTV series, but use crossed-roller guides. They have very high rigidity, which is necessary where several transporters are stacked for compound motion or where offset loads are present. They are manufactured with UHV compatible material and construction methods and utilise AML UHV stepper motors.

FEATURES

- Travel ranges 25 to 85 mm
- Resolution to 1 µm per step
- Negligible backlash
- Low profile construction
- Load capacity to 50 kg
- Directly stackable for XYZ
- Suitable for use below 1 x 10^{-10} mBar
- Bakeable to 200°C
- Cross-roller bearing motion
- Diamond corrected leadscrew and matched nut
- Gamma radiation hard to 1 x 10^{6} Gy versions available
- Limit switch or optical encoder options available
- May be customised
- Cryogenic. Extended operating temperature range. -196°C to +175°C



SPECIFICATIONS

Specification	Unit	LTXL	LTXH
Travel	mm	25 / 55 / 85	
Resolution in full steps	µm	5	1
Maximum speed	mm/s	15	4
Recommended loaded speed in UHV	mm/s	2	0.8
Repeatability	µm	1	0.2
Centred Load Capacity (Normal)	kg	50	
Load moment	Nm	<20	
Axial load force @ 500Hz, 1A phase current	kg	3	10
Backlash	µm	Negligible	
Roll, Pitch & Yaw (Unloaded)	µrad	<25	
Roll Compliance	µrad/Nm	5	
Pitch & Yaw Compliance	µrad/Nm	2	
Straightness of Travel	µm	<1.3 µm / 100 mm	
Stepper Motor		D35.1	
Vacuum	mBar	1×10^{-10}	
Maximum temperature	°C	200 (reduces to 120 when an optical encoder is fitted)	
MTBF (5 kg load and 30% duty cycle)	hrs	15,000	10,000

NOTES

BACKLASH: Backlash in the gearbox of LTXH is controlled by special gearing and is negligible. Backlash between the nut and leadscrew, and axial float in the bearings is controlled by a constant force spring and is much less than the resolution. If the transporter is used for motion with a significant vertical component (>30°), the load provided by the carriage weight is sufficient to eliminate backlash and the spring can be removed. In these cases, mount with the motor at the top. Since speeds are low, acceleration forces are negligible.

ROLL COMPLIANCE: Multiple-axis mechanisms can produce varying roll moments about the bottom transporter. The LTX carriage will deflect about the roll axis at 5µradian per Nm. To achieve this performance the transporter must be fixed to an extremely rigid, flat baseplate, using all of the base fixings.

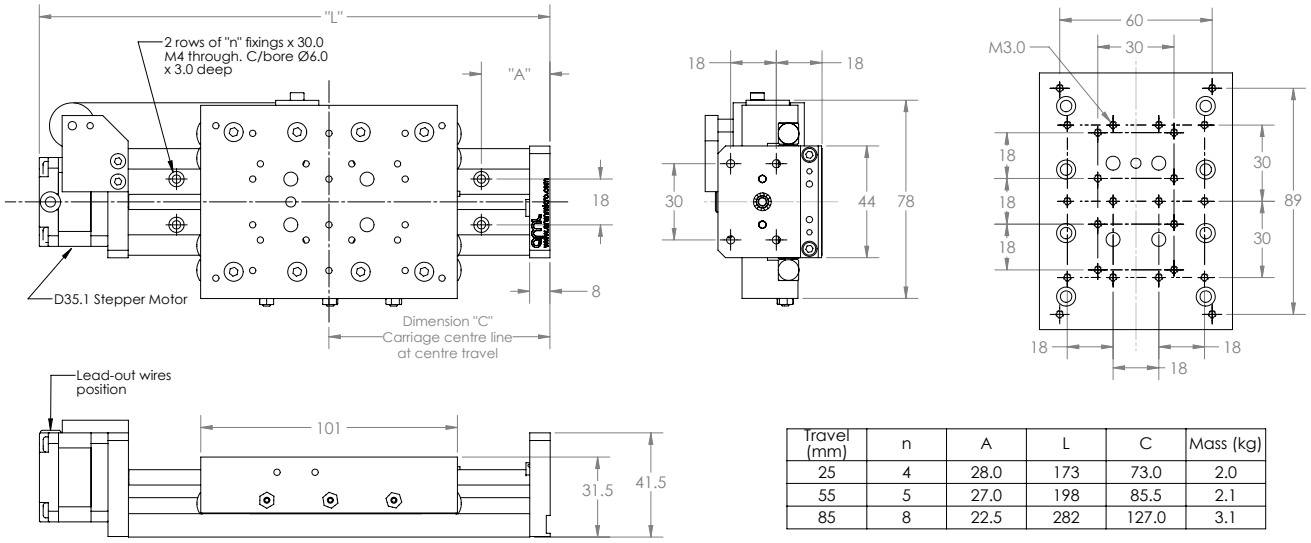
LUBRICATION: Running surfaces are dissimilar materials or dry lubricated with molybdenum disulfide. Leadscrews are lubricated with Nyetorr® 6300 UHV grease. Dry lubrication can be specified.

VERNIER STOP: These transporters may be driven to the vernier stops at the limits of their travel and stalled without damage.

STACKED MECHANISMS: For 3-axis motion mount the stage moving the load vertically on top of the others to avoid adding their weight to its load.

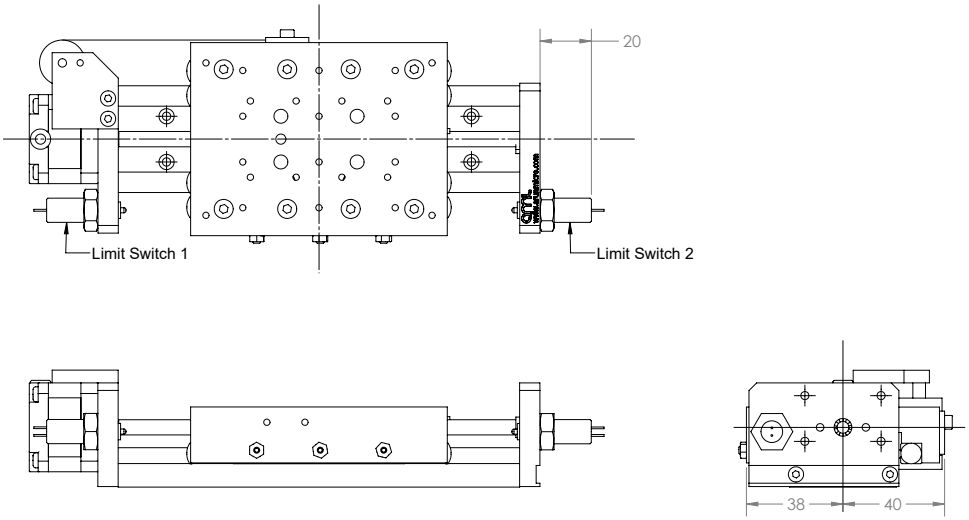
DIMENSIONS

LTXL

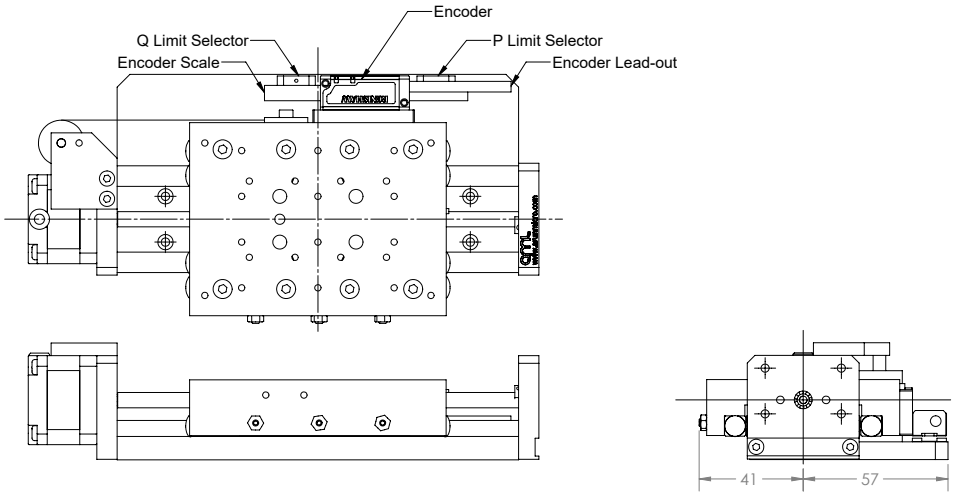


Travel (mm)	n	A	L	C	Mass (kg)
25	4	28.0	173	73.0	2.0
55	5	27.0	198	85.5	2.1
85	8	22.5	282	127.0	3.1

LTXL-LS

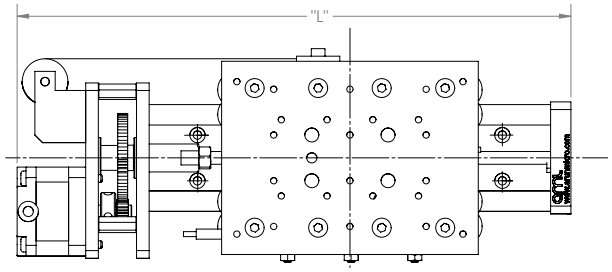


LTXL-E



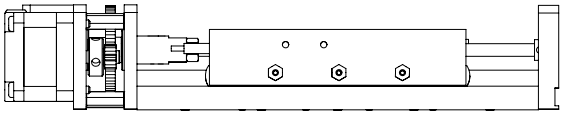
DIMENSIONS

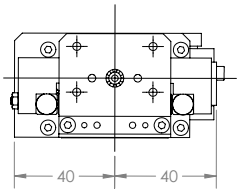
LTXH



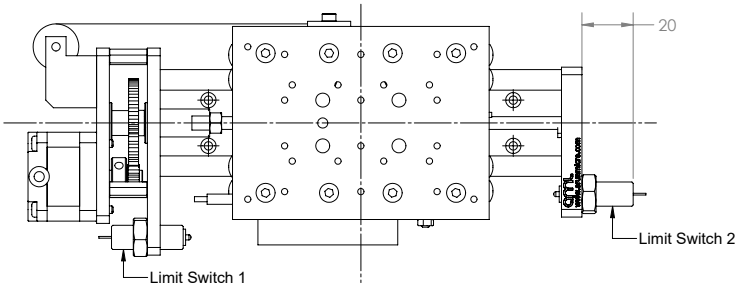
Travel (mm)	L	C	Mass (kg)
25	190	73.0	2.2
55	215	85.5	2.3
85	299	127.0	3.3

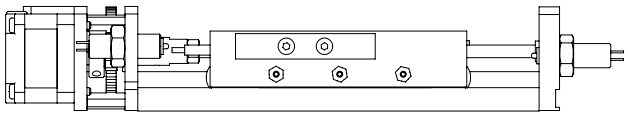
All other dimensions as LTXL

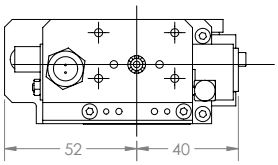




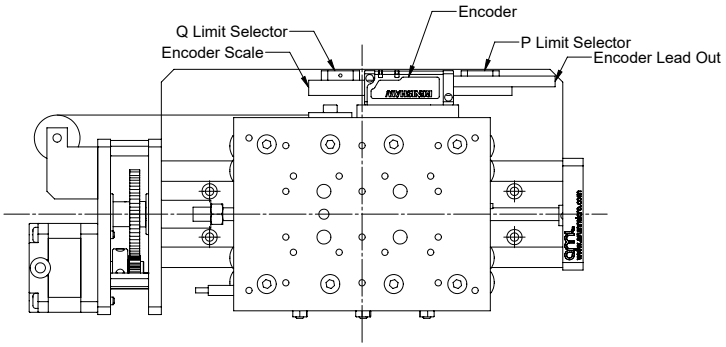
LTXH-LS

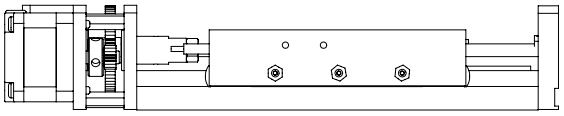


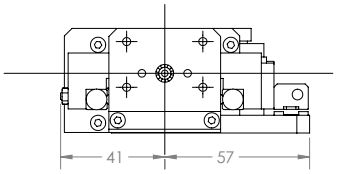




LTXH-E







ORDERING INFORMATION

Order Code	
LTXL-xxx	Translation stage, 5 µm (xxx = travel in mm)
LTXL-xxx-LS	Translation stage, 5 µm with 2 x limit switches
LTXL-xxx-E	Translation stage, 5 µm with optical encoder
LTXH-xxx	Translation stage, 1 µm (xxx = travel in mm)
LTXH-xxx-LS	Translation stage, 1 µm with 2 x limit switches
LTXH-xxx-E	Translation stage, 1 µm with optical encoder

Add suffix 'G' for Nyetorr® lubrication (at > 1 x 10^{-9} mbar)

Related Products	
SMD210	Stepper Motor Controller
SMD3	Stepper Motor Drive
MLF18F	18-way Electrical Feedthrough
MLF18NBL	3 metre lead, SMD210 to MLF18F

英国AML中国

北京星微自动化科技有限公司
Beijing XIVI Automation Technology Co.,Ltd.

电话：182 0109 9680
网址：www.xivimotion.com

AML pursues a policy of continuous improvement and reserves the right to make detail changes to specifications without consultation. E and OE.

超高真空偏摆平台

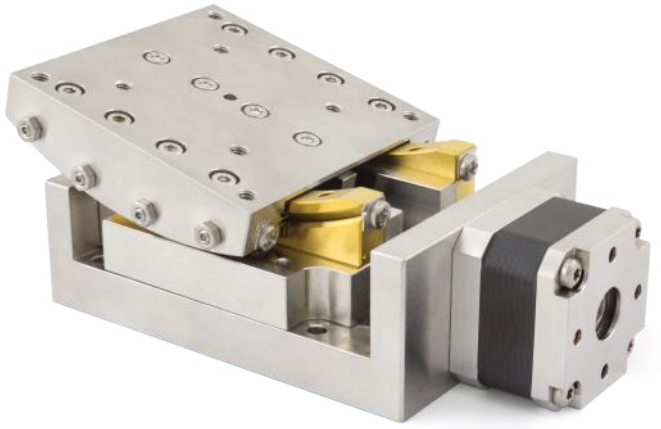
TSX Goniometer Stage

UHV Goniometer Stage

ARUN MICROELECTRONICS LTD

AML ultra high vacuum compatible goniometer stages are manufactured with UHV compatible material and construction methods in an ISO 7 cleanroom and utilize AML D35.1 UHV stepper motors.

The TSX72K0 features a rigid stainless-steel construction and low gear ratio, allowing for a high load capacity, whilst maintaining smooth motion through its 30 degrees of travel. Eight mounting holes are positioned on the top plate to allow for a wide variety of mounting positions and easy integration into any system.



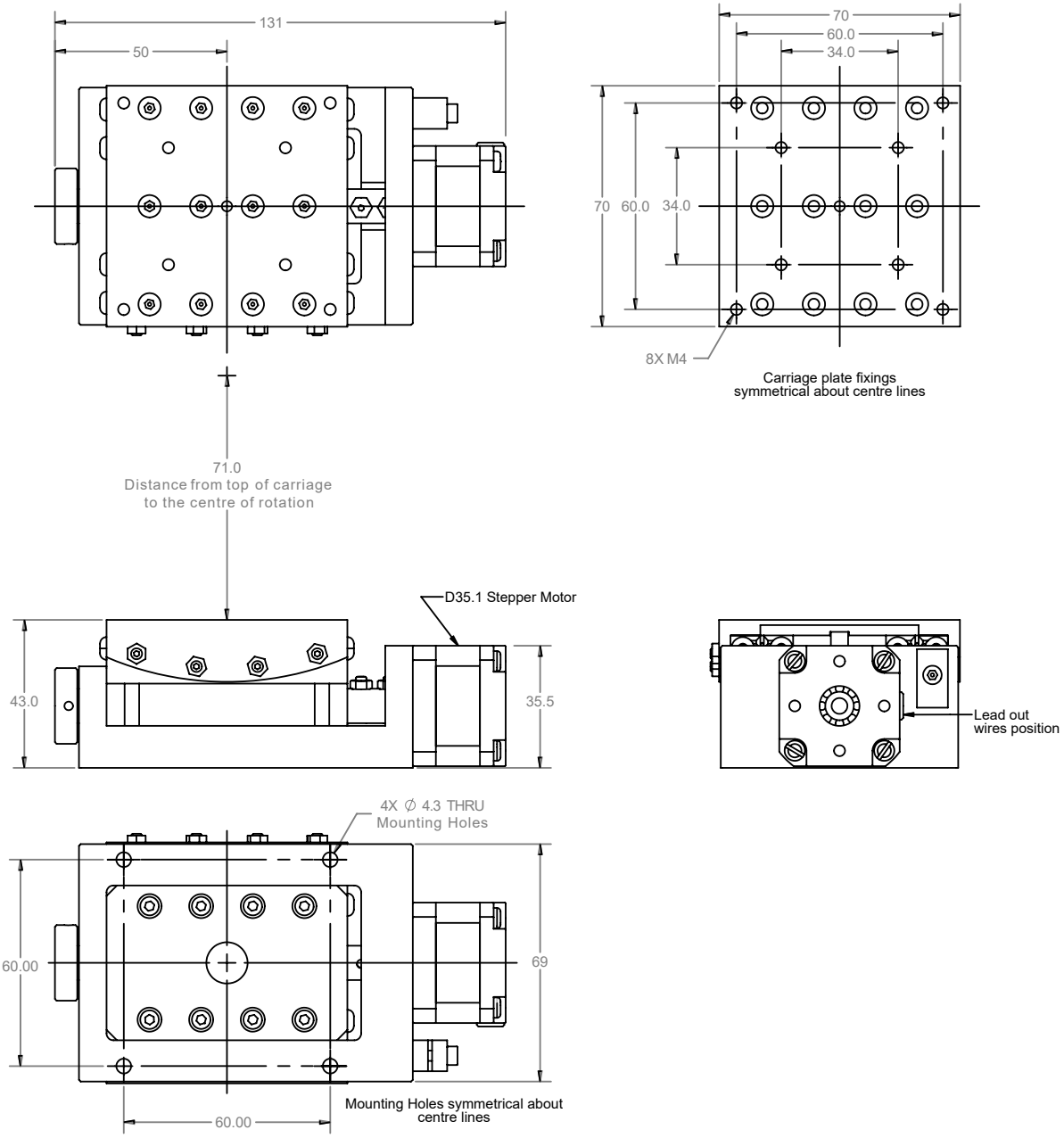
SPECIFICATIONS

Travel range	±15°
Resolution in full steps	0.005°
Work distance (rotation centre to table)	71 mm
Maximum loaded speed	25°/s
Table size	70 mm x 70 mm
Maximum torque	10 N·m
Bi-directional repeatability	±176 µrad
Centred load capacity (Normal)	40 kg
Wobble	±310 µrad
Radial compliance	30 µrad/N·m
Vacuum	1 x 10^{-10} mBar
Maximum temperature	200 °C
Motor	D35.1
Mass including motor	1.72 kg
Cable length	1.5 m

As standard TSX goniometer stages are supplied lubricated with Nyetorr® 6300 low-vapour pressure (6 x 10^{-12} mbar) grease. Dry lubrication with molybdenum disulfide is available as an alternative option but this will reduce the expected life.

Cryogenic. Extended operating temperature range. -196°C to +175°C

DIMENSIONS



ORDERING INFORMATION

Order Code	
TSX72K0	Goniometer stage 0.005° / step resolution

Related Products	
SMD3	Stepper Motor Drive
MLF18F	18-way Electrical Feedthrough
MLF18SMD3	3 metre lead, SMD3 to MLF18F
RSX3K6	Rotation stage 0.1° / step resolution
LTVL-xxx	Translation Stage, 5 µm (xxx = travel in mm)

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超高真空旋转台-RSB系列

RSB Rotation Stage

UHV Rotation Stage

ARUN MICROELECTRONICS LTD

Ultra high vacuum compatible rotation stages intended for intermittent rotation of balanced loads or as a precision gearbox.

Manufactured with UHV compatible material and construction methods and featuring a preloaded worm drive for zero backlash, continuous rotation range and AML D35.1 UHV stepper motors.

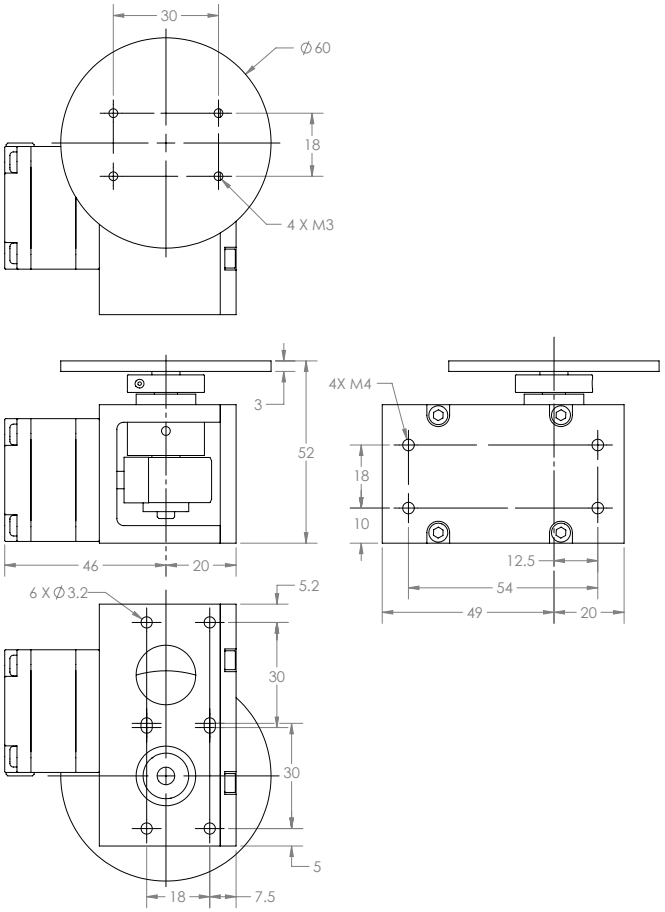
The RSB10K/20K/30K can be mounted directly on AML LTV translation stages to provide compact multi-axis positioning systems.

SPECIFICATIONS

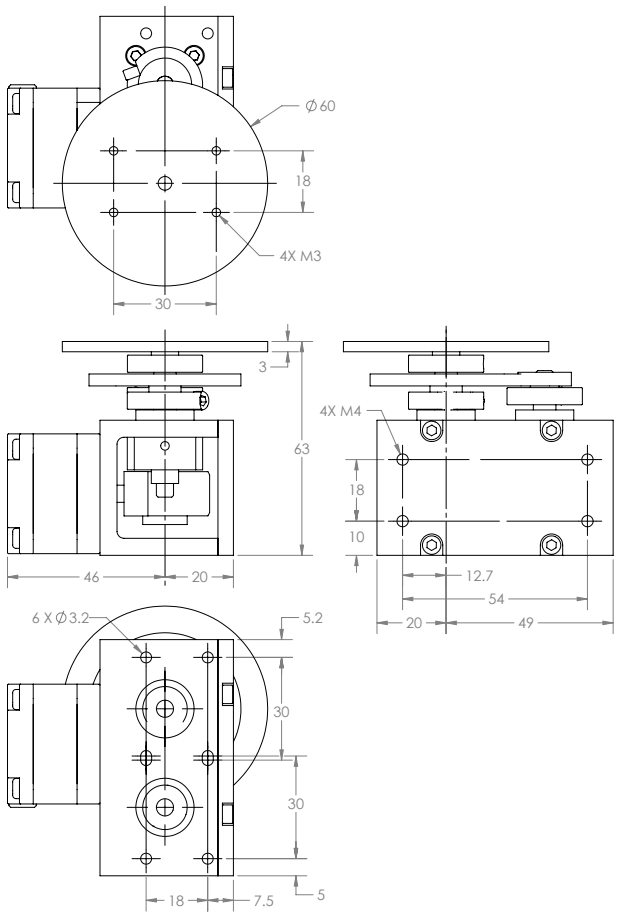
Model	RSB10K	RSB20K	RSB30K	RSB90K
Rotation range	360°			
Resolution in full steps	0.036°	0.018°	0.012°	0.004°
Steps per revolution	10,000	20,000	30,000	90,000
Maximum loaded speed	1kHz 10sec/rev	1kHz 20sec/rev	1kHz 30sec/rev	2kHz 45sec/rev
Load capacity Vertical	1kg			
Load capacity Horizontal	10kg			
Backlash (Unloaded)	Less than resolution			
Vacuum	1×10^{-10}			
Max.Temperature	200°C			
Motor	D35.1			
Weight, including motor	640g	710g	710g	940g

As standard CRS rotational stages are supplied lubricated with Nyetorr® 6300 low-vapour pressure (6×10^{-12} mbar) grease. Dry lubrication with molybdenum disulfide is available as an alternative option but this will reduce the expected life of the worm wheel.
Cryogenic. Extended operating temperature range. -196°C to +175°C

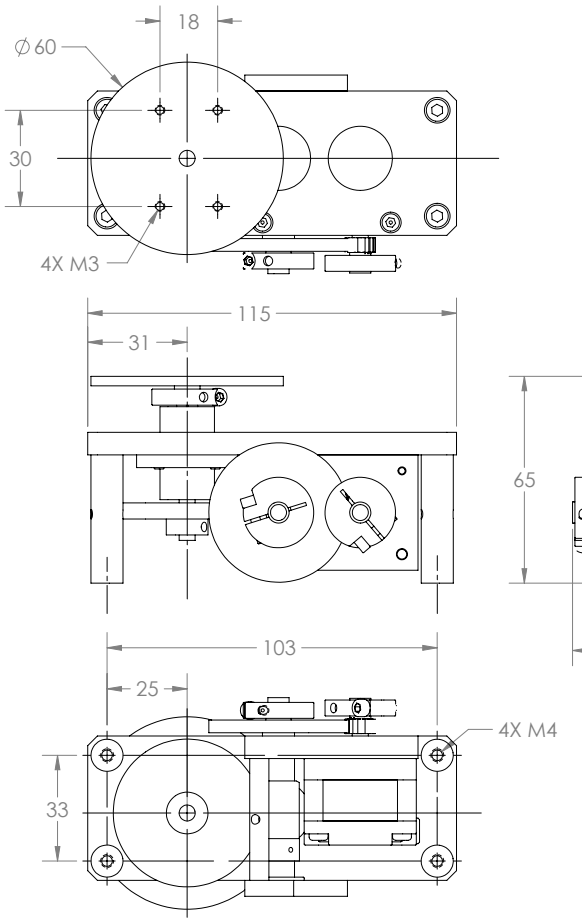
RSB10K

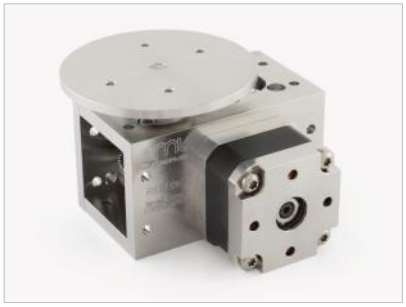


RSB20K / 30K

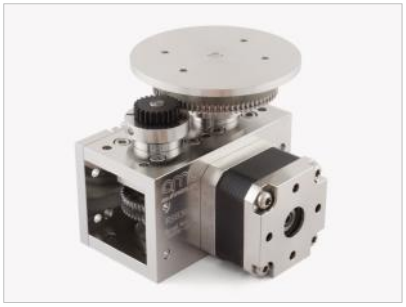


RSB90K





RSB10K



RSB20K/30K

RSB90K

ORDERING INFORMATION

Order Code	
RSB10K	0.036° Resolution Rotation stage
RSB20K	0.018° Resolution Rotation stage
RSB30K	0.012° Resolution Rotation stage
RSB90K	0.004° Resolution Rotation stage

Related Products	
SMD210	Stepper Motor Drive
MLF18F	18-way Electrical Feedthrough
MLF18NBL	3 metre lead, SMD210 to MLF18F
LTVLxxx	Translation Stage, 5 µm (xxx = travel in mm)

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超高真空旋转台-RSX系列

RSX Rotation Stage

UHV Rotation Stage

ARUN MICROELECTRONICS LTD

AML ultra high vacuum compatible rotation stages are manufactured with UHV compatible material and construction methods in an ISO 7 cleanroom and utilize AML D35.1 UHV stepper motors.

The RSX3K6 features a precision cross-roller ring bearing providing high rotational accuracy capable of bearing loads in every direction. It has a 18mm clear aperture, anti-backlash spur gearing and can optionally be fitted with an optical UHV compatible rotary encoder.

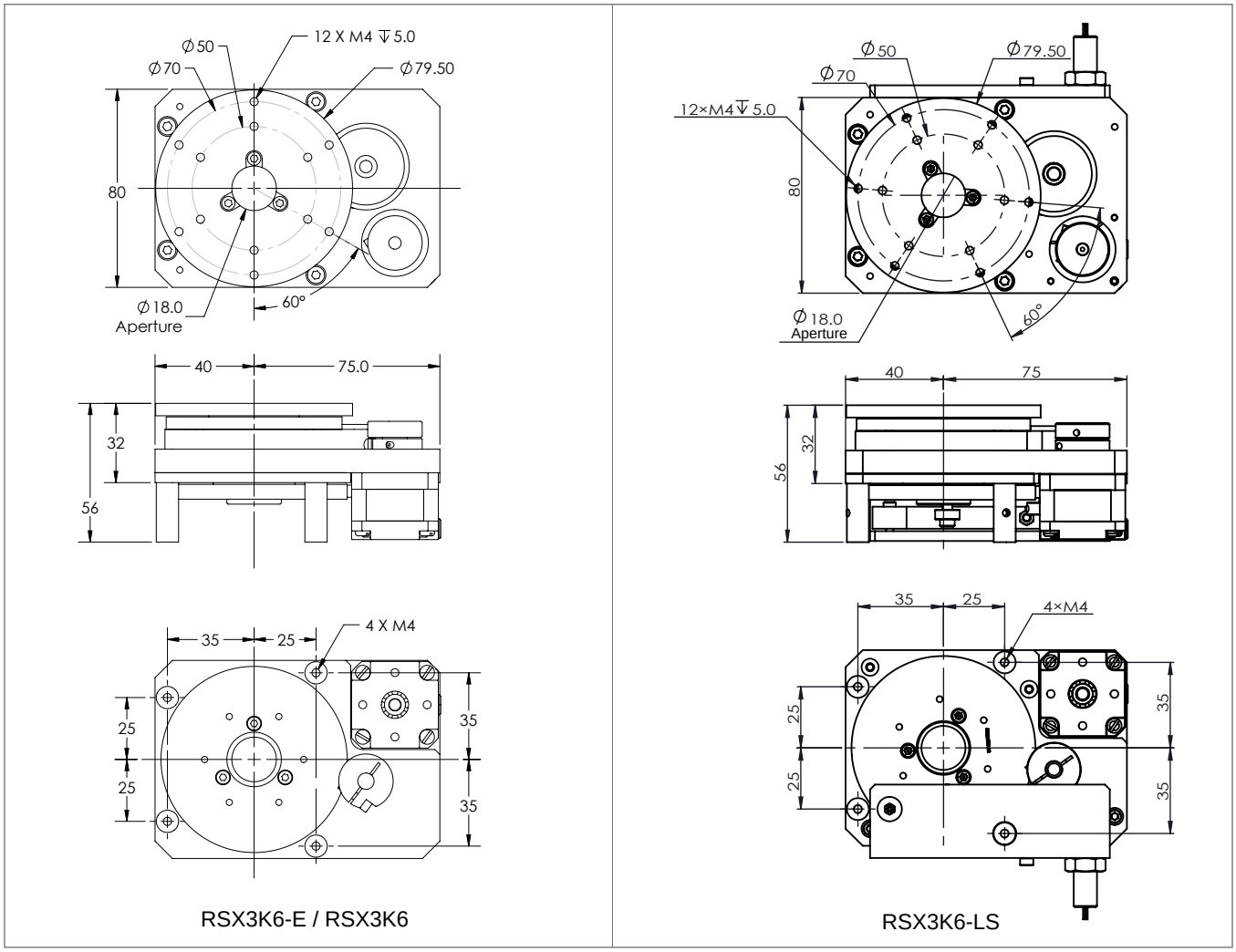
SPECIFICATIONS

Rotation range	360°
Resolution in full steps	0.1°
Steps per revolution	3,600
Maximum loaded speed	100 rpm
Maximum torque	1 N·m
Backlash (Unloaded)	Less than resolution
Centred load capacity (Vertical)	100 kg
Wobble	±4.0 µrad
Eccentricity	10.0 µm
Wobble compliance	10 µrad/N·m
Vacuum	1 x 10^{-10} mBar
Maximum temperature	200 °C (reduces to 120 °C when an optical encoder is fitted)
Aperture diameter	18 mm
Motor	D35.1
Mass including motor	1.7 kg

As standard RSX rotational stages are supplied lubricated with Nyetorr® 6300 low-vapour pressure (6 x 10^{-12} mbar) grease. Dry lubrication with molybdenum disulfide is available as an alternative option but this will reduce the expected life.

Cryogenic. Extended operating temperature range. -196°C to +175°C

DIMENSIONS



RSX3K6-E / RSX3K6

RSX3K6-LS

RSX3K6-E

RSX3K6

RSX3K6-LS

ORDERING INFORMATION

Order Code	
RSX3K6	Rotation stage 0.1° / step resolution
RSX3K6-E	RSX3K6 with optical encoder
RSX3K6-LS	RSX3K6 with 1 x Limit switch
Related Products	
SMD210	Stepper Motor Drive
MLF18F	18-way Electrical Feedthrough
MLF18NBL	3 metre lead, SMD210 to MLF18F
LTVLxxx	Translation Stage, 5 µm (xxx = travel in mm)

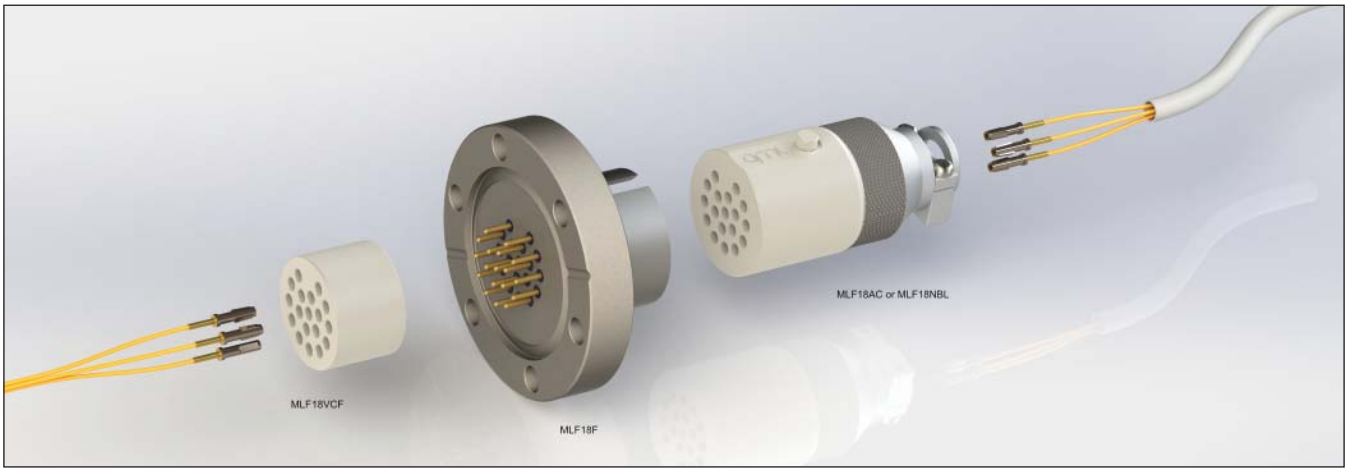
超高真空电极贯穿件

MLF18 Accessories

Ultra High Vacuum Feedthrough & Accessories

ARUN MICROELECTRONICS LTD

AML produce a range of wiring accessories to complement their UHV compatible stepper motors. These components make installation of motors and other electrical items in vacuum much easier.



MLF18F
18-way feedthrough on a NW35CF (70mm OD) flange which mates with the MLF18VCF UHV connector, MLF18AC air-side connector or the MLF18NBL lead. It has individual glass compression seals with 1.5mm diameter gold-plated pins and is bakeable to 250°C. For non-motor applications observe the maximum ratings of 200V, 5A maximum per pin and 15A maximum per feedthrough.

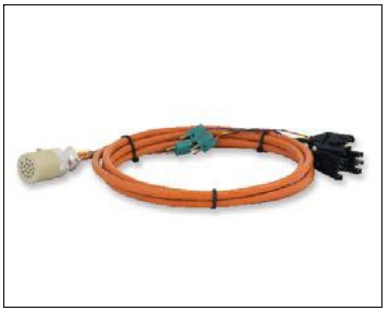
MLF18AC
Air-side connector which mates with the MLF18F feedthrough. Bakeable to 250°C. Use this for manufacturing your own air-side leads.

MLF18VCF

18-way electrical female PEEK connector for use in UHV and is bakeable to 250°C. It mates with the MLF18F feedthrough and the MLF18VCM male connector. The gold plated, barbed crimp-contacts are attached to wires before insertion into the body and removed with a standard pin extraction tool if required. All AML motors are supplied with this type of crimp-contacts.

MLF18VCM

Male counterpart of the MLF18VCF.



MLF18L

3-meter, 250°C bakeable lead for use with AML stepper motor drives and up to 3 motors installed in one vacuum chamber. It mates with the MLF18F feedthrough.

MLF18NBL

3-meter non-bakeable lead for use with AML stepper motor drives and up to 3 motors installed in one vacuum chamber. It mates with the MLF18F feedthrough.

PWB

Set of 4, 250°C bakeable PEEK wiring bushes and M3 x 16mm vented screws. The four phase wires and thermocouple from a single motor are a light fit in the hole in the bush. Use one in situations where a 'P' clip would be used in air.

VTB6

6-way 250°C bakeable PEEK terminal block. Rating 2A per way, 200V and is compatible will all AML polyimide-covered wires. Supplied with M3 fixing screws, washers and nuts.

BC1.5

Pack of 10 barrel connectors 1.5mm bore.

MLF18SKT

Bag of 20 replacement crimp-contacts for use with MLF18VCF and MLF18AC.

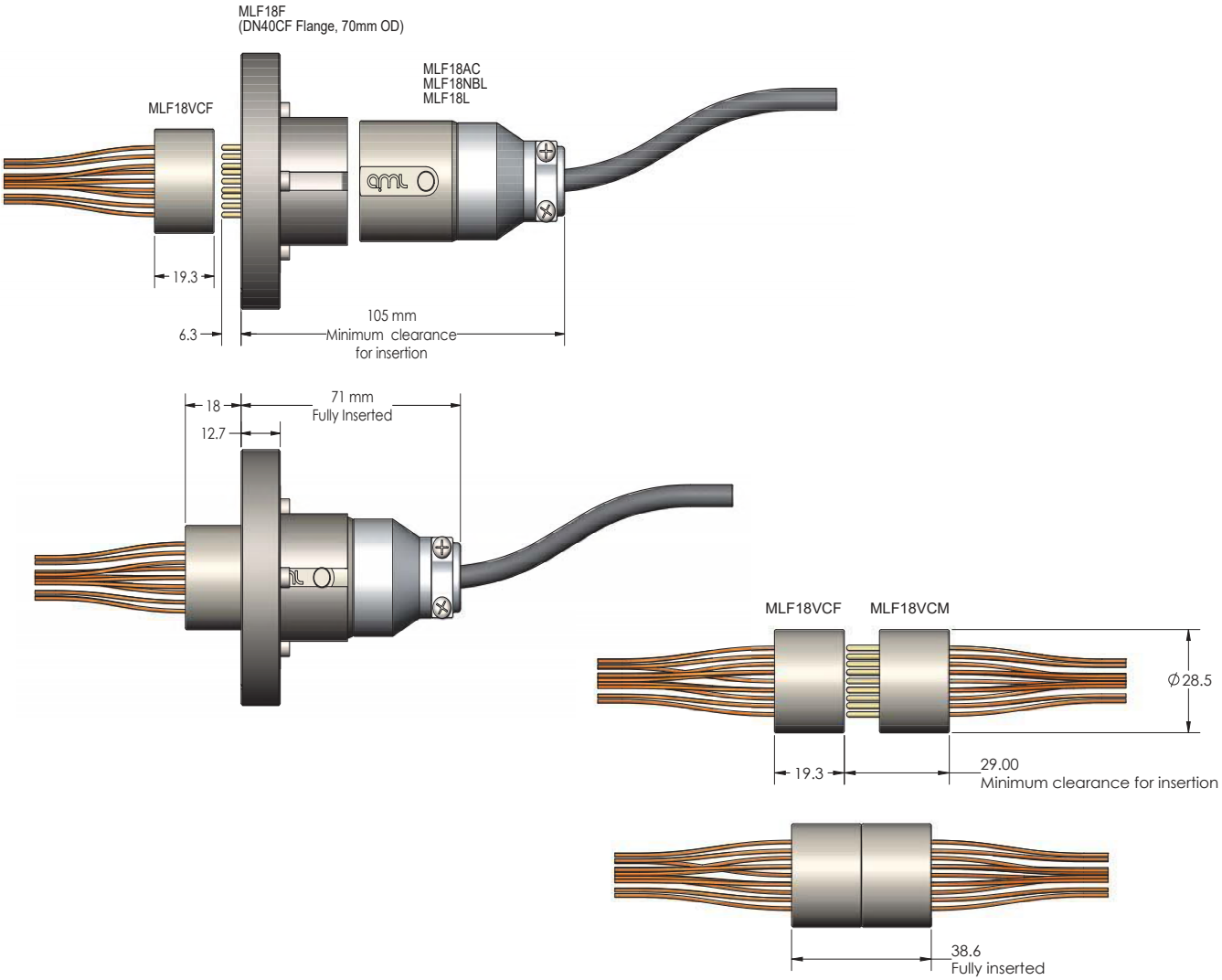
MLF18PIN

Bag of 20 replacement crimp-contacts for use with MLF18VCM.

XCR24. Crimp tool for MLF18 crimp contacts.

XPX24. Pin extraction tool for MLF18 crimp contacts.

DIMENSIONS



ORDERING INFORMATION

Order Code	
MLF18F	Feedthrough, 18-way
MLF18VCF	In-vacuum female connector, 18-way
MLF18VCM	In-vacuum male connector, 18-way
MLF18AC	Air side connector, 18-way
MLF18L	SMD210 air side lead, 3m, bakeable
MLF18NBL	SMD210 air side lead, 3m non-bakeable
PWB	PEEK wiring bush x 4
VTB6	PEEK terminal block, 6-way
BC1.5	Barrel connectors. Pack of 10
MLF18SKT	Socket crimp, 24AWG. Bag of 20
MLF18PIN	Pin contact crimp, 20AWG. Bag of 20
XCR24	Crimp tool
XPX24	Pin extraction tool

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ARUN MICROELECTRONICS LTD

超高真空高低温耐辐射线缆

KW Wire Ultra High Vacuum Wire & Thermocouple

GENERAL CHARACTERISTICS OF POLYIMIDE INSULATED WIRE

Polyimide has excellent dielectric and mechanical properties. It has good resistance to abrasion and is flexible at high and low temperatures. The outgassing performance is excellent and it loses adsorbed gas quickly during bakeout.

Polyimide covered wire is available in two basic forms: enamelled and film-wrapped. The enamelled wire has a thin coating and has the advantage of being radiation-resistant. The film-wrapped wire has much thicker insulation and is more suitable in applications where the wire is subjected to movement.

Polyimide is naturally gold to pale brown in the range of thicknesses used: no organic dyes are added. All products of this type are supplied cleaned for UHV use.

Common Data - all types

- Minimum bend radius 2mm
- Bakeable to 200ºC. The insulation will remain intact up to 260ºC but the outgassing performance may be permanently degraded.
- Minimum temperature <4.2ºK. If used below 80ºK the wire must not be allowed to flex, stretch or twist.
- Outgassing products CO and H2, < 1 x 10^{-12} mBar litres/sec. cm^2 at 70ºC after a 12 hour bake at 200ºC.

KW3

- Polyimide enamelled OFHC copper wire. 10 metre length.
- Wire diameter 0.295mm, overall 0.314 to 0.331mm
- Resistance 0.25 ohm $metre^{-1}$ at 20ºC.
- Voltage rating 250V RMS.
- Withstands gamma irradiation > 1 x 10^{10} Rad.

KW6

- Silver-plated OFHC copper wire with two wrapped helical films of polyimide. The polyimide is sealed to itself with a fluorinated ethylene copolymer. 10 metre length.
- Wire diameter 0.6mm, overall 0.81 to 0.87mm.
- Resistance 0.06 ohm $metre^{-1}$ at 20 ºC.
- Voltage rating 600V RMS

KTK

- Chromel/Alumel type K thermocouple with a wrapped helical film of polyimide on each wire. The polyimide is sealed to itself with a fluorinated ethylene copolymer. The thermocouple junction is exposed. Wires are twisted. Length 2 metres.
- Wire diameters 0.2mm, overall 0.4mm.
- Tolerance. Deviation <1º over -40ºC to +230ºC from BS4937 standard table.

APPLICATION INFORMATION

Stripping

Use of a rotary high speed stripper is recommended for all polyimide insulated wire. Thermal strippers are not suitable.

Film-wrapped wire may be stripped by rolling the wire under a sharp knife and removing the free cylinder of insulation. Care should be taken to avoid damage to the wire.

Enamelled wire may be stripped by abrading with silicon carbide paper.

Use of Thermocouples

The thermocouple junction is exposed. Ensure that contact with any conducting surface does not present a source of error to any measuring or control device connected to the thermocouple. Most control equipment will be affected by any common mode voltage on the thermocouple so it is often necessary to isolate the junction. Alumina ceramic beads or plates are convenient for this purpose because they have high thermal conductivity and good electrical insulation properties.

Because the wires are identical in appearance they must be identified by other means. When the thermocouple junction is heated a positive voltage is generated on the Chromel wire with respect to the Alumel wire. The voltage is about 40μV $^{o}C^{-1}$ so that a temperature increase of many tens of degrees will be necessary for positive identification with a voltmeter. Alternatively, since Alumel is weakly magnetic it may be identified with a small permanent magnet.

Connect the thermocouple to the controller with compatible, screened or twisted wires. It is generally not worthwhile using a compatible-material feedthrough, due to the practical difficulty involved in making a joint on the vacuum side with entirely compatible materials. Ensure that the feedthrough pins used are as close together as is practical so that they are at the same temperature. This will cause the voltages generated by the additional, unwanted thermocouples at each end of the feedthrough pins to be small and to cancel each other. The typical error with these precautions taken is less than 2^{o}C.

Avoid using spare pins on a multi-way feedthrough carrying high currents as these will heat the entire feedthrough and contribute to measurement errors. Large alternating voltages close to the thermocouple wires may affect the measuring device.

ORDERING INFORMATION

Order Code	
KW3	0.3mm copper wire, polyimide-enamelled. 10m
KW3/100	0.3mm copper wire, polyimide-enamelled. 100m
KW6	0.6mm copper wire, polyimide-wrapped. 10m
KW6/100	0.6mm copper wire, polyimide-wrapped. 100m
KTK	Type K thermocouple, polyimide-wrapped. 2m

真空离子规控制器

NGC3 Ion Gauge Controller

UHV Dual Bayard-Alpert Ion Gauge Controller

ARUN MICROELECTRONICS LTD

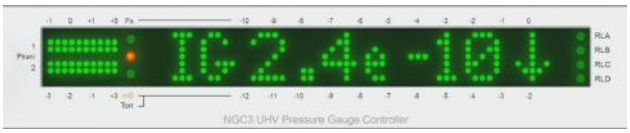
The NGC3 is a high-accuracy Ion Gauge controller that offers integrated pressure measurement and process control with a large, clear display, an intuitive user interface and serial communications.

- Continuous measurement range: 1200 mBar to 3 x 10^{-11} mBar
- Control 2 Ion gauges (sequentially), 1 Active gauge and 2 AML legacy Pirani gauges
- Bright green LED display; measurements are easy to read. Assignable custom gauge labels
- Multiple Ion gauge modes, including start/stop and interlock based on Active or Pirani gauge pressure
- 1U high full-width for easy rack-mounting
- Display pressure in mBar, Torr or Pascal, or Ion current in Amps
- Password protection feature; prevent inadvertent changes to important setup
- Automatic or manual emission current setting; sensitivity adjustable 1 $mBar^{-1}$ to 140 $mBar^{-1}$
- Manual and automatic electron-bombardment degas programs
- 4 power relays for process control
- System bake-out program with control of temperature, time and over-pressure limit. Integral K-thermocouple amplifier
- RS-232C interface for data-logging and control, 1.0 volt/decade Recorder output
- Operates from 100 V to 240 V, 48 to 65 Hz supply without adjustment

Active gauge input

Industry standard RJ45 jack for connection of most low power (24 V, 1 W max.) active gauge heads. Selectable linear or log formats.

Ideally suited for use with our APG Active Pirani gauge head.



Ion gauge operation

Four modes of operation; Auto and Interlock use Active or Pirani gauge pressure to automatically start/stop the Ion gauge, or prevent it from starting based on Active or Pirani gauge pressure.

External inhibit allows start/stop of Ion gauge from an externally supplied logic signal.

Use manual mode to force Ion gauge on and off as required.

Serial interface

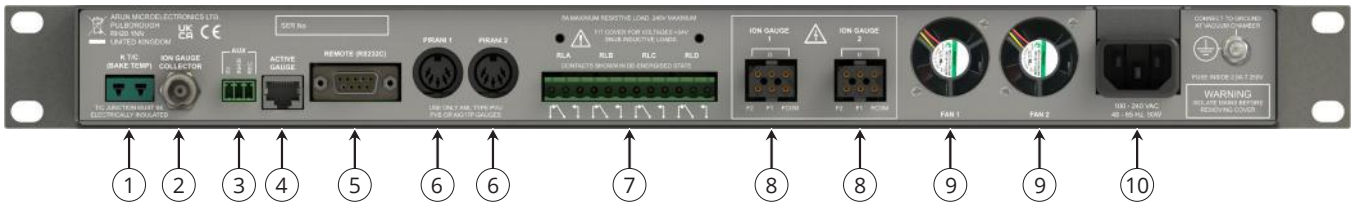
Read back pressure measurements or control the NGC3 via the easy to use serial interface. Full documentation of the protocol is provided, making it easy to integrate into your application.

Software is available for download on our website which demonstrates the interface features offered by the NGC3.

SPECIFICATIONS

Ionization Gauge				
Gauge type	AML AIG1xG are recommended. Bayard-Alpert gauges with coiled filaments from many other manufacturers are suitable without adjustment other than sensitivity.			
Range	From 1 x 10^{-3} to below 3 x 10^{-11} mBar with a UHV gaugehead with tungsten filaments. The lower limit is dependent on gaugehead, cable construction, cable length and conditions of use. The upper limit is determined by the acceptable life of the filament and my be extended by the use of thoria or yttria-coated iridium filaments.			
Accuracy and repeatability	Determined principally by the gaugehead: controller errors are much smaller. Emission at 0.5 mA is recommended.	Electrometer Logarithmic Conformance		
		Range	21°C	5°C to 35°C
		1 mA to 350 pA	<1%	<1%
		<350 pA to 10 pA	<1%	<4%
		<10 pA to 2 pA	<10%	<20%
Gauge supplies	Grid: +200 V in emission, +500 V at ≤60 mA in degas. Filament: +50 V bias, ≤12 V at ≤4.2 A (Tungsten), ≤2.6 A (Iridium) with power limited to 30 W maximum.			
Pirani Gauge				
Gauge type	AML types PVU and PVB. A constant-voltage bridge circuit reduces contamination at high pressures. AML Pirani gaugeheads may be exchanged or extension leads may be connected without adjustments being necessary.			
Active Gauge				
Gauge type	Self-powered or Active Gauge with +10 V full-scale output. Format selectable between linear (1, 10, 100, 1000 mBar or Torr full scale) or log (1 V/decade, 0.5 V at 1 x 10^{-6} mBar). The instrument provides a regulated +24 Vdc supply, 1 W maximum, protected by a 50 mA self-resetting fuse to power a connected Active gauge.			
Process trips				
Relays	4 x single-pole, change-over. 5 A at 240 V maximum.			
Assignment	Independently assignable to any gauge.			
Bake-out				
Thermocouple type	Mineral-insulated K-type with miniature flat-pin connector.			
Programme	Settable bake temperature (50°C to 250°C), bake time (1 hour to 90 hours) and overpressure limit.			
Communications				
Interface	RS232C			
Settings	1200, 2400, 4800 or 9600 (Default) baud, 8 data bits, 1 stop bit, no parity, no handshaking.			
General Specifications				
Pressure display	Scientific notation (1 or 2 decimal place resolution) or bar-graph displays in mBar, Torr or Pascal.			
Current display	Whole values in pA, nA, µA and mA.			
Operating temperature	5°C to 35°C for specified performance. Incoming air temperature is measured and displayed. Operation is inhibited at >40°C.			
Supply voltage	100 V to 240 V nominal at 48 to 65 Hz, without adjustment.			
Power consumption	<20 W idling, <75 W in emission.			
Dimensions	Width: 19" full-width rack (482.6 mm), Height: 1U (44.45 mm), Depth 270 mm.			
Weight	2.7 kg			

CHASSIS REAR PANEL



1	Thermocouple connector (K-Type)	2	Ion gauge collector connector (BNC)
3	AUX (3.5 mm pitch, 3-way terminal block)	4	Active gauge connector (8P8C RJ45)
5	Remote RS232 connector (DB-9 Female)	6	Pirani gauge connectors (5-pin DIN)
7	Relays (5.08 mm pitch, 12-way terminal block)	8	Ion gauge connectors (SMS6GE5)
9	Fans (30 mm, 12 V)	10	Input power connection (C14 IEC)

AML GAUGES

AML supplies a range of hot-cathode ionization gauges with a choice of tungsten (W), thoria coated iridium (ThO2/Ir) or yttria coated iridium (Y2O3/Ir) filaments. We also offer passive Pirani and active MEMS Pirani gauges.

Bayard-Alpert Ion Gauge

Pirani Gauge

MEMS Active Pirani Gauge

ORDERING INFORMATION

Order Code	
NGC3	Ion Gauge Controller

Related Products	
AIG17G	UHV BA Ion Gauge. 2 x Tungsten filaments
AIG18G	UHV BA Ion Gauge. 2 x Thoria coated Iridium filaments
AIG19G	UHV BA Ion Gauge. 2 x Yttria coated Iridium filaments
AIGL3, 6 or 9	3, 6 or 9 metre bakeable ion gauge cable
APG-1	Active Pirani Gaugehead
PVU3	Pirani gauge. Non-bakeable with 3 metre cable
PVB3	Pirani gauge. Bakeable with 3 metre cable
PVX10	Pirani 10 metre extension cable, non-bakeable
XAD1	AGP-1 to RJ45 adapter

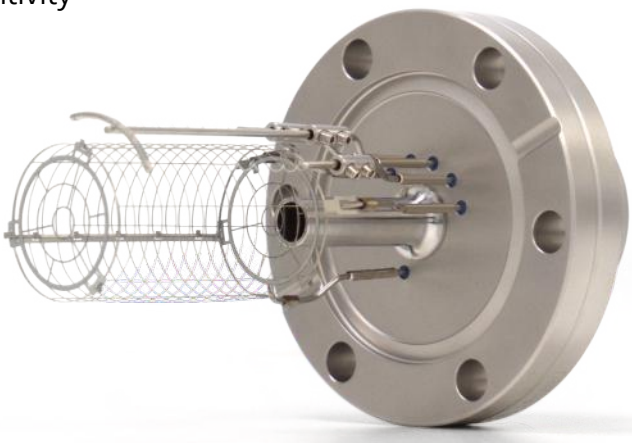
超高真空离子规

AIG Ion Gauge

UHV Nude Bayard-Alpert Ion Gauge

ARUN MICROELECTRONICS LTD

The AML AIG nude ionization gauge is a high-sensitivity UHV Bayard-Alpert gauge covering the vacuum range of $3x10^{-11}$ to $1x10^{-3}$ mbar and is intended for electron-bombardment degas. It has an NW35CF flange with in-dividual glass compression seals, closed-end grid and a choice of filament materials.



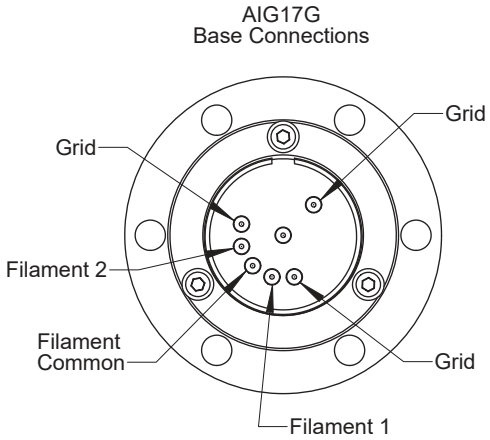
FEATURES

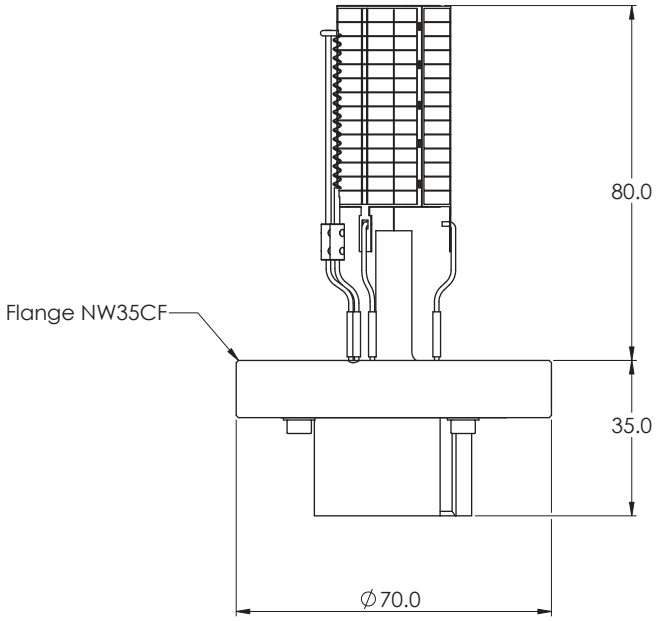
- Wide measuring range $3x10^{-11}$ to $1x10^{-3}$ mbar
- Replaceable twin Tungsten, Thoria or Yttria-coated Iridium filaments
- Individual glass compression seal around each feedthrough pin are more economical and robust than ceramic, resulting in a less expensive and more rugged gaugehead, with the central collector pin inherently guarded against leakage currents by the grounded bulk of the flange
- The molybdenum grid has a closed-end, light, rigid structure, resulting in high sensitivity. The X-Ray induced electron desorption current at the collector is minimised by geometry and screening
- Connector pins are gold-plated, shrouded and polarized. Gold plating ensures that oxidation on the air-side cannot occur even after repeated bakeouts
- Maximum bakeout temperature 450 °C. Sensitivity 19 per mbar for nitrogen. X-Ray asymptote $3x10^{-11}$ mbar
- RoHS compliant

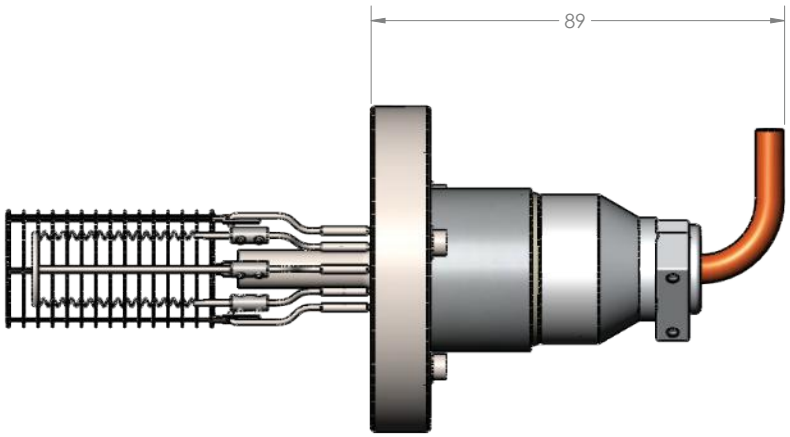
SPECIFICATIONS

Measurement range	$3x10^{-11}$ to $1x10^{-3}$ mbar / $2.2x10^{-11}$ to $1x10^{-3}$ Torr
X-ray limit	$3x10^{-11}$ mbar
Sensitivity for N_2	19/mbar
Degas power	50 W (maxiumum)
Bakeout temperature	450 °C
Filament	Dual Tungsten or dual yttria coated iridium or dual thoria coated iridium
Mounting flange	NW35CF (2.75")
Mounting position	Any
Collector potential	0 V
Grid potential	+200 V
Filament bias	+50 V
Maximum emission	10 mA(W), 60 mA (Ir)

DIMENSIONS







FEATURES

Filament Types

Filament power varies over the useful life of a filament, due to gradual erosion of bare tungsten or loss of the oxide coating. In general, Thoria-coated iridium filaments require about one quarter the power of tungsten at mid-life. Yttria has similar properties and runs less than 50 °C hotter in normal emission. Yttria also has better adhesion and consequently longer life. Oxide-coated filaments absorb water in storage and may require morepower initially to evaporate it.

The filament power supply must be capable of providing high currents to develop adequate power in the low resistance of a cold filament and sufficient voltage to compensate for drops in a long, hot cable. A power-limited supply of 40 W capable of providing up to 12 V and up to 4 A will drive any AIG17G gauge operating under any conditions, (including degassing during bakeout at 250 °C) with an AIGL9 lead. AML BA gauge controllers exceed these requirements and include comprehensive filament protection features.

Replacement Filaments

Replacement filament assemblies are available in tungsten, thoria and Yttria-coated iridium. The assembly is held by Allen set screws in socket receptacles and a key and replacement screws are provided.

AIGL Gauge Lead

The AIGL is a 250 °C bakeable lead for use with AIG and similar ionisation gauges connected to AML controllers. They are available in 3, 6 and 9 metre versions or custom lengths to order. AML use gold-plated connectors exclusively: these are essential for reliable long-term measurement of the ion current after baking. The cable is rated for the worst-case operating conditions of 50 W degas with a new tungsten filament during a 200 °C bake. This product incorporates a fully screened and guarded collector with >1x10^{15} Ω insulation. The connector housing is machined from PEEK and the cable clamp is anodized aluminium.

ORDERING INFORMATION

Order Code	
AIG17G	UHV BA Ion Gauge, 2 x Tungsten filaments
AIG18G	UHV BA Ion Gauge, 2 x Thoria coated filaments
AIG19G	UHV BA Ion Gauge, 2 x Yttria coated filaments

AIGL3	3 metre bakeable ion gauge cable
AIGL6	6 metre bakeable ion gauge cable
AIGL9	9 metre bakeable ion gauge cable

FIL17	Replacement filament assembly, Tungsten
FIL18	Replacement filament assembly, Thoria coated
FIL19	Replacement filament assembly, Yttria coated

真空MEMS皮拉尼规

APG-1 Pirani Gauge

Wide Range MEMS Pirani Gauge

ARUN MICROELECTRONICS LTD

The APG Pirani gauge incorporates cutting edge MEMS (Microelectromechanical Systems) sensor technology with precision digital signal processing and advanced measurement algorithms. Combined with precision automated manufacturing and calibration processes, this product provides uncompromised measurement performance.

The well-known gas dependency in the rough vacuum range of thermal conductivity gauges has been eliminated by integrating a MEMS diaphragm sensor that offers precision performance comparable to more expensive capacitance manometers. This feature ensures more accurate control of vacuum system venting processes and can prevent over-pressurization of the vacuum system.

- Measurement range: 1 x 10^{-6} mBar to 1333 mBar (7.5 x 10^{-7} to 1000 Torr)
- Ultra-wide range high performance MEMS Pirani sensor
- Advanced innovative digital signal processing
- Precision gas-independent sensor from 5 to 1333 mBar
- 0 - 10 Vdc programmable voltage output
- Mountable in any orientation without impact on performance
- Programmable voltage output signal
- Digital RS-232 interface
- One solid-state relay for process control
- High overpressure tolerance of 10 bar (145 psi) absolute

Transducer settings and parameters are user-programable from the serial interface enabling diagnostics, predictive maintenance, service, calibration, setpoint configuration, analog output scaling and acquisition of real-time vacuum pressure measurements. A wide selection of analog output scaling options to emulate other vendors' vacuum gauges and transduces is available.

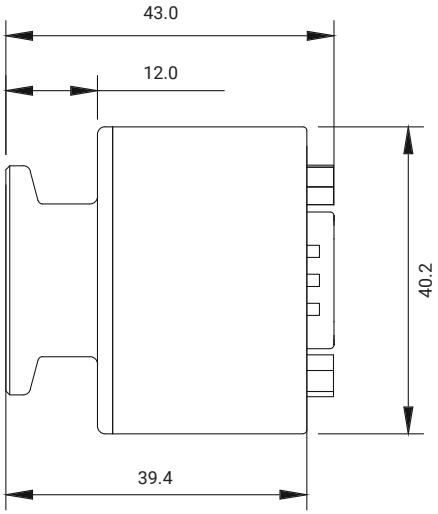
Active temperature compensation and calibration provides an ultra-stable zero-point which enables a reliable, wide dynamic range – it also eliminates the need for frequent user re-zeroing due to zero-point drift commonly known from legacy Pirani and convection gauges. The active temperature compensation also compensates for measurement signal errors introduced by fluctuations in the ambient temperature.

One independent solid-state switch relay. The basic control uses on/off regulation with a programmable setpoint and hysteresis value and offers both normally closed and normally open contacts.

TECHNICAL DATA

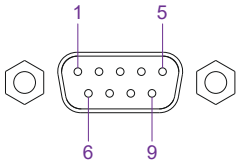
Specifications	
Measurement range	1 x 10^{-6} to 1333 mBar (7.5 x 10^{-7} to 1000 Torr)
Measuring principle 1 x 10^{-6} to 1.5 mBar	MEMS Pirani thermal conductivity
Measuring principle 1.5 to 2 mBar	Blended MEMS Pirani / piezo reading
Measuring principle 2 to 1333 mBar	MEMS piezo resistive diaphragm
Accuracy 1 x 10^{-5} to 9.99 x 10^{-5} mBar	25% of reading
Accuracy 1 x 10^{-4} to 7.99 mBar	5% of reading
Accuracy 8.00 to 99.9 mBar	1% of reading
Accuracy 100 to 800 mBar	0.5% of reading
Accuracy 800 to 1099 mBar	0.25% of reading
Accuracy 1100 to 1333 mBar	0.5% of reading
Hysteresis 1×10^{-3} to 10 mbar (ISO19685:2017)	1%
Hysteresis 10 to 1333 mbar (ISO19685:2017)	0.1%
Analog output resolution	16 bit (150 µV)
Analog output update rate	124 Hz
Response time (ISO 19685:2017)	<20 ms
Temperature compensation	+10°C to +50°C
Solid state relay set point range	5 x 10^{-6} to 1333 mbar (3.75 x 10^{-6} to 1000 Torr)
Solid state relay contact rating	50 Vdc/Vac peak, 100 mA_{rms}/mA_{dc}
Environmental conditions	
Operating ambient temperature	-20°C to +50°C
Media temperature	-20°C to +50°C
Storage ambient temperature	-40°C to +120°C
Bake-out temperature (non-operating)	+120°C
Maximum media pressure	10 bar absolute
Mounting position	Arbitrary
Protection rating, EN 60529/A2:2013	IP 40
Humidity, IEC 68-2-38	98%, non-condensing
Power supply	
Supply voltage	12 - 30 Vdc
Power consumption	240 mW maximum
Reverse polarity and over voltage protection	Yes
Internal fuse	100 mA (thermal recoverable)
Materials	
Vacuum process flange	SS 1.4404 / AISI 316 stainless steel
Enclosure	SS 1.4404 / AISI 316 stainless steel / Aluminium
Vacuum exposed materials (media wetted)	316 Stainless steel, Kovar, glass, silicon, nickel, aluminum, SiO_2, Si_3N_4, gold, Viton®, low out-gassing epoxy resin
Process leak tightness	< 1 · 10^{-9} mBar · l/sec.

DIMENSIONS & PIN OUTS



Notes

All dimensions are in millimetres.



Pin	Description
1	Relay NO (normally open contact)
2	Relay NC (normally closed contact)
3	Supply voltage 12 - 30 Vdc
4	Supply voltage – (return)
5	Analog voltage signal +
6	Relay Common
7	RS-232 Transmit (–)
8	Analog voltage signal – (return)
9	RS-232 Receive (+)

GAUGE CONTROLLER

AML offer an Ion Gauge Controller with Active Gauge Input which includes an industry standard RJ45 jack that allows connection of most low power Active gauges. This enables a continuous measurement range of 1200 mBar to 3 x 10^{-11} mBar when used with our APG-1 Active Pirani gauge head or equivelant.

AML supplies a range of hot-cathode ionization gauges with a choice of tungsten (W), thoria coated iridium (ThO2/Ir) or yttria coated iridium (Y2O3/Ir) filaments. We also offer passive Pirani gauges.

ORDERING INFORMATION

Order Code	
APG-1	Active Pirani Gaugehead

Related Products	
NGC3	Ion Gauge Controller with Active Gauge Input
XAD1	AGP-1 to RJ45 adapter

真空皮拉尼规

PV Pirani Gaugeheads

Pirani Gaugeheads for use with AML Ion Gauge Controllers

ARUN MICROELECTRONICS LTD

Pirani gauges detect the cooling effect of residual gas molecules on a heated filament. The rate of heat-transfer to the gas is related to pressure and causes a change in the electrical resistance of the filament or the amount of power required to maintain it at constant temperature. The filament is normally connected in a bridge circuit.

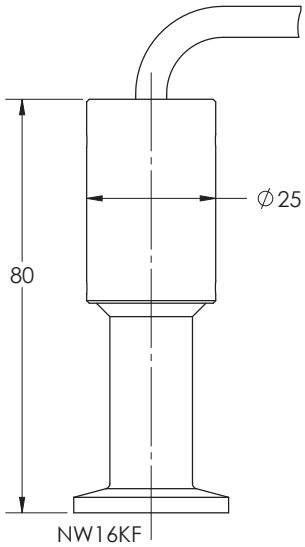
FEATURES

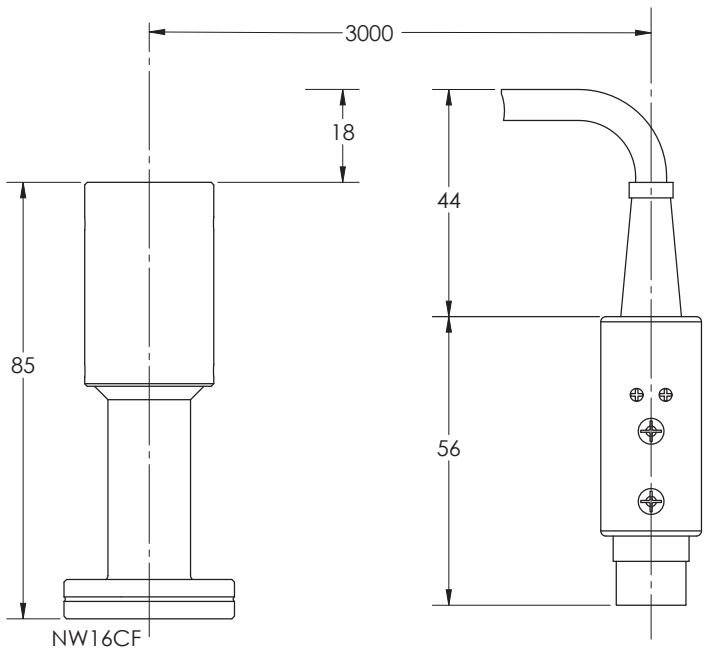
- Range: 200 mbar to 1 x 10^{-3} mbar
- Intended for use in constant-voltage bridge circuits, which reduces the filament temperature and the rate of filament corrosion or contamination at high pressures
- May be interchanged between any AML NGC / PGC series or equivalent controllers without recalibration
- Integral 3-metre lead and connector
- Extension cables do not affect the calibration
- Mounts in any orientation
- 200°C bakeable version available
- RoHS compliant

SPECIFICATIONS

	PVU3	PVB3
Measuring principle	Thermal conductance according to Pirani	
Measurement range	200mbar to 1 x 10^{-3}mbar	
Maximum operating temperature	+45°C	
Maximum bake temperature	100°C	200°C
Filament material	Tungsten	
Mounting orientation	Any (factory calibrated vertical)	
Degree of protection	IP40	
Vacuum Flange	KF16	CF16
Weight	120g	130g
Cable length	3 metres	
Materials exposed to vacuum	Stainless steel, glass, tungsten	

DIMENSIONS





ORDERING INFORMATION

Order Code	
PVU3	Pirani Gauge, Non-bakeable, NW16KF
PVB3	Pirani Gauge, Bakeable, NW16CF
PVX10	Pirani extension lead, non bakeable, 10 metres

超高真空步进电机驱动器
SMD3 Stepper Motor Drive

Single-axis bipolar stepper motor controller

ARUN MICROELECTRONICS LTD

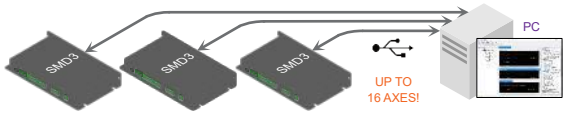
The SMD3 Stepper Motor Drive is a single-axis bipolar stepper motor driver that is engineered to drive vacuum-compatible stepper motors with maximum performance and minimal heat. It is optimised for use with AML UHV-compatible motors.

Powerful software is supplied with the SMD3 that enables you to control and configure multiple SMD3 units simultaneously, in a single user-friendly graphical interface.

- Single-channel UHV stepper motor driver optimised for vacuum use, ideally suited for use with our range of UHV stepper motors
- Advanced low-power drive techniques for minimum motor temperature rise, minimum outgassing and maximum operating time
- Holding torque can be controlled independently of dynamic torque under program control, to reduce power
- Full-step and up to 256x micro-step resolution, with user-configurable transition from micro step to full-step mode (stops on full-step positions only, micro-stepping used for control of resonance and smoother step transition)
- Continuous monitoring of motor temperature with automatic shutdown if motor temperature exceeds tolerable levels
- Current adjustable from 0 A to 1 A RMS in approx. 30 mA steps
- 2 x configurable limit inputs
- Opto-coupled step, direction and enable interface
- Control via USB
- Comprehensive configuration and control software supplied, or interface to your own application. C# API is available

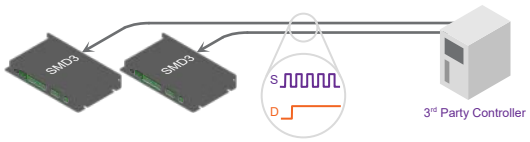
OPERATING MODES

USB Remote Control

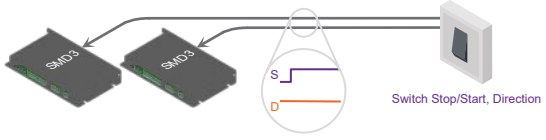


Accepts commands from host PC or PLC; powerful software supplied, control and configure multiple axes at once

Step and direction



Opto-isolated step, direction enable; configurable rising or rising/falling edge; up to 256x interpolation



Joystick

Ideal for basic movement during commissioning; press for one step, press and hold for slew; latching mode option

SPECIFICATIONS

General	
Interface	USB Type-C (appears as virtual COM port on PC)
Dimensions	180 mm x 105 mm x 26 mm
Weight	0.6 kg
Protection class	IP 20
Temperatures	Operation 10°C to 60°C, Storage -10°C to 85°C
Power supply	External 15 Vdc to 67 Vdc power supply required
Power consumption	28 W maximum
Motor	
Suitable types	2 phase bipolar stepper motor with 4 leads
Phase current	Up to 1 A RMS, adjustable in 30 mA steps
Source voltage	As supply voltage, 67 Vdc maximum
Resolution	Full-step, 2, 4, 8, 16, 32, 64, 128, 256 micro-stepping
Protection	Motor temperature monitored via integral RTD or thermocouple
Operating modes	
• Remote, via USB interface • SDE interface using an external motion controller • Trigger movement via SDE interface • Joystick	

Limits	
Quantity	2
Compatible switch types	Mechanical NO or NC (polarity selectable)
Protection	Withstands continuous short to 24 V maximum
Miscellaneous	Source current < 1 mA
Motor temperature measurement	
Type	Selectable PT1000 RTD or K-Type thermocouple
Range	0°C to 200°C
Accuracy	±5%
Fault detection	Open and short circuit
SDE (step, direction enable) interface	
Type	Optocoupled, bi-directional LED
Levels	3.3 Vdc to 24 Vdc maximum
Maximum frequency	2 MHz at 50% duty
Joystick	
Connection	Front panel mounted 4P4C jack
Input type	Active low, short to ground to activate function
Miscellaneous	Open circuit voltage 3.3 V, source current < 3.5 mA
Software	
Compatibility	Windows 7 or later

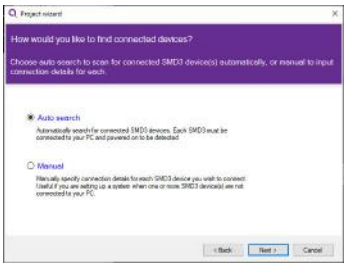
SOFTWARE FEATURES

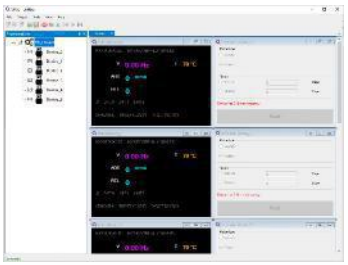
Powerful bundled software allows you to easily configure and control multiple SMD3 units at once.

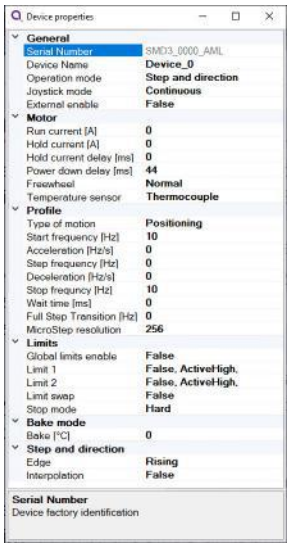
View critical motor properties, such as temperature, absolute and relative position. Highly configurable limits setup; change polarity, swap or rename your limits.

Command movements with the press of a button; easily toggle between velocity and absolute or relative positioning modes.

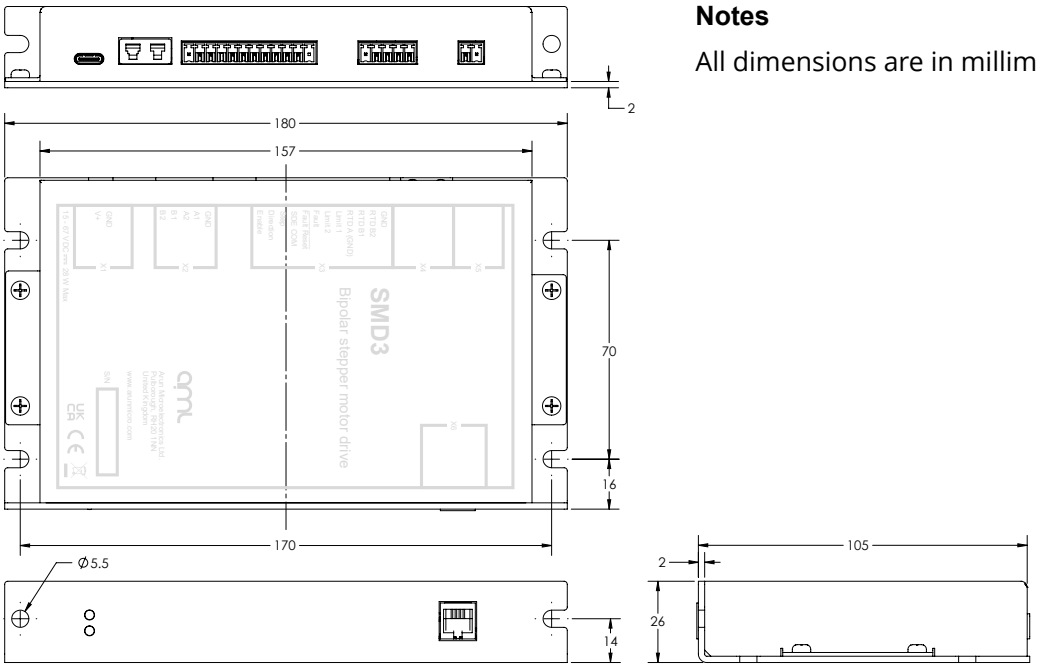
Save your project to file; quickly reconfigure the system by loading different projects. Choose to save configuration to the SMD3 units and or file.







MECHANICAL DATA



Notes

All dimensions are in millimetres.

ACCESSORIES

AML supplies a range of ultra-high vacuum compatible stepper motors, specifically designed for maximum performance and minumum heat. A joystick and power supply is available to use in conjunction with the SMD3 Stepper Motor Drive.

UHV Stepper Motors

Joystick

Power Supply

ORDERING INFORMATION

Order Code	
SMD3	Stepper Motor Drive

Related Products	
SMD3JOY	Joystick
SPSU48V	48 Vdc, 60 W Power Supply
MLF18F	Feedthrough. 18-way NW70CF
MLF18AC	Air-side bakeable connector, 18-way

ARUN MICROELECTRONICS LTD

耐核辐照/核辐射步进电机

Radiation Hardened Stepper Motors

1.8°, two phase hybrid stepper motors

AML Radiation Hardened Stepper Motors (HE) are an atmospheric version of our ultra high vacuum range and are manufactured using only radiation resistant materials to provide a long service life in a dry atmosphere gamma radiation environment.

FEATURES

英国AML的H系列的耐辐照步进电机是两相1.8°混合式步进电机，提供标准的尺寸35、42、57，由于专利设计，材料的选择，结构的改进从而使电机的耐辐照总吸收剂量为1x10^6Gy,电机的输出轴和后端盖都可以根据要求定制。

All motors are hand assembled in an ISO Class 7 cleanroom.

Model	Holding Torque mNm	Detent Torque mNm	Rotor Inertia gcm^2	Max.Axial Force N	Max. Radial Force (1) N	Mass g	Current Per Phase A	Phase Resistance at 20°C Ω	Phase Inductance mH
HE35.1-R	70	8	10	9	15	190	1.0	4.7	3.8
HE42.1-R	180	8	35	9	15	350	1.0	5.3	6.6
HE42.2-R	360	14	68	9	15	470	1.0	6.8	10.5
HE42.3-R	450	20	102	9	15	610	1.0	8.5	19.5
HE57.1-R	800	30	300	13	40	700	1.0	10.5	27
HE57.2-R	1700	50	600	13	45	1380	1.0	12.5	30.0

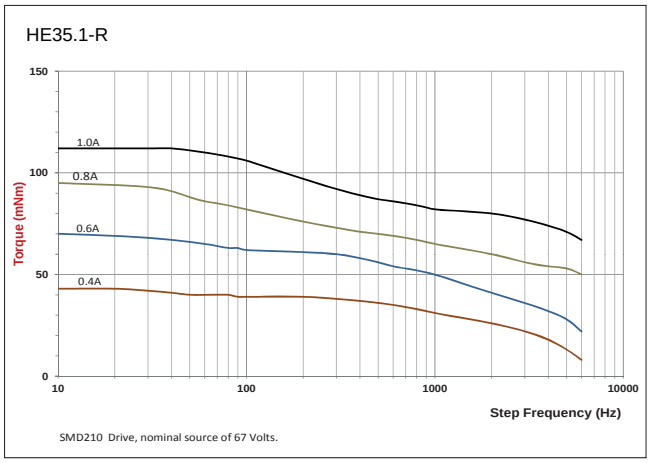
Operating temperature -10°C to +150°C
Gamma radiation hardened to 1 x 10^6 Gy
Lead length 1.5m
Step angle 1.8°
Step angle tolerance 5%

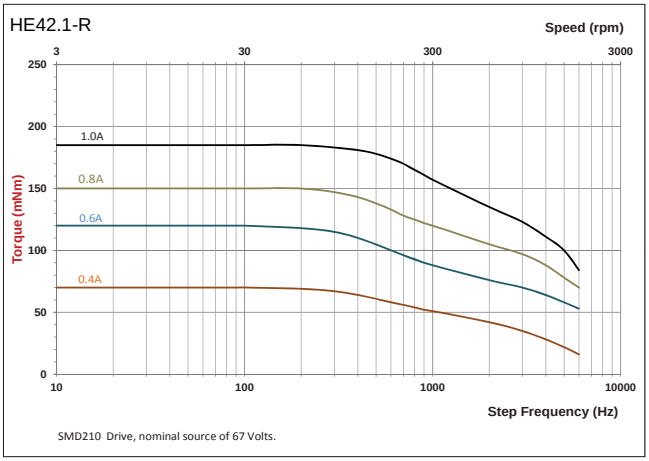
SPEED VS TORQUE CHARACTERISTICS

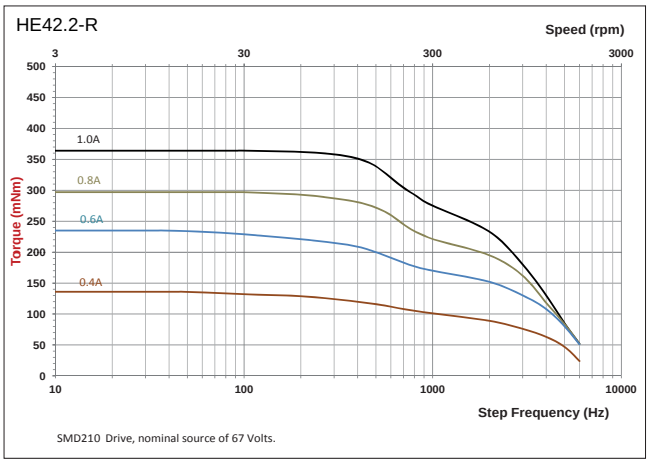
The performance shown on these graphs was obtained using an SMD210 drive operating with standard settings for step division.

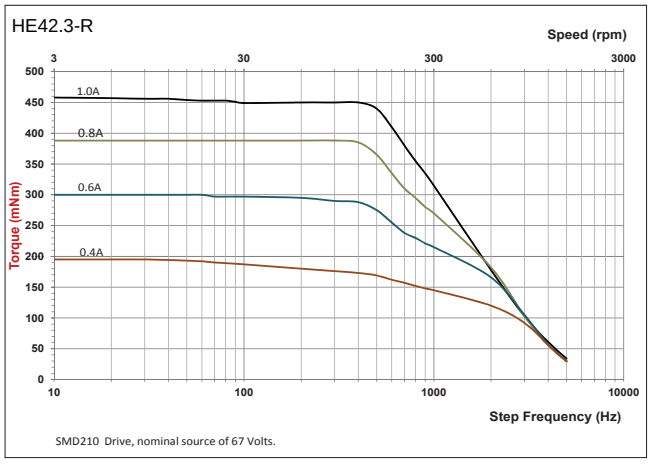
SMD210 is a switch-mode, bipolar, current-regulating drive with a nominal source of 67volts, optimised for use with vacuum motors. At low speed where step division is active the RSS (root sum of squares) of phase current is set to the nominal current. Over most of the speed range the drive operates in wave mode with nominal set current in only one energised phase.

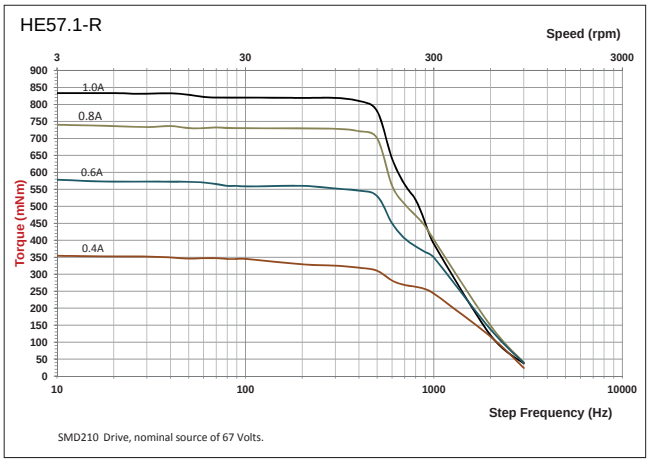
Different drives will produce different speed / torque curves. Drives capable of producing a total phase current of more than 1A RSS may damage the insulation. Drives with significantly lower source voltages may result in poor high speed performance. Use of the embedded thermocouple is essential for motor protection.



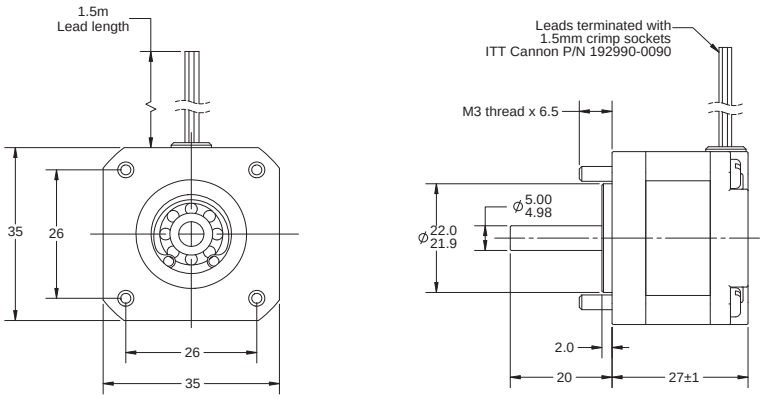






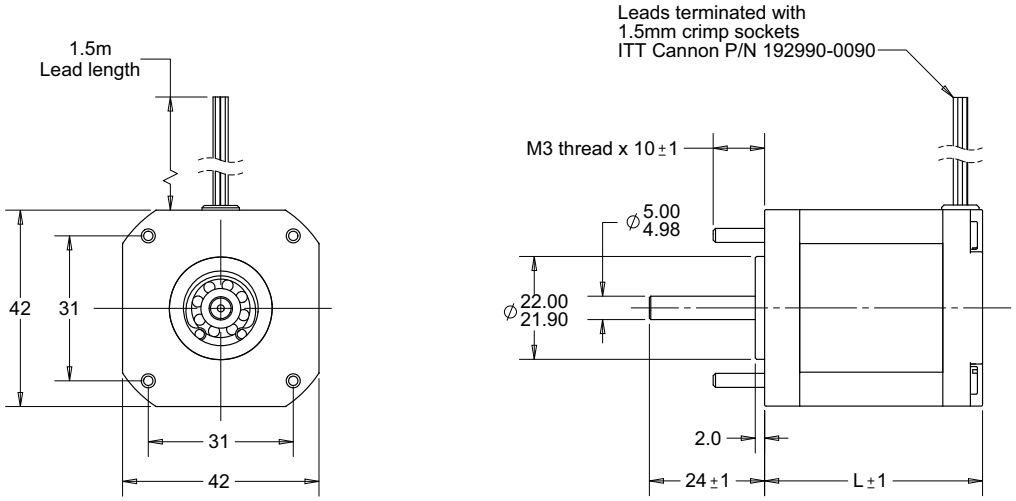


HE35.1-R

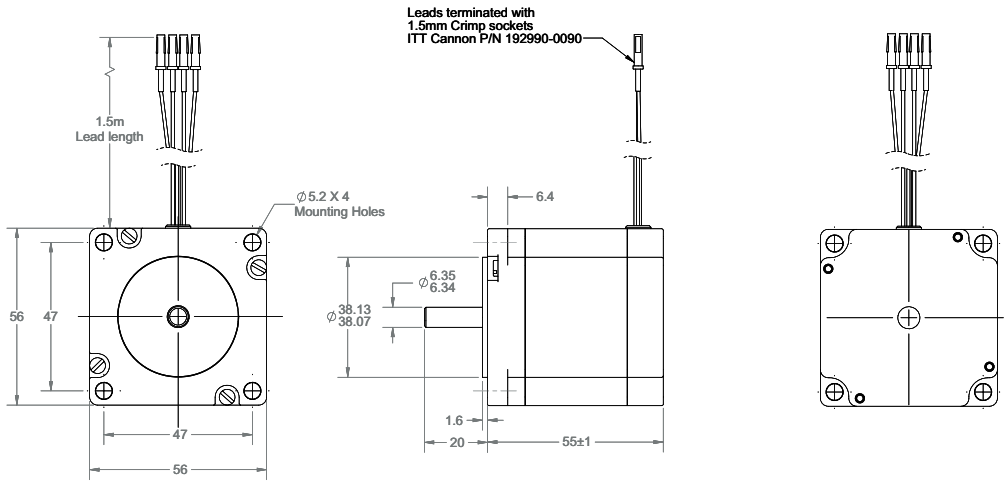


HE42.X-R

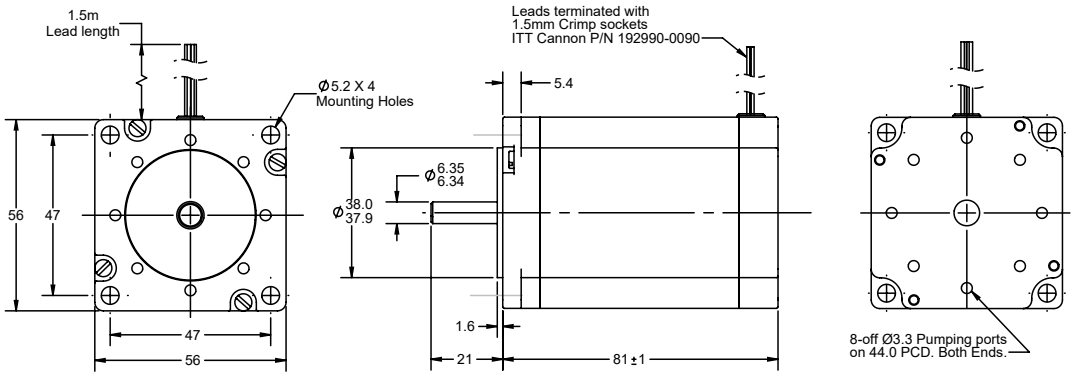
Motor	Length L
HE42.1	33
HE42.2	47
HE42.3	60

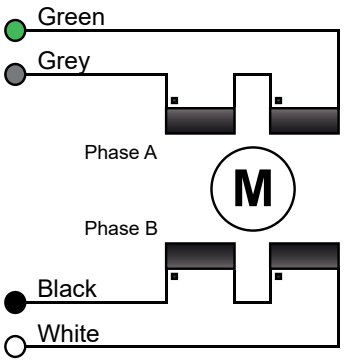


HE57.1-R



HE57.2-R





Motor windings in series

Bearings

For low duty applications where grease is not permitted specify option ‘H’ hybrid bearings. These have silicon nitride ceramic balls, dry lubricated with Tungsten disulfide.

订购型号示例： HE42.1-R-**

示例所选型号为：**表示根据特殊要求定制，定制编码请联系北京星微自动化

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邮箱：18201099680@163.com
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Ultra High Vacuum

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