TURBOMOLECULAR PUMPS
ULTIMATE VACUUM SOLUTIONS

EXT and nEXT Turbomolecular Pumps and Controllers

Our range of EXT and nEXT compound turbomolecular pumps and TIC Controllers use state-of-the-art technology to provide reliable, high and ultra high vacuum.

Key Performance Factors

A turbomolecular pump (TMP) is a multi-stage axial-flow turbine in which high speed rotating blades provide compression by increasing the probability of gas molecules moving in the pumping direction. The turbomolecular pump is optimised for molecular flow conditions and requires a suitably sized two stage rotary vane pump or an oil free scroll pump to exhaust to atmosphere.

A compound molecular pump (CMP) is based on the concept of combining bladed turbomolecular stages with molecular drag stages on the same rotor. This design allows:

- High critical foreline pressures (typically up to 10 mbar)
- Options to use smaller backing pumps or dry diaphragm backing pumps

Pumping Speed (volume flow rate) is determined by the rotor diameter, inlet flange size and rotational speed. The pumping speed reduces at high inlet pressures to a value determined by the size of the backing pump. As the inlet pressure rises, the motor power dissipation and pump temperature increase. Maximum continuous inlet pressure sets the maximum throughput limit for steady state pumping and depends on the cooling method used. Above this pressure, the rotational speed of the pump reduces as temperature sensors limit the pump power. With a water-cooled pump, the actual maximum throughput depends on the size of the backing pump.

Quiescent Electrical Power is the nominal power dissipated by a pump operating normally at full rotational speed and with low gas throughput (inlet pressure below the 10^{-3} mbar range). During the run-up time, or when operating at high gas throughput or above the critical backing pressure, the pump power dissipation will rise and approach the maximum power output for the turbo controller used. Critical backing pressure for compound turbomolecular pumps is approximately 10 to 20 mbar.

Compression Ratio is determined by the rotational speed, the number of pump stages and the molecular weight of the pumped gas. It is higher for heavier gases which explains why the suppression of hydrocarbon backstreaming is so effective and why the ratio for hydrogen is important for ultra high vacuum applications.

Ultimate Pressure measured according to Pneurop standards, is the lowest pressure achieved in the test system, 48 hours after bakeout. The system is backed only by a two-stage rotary vane pump. Fluoroelastomer inlet seals are used with ISO-flanged pumps and metal seals are used with CF-flanged pump models.

Bearing and Suspension Technologies

We use two basic technologies: magnetic bearings and mechanical ceramic ball bearings.

Ceramic bearings, which are lubricated for life by either grease or oil, have replaced conventional steel bearings. The silicon nitride ceramic balls are lighter, harder and smoother than steel equivalents, leading to longer life and lower vibration characteristics. Reliability is increased because the ball and race materials are different, which prevents micro pitting.

Magnetic bearings further increase reliability. Our EXT and nEXT turbomolecular pumps use a hybrid bearing arrangement with a permanent magnet upper bearing and an oil lubricated ceramic lower bearing.

Rotor Technologies

We use two basic technologies:

- Compound molecular and fluid dynamic (combining turbomolecular, drag and fluid dynamic stages) available on nEXT ‘T’ variant pumps
- Compound molecular (combining turbomolecular and drag stages) on all EXT and nEXT ‘D’ variant pumps.

Motor Technology
EXT pumps use brushless d.c. motors and are available in 24 (EXT75DX), 24 to 48 (nEXT) and 80 (EXT556H) volt variants. For the 24 volt pumps the TIC line of controllers are available with the added benefit of integrated instrument controllers. For the 80 volt pumps you can choose from our EXC line of controllers to optimise the performance and cost options for your application. The Controllers incorporate a regenerative back-up supply which provides power in the event of electrical supply failure to keep the vent-valve closed for several minutes.

Corrosive Applications
For maximum life and reliability in the exacting process conditions encountered in semiconductor wafer processing applications, we recommend that you use turbomolecular pumps from our Edwards STP-C and STPH-C series. These Maglev pumps have magnetic bearings and are ideal for these harsh duty applications.

Purge Port
The EXT and nEXT pumps all have purge-ports which can be used to purge the motor and bearing cavity with an inert gas (such as nitrogen). We recommend that you purge the pump when you pump corrosive and abrasive gas mixtures or those with an oxygen content over 20%. You can use our PRX10 purge-restrictor to set the purge gas flow rate. This typically adds up to 25 sccm to the total gas load and the backing pump must be sized accordingly.

Venting
To maintain the cleanliness of your vacuum system, we recommend that you vent a turbomolecular pump at or above half rotational speed, when the rotor is still spinning fast enough to suppress any backstreaming of hydrocarbons from the backing line. The vent port on the EXT and nEXT pump is part way up the rotor stack to ensure maximum cleanliness even with fluoroelastomer sealed vent-valves. Each pump is supplied with a manual vent-valve. If you use this manual valve care must be taken not to open it too quickly, especially if the system volume is small (typically less than the approximate volume of the turbomolecular pump), because if the rate of pressure rise is too high, the pump bearing life may be reduced. In a small volume system, the rate of pressure rise will be greater than in a large volume for a given vent flow rate, and it may be necessary to restrict the vent gas flow. We offer the VRX range of vent restrictors which you can fit to your EXT or nEXT pump.

Since the rate of pressure rise cannot be accurately controlled by the manual vent-valve, we recommend that, unless you fit a suitable VRX restrictor to the vent port, you must wait until the turbomolecular pump has slowed down to 50% speed, as indicated by the controller, before you open the manual vent-valve. The maximum rate of pressure rise varies by pump model, and the Instruction Manual supplied with the pump gives further guidance on this, and the size of vent restrictor needed to meet the fastest pressure rise allowed. Control of the rate of venting is particularly important with pumps using fully magnetic bearings, otherwise the safety bearings may be damaged.
The manual vent-valve can be replaced with a TAV solenoid valve driven by the Controller to allow venting after a 2 second delay on shut-off, or delaying vent until the rotational speed has dropped to 50%. The Controller can also control the TAV vent-valve in the event of power or pump failure. You can choose from two solenoid vent-valve options; the TAV5 which covers most auto-venting applications, and the TAV6 which has a higher conductance than the TAV5 and is designed either for use on larger chambers (typically with a volume greater than 10 litres), or when you want to use a two-stage venting procedure for the fastest possible vent times. For two-stage venting you need two TAV valves. By using the appropriately restricted flow for the first stage vent-valve you can start venting when the pump is still at full rotational speed. Once the pump has slowed to half rotational speed you can then introduce higher flow rates from the second stage vent-valve. EXT75DX and nEXT also have the facility for pulsed venting to allow rapid yet controlled venting of a system.

Inlet-Screen
An inlet-screen is fitted as standard to all EXT pumps and supplied with nEXT pumps. The inlet-screen prevents debris from falling into the pump-inlet. In addition, the inlet-screen prevents you from coming into contact with the blades of the pump when it is disconnected from your vacuum system.

Cooling

For most applications, we recommend that you use forced-air cooling with the appropriate ACX air-cooler connected to your EXT or nEXT pump. NB: high gas load, high backing pressure and rapid cycling require more cooling. However, if the ambient temperature is above 35°C you must water-cool the pump. Water cooling reduces the running temperature of the pump motor and bearings and is particularly recommended when you operate the pump with a continuous high throughput (that is, inlet pressure above 1 x 10^{-3} mbar) or when you bake the pump to above 70°C (measured at the inlet flange). Water cooling accessories need to be purchased separately.

Scope of Supply

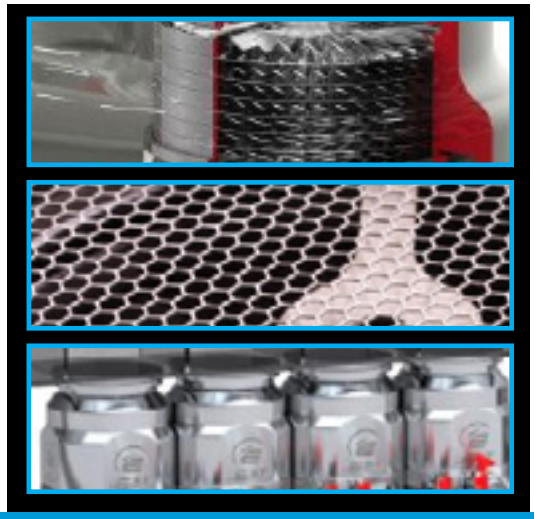
For end users desiring front panel controls and indications we suggest the following:

- TIC controller with EXT75DX and nEXT
- EXC300 controller with EXT556H and EXT to EXC cable

Each EXT or nEXT pump is supplied with an inlet screen, elastomer or copper gasket inlet seal (as appropriate) and manual vent valve. Where required a water cooling accessory is available. Turbo controllers require the appropriate mains cable to be selected.

nEXT TURBOMOLECULAR PUMP

THE NEW EXPERIENCE IN TURBO PUMPS



The nEXT is a hybrid bearing compound turbopump. nEXT pumps combine our proven bearing technology (oil lubricated ceramic lower bearing with dry permanent magnetic upper bearing), an improved rotor design with a new molecular drag stage to deliver improved pumping speed and compression ratios, and user serviceability. They feature 24V to 48V d.c. sensor less motors with a built in drive that is fully compatible with our range of TAG and TIC controllers. They are available pre-set for either 80W or 160W maximum power, the former enabling use with our 100W TIC controllers are also recommended for pumping Argon, but with a longer ramp time to full operating speed.

Features and Benefits

- **Value for money** - exceptional pumping speeds and compression ratios
- **No unplanned downtime** - field proven reliability in the most demanding environments
- **Easy integration** - standard fit in many scientific instruments
- **Reliability for peace of mind** - over 200,000 turbo pumps installed
- **Low cost of ownership** - end user serviceable

Applications

- Mass spectrometry
- Electron microscopy
- Research and development
- High energy physics
- Industrial

Pump Range

nEXT
- nEXT240
- nEXT300
- nEXT400

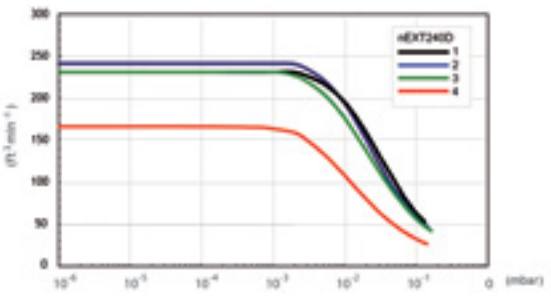
Performance Curves

nEXT240 Turbomolecular Pump

nEXT240

Inlet pumping speed ls^{-1}	
	240 N_2
	230 He
	165 H_2
Compression ratio	
	>1 x 10^{11}
	3 x 10^{5}
	1 x 10^{4}

nEXT240 Performance Curve



Ordering information

Product description	Order no:
nEXT240D Turbomolecular Pump ISO100 Inlet Flange	B81200100
nEXT240D Turbomolecular Pump ISO100 Inlet Flange, 80W	B81200101
nEXT240D Turbomolecular Pump CF100 Inlet Flange	B81200200
nEXT240D Turbomolecular Pump CF100 Inlet Flange, 80W	B81200201

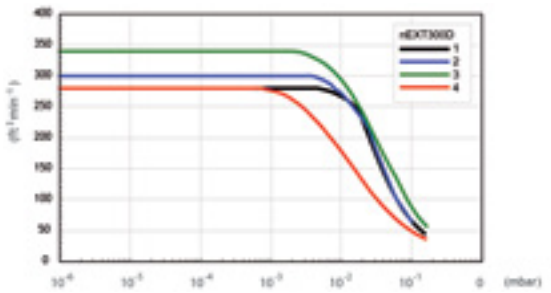
1	Argon
2	Nitrogen
3	Helium
4	Hydrogen

nEXT300 Turbomolecular Pump

nEXT300

Inlet pumping speed ls^{-1}	
	300 N_2
	340 He
	280 H_2
Compression ratio	
	>1 x 10^{11}
	1 x 10^{6}
	5 x 10^{4}

nEXT300 Performance Curve

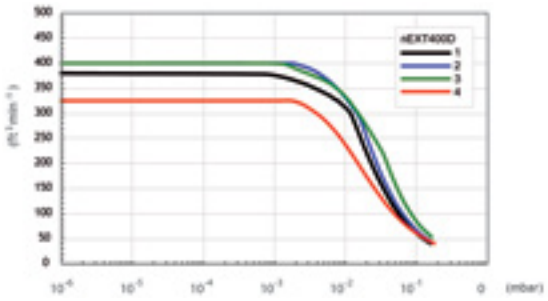


Ordering information

Product description	Order no:
nEXT300D Turbomolecular Pump ISO100 Inlet Flange	B82200100
nEXT300D Turbomolecular Pump ISO100 Inlet Flange, 80W	B82200101
nEXT300D Turbomolecular Pump CF100 Inlet Flange	B82200200
nEXT300D Turbomolecular Pump CF100 Inlet Flange, 80W	B82200201

1	Argon
2	Nitrogen
3	Helium
4	Hydrogen

nEXT400 Performance Curve



1	Argon
2	Nitrogen
3	Helium
4	Hydrogen

nEXT400

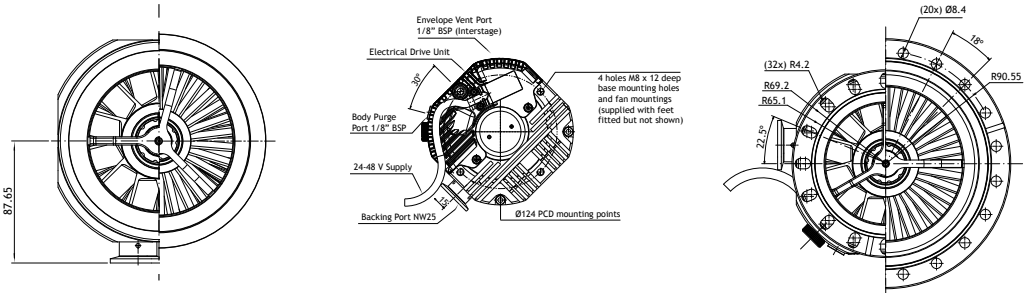
Inlet pumping speed ls^{-1}	
	400 N_2
	390 He
	325 H_2
Compression ratio	
	>1 x 10^{11}
	1 x 10^8
	5 x 10^5

Ordering information

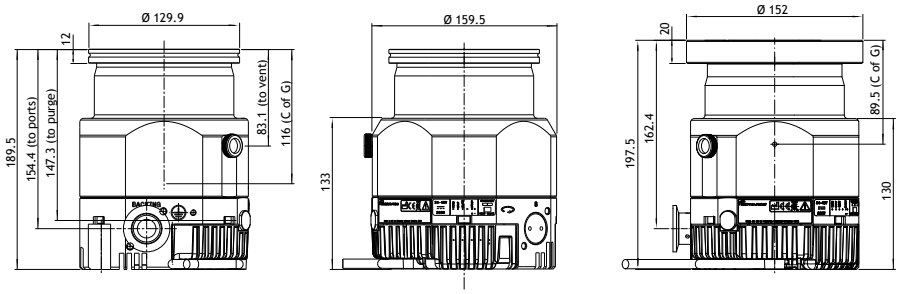
Product description	Order no:
nEXT400D Turbomolecular Pump ISO160 Inlet Flange	B83200300
nEXT400D Turbomolecular Pump ISO160 Inlet Flange, 80W	B83200301
nEXT400D Turbomolecular Pump CF160 Inlet Flange	B83200400
nEXT400D Turbomolecular Pump CF160 Inlet Flange, 80W	B83200401

Dimensions

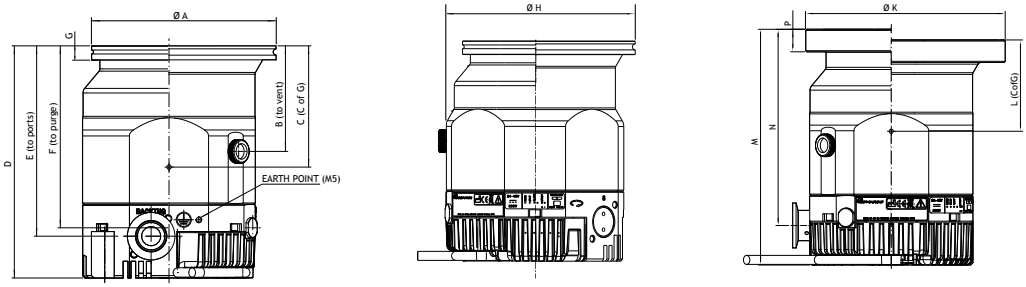
nEXT dimension



nEXT240 Dimension



nEXT300/400 Dimension



	A	B	C	D	E	F	G	H	J	K	L	M	N	P
nEXT300	129.9	88.7	117	195	159.9	152.8	12	159.9	87	152	81.1	200	164.9	20
nEXT400	179.9	88.7	102	195	159.9	152.8	12	159.9	87	202.4	100.4	209.5	174.4	20

Technical Data

	Units	nEXT240	nEXT300	nEXT400
Inlet flange		DN100 ISO-K or DN100CF	DN100 ISO-K or DN100CF	DN160 ISO-K or DN160-CF
Inlet pumping speed ls^{-1}	N_2	240	300	400
	He	230	340	390
	H_2	165	280	325
Compression ratio	N_2	>1 x 10^{11}	>1 x 10^{11}	>1 x 10^{11}
	He	3 x 10^5	1 x 10^6	1 x 10^8
	H_2	1 x 10^4	5 x 10^4	5 x 10^5
Interstage pumping speed ls^{-1}	N_2	13		
	He	13		
	H_2	11		
Backing/interstage/boost ports		NW25		
Vent/purge port	BSPP	1/8”		
Critical backing pressure D	mbar	9.5	9.5	10
Maximum continuous inlet flow (nitrogen)				
Water cooling (40°C ambient)	sccm	45	95	105
Forced air cooling (35°C ambient)	sccm	30	115	90
Natural convection (30°C ambient)	sccm	10	35	45
Maximum continuous backing pressure				
Water cooling (40°C ambient)	mbar	6	6.8	7.5
Forced air cooling (35°C ambient)	mbar	4.8	7	7.5
Natural convection (30°C ambient)	mbar	1	2.8	4
Recommended backing pump*		RV12/nXDS10i		
Normal rotational speed	rpm	60,000		
Start time to 90% speed D (T)	sec	115 (150)	145 (190)	180 (210)
Sound pressure level at 1 m	dB(A)	<45 (+/-3)		
Mass (kg) D (T)	ISO	5.7 (6)		6.5 (6.8)
	CF	8.8 (9.1)	8.5 (8.8)	9.5 (9.8)

* a smaller backing pump may be used depending on application.

Service, Spares and Accessories

VRX Vent-Restrictor

Product description	Order no:
DN63CF	B58101000
DN63ISO-K	B58115000
DN100ISO-K	B58120000
DN100CF	B58105000

VRX Vent-Restrictor

Product description		Order no:
VRX Vent-Restrictor	Orifice Diameter (mm)	
VRX10	0.1	B58066021
VRX20	0.2	B58066022
VRX30	0.3	B58066023
VRX50	0.5	B58066024
VRX70	0.7	B58066025

Water-Cooler

Product description	Pump	Order no:
nEXT water cooler	nEXT240/300/400	B80000815
WCX water-cooler WCX250	EXT75DX	B73600121

(n)EXT Spares

Spares	Pump	Inlet Flange Size	Order no:
Inlet flange seals with integrated inlet screen			
100 coarse	nEXT240/300	DN100ISO	B81000808
100 fine	nEXT240/300	DN100ISO	B81000809
160 coarse	nEXT400	DN160ISO	B80000825
160 fine	nEXT400	DN160ISO	B80000826
ISX inlet-screen			
100 coarse	nEXT240/300	DN100CF	B80000821
100 fine	nEXT240/300	DN100CF	B80000822
160 coarse	nEXT400	DN160CF	B80000823
160 fine	nEXT400	DN160CF	B80000824
63	EXT75DX	DN63ISO / DN63CF	B72240860
100	EXT75DX	DN100ISO	B58051001
Inlet flange seals			
DN40NW Co-Seal, fluoroelastomer			B27158453
ISO63 Trapped O-ring, fluoroelastomer			B27158170
63CF copper compression gasket (pack of 10)			C10007490
100CF copper compression gasket (pack of 10)			C10009290
160CF copper compression gasket (pack of 5)			C10011290

Pump-to-Controller Cable

Product description	Order no:
1 m cable	D39700835
3 m cable	D39700836
5 m cable	D39700837

Air-Cooler

Product description	Pump	Order no:
ACX75	EXT75DX	B58053075
nEXT Axial air cooler	nEXT240/300/400	B58053185
nEXT Radial air cooler	nEXT240/300/400	B58053175
nEXT Axial air cooler with connector	nEXT240/300/400	B58053180
nEXT Radial air cooler with connector	nEXT240/300/400	B58053170

PRX10 Purge-Restrictor

Product description	Order no:
PRX10 purge-restrictor	B58065001

TAV Vent-Valve

Product description	Order no:
TAV5 vent-valve	B58066010
TAV6 vent-valve	B58066020

Vent-Port Adaptor

Product description	Order no:
Vent-port adaptor	B58066011

nEXT Bearing Service Parts and Tools

Product description	Order no:
Oil cartridge tool kit	B80000812
Bearing tool kit	B80000805
Oil cartridge	B80000811
Bearing and oil cartridge	B80000810

Service

Edwards products, spares and accessories are available from Edwards companies in Belgium, Brazil, China, France, Germany, Israel, Italy, Japan, Korea, Singapore, United Kingdom, U.S.A. and a world-wide network of distributors.

The majority of these centres employ Service Engineers who have undergone comprehensive Edwards training courses.
Order spare parts and accessories from your nearest Edwards company or distributor.
When you order, please state for each part required:

- Model and item number of your equipment.
- Serial number (if any).
- Item number and description of the part.

This page has intentionally been left blank

EXT TURBOMOLECULAR PUMP

PERFORMANCE YOU CAN RELY ON

Edwards is a world leader in the design and manufacture of turbomolecular pumps with over 200,000 units installed worldwide. The range of products includes the EXT75DX compound turbomolecular pumps that combine the proven technology of a ceramic mechanical lower bearing, a dry permanent magnetic upper bearing and Holweck drag stage with the added convenience of an on-board controller and a 24V d.c. motor.

Features and Benefits

- Compact design with high performance for efficient systemisation
- Permanent magnetic upper bearing and oil lubricated bottom bearing for reliable running
- Compatible with Edwards TAG and TIC turbo and instrument controller meaning you can add up to 3 vacuum gauges without the need of an additional gauge controller
- RoHS compliant and CSA/UL approved.

Applications

- Mass spectrometry
- Electron microscopy
- Research and development
- High energy physics
- Industrial

Pump Range

EXT

- EXT75DX

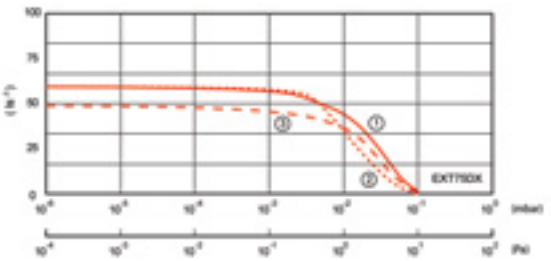
Performance Curves

EXT75DX Turbomolecular Pump

EXT75DX

Inlet pumping speed ls^{-1}	
ISO63 / CF63, DN40NW) (ISO100)	61, 42, 66 N_2
	57, 49, 59 He
	53, 48, 54 H_2
Compression ratio	
	>1 x 10^{11}
	1 x 10^6
	5 x 10^4

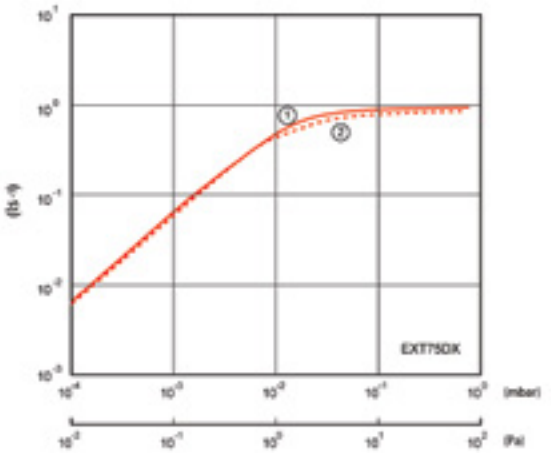
EXT75DX Performance Curve



Ordering information

Product description	Order no:
EXT75DX DN63ISO-K	B72241000
EXT75DX DN63CF	B72242000
EXT75DX DN40NW	B72243000
EXT75DX DN100ISOK	B72245000
EXT75DX DN100ISO-K (DN25NW Backing)	B72246000
EXT75iDX Turbo Pump DN40NW	B72235000
EXT75iDX Turbo Pump DN63ISO-K	B72237000
EXT75iDX Turbo Pump DN63ISO-K (NW25 Interstage)	B72238000

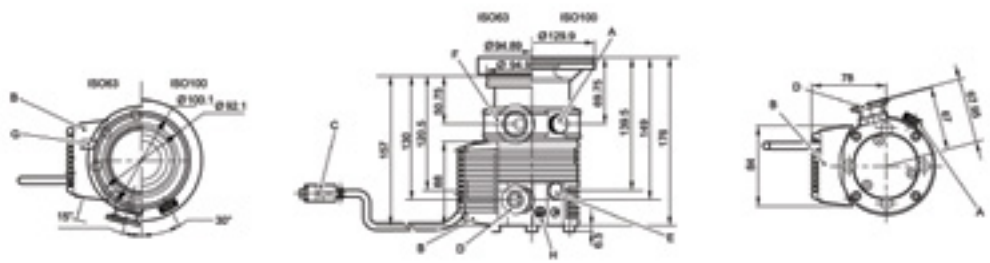
1	Nitrogen
2	Helium
3	Hydrogen



1	Nitrogen
2	Helium

Dimensions

EXT Dimension



A	Manual vent valve in vent port	D	Backing port	G	Podule connector socket
B	Podule	E	Purge port (blanked off)	H	Earth connection
C	Logic interface connector	F	Interstage port (EXT75iDX only)		

Technical Data

	Units	EXT75DX
Inlet flange		DN40NW, DN63ISO-K, DN63CF or DN100ISO-K
Outlet Flange		DN16NW
Compression ratio		
N_2		$>1 \times 10^{11}$
He		1×10^{6}
H_2		5×10^{4}
Recommended backing pump		E2M0.7/XXD1/RV5/nXDS6i
Vent port	inch BSP	1/8
Purge port	inch BSP	1/8
Maximum continuous inlet pressure (light gas pumping)†		
Water cooling (water at 15 °C, ambient temp at 40 °C)	mbar	2×10^{-2}
Forced air cooled, 35 °C ambient	mbar	1×10^{-2}
Pump rotational speed		
Nominal rotational speed	rpm	90000
Standby rotational speed	rpm	Variable from 49500 to 90000 rpm (63000rpm default)
Programmable power limit settings	W	Variable from 50-120W (80W default)
Start time to 90% speed	sec	110 s ‡
Analogue outputs		Pump rotational speed; Power consumption; Pump temperature; Controller temperature
Cooling method Δ		Forced air / water
Ambient air temperature for forced air cooling	°C	5 - 35
Minimum cooling water flow rate (water 15 °C)	lh^{-1}	15
Water temperature range	°C	10 - 20
Maximum inlet flange temperature	°C	100
Operating attitude		Vertical and upright, through to horizontal
Noise level at 1 metre	dB(A)	<50
Maximum magnetic field pump can tolerate	mT	5
Recommended controller		TIC100 turbo and instrument controller
Quiescent electrical power	W	10

† Above this inlet pressure, rotational speed drops to below nominal.
‡ Power limit set to 80 W.
Δ Air and water cooling accessories must be ordered separately

Service, Spares and Accessories

Controllers

Product description	Order no:
TIC100 turbo and instruments*	D39721000
TIC200 turbo and instruments*	D39722000

* Lower cost turbo only TIC controllers also available.

TIC Relay Box

Product description	Order no:
Small backing pump	D39711805
Instruments & Small backing pump	D39721806

Coolers

Product description	Order no:
ACX75 air cooling accessory	B58053075

Bakeout Bands

Product description	Order no:
BX70 heater band 110V 30W	B58052040
BX70 heater band 240V 30W	B58052060

Vent Valve

Product description	Order no:
TAV5 vent valve	B58066010

Mains cables (Suitable for TIC or Relay Box)

Product description	Order no:
UK 2m	D40013025
US 2m	D40013120
EUR 2m	D40013030
Mains cable IEC320 M/F 2m	D39700831

Service

Edwards products, spares and accessories are available from Edwards companies in Belgium, Brazil, China, France, Germany, Israel, Italy, Japan, Korea, Singapore, United Kingdom, U.S.A. and a world-wide network of distributors.

The majority of these centres employ Service Engineers who have undergone comprehensive Edwards training courses.
Order spare parts and accessories from your nearest Edwards company or distributor.
When you order, please state for each part required:

- Model and Item Number of your equipment.
- Serial number (if any).
- Item Number and description of the part.

Interface Cables

Product description	Order no:
TIC logic interface cable	D39700833
TIC RS232 interface cable 2m	D39700834
XDD/DX/EXDC extension cable 2m	D39700836

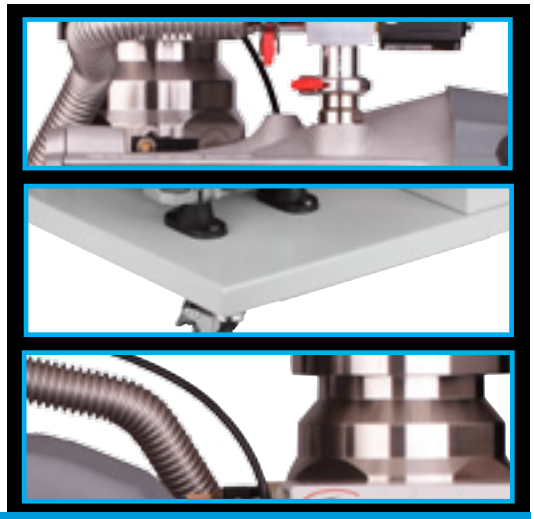
Active Gauge Cables

Product description	Order no:
0.5 m	D40001005
1 m	D00001010

Other cable lengths also available. Please contact Edwards for further details

nEXT TURBOPUMPING STATION

PERFORMANCE YOU CAN RELY ON



Our range of nEXT turbopumping stations build on our previous generation, but with a simplified ordering matrix and expanded range to include turbopumps with speeds from 42 ls^{-1} to 400 ls^{-1}. For pumping speeds from 42 ls^{-1} to 66 ls^{-1} we offer our trusted EXT75DX pump with a choice of various wet and dry backing pumps and a Turbo and Instrument TIC100. For pumping speeds of 240 ls^{-1} to 400 ls^{-1} the nEXT turbopumping stations are based on our nEXT pumps offering the additional flexibility of end-user serviceability plus a choice of backing pumps and a Turbo and Instrument TIC200.

Features and Benefits

- **Value for money** - exceptional pumping speeds and compression ratios
- **No unplanned downtime** - field proven reliability in the most demanding environments
- **Easy integration** - standard fit in many scientific instruments
- **Reliability for peace of mind** - over 200,000 turbo pumps installed
- **Low cost of ownership** - end user serviceable

Turbopumping stations fitted with E2M1.5 or RV pumps come with an EMF mist filter fitted, and those fitted with our class leading nXDS scroll pumps have an isolation valve fitted between the turbopump and backing pump as standard. All turbopumping stations include 4 locking castor wheels, a bench-top mounting kit, built in air cooling and come configured to suit a wide variety of applications such as: UHV systems; beam lines; load locks; surface science; high energy physics.

‘Plug and play’ turbopumping station

Everything about our new range of nEXT turbopumping stations has been developed to provide a comprehensive vacuum solution with the latest technological advances for easy installation and operation. A simplified ordering matrix and expanded range, to include turbopumps with speeds from 42 ls^{-1} to 400 ls^{-1}, enables you to select the most appropriate combination for your application, fully assembled and ready to go.

1. Choose your turbopump

EXT75DX
75 ls^{-1}

nEXT240
240 ls^{-1}

nEXT300
300 ls^{-1}

nEXT400
400 ls^{-1}

2. Choose your backing pump

OIL-SEALED

1.8 m^3h^{-1}

RV5
5.1 m^3h^{-1}

RV12
14.2 m^3h^{-1}

DRY

1.2 m^3h^{-1}

nXDS6i
6.2 m^3h^{-1}

nXDS10i
11.4 m^3h^{-1}

nXDS15i
15.1 m^3h^{-1}

nXDS20i
22 m^3h^{-1}

3. Select your voltage

Ordering matrix

T	S			–			–	0	0	

Turbopump *
- M EXT75DX
- B nEXT240
- C nEXT300
- D nEXT400

Inlet Flange *
1. DN40NW (EXT75DX)
2. DN63ISO-K (EXT75DX)
3. DN63CF (EXT75DX)
4. DN100ISO-K (nEXT240/300)
5. DN100CF (nEXT240/300)
6. DN160ISO-K (nEXT400)
7. DN160CF (nEXT400)

Backing Pump
- 1 E2M1.5 ‡
- 2 RV5
- 3 RV12
- A XDD1
- D nXDS6i
- E nXDS10i
- F nXDS15i
- G nXDS20i

Vent Option
- 0 Manual Vent
- 1 TAV5 Vent Valve

Electrical Supply
1. 220-240 V 50/60 Hz (Europe)
2. 110-120 V 50/60 Hz (USA)
3. 200 V 50/60 Hz (Japan)
4. 220-240 V 50/60 Hz (UK)

* Turbopump and inlet flange must match as shown

‡ For Japan low volts on E2M1.5 please order the USA voltage variant, for all other pumps please order Japan version and specify pumps please order Japan version and specify low volts on your order

T-STATION 75 TURBOPUMPING SYSTEM

PERFORMANCE YOU CAN RELY ON

The T-Station 75 is Edwards's entry level Turbopumping system. It combines our proven EXT75DX with a choice of either an oil sealed E2M1.5 backing pump or an XDD1 diaphragm pump where a totally dry solution is desired.
The T-Station comes with our TAG (Turbo and Active Gauge) controller fitted as standard which enables single button start/stop of the system, the ability to control one of our Active Gauges*, vent valve control*, and delayed start to either time or pressure if a gauge is fitted making the T-Station ideal for general laboratory needs.

* Gauges and TAV5 vent valve must be purchased separately.

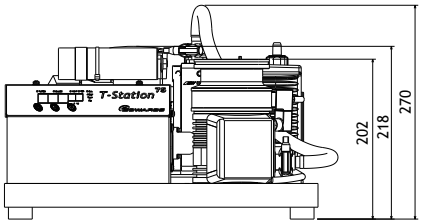
Features and Benefits

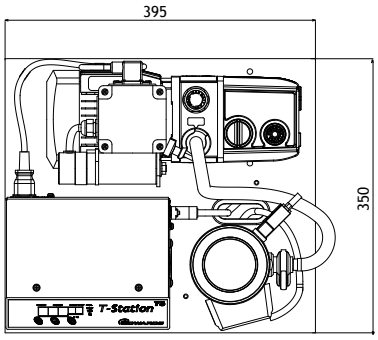
- Fully assembled and ready to use
- Control of turbopump, backing pump and optional gauge from integrated controller
- NW40, ISO63 or CF63 inlet flanges
- Choice of backing pumps, E2M1.5 oil sealed pump T-Station 75W or XDD1 diaphragm pump T-Station 75D
- Delayed turbo start option for pumping larger volumes

Applications

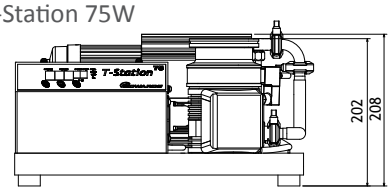
- General laboratory applications
- Spectroscopy
- Surface analysis
- Small coating systems
- Vacuum tube manufacturing

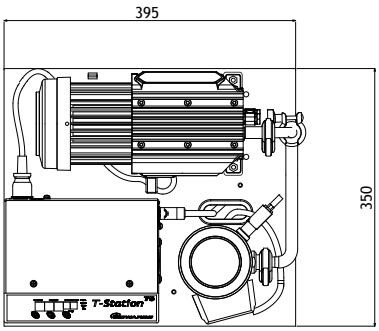
T-Station Dimension





T-Station 75W





T-Station 75D

Pumping system view

Technical Data

	Units	T-Station 75
Pumping Speed for N_2		
NW40	ls^{-1}	42
ISO63/CF63	ls^{-1}	61
Compression ratio for N_2		>1 x 10^{11}
Backing pump speed @ 50Hz		
E2M1.5	m^3h^{-1}	1.6
XDD1	m^3h^{-1}	1.2
Ultimate pressure	mbar	<5 x 10^{-8}
Inlet flange		NW40, ISO63 or CF63
Exhaust flange		
E2M1.5		11mm OD Nozzle or 3/8 inch BSP
XDD1		Fitted silencer or 1/8 inch BSP
Weight		
E2M1.5	kg /lb	22 / 48
XDD1	kg /lb	18 / 40
Noise level	dB(A)	55.4
Leak tightness	ls^{-1}	<1 x 10^{-6} mbar
Operating temperature range	°C/F	10 to 40 / 50 to 104

T-Station 75

Ordering information

Product description	Order no:
T-Station 75D NW40 200-230V 50/60Hz	TS75D1001
T-Station 75D NW40 100-120V 50/60Hz	TS75D1002
T-Station 75D ISO63 200-230V 50/60Hz	TS75D2001
T-Station 75D ISO63 100-120V 50/60Hz	TS75D2002
T-Station 75D CF63 200-230V 50/60Hz	TS75D3001
T-Station 75D CF63 100-120V 50/60Hz	TS75D3002
T-Station 75W NW40 200-230V 50/60Hz	TS75W1001
T-Station 75W NW40 100-120V 50/60Hz	TS75W1002
T-Station 75W ISO63 200-230V 50/60Hz	TS75W2001
T-Station 75W ISO63 100-120V 50/60Hz	TS75W2002
T-Station 75W CF63 100-120V 50/60Hz	TS75W3002
T-Station 75W CF63 200-230V 50/60Hz	TS75W3001

Gauge

Product description	Order no:
AIM-X Active Inverted Magnetron Gauge	D14642000
APG100 Active Pirani Vacuum Gauge	D02603000
APGX-H Active Linear Convection Gauge	D02391000
WRG-S Active Wide Range Gauge	D14701000

Active Gauge Cable

Product description	Order no:
0.5M Active Gauge Cable	D40001005
1M Active Gauge Cable	D40001010
3M Active Gauge Cable	D40001030
5M Active Gauge Cable	D40001050

Electrical Supply Cable

Product description	Order no:
2m electrical supply cable for 1-ph pumps, no plug	A50508000
2m electrical supply cable for 1-ph pumps, North America/Japan plug	A50507000
2m electrical supply cable for 1-ph pumps, North European plug	A50506000
2m electrical supply cable for 1-ph pumps, UK, Three-pin plug	A50505000

Mist Filter

Product description	Order no:
Model EMF3 mist filter	A46220000

Vent Valve

Product description	Order no:
TAV5 Vent Valve 24V DC 1/8 Bsp	B58066010

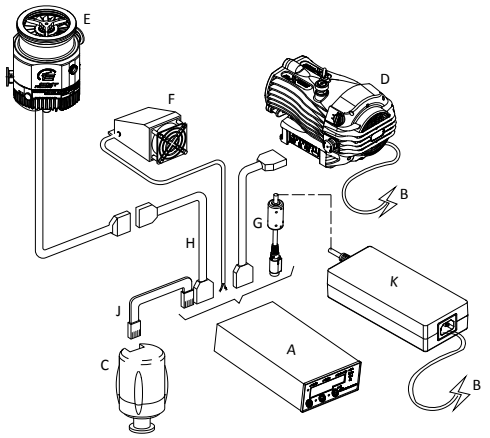
TAG CONTROLLER

The TAG (Turbo & Active Gauge) controller is a small, compact, low cost pumping system Controller, which is suitable for a wide range of vacuum applications. It is a 24V controller that is compatible with all Edwards DX and nEXT turbopumps. It contains no power source and thus you either need to supply your own power or buy the optional power supply. In addition to a turbopump it can control a backing pump, a vent valve, an air cooler and an Edwards active gauge.
The TAG Controller is controlled by an easy to use interface. A large clear LED display shows the pump speed or vacuum pressure. The compact size of the controller is ideal for use on bench-tops or suitable mobile platforms.

Features and Benefits

- Compatible with all Edwards 24V turbopumps enabling pump control and speed display
- Start/stop control of a backing pump for full system control (external relay may be required)
- Turbomolecular pump start options: start with backing pump, start after time delay or start at pressure set point
- Vent valve control options: controlled vent from full speed, vent from half speed or no vent
- Pressure display from a compatible active gauge in mbar, Torr or Pa

Tag Controller Configuration



A	TAG controller
B	Mains cable/line cord
C	WRG-S-NW25
D	Backing pump
E	Turbomolecular pump
F	ACX75 air-cooler
G	XDD/DX/EXDC extension cable
H	XDD/DX/EXDC extension cable (optional)
J	Active gauge cable
K	Power Supply

Technical Data

	Units	TAG Controller
Max input Power	W	240
Mains input		
Electrical supply	V d.c.	24
Power consumption (max)	W	5
Auxiliary terminals		
Air cooling fan		24V d.c. 3.6W max
Turbo pump		24V d.c. 160W max
Dimensions	mm	96 x 48 x 165
Mass	kg	0.3
Operating temp	°C	0 to 40
Storage temp	°C	-30 to 70
Max ambient operating humidity		90% RH non-condensing at 40°C
Max operating altitude	m	2000
Enclosure rating		IP20. IP40 when panel mounted.

TAG Controller

Ordering information

Product description	Order no:
TAG Turbo and active gauge controller	D39592000

Linecord

Product description	Order no:
Linecord 2M North Euro Plug	D40013030
Linecord 2M UK Plug	D40013025
Linecord 2m With US Plug	D40013120

Extension Cable

Product description	Order no:
XDD/DX/EXDC Extension Cable 1m	D39700835
XDD/DX/EXDC Extension Cable 2m	D39700836
XDD/DX/EXDC Extension Cable 5m	D39700837

Power Supply

Product description	Order no:
200 W power supply	D39592800

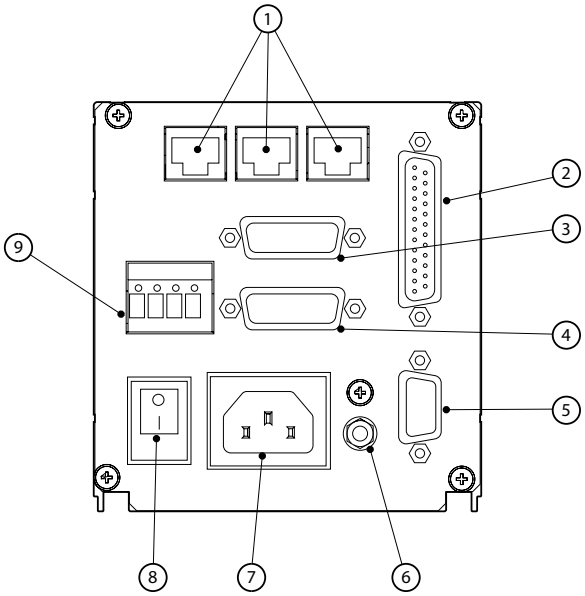
TIC TURBO AND INSTRUMENT CONTROLLER

A compact turbo controller with a large clear graphical display, an intuitive user interface and serial communications providing full remote control and data logging functions via a new Windows™ based PC program. The controller automatically recognises and supports one 24V turbomolecular pump from the EXT/nEXT range. Cooling and vent valve support is provided directly from the controller. Mains backing pumps (up to nXDS20i/RV12) may be controlled via an optional relay box. Two different power variants are available, 100W or 200W which determines the ramp speed of the turbo pump. In addition 200W models have the ability to power a 24V d.c. backing pump such as our XDD1 or nXDS through a 15-way 'D' socket. Turbo and instrument models add the ability to control up to 3 of our range of Active gauges.

Features and Benefits

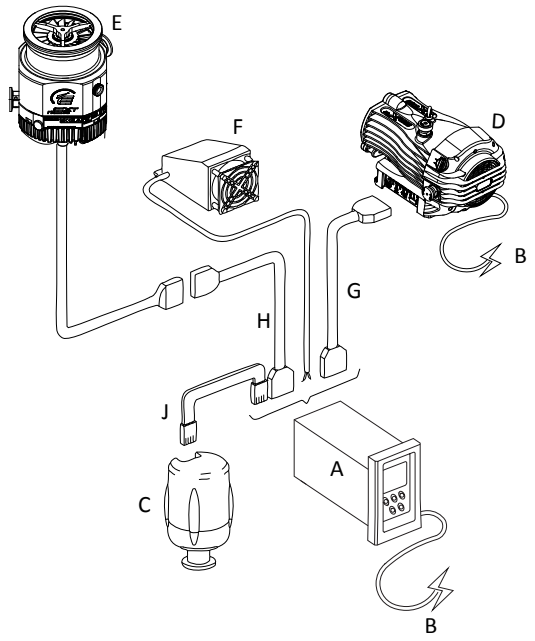
- TIC automatically recognises and controls one 24V turbomolecular pump from either the nEXT, DX or EXDC ranges. nEXT and DX turbos have full serial communication with TIC and may be both configured and report status via TIC.
- Both mains and 24V backing pumps may be controlled by TIC. For larger vacuum systems the TIC may control mains backing pumps, up to and including nXDS10i and RV12, via the optional relay box.
- The optional external relay box enables mains backing pumps to be controlled and also provides interfaces for a turbo heater band, a backing line isolation valve and a logic bypass. See relay box section.
- In most instances, TIC systems may be simply and quickly configured using the range of standard cables on offer, there is therefore no need for the customer to prepare loom assemblies or relay boxes and special interfaces.
- TIC is packaged in a compact case and may be panel or rack (¼ 19inch rack 3U) or bench mounted. With the addition of the bezel it becomes an attractive bench-top instrument. The large 128 x 64 pixel backlit graphics LCD and mobile phone style menu system simplifies programming and with a choice of summary screens excellent visibility of displayed parameters is assured.

TIC Turbo and Instrument Controller - Back view



1.	Gauge inputs (FCC68 (RJ45) (turbo & instrument only)
2.	Logic interface (25-way 'D' socket)
3.	Backing pump 24V (15-way 'D' socket) (TIC200 only)
4.	Turbo Pump 24V (15-way 'D' socket)
5.	RS232/485 (9-way 'D' socket)
6.	Earth stud (M4)
7.	Mains input (CEE/IEC 320 plug)
8.	Mains on/off switch
9.	Auxiliary vent valve and fan terminals (24V supply) 4-way screw term.

TIC Turbo and Instrument Configuration



A	TIC turbo and instrument controller, 200W
B	Mains cable/line cord
C	WRG-S-NW25
D	XDD1 24V d.c. diaphragm pump
E	EXT75DX ISO63
F	ACX75 air-cooler
G	XDD/DX/EXDC extension cable
H	XDD/DX/EXDC extension cable (optional)
J	Active gauge cable

Technical Data

	Units	TIC Turbo and Instrument Controller
Pump / TIC power	W	100 / 200
EXT75DX		Fast / Fast
nEXT 80W		Slow / Slow
nEXT 160W		Slow / Fast
Mains input		
Electrical supply		90 to 264 V a.c. 47 to 63 Hz
Power consumption (max)		215 VA
Peak inrush current		10.3 A @ 110 V a.c. / 23.0 A @ 230 V a.c.
Earth stud		M4
Auxiliary terminals		
Air cooling fan		24 V d.c. 3 W max, ACX70, ACX75 & ACX250H
Vent valve		24 V d.c. 2 W max, TAV5 & TAV6
Dimensions		
Electronics housing	mm	110 high x 105 wide x 245 deep
Front panel	mm	106 wide x 128 high
Weight	kg	3.5
Operating temp	°C	+0 to +40
Storage temp	°C	-30 to +70
Max ambient operating humidity		90% RH non-condensing at 40 °C
Max operating altitude	m	3000
Electronic Design		EN 61010-1
Electromagnetic Compatibility		EN 61326 Industrial Location, Class B Emissions
Enclosure rating		IP20

Service

Edwards products, spares and accessories are available from Edwards companies in Belgium, Brazil, China, France, Germany, Israel, Italy, Japan, Korea, Singapore, United Kingdom, U.S.A. and a world-wide network of distributors.

The majority of these centres employ Service Engineers who have undergone comprehensive Edwards training courses.
Order spare parts and accessories from your nearest Edwards company or distributor.
When you order, please state for each part required:

- Model and Item Number of your equipment.
- Serial number (if any).
- Item Number and description of the part.

TIC Turbo and Instrument Controller

Ordering information

Product description	Order no:
TIC Turbo & Instrument Controller, 100 W RS232	D39721000
TIC Turbo & Instrument Controller, 200 W RS232	D39722000
TIC Turbo Controller, 100 W RS232	D39711000
TIC Turbo Controller, 200 W RS232	D39712000

Communications Module

Product description	Order no:
TIC Profibus Communications Module	D39754000

Extension Cable

Product description	Order no:
XDD/DX/EXDC Extension Cable 1m	D39700835
XDD/DX/EXDC Extension Cable 2m	D39700836
XDD/DX/EXDC Extension Cable 5m	D39700837

Linecord

Product description	Order no:
Linecord 2M UK Plug	D40013025
Linecord 2M North Euro Plug	D40013030
Linecord 2m With US Plug	D40013120

Active Gauge Cable

Product description	Order no:
0.5M Active Gauge Cable	D40001005
1M Active Gauge Cable	D40001010
3M Active Gauge Cable	D40001030
5M Active Gauge Cable	D40001050
10M Active Gauge Cable	D40001100

This page has intentionally been left blank

STP TURBOMOLECULAR PUMPS

VIRTUALLY ZERO MAINTENANCE

STP turbomolecular pump series provide a wide range of product offering to suit all high vacuum pumping applications. The STP series has 4 basic product ranges:

Product ranges

Integrated Controller Series

The integrated controller series can be fully interfaced with advanced controllers to operate on a wide range of applications and processes. It eliminates the need for a conventional, rack-mounted controller and interconnecting cables. The fully integrated product offers easy installation and small footprint as an all-in-one solution for all application tools.

- STP-iX455, STP-iXL455, STP-iXR1606, STP-iXR2206, STP-iXA3306, STPiX3006 and STPiXA4506

High Throughput Series

The high throughput pumps incorporate a Holweck drag stage that increases the pumps throughput at low pressure. Their advanced rotor design combined with selection of the best materials has allowed the creation of the next generation of high throughput turbo pump inside the same footprint as many of the existing models. The range contains pumps with throughput speeds from 300 ls^{-1} to 4500 ls^{-1}.

- STP-H301, STP-H451, STP-A803, STP-A1303, STP-A1603, STP-A2203, STP-XA2703, STP-XA3203, STP-XA4503

Ultra High Vacuum (UHV) Series

The multistage pure bladed rotors in the UHV pumps provide the high vacuums required for clear beamlines on CD SEM machines, mass spectrometers and ion implanters. They provide optimum pumping performance with excellent light gas compression ratios.

- STP-301, STP-451, STP-603, STP-1003

UHV Low Vibration Series

The low vibration series has been designed to meet the low vibration requirements of advanced spectroscopy and metrology tools. It provides the advantage of having the vibration system built into the pump body.

- STP-L301, STP-L451

STP Magnetically Levitated Turbomolecular Pumps

In April 2002, Edwards acquired the turbomolecular pump business of Seiko Instruments, Inc.

- Distributed and supported globally by Edwards for nearly twenty years
- Designed by continuous improvement on existing proven reliable technology
- Advanced materials and designs provide:
  - Class leading performance
  - Low vibration
  - Guaranteed reliability
  - Low cost of ownership
- The broad product range covers all potential turbo pump applications.
- Qualified by all major semiconductor OEM's
- Used in all major semiconductor fabrication plants
- Installed base of over 120000 units, 85% in the semiconductor industry

Features & Benefits

- Improved pumping performance
  - Maximised gas throughput for each flange size
  - Applications specific models
- New generation universal controllers
- Compact (1/2 rack) controller
  - Auto tune enabling "mix and match" pumps
  - Integrated TMS control
  - Improved diagnostics
- High power motor drive
  - Fast ramp-up time
  - Self regeneration upon power failure, eliminating the need for batteries

Key Features

- Multi-axis magnetic bearing system
- High Throughput versions for high flow processes
- Low vibration characteristics
- Advanced controller technology
- Full interfacing capability

Edwards is a leader in clean and dry vacuum technology. The first STP pumps were sold in 1983 and there are now over 120000 installations worldwide. 85% are operating on semiconductor process tools where they demonstrate exceptional levels of reliability. STP pumps are the first choice for applications demanding high up-time, hydrocarbon-free pumping, minimal maintenance and low vibration.

- Proven reliability
- Clean oil-free high vacuum
- Complete range from 300 to 4500 ls^{-1}
- Application specific models
- Very low noise and vibration
- Low cost of ownership
- Maintenance free
- Installation in any orientation
- Full remote control interface
- Supported globally by Edwards

Proven Magnetic Bearing Technology

The rotor is entirely suspended by magnetic bearings so all contact between the rotor and the remainder of the pump is eliminated. As well as giving very low vibration, the elimination of contact means no bearing wear and no requirement for consequent pump maintenance.

STP Features

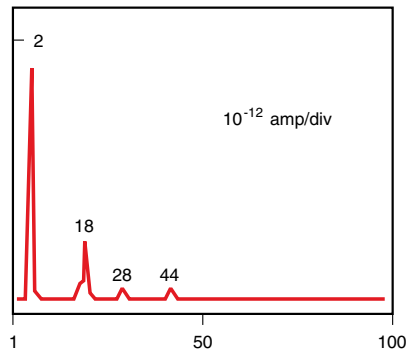
Oil Free

- All STP turbomolecular pumps are oil free. The use of magnetic bearings eliminates all hydrocarbon lubricants ensuring no contamination of the vacuum process from the turbomolecular pump. This feature is vital in industry and in surface science or high energy physics applications (where even minute degrees of contamination disrupt measurements).

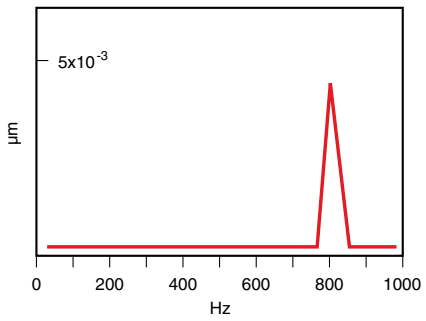
Vibration Free

- Magnetic levitation of the rotor results in an extremely low level of noise and vibration. Peak-to-peak vibration level is less than 0.02 µm. This amplitude remains constant throughout the life of the pump and is free from troublesome sub-harmonics.

Residual gas analysis



Vibration analysis STP300 displacement/frequency



Maintenance Free

- Unlike conventional mechanical bearings, magnetic levitation means there is no frictional contact, eliminating sources of wear and vibration. This feature enables STP turbomolecular pumps to run for years with virtually no maintenance, reducing annual operating costs to a minimum and ensuring maximum up-time is achieved. This maintenance free feature can be particularly beneficial on processes producing chemical or radioactive contamination.

Safety Backup Bearings

- STP pumps have dry lubricated axial and radial mechanical bearings as safety backup bearings. These support the rotor and protect the pump in the event of a total disruption of magnetic suspension or a massive air inrush which overcomes the magnetic bearing stiffness. These high precision ball bearings are dry lubricated and are not in contact with the rotor during normal operation.

Automatic Balancing System (ABS)

- ABS is a unique patented development of 5-axis technology. If any rotor imbalance is introduced (by deposition of process by-products, for example), sensors in the pump detect changes in the rotor motion and compensate the magnetic bearing fields to allow the rotor to spin on its natural inertial axis. This minimises the vibration transmitted to the inlet flange. ABS works at all pump rotational speeds.

Proven magnetic bearing technology

- The rotor is suspended by multi-axis magnetic bearings, so all contact between the rotor and the remainder of the pump is eliminated. As well as giving very low vibration, the elimination of contact means no bearing wear and no requirement for maintenance.

Safety Backup Bearings

- STP pumps have dry lubricated axial and radial mechanical bearings as safety backup bearings. These support the rotor and protect the pump in the event of a total disruption of magnetic suspension or a massive air inrush which could overcome the magnetic bearing stiffness. These high precision ball bearings are dry lubricated and are not in contact with the rotor during normal operation.

Corrosion Resistant

- To ensure a high level of resistance to corrosion, the corrosion resistant (C) and high throughput pumps have nickel coated rotors/stators and pump internals are suitable for corrosive applications. Further enhanced levels of protection are available on request.

Nitrogen Purging

- The corrosion resistant (C) pumps and the high throughput pumps have a nitrogen purge facility as standard, a constant flow of nitrogen through the pump dilutes corrosive gases minimising their damage to the pumps motor and sensor coils.

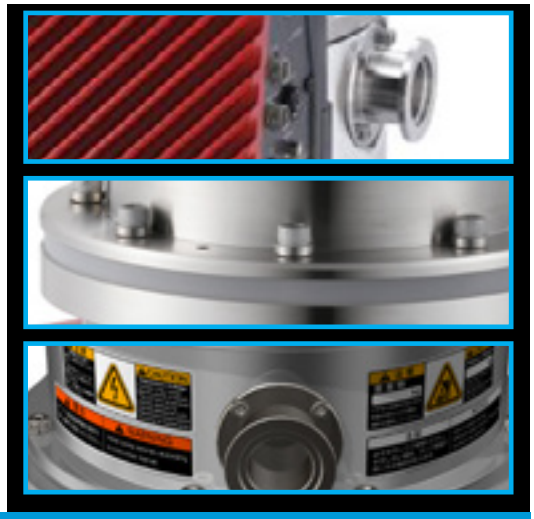
TMS System

- The Edwards Temperature Management System is available on a wide range of turbo pumps. It is designed to optimise the temperature within the pump, dramatically reducing the particle condensation within. This will not only considerably enhance the performance of the pump under harsh process conditions, but also increase its operational life. Higher temperature setting option is available for even more harsh processes.

Wide range of pumps from 300 ls^{-1} to 4500 ls^{-1} available with remote controllers, please call Edwards for more information

STP INTEGRATED CONTROLLER PUMP

VIRTUALLY ZERO MAINTENANCE



The STP integrated controller pump series provide industry-leading performance and features a compact size integrated on-board control unit. An integrated controller eliminates the need for a conventional, rack-mounted controller and interconnecting cables. The pumping performance is improved by the newest developed revolutionary rotor design. This fully integrated product offers easy installation and small footprint as an all-in-one solution for all application tools.

Features & Benefits

- **Increased productivity** - class leading high throughput with quicker pump down to base pressure
- **Compact size** - saves space and makes for easy installation
- **Low cost of ownership** - low power and utilities consumption
- **Maintenance free** - economical

Applications

- R&D
- Metrology and microscopic applications
- Pre-clean process
- Glass coating systems
- Inline/Batch coating systems
- Steel Degassing
- Solid State Lighting
- Semiconductor and FPD Etching systems
- Syncrotrons's Electron Microscope (SEM)

On Board Pump Range

STP-iX

- STP-iX455
- STP-iXL455
- STP-iXR1606
- STP-iXR2206
- STP-iXA2206C
- STP-iX3006
- STP-iXA3306C
- STP-iXA4506C

Performance Curves

STP-iX455 Turbomolecular Vacuum Pump

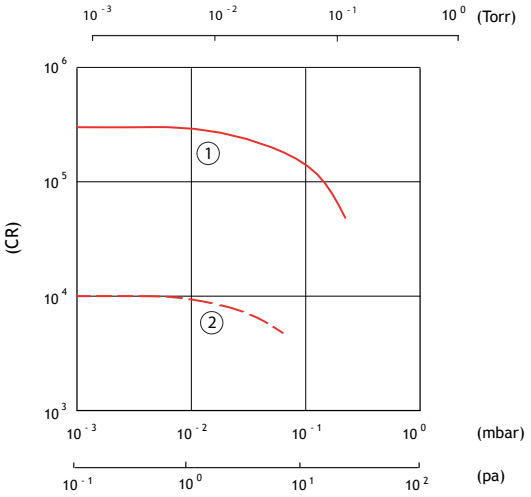
STP-iX455

Peak Pumping Speed		
	N_2	300 ls^{-1}/ 450 ls^{-1}
	H_2	300 ls^{-1}/ 460 ls^{-1}
Compression Ratio		
	N_2	>10^8
	H_2	1 x 10^4
Ultimate pressure		
		6.5 x 10^{-6} order Pa

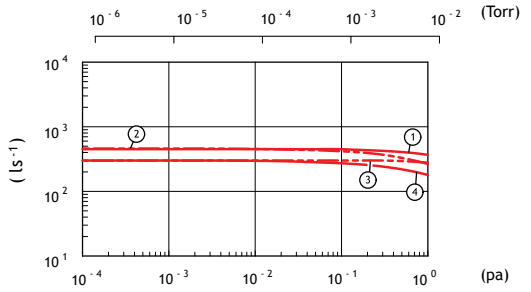
Ordering information

Product description	Order no:
STP-iX455 Turbomolecular pump ISO100K	PT640Z010
STP-iX455 Turbomolecular pump ISO160K	PT640Z020
STP-iX455 Turbomolecular pump DN100CF	PT640Z050
STP-iX455 Turbomolecular pump DN160CF	PT640Z060

STP-iX455 Performance Curve

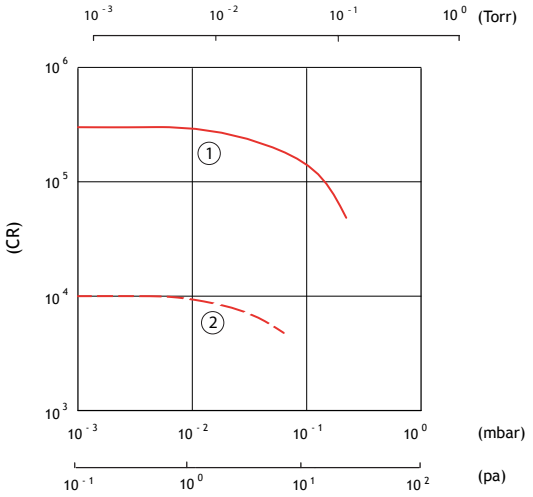


1	He
2	H_2

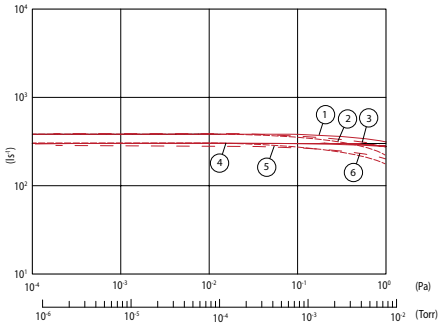


1	N_2	450 ls^{-1} (ISO160, VG150)
2	H_2	460 ls^{-1} (ISO160, VG150)
3	N_2	300 ls^{-1} (ISO100, VG100)
4	H_2	300 ls^{-1} (ISO100, VG100)

STP-iXL455 Performance Curve



1	He
2	H_2



1	N_2	380 ls^{-1} (ISO160, VG150)
2	H_2	380 ls^{-1} (ISO160, VG150)
3	He	390 ls^{-1} (ISO160, VG150)
4	N_2	300 ls^{-1} (ISO100, VG100)
5	H_2	300 ls^{-1} (ISO100, VG100)
6	He	280 ls^{-1} (ISO100, VG100)

STP-iXL455

Peak Pumping Speed	
N_2	300 ls^{-1}/ 380 ls^{-1}
H_2	300 ls^{-1}/ 380 ls^{-1}
Compression Ratio	
N_2	$>10^8$
H_2	1×10^4
Ultimate pressure	
	6.5×10^{-6} order Pa

Ordering information

Product description	Order no:
STP-iXL455 Turbomolecular pump ISO100K	YT642Z030
STP-iXL455 Turbomolecular pump ISO160K	PT642Z020

Performance Curves

STP-iXR1606 Turbomolecular Vacuum Pump

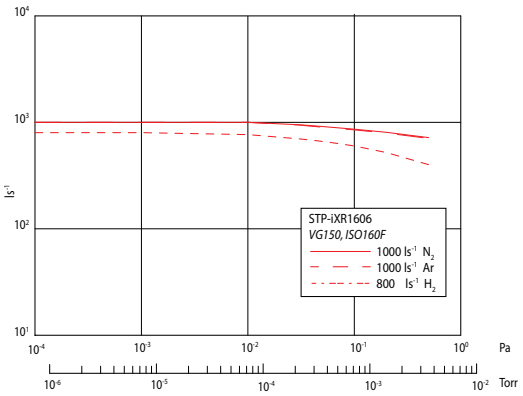
STP-iXR1606

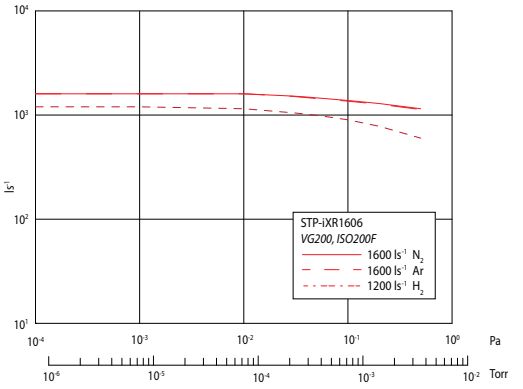
Peak Pumping Speed	
N_2	1000 ls^{-1}/ 1600 ls^{-1}
H_2	800 ls^{-1}/ 1200 ls^{-1}
Compression Ratio	
N_2	$>10^8$
H_2	1×10^3
Ultimate pressure	
	10^{-7} Pa

Ordering information

Product description	Order no:
STP-iXR1606 ISO200F	YT790Z010
STP-iXR1606 VG200	YT790Z020
STP-iXR1606 ISO250F	YT790Z040
STP-iXR1606 ISO160F	YT790Z070
STP-iXR1606 VG150	YT790Z080
STP-iXR1606 ISO200F with Profibus	YT790Z100
STP-iXR1606 ISO250F with Profibus	YT790Z110

STP-iXR1606 Performance Curve





STP-iXR2206 Turbomolecular Vacuum Pump

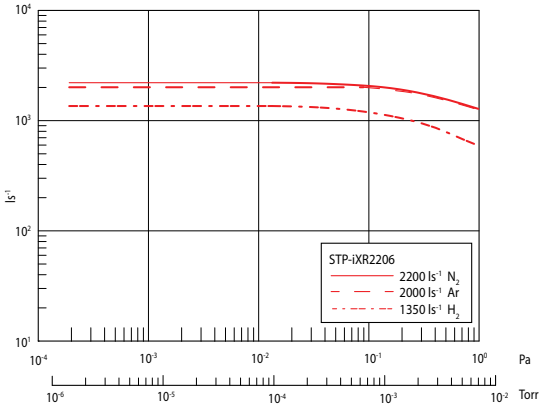
STP-iXR2206

Peak Pumping Speed	
N_2	2200 ls^{-1}
H_2	1350 ls^{-1}
Compression Ratio	
N_2	$>10^8$
H_2	1×10^3
Ultimate pressure	
	10^{-7} Pa

Ordering information

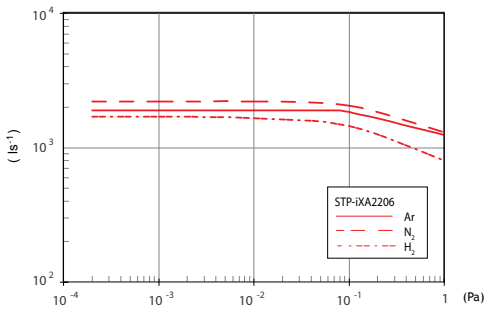
Product description	Order no:
STP-iXR2206 Turbomolecular pump ISO250F	YT850Z000
STP-iXR2206 Turbomolecular pump VG250	YT850Z010
STP-iXR2206 Turbomolecular pump DN250CF	YT850Z020
STP-iXR2206 Turbomolecular pump ISO250F Profibus	YT850Z030

STP-iXR2206 Performance Curve



STP-iXA2206C Turbomolecular Vacuum Pump

STP-iXA2206C Performance Curve



STP-iXA2206C

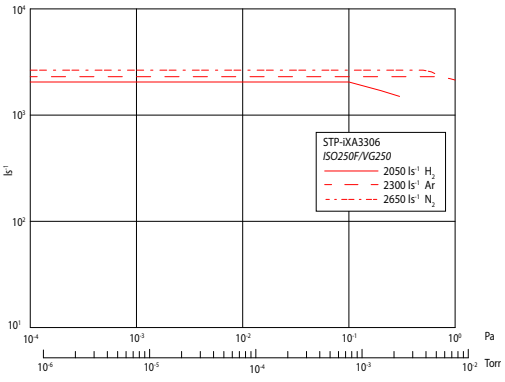
Peak Pumping Speed	
N_2 /Ar	2200 ls^{-1}/ 1900 ls^{-1}
Compression Ratio	
N_2	>10^8
H_2	1 x 10^4
Ultimate pressure	
	10^{-7} Pa

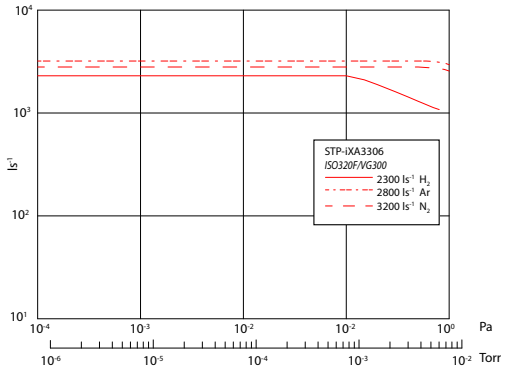
Ordering information

Product description	Order no:
STP-iXA2206C ISO250F	YT810Z010
STP-iXA2206C VG250	YT810Z020
STP-iXA2206C DN250CF	YT810Z030
STP-iXA2206C ISO250F with Profibus	YT810Z040

STP-iXA3306C Turbomolecular Vacuum Pump

STP-iXA3306C Performance Curve





STP-iXA3306C

Peak Pumping Speed	
N_2	2600 ls^{-1}/ 3200 ls^{-1}
H_2	2050 ls^{-1}/ 2300 ls^{-1}
Compression Ratio	
N_2	>10^8
H_2	2 x 10^3
Ultimate pressure	
	10^{-7} Pa

Ordering information

Product description	Order no:
STP-iXA3306C ISO250F	YT820Z020
STP-iXA3306C VG250	YT820Z030
STP-iXA3306C ISO320F	YT820Z040
STP-iXA3306C VG300	YT820Z050
STP-iXA3306C ISO250F with Profibus	YT820Z060
STP-iXA3306C ISO320F with Profibus	YT820Z070

Performance Curves

STP-iXA4506C Turbomolecular Vacuum Pump

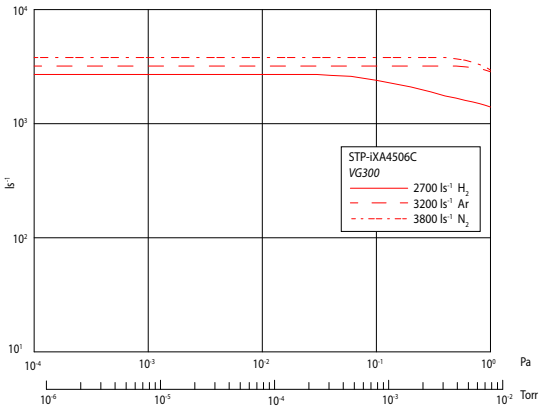
STP-iXA4506

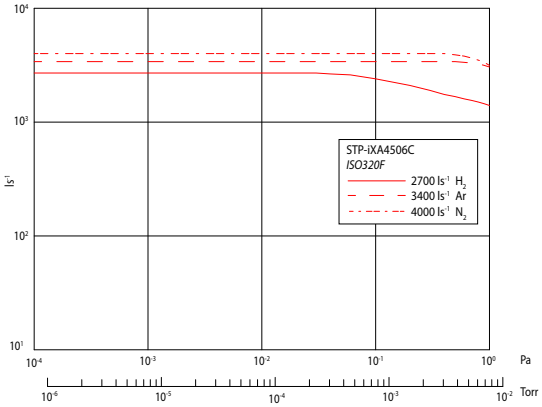
Peak Pumping Speed	
N_2	3800 ls^{-1}/ 4000 ls^{-1}/ 4300 ls^{-1}
H_2	2700 ls^{-1}/ 2700 ls^{-1}/ 2700 ls^{-1}
Compression Ratio	
N_2	$>10^8$
H_2	10^3
Ultimate pressure	
	10^{-7} Pa

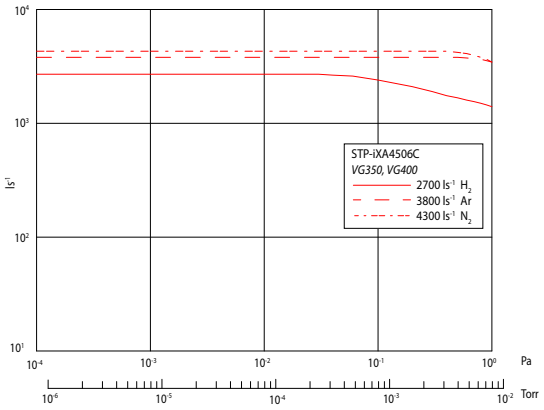
Ordering information

Product description	Order no:
STP-iXA4506C Turbomolecular pump ISO320F	YT780Z010
STP-iXA4506C Turbomolecular pump VG300	YT780Z100
STP-iXA4506C Turbomolecular pump VG350	YT780Z090
STP-iXA4506C Turbomolecular pump VG400	YT780Z030
STP-iXA4506C Turbomolecular pump ISO320F Profibus	YT780Z050
STP-iXA4506C Turbomolecular pump VG300 Profibus	YT780Z110
STP-iXA4506C Turbomolecular pump VG350 Profibus	YT780Z060

STP-iXA4506 Performance Curve

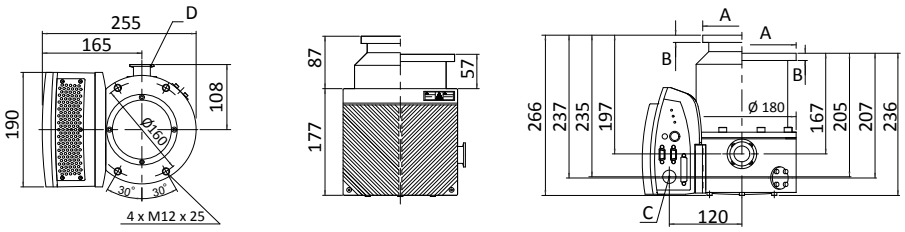






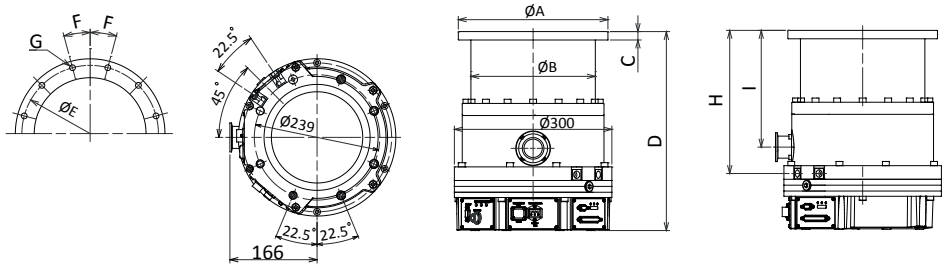
Dimensions

STP-iX455/iX455C Dimensions



Inlet Flange	ISO100	DN100CF	VG100	ISO160	DN160CF	VG150
A	130 (5.12)	152 (5.98)	182 (7.17)	0 180 (7.09)	203 (7.99)	235 (9.25)
B	12 (0.47)	21 (0.83)	12 (0.47)	12 (0.47)	22 (0.87)	12 (0.47)
C	Power Cable Connector					
D	Outlet Port KF25					

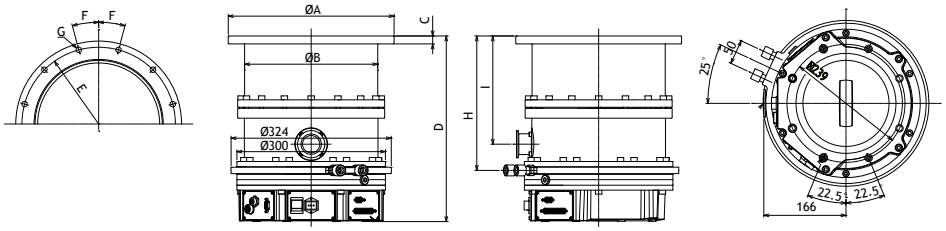
STP-iXR1606 Dimensions



Inlet port flange	VG150	VG200	VG250	ISO160F	ISO200F	ISO250F	ICF203	ICF253	ICF305
ØA	235	300	350	225	285	335	203	253	305
ØB	237	237	237	237	237	237	237	237	237
C	15	16	16	15	16	16	22	25	28
D	420	380	380	420	380	380	420	418	380
ØE	210	270	320	200	260	310	181	231.8	284
F	22.5°	22.5°	15°	22.5°	15°	15°	9°	7.5°	5.625°
G	8-Ø12	8-Ø15	12-Ø15	8-Ø12	12-Ø11	12-Ø11	20-Ø8.4	24-Ø8.4	32-Ø8.4
H	313	273	273	313	273	273	313	311	273
I	263	223	223	263	223	223	263	261	223

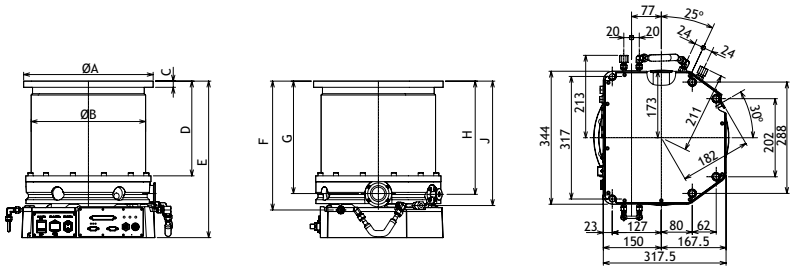
Dimensions

STP-iXR2206 Dimensions



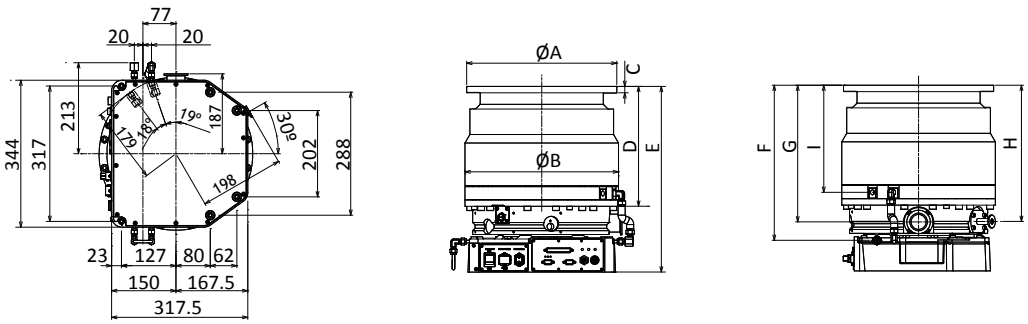
Inlet port flange	VG250	ISO250F	ICF305
ØA	350	335	305
ØB	296	296	296
C	18	16	28
D	235	245	275
E	395	405	435
F	312	322	352
G	281	291	321
H	283	293	323
I	322	332	322

STP-iXA2206C Dimensions



Inlet port flange	VG250	ISO250F	ICF305
ØA	350	335	305
ØB	296	296	296
C	18	16	28
D	235	245	275
E	395	405	435
F	312	322	352
G	281	291	321
H	283	293	323
I	322	332	322

STP-iXA3306C Dimensions



Inlet port flange	VG250	ISO250F	VG300	ISO320F	ICF305	ICF356
ØA	350	335	400	425	305	356
ØB	358	358	358	358	358	358
C	15	15	18	20	28	28.5
D	281	281	242	242	286	281
E	435	435	396	396	440	435
F	363	363	325	325	368	364
G	320	320	282	282	325	321
H	319	319	281	281	324	320
I	251	251	212	212	256	251

Technical Data

	STP-iX455		STP-iXL455	
Inlet flange	ISO100K/ DN100CF	ISO160K/DN160CF	ISO100K	ISO160K
Backing port size	KF25		KF25	
Pumping Speed				
N_2	300 ls^{-1}	450 ls^{-1}	300 ls^{-1}	380 ls^{-1}
H_2	300 ls^{-1}	460 ls^{-1}	300 ls^{-1}	380 ls^{-1}
Compression ratio				
N_2	$>10^8$	$>10^8$	$>10^8$	$>10^8$
H_2	$>1 \times 10^4$	$>1 \times 10^4$	1×10^3	1×10^3
Ultimate pressure	6.5×10^{-6} Pa	10^{-8} Pa	6.5×10^{-6} Pa	10^{-8} Pa
	5×10^{-8} Torr	10^{-10} Torr	5×10^{-8} Torr	10^{-10} Torr
Max working pressure	1.3×10^{-1} Pa			
Allowable backing pressure	67 Pa			
Rated speed	55000 rpm			
Run-up time to 90% rated speed				
Starting time	<6 min			
Mounting position	Any orientation			
Cooling method	Natural cooling (Air cooling Fan when baking or gas pumping)			
Lubricating oil	Not necessary			
Backing pump	240 $lmin^{-1}$			
Leakage Magnetic Flux				
Axial direction	≤100 mGauss			
Radial direction	≤100 mGauss			
Ambient temperature range	0 to 40 °C			
Storage temperature range	-25 to 55 °C			
Input voltage	48 V a.c.			
Maximum input current				
Weight	16 kg			

* The maximum gas flow is applicable under conditions that N_2 or Ar gas is pumped continuously with water cooling temperature between 15-25 °C and the backing pump (10,000 $lmin^{-1}$ size) is used. It is changed on condition.

	STP-iXR1606		STP-iXR2206	
Inlet flange	VG150/ ISO160F/ ICF203	VG200/ VG250/ ISO200F/ ISO250F/ ICF253/ ICF305	VG200/ ISO200F/ ICF253	VG250/VG250/ ICF305
Backing port size	KF40	KF40	KF40	KF40
Pumping Speed				
N_2	1000 ls^{-1}	1600 ls^{-1}	1850 ls^{-1}	2200 ls^{-1}
H_2	800 ls^{-1}	1200 ls^{-1}	1250 ls^{-1}	1350 ls^{-1}
Ar	-	-	1650 ls^{-1}	2000 ls^{-1}
Compression ratio				
N_2	$>10^8$	$>10^8$	$>10^8$	$>10^8$
H_2	1 x 10^3	1 x 10^3	1 x 10^3	1 x 10^3
Ultimate pressure	10^{-7} Pa (10^{-9} Torr)	10^{-7} Pa (10^{-9} Torr)	10^{-7} Pa (10^{-9} Torr)	10^{-7} Pa (10^{-9} Torr)
Max working pressure	-			
Allowable backing pressure	266 Pa (2 Torr)			
Rated speed	36,500 rpm			
Run-up time to 90% rated speed				
Starting time	≤8 min			
Mounting position	Any orientation			
Cooling method	Water cooling			
Lubricating oil	Not necessary			
Backing pump	-			
Leakage Magnetic Flux				
Axial direction	-			
Radial direction	-			
Ambient temperature range	0 to 40°C			
Storage temperature range	-5 to 55°C			
Input voltage	200 to 240 (± 10) V a.c.			
Maximum input power	750 VA			
Weight	48 kg			

* The maximum gas flow is applicable under conditions that N_2 or Ar gas is pumped continuously with water cooling temperature between 15-25 °C and the backing pump (10,000 $lmin^{-1}$ size) is used. It is changed on condition.

Technical Data

	STP-iXA2206C	STP-iXA3306C	
Inlet flange	ISO250F/VG250/ICF305	ISO250F/VG250/ ICF305	ISO320F / VG300 / ICF356/ VG350
Backing port size	KF40	KF40	KF40
Pumping Speed			
N_2	2200 ls^{-1}	2650 ls^{-1}	3200 ls^{-1}
H_2	-	2050 ls^{-1}	2300 ls^{-1}
Ar	1900 ls^{-1}	2300 ls^{-1}	2800 ls^{-1}
Compression ratio			
N_2	$>10^8$	$>10^8$	
H_2	1 x 10^3	2 x 10^3	
Ultimate pressure	10^{-7} Pa (10^{-9} Torr)	10^{-7} Pa	
		10^{-9} Torr	
Max working pressure	-	-	
Allowable backing pressure	266 Pa (2 Torr)	266 Pa (2 Torr)	
Rated speed	27000 rpm	27700 rpm	
Run-up time to 90% rated speed		-	
Starting time	<8 min	<10 minutes	
Mounting position	Any orientation	Any orientation	
Cooling method	Water cooling	Water cooling	
Lubricating oil	Not necessary	Not necessary	
Backing pump	-	>1300 $lmin^{-1}$	
Leakage Magnetic Flux			
Axial direction	-	<100mGauss	
Radial direction	-	<100mGauss	
Ambient temperature range	0 to 40°C	0 to 40 °C	
Storage temperature range	-5 to 55°C	-25 to 55°C	
Input voltage	200 to 240 (± 10) V a.c.	200 to 240 ±10% ACV	
Maximum input power	750 VA	1500 VA	
Weight	62 kg	80 kg	83 kg

* The maximum gas flow is applicable under conditions that N_2 or Ar gas is pumped continuously with water cooling temperature between 15-25 °C and the backing pump (10,000 $lmin^{-1}$ size) is used. It is changed on condition.

STP-iXA4506C				
Inlet flange	VG300	ISO320F	VG350	VG400
Backing port size	KF40	KF40	KF40	
Pumping Speed				
N_2	3800 ls^{-1}	4000 ls^{-1}	4300 ls^{-1}	
H_2	2700 ls^{-1}	2700 ls^{-1}	2700 ls^{-1}	
Ar	3200 ls^{-1}	3400 ls^{-1}	3800 ls^{-1}	
Compression ratio				
N_2	$>10^8$	$>10^8$		
H_2	1 x 10^3	1 x 10^3		
Ultimate pressure	6.5 x 10^{-6} Pa	10^{-8} Pa		
	5 x 10^{-8} Torr	10^{-10} Torr		
Max working pressure	-			
Allowable backing pressure	266 Pa (2 Torr)			
Rated speed	24240 rpm			
Run-up time to 90% rated speed				
Starting time	≤11 minutes			
Mounting position	Any orientation			
Cooling method	Water cooling			
Lubricating oil	Not necessary			
Backing pump	>1300 $lmin^{-1}$			
Leakage Magnetic Flux				
Axial direction	<100mGauss			
Radial direction	<100mGauss			
Ambient temperature range	0 to 40 °C			
Storage temperature range	-25 to 55°C			
Input voltage	200 to 240 ±10% ACV			
Maximum input power	1700 VA			
Weight	109 kg	111 kg	104 kg	111 kg

* The maximum gas flow is applicable under conditions that N_2 or Ar gas is pumped continuously with water cooling temperature between 15-25 °C and the backing pump (10,000 $lmin^{-1}$ size) is used. It is changed on condition.

Service, Spares and Accessories

STP-iX Series Common Accessories

Display Unit

Product description	Order no:
iDT-001 Display terminal	YT79U1Z00

STP-iX455, STP-iXL455 Accessories

Power Cable

Product description	Order no:
iPS-240 Power supply unit	PT64W0Z00
Power supply cable for iPS240 3m	PT64Y0A10
Power supply cable for iPS240 5m	B70700040

DC Cable

Product description	Order no:
STP-iX455 iPS240 interconnection cable 5 m	PT64Y0B20
STP-iX455 iPS240 interconnection cable 10 m	PT64Y0B30
STP-iX455 iPS240 interconnection cable 15 m	PT64Y0B40
STP-iX455 iPS240 interconnection cable 20 m	PT64Y0B50

Air Cooling Unit

Product description	Order no:
STP-iX455 air cooling unit	PT640U101

STP-iXR1606, STP-iXR2206, STP-iXR2206C, STP-iXA3306C Accessories

Power Cable

Product description	Order no:
Power cable 5m	YT79Y0A00
Power cable 10m	YT79Y0A03
Power connector only	PTZ003114

STP-iXA4506 Accessories

Power Cable

Product description	Order no:
Power cable 5m	YT78Y0A00
Power cable 10m	YT78Y0A01
Power connector only	PTZ003114

In addition to the ‘On-board range of pumps Edwards continue to make a wide range of remote controller pumps from 300 ls^{-1} to 4500 ls^{-1}.

Please contact a Edwards for more info or visit our webshop

SCU-350 CONTROL UNIT

The Edwards SCU-350 control unit is a EU-RoHS compliant controller for small sized turbomolecular pumps. It is fully compatible with the current control unit models, but has an improved vibration property at low frequency range. It also has lower input voltage, which contributes to a reduction in electric capacity and tool power consumption.
The SCU-350 has improved noise immunity and is equipped with universal voltage function for operation with supply voltage from 100-240V a.c. without switching.

Features and Benefits

- Better vibration property
- No peak vibration movement across all frequencies
- Compact design
- Smallest size control unit in its class
- Energy saving

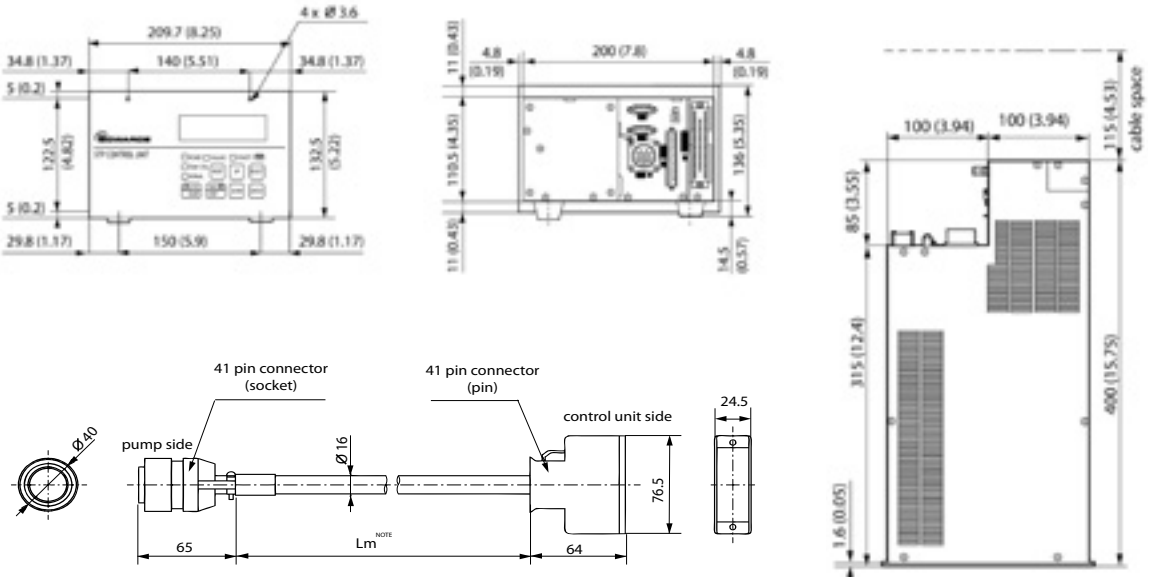
Applications

- STP301/451 series
- STPL301/L451 series

Technical Data

	SCU-350
Magnetic bearing control system	Digital control
Input voltage	100-120
	200-240V a.c.
Power consumption	
Start up	Max 350 VA
Continuous	Max 150 VA
Input frequency	50/60 ±2 Hz
Leak current	3.5 mA
Main breaker rated current	5 A
Motor drive system	3-phase d.c.
Allowable ambient temperature	0 to 40 °C
	(32 to 104 °F)
Weight	8 kg
Panel display	LCD

SCU-350 Control Unit Dimensions



SCU-350 Control Unit

Ordering information

Product description	Order no:
SCU-350 Control Unit	YT21Z3ZC0
SCU-350 Turbo Pump Control Unit with RS232	YT21ZEZC0
SCU-350A Turbo Pump Control Unit with ABS	YT21ZCZC0

Ring Terminals

Product description	Order no:
Type B P/Cab 3M Ring Terminals	B70700090
Type B P/Cab 5M Ring Terminals	B70700040
Type B P/Cab 10M Ring Terminals	PT21Y0A00
Type B P/Cab 15M Ring Terminals	PT21Y0A01

Straight Connection Cable

Product description	Order no:
STP straight connection cable, 3m	B70700010
STP straight connection cable, 5m	B70700000
STP straight connection cable, 10m	B70700130
STP straight connection cable, 15m	B70700070
STP straight connection cable, 20m	B70700150

SCU-800 CONTROL UNIT

The Edwards SCU800 turbomolecular pump control unit is a fully digital controller, and has perfect compatibility for mid sized pumps. New AVR (Auto Vibration Reduction) technology achieves a further reduction in vibration levels, and the advanced pre-maintenance call function provides advanced notice of precise maintenance time.
The reliability focused design, enhanced communication function, and perfect compatibility bring significant back up units savings and contributes to a reduction in total C0O.

Features and Benefits

- Universal Controller
- Single controller is used for mid sized pumps. No requirement for different controllers for each pump type
- Service back up stocks will be reduced
- Advanced pre-maintenance Function
- AVR (Auto Vibration Reduction) minimises the rotate system vibration during acceleration.

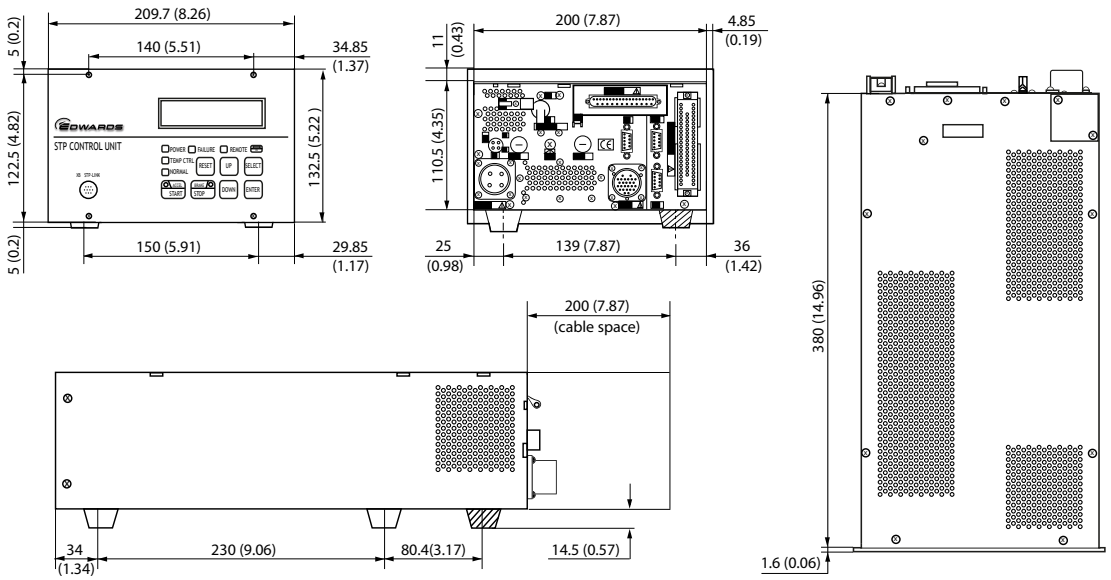
Applications

- STP603/1003 series
- STPH301/H451 series
- STPH803/H1303 series
- STPA803C/A1303 series
- STPA1603 series

Technical Data

	SCU-800
Magnetic bearing control system	Digital control
Input voltage	100 – 120 ±10 V a.c.
	200 – 240 ±10 V a.c.
Power consumption	
(without Temperature Management System, TMS)	Max 850 VA
Power consumption (with TMS)	Max 1200 VA
Input frequency	50/60 ±2 Hz
Leak current	3.5 mA
Main breaker rated current	10 A
Motor drive system	3-phase d.c.
Allowable ambient temperature	0 to 40 °C (32 to 104 °F)
Weight	8.5 kg
TMS control unit	Built-in
Serial communication function (RS232/ RS485)	Standard
Panel display	LCD

SCU-800 Control Unit Dimensions



SCU-800 Control Unit

Ordering information

Product description	Order no:
SCU-800 Turbo Pump Control Unit	YT49Z2Z00

Cable

Product description	Order no:
Power Cable 5m	PT49Y0A00
Power Cable 10m	PT49Y0A01
Power Cable 15m	PT49Y0A02
Power Cable 20m	PT49Y0A03

Straight connection cable

Product description	Order no:
STP straight connection Cable, 5m	B75130020
STP straight connection Cable, 10m	B75130060
STP straight connection Cable, 15m	B75130070
STP straight connection Cable, 20m	B75130190

SCU-1600 CONTROL UNIT

The fully digital SCU-1600 turbo pump control unit is compatible with STP turbomolecular pumps ranging from 2000 ls^{-1} to 4500 ls^{-1}. It provides reliability, enhanced communication and pump compatibility with reduced back-up unit requirements and minimised overall cost of ownership.

Features and Benefits

- Advanced pre-maintenance function
- Precise maintenance timing
- Two stage warning messages
- Rotor imbalance monitoring
- Back-up bearing damage monitoring

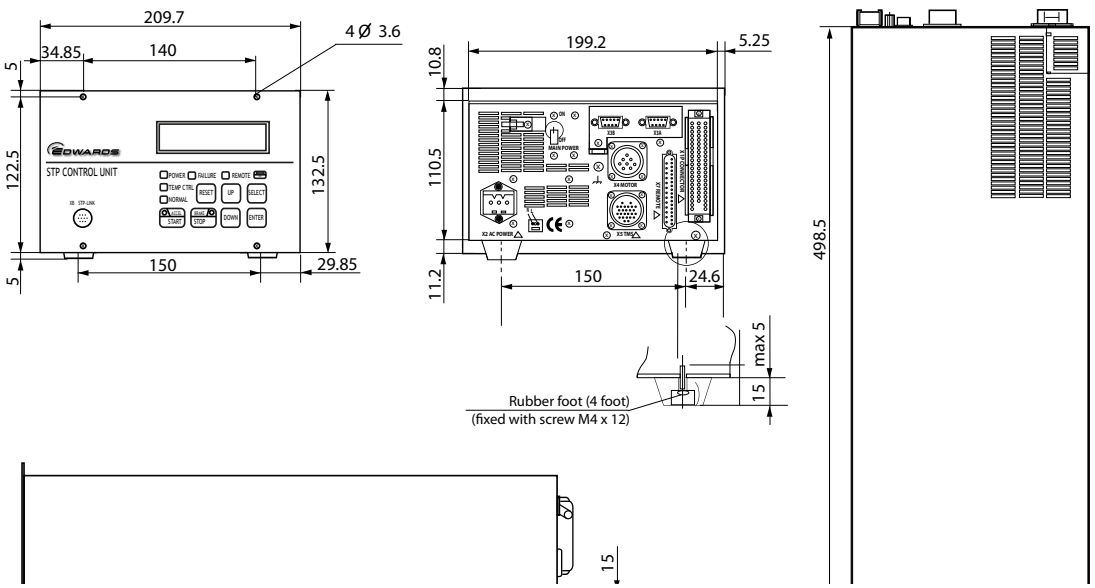
Applications

- STP-A2203/2503/2803/3003/3503
- STP-F2203
- STP-XA2703/3203/4503
- STP-XH2603/3203

Technical Data

	SCU-1600
Magnetic bearing control system	Digital control
Input voltage	200 – 240 ±10 V a.c.
Power consumption (without Temperature Management System, TMS)	Max 1600 VA
Power consumption (with TMS)	Max 2100 VA
Input frequency	50/60 ±2 Hz
Leak current	3.5 mA
Main breaker rated current	15 A
Motor drive system	3-phase d.c.
Allowable ambient temperature	0 to 40 °C (32 to 104 °F)
Weight	12 kg
TMS control unit	Built-in
Serial communication function (RS232/RS485)	Standard
Operation switch	Start, Stop, Reset, Select, Up, Down, Enter, Manual/ Remote
Panel display	LCD

SCU-1600 Control Unit Dimensions



SCU-1600 Control Unit

Ordering information

Product description	Order no:
SCU-1600 Turbo Pump Control Unit	YT76Z0Z00

Cable

Product description	Order no:
Power cable, 15m	YT76Y0A03
Power cable, 20m	YT76Y0A04

Straight Connection Cable

Product description	Order no:
STP straight connection cable, 5m	B75030010
STP straight connection cable, 10m	B75030040
STP straight connection cable, 15m	B75030220
STP straight connection cable, 20m	B75030230

Order your pump and accessories today!

How to order your pump and accessories at **shop.edwardsvacuum.com**

1

Take a look through our products and accessories in our webshop

OR

Search the webshop using a product number

2

Click 'Add to cart'

Use our Customer Services helpline

Contact our representatives at the below contact numbers:

EUROPE

UK Crawley +44 1293 528844

UK (local rate) 08459 212223

Belgium Brussels +32 2 300 0730

France Paris +33 1 4121 1256

Germany Munich 0800 000 1456

Italy Milan +39 02 48 4471

USA

Niagara (toll free) +1 800 848 9800

BRAZIL

Sao Paulo +55 11 3952 5000

ISRAEL

Qiryat-Gat +972 8 681 0633

ASIA PACIFIC

China (toll free) +86 400 111 9618

India, Pune +91 20 4075 2222

Japan, Yachiyo +81 47 458 8831

Korea, Bundang +82 31 716 7070

Singapore +65 6546 8408

Taiwan R.O.C. Jhunan Town +886 3758 1000

info@edwardsvacuum.com

This page has intentionally been left blank