VACUUM INSTRUMENTS

PERFORMANCE YOU CAN RELY ON

VACUUM MEASUREMENT AND CONTROL SYSTEMS

The Edwards range of instruments offers:
- Measurement over the range 2000 to < 10^{-9} mbar
- Advanced microprocessor based controllers
- Optional certification of instruments to UK national standards

Selecting Your Vacuum Gauge

Edwards offers a wide choice of vacuum measurement and control products – from dial gauges to microprocessor based gauge controllers. Within each product range, there is a family of models designed to meet the widest user specification.

- The first step in selecting the right gauge to meet your application is to decide the range of pressures that you want to measure at each of your measuring points. The chart below indicates the broad pressure ranges covered by the spectrum of Edwards instruments: use this chart as a primary guide to the choice of gauge head.
- The second step is to establish your requirement for the output of the pressure measurement. If you simply want an indication that a certain level of vacuum has been reached (for example, to open a valve or start a process), then a vacuum switch or Active gauge head alone may be appropriate. If you want to display the pressure locally, then a dial gauge may be suitable. If you need the pressure display to be remote from the measurement point (for example, in a control panel) then select the TIC Instrument Controller or Active Digital Controller, depending on the features you require. (You will also need to select appropriate gauge head(s) to accompany these displays and controllers.) If your control system (such as a PLC, PC or dedicated microprocessor controller) needs to know the pressure to make sequence decisions but you do not need a separate vacuum display, then you can use an Active gauge head as a stand-alone transducer connected to an appropriate power supply and control system analog input.
- Thirdly, you need to select a gauge suitable for the process gases and constructed to withstand exposure to the external environment of your vacuum system. Consider both whether the gauge will survive in the process and also whether the process gases will effect the gauge's measurement. For example, the measurement made by mechanical gauges (vacuum switches, dial gauges and strain gauges) is not affected by gas composition, whereas that made by other types of gauges is gas dependent.

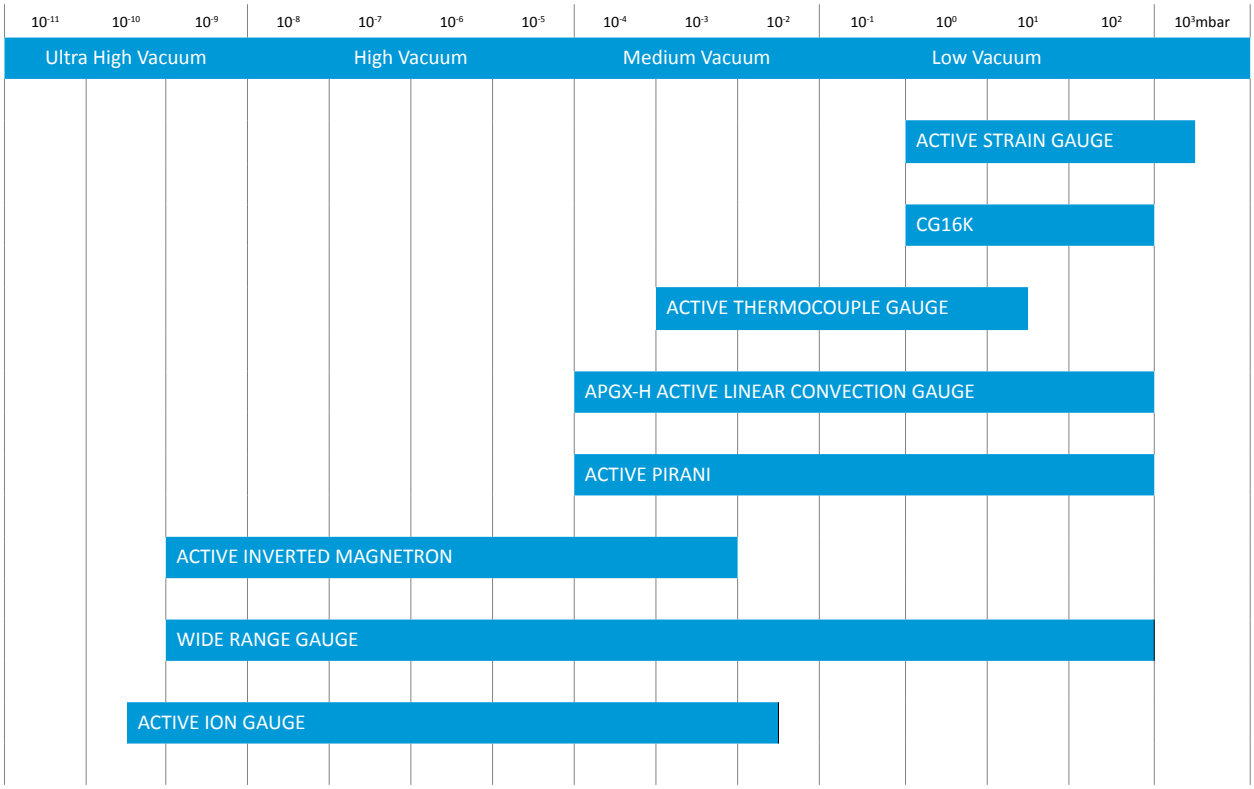
Correction factor for Different Gases

All of our gauge heads are set up for dry nitrogen; the set up for dry air is the same. If you use thermal conductivity or ionisation gauges with gases other than nitrogen or air, you may need to apply a gas correction factor for an accurate indication of your system pressure. Please contact us if you need more information.

Gauge Head Installation

How you install the gauge head into your vacuum system will affect the accuracy and reliability of your pressure measurement. For best performance we recommend that you:

- Connect the gauge head to your vacuum system with a straight, short branch pipe. This pipe should have an internal diameter no less than that of the gauge tube itself. Long, narrow or angled connections can cause a significant measurement error. Note that the indicated pressure may be higher or lower than the actual pressure.
- Connect the gauge head as close as possible to the point where you want to measure the system pressure.
- Orientate the gauge head so that it is vertical, with the connection to the vacuum system at its base. This prevents debris falling into the gauge.


10-11
10-10
10-9
10-8
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10-6
10-5
10-4
10-3
10-2
10-1
100
101
102
103mbar
Ultra High Vacuum
High Vacuum
Medium Vacuum
Low Vacuum
ACTIVE STRAIN GAUGE
CG16K
ACTIVE THERMOCOUPLE GAUGE
APGX-H ACTIVE LINEAR CONVECTION GAUGE
ACTIVE PIRANI
ACTIVE INVERTED MAGNETRON
WIDE RANGE GAUGE
ACTIVE ION GAUGE

The Active Gauge Concept

- Operate from standard power supplies for simple installation
- Gauge type identification signal and common 0-10 V d.c. output
- Cable lengths of up to 100 m for remote operation
- Range of microprocessor based controllers
- The Active gauge range with TIC Instrument Controller give continuous measurement from 2000 mbar to <10^{-9} mbar
- Low cost analogue and digital displays and controllers available

Edwards Active vacuum gauges and controllers give unrivalled performance, flexibility and ease of use. Traditionally, vacuum gauges consisted of a sensing element and a separate display/controller. With Edwards' Active gauges, the functions that are specific to the gauge type (such as signal conditioning and specialised power supplies) have been moved from the dedicated controller and incorporated in the head itself. Now the gauge head can be used as a standalone transducer: it requires only a simple power supply and it provides a 2 to 10 V output. Alternatively, you can connect the gauges to a Edwards display or universal controller: these will accept all gauge types in any combination for the most flexible solution.

The Active Gauge Range

Active Pirani Gauge A range of Pirani gauges including linear measuring from above atmospheric pressure to 10^{-4} mbar, with integral set-point for OEM use.

Active Ion Gauge A new range of small self-contained Active ion gauges with a measuring range from 5 x 10^{-2} to 5 x 10^{-10} Torr. The gauges incorporate degas, automatic emission current switching, automatic filament protection, a push button adjustable set-point and status indicating LED.

Active Inverted Magnetron Operating through the range 10^{-2} mbar to 10^{-9} mbar, with integral set-point for OEM use. A low external magnetic active field version is available.

Active Wide Range Gauge A range of gauges measuring from atmosphere to 10^{-9} mbar with a linear output and integral set-point for OEM use. A low external magnetic field version is available.

Active Thermocouple Gauge A range of gauges measuring from atmosphere to 10^{-3} mbar, with integral set-point for OEM use and LED indication of vacuum status.

Active Strain Gauge A range of strain gauges measuring from 2000 mbar to 1 mbar. This type of gauge is extremely rugged and offers accurate, gas independent measurement.

Active Controllers and Displays

The Edwards Active range of gauges can operate as stand-alone pressure transducers requiring only a simple power supply and providing a 2 to 10V analogue output. If you need a complete vacuum measuring and display system, we also offer a range of controllers and displays. Our displays and controllers are designed for maximum flexibility and ease of use. The range is suitable for bench-top or panel mounting and options include RS232 interfacing.

TIC Instrument Controller A compact instrument controller with a large clear graphical display, an intuitive user interface and serial communications providing full remote control and data logging functions for one or more TIC systems via a new Windows™-based PC program.

The controller supports, automatically recognises and controls up to six gauges from the Edwards range, with coverage from 2000 to 6.6 x 10^{-10} mbar. Low pressure gauges may be controlled and protected by high pressure gauges and there are open collector set-point outputs. An optional relay box uses these outputs to control mains changeover relays. The TIC instrument controller may be either rack or bench mounted and provides a useful hub for the flexible operation of a wide range of vacuum system configurations.

Active Digital Controller The Edwards Active Digital Controller (ADC) is a compact single gauge controller and display. It features a bright LED display and simple push-button controls. The ADC automatically recognises compatible Edwards gauges, loads the appropriate lookup table and displays the pressure in commonly used vacuum units.

The ADC is available in standard and enhanced versions. The standard controller displays the pressure measured by a single active gauge. The enhanced controller supports two similar gauges – it has two variable hysteresis set-points which are linked to 48 V d.c. 1 A changeover relays and two 0-10 V d.c. analogue

outputs. To aid system integration, the enhanced controller is provided with an RS232 interface. When combined with a suitable gauge, such as the Edwards APGX-H Convection Pirani or Wide Range Gauge (WRG), the ADC represents a cost effective means of monitoring and controlling process vacuum in a broad range of applications.

Other Instruments

In addition to the range of Active gauges, Edwards offers a variety of more traditional vacuum measurement and control products. Our simple dial gauges provide rugged, local indication of pressures from atmosphere to 1 mbar and are ideal for vacuum chambers in an industrial environment. Vacuum switches, with high current ratings, give a simple method of directly controlling loads without the need for additional relays or power supplies.

Optional Gauge Certification

All Edwards gauges may either be supplied as a certificated gauge (as denoted by suffix C in the ordering number) or re-certificated by request.

- Provides certification traceable to National Standards which meets ISO9000 requirements worldwide.
- Service available for both new and returned instruments.
- Transducers certificated separately or with display/controller.

As a leading manufacturer of vacuum instruments, Edwards offers an expert certification and repair service with 25 years of experience. Other manufacturers' vacuum instruments are also covered. The instruments are compared to traceable standard gauges with dry nitrogen; for other gases or at specific pressures, please consult Edwards.

The range of instruments include:

- Active gauges, displays and controllers. Note that Active gauges can be certificated on their own, with a display or with a controller.

APG100 ACTIVE PIRANI VACUUM GAUGE

Edwards APG100 series Active Pirani vacuum gauges are available in 2 models. The APG100-XM is the standard model and measures to 10^{-3} mbar, the APG100-XLC is a corrosion resistant version with measurement to 10^{-4} mbar.

Both gauges feature compact size for easy installation, a linear output and a replaceable sensor tube. These gauges are compatible with all Edwards TIC instrument controllers and other Active gauge controllers and displays. They are also CSA, C/US approved as well as fully RoHS compliant due to their lead-free construction.

Features and Benefits

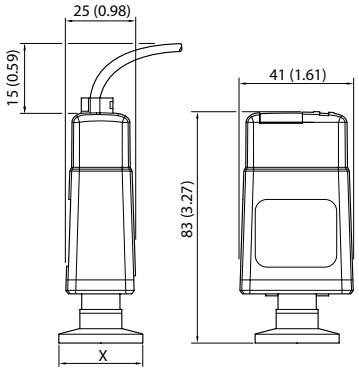
- Cable connections and gauge adjustment conveniently located, thereby minimising the space envelope required for access.
- Sensor tube can be baked to 150 ˚C.
- Adjustable set-point for simple process control and interlocking.
- Remote calibration possible.
- NW16,NW25 and DN16CF flange options for easy connection to vacuum systems.
- Linear output – 1 V per decade for easy interface with vacuum control systems.

Product Range

APG100

- APG100-XM
- APG100-XLC

APG100 Dimension



Flange	X
NW16	30 mm (1.18 inch)
NW25	40 mm (1.57 inch)

Technical Data

	APG100
Mass	85 g
Internal volume	5 cm^3
Enclosure rating	IP40
Measurement range	
(APG100-XM)	Atmosphere to 10^{-3} mbar
(APG100-XLC)	Atmosphere to 10^{-4} mbar
Accuracy (APG100-XM)	Typically +/- 15% at <100 mbar*
Accuracy (APG100-XLC)	Typically +/- 15% at <10 mbar*
Maximum over-pressure	10 bar absolute
Operating temp range	5 to 60 °C
Storage temp range	-30 to 70 °C
Bake-out with no electronics	150 °C
Humidity	80% RH up to 31 °C decreasing linearly to 50% RH at 40 °C and above
Maximum	3000 m
Filament temperature	100 °C above ambient
Electrical supply voltage	15 to 30 V d.c. nominal
	13.5 V d.c. minimum
	32 V d.c maximum
Power consumption	1 W
Output signal	0 to 10 V d.c. nominal
Set-point – open collector transistor	
Rating	30 V d.c. 100 mA
Range of set-point	1.8 to 9.2 V d.c.
Fixed hysteresis	500 mV (1/2 decade)
Level setting resolution	6 mV

* Accuracy is reduced at the limits of measuring range

APG100 Active Pirani Vacuum Gauge

APG100

Ordering information

Product description	Order no:
APG100-XM, NW16	D02601000
APG100-XM, NW25	D02602000
APG100-XLC, corrosion resistant, NW16	D02603000
APG100-XLC, corrosion resistant, NW25	D02604000
APG100-XM, DN16CF	NRD710000
APG100-XLC, corrosion resistant, DN16CF	NRD712000
APG100-XM, NW16, Certificated	D0260100C
APG100-XM, NW25, Certificated	D0260200C
APG100-XLC, NW16, Certificated	D0260300C
APG100-XLC, NW25, Certificated	D0260400C

Electronics Module

Product description	Order no:
Spare APG100-XLC electronics module	D02603800
Spare APG100-XM electronics module	D02601800

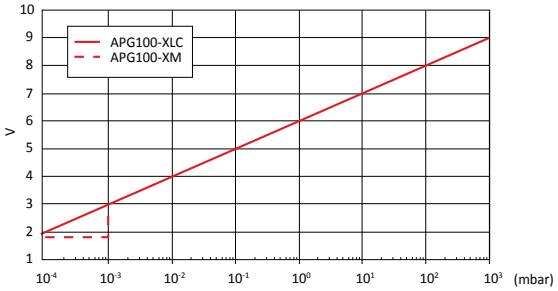
Mesh Filter

Product description	Order no:
Spare mesh filter for APG100 pack of 5	D04850805

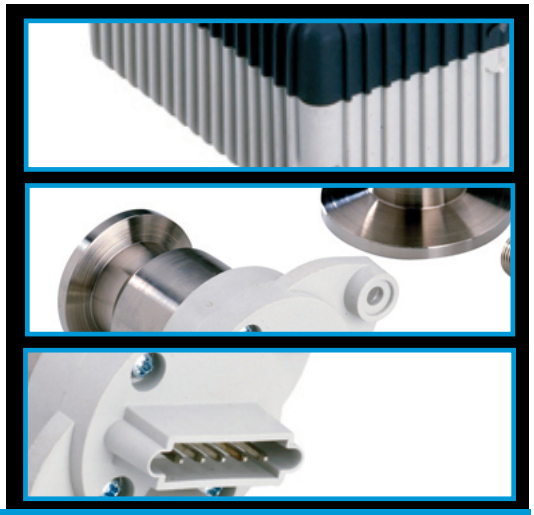
Spare Sensor

Product description	Order no:
Spare sensor for APG100-XLC NW16 flange	D02603801
Spare sensor for APG100-XLC NW25 flange	D02604801
Spare sensor for APG100-XM NW16 flange	D02601801
Spare sensor for APG100-XM NW25 flange	D02602801
Spare sensor for APG100-XM DN16CF flange	NRD711000
Spare sensor for APG100-XLC DN16CF flange	NRD713000

APG100 Performance Curve



APGX-H ACTIVE LINEAR CONVECTION GAUGE



Edwards Linear Convection Vacuum Gauge has a wide measuring range from 1333 to 3 x 10^{-4} mbar (1000 to 2.3 x 10^{-4} Torr). The use of convection technology ensures accuracy and sensitivity are maintained to the top of the range.

The gauge is compact and may be mounted in any orientation, simplifying installation where space is limited. The gauge incorporates a setpoint and two LEDs, which indicate setpoint and gauge status.

Features and Benefits

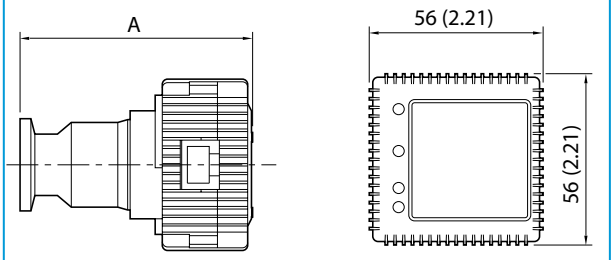
- Wide measuring range 1333 to 3 x 10^{-4} mbar (1000 to 2.3 x 10^{-4} Torr).
- Use of convection technology ensures consistent measuring accuracy (typically ±15%) and repeatability (±5%) to top of range.
- Reduced cost of ownership.
- Replaceable tubes are available.
- CSA, C/US Approved.

Product Range

APGX-H

- APGX-H

APGX-H Dimension



	A
NW16 Al	75 mm/2.95”
NW16 St St	75 mm/2.95“
NW25 St St	75 mm/2.95“
1/8 inch NPT St St	87 mm/3.42“

Technical Data

	APGX-H
Pressure range	1333 to 3 x 10^{-4} mbar (1000 to 2.3 x 10^{-4} Torr)
Power supply	14.5 to 30 V d.c.
Power consumption	1.5 W maximum
Accuracy	±15% of reading ±3 x 10^{-4} mbar
Repeatability	±5% of reading
Response time	< 100 ms
Maximum overpressure	10 bar absolute (145 psia)
Adjustments	Set vacuum and set atmosphere. To allow for variations in barometric pressure, atmosphere may be set in the range 700 to 1100 mbar (525 to 825 Torr).
Setpoints† (open collector transistor)	Range of setpoint 1.8 to 9.3V
	Rating 30 V d.c. 100 mA
	Fixed hysteresis (1/2 decade) 500 mV

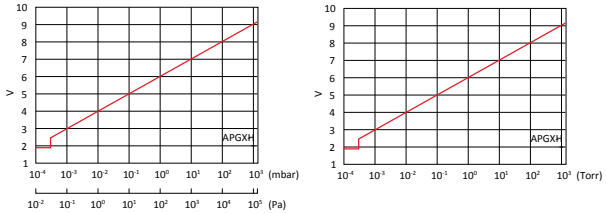
† The setpoint output will be turned off if an error is detected.
For further information, please contact Edwards.

APGX-H Active Linear Convection Gauge

APGX-H

Product description	Order no:
APGX-H-NW16, aluminium	D02391000
APGX-H-NW25 ST/ST	D02392000
APGX-H-NW16 ST/ST	D02395000
APGX-H ⅛” NPT ST/ST	D02396000
APGX-H-NW16 Aluminium, Certificated	D0239100C
APGX-H-NW16 ST/ST, Certificated	D0239500C
APGX-H-NW25 ST/ST, Certificated	D0239200C
APGX-H ⅛” NPT ST/ST, Certificated	D0239600C

APGX-H Performance Curve



Active Gauge Cable

Product description	Order no:
0.5 m Active Gauge Cable	D40001005
1 m Active Gauge Cable	D40001010
3 m Active Gauge Cable	D40001030
5 m Active Gauge Cable	D40001050
10 m Active Gauge Cable	D40001100
15 m Active Gauge Cable	D40001150
25 m Active Gauge Cable	D40001250
50 m Active Gauge Cable	D40001500
100 m Active Gauge Cable	D40001999

Filter pack 5

Product description	Order no:
APGX-H Filter Pack 5 (not NPT version)	D02391805

Electronics module

Product description	Order no:
APGX-H Electronics Module	D02391800

Tube

Product description	Order no:
NW16 AL tube APGX-H spare	D02391801
NW16 STST tube APGX-H	D02395801
NW25 STS tube APGX-H spare	D02392801
Spare tube ⅛” NPT ST/ST	D02396801

ATC ACTIVE THERMOCOUPLE GAUGE

Edwards Active Thermocouple Gauge (ATC-E) is suitable for measuring from 50 to 10^{-3} Torr, with integral set-point for OEM use and LED indication of vacuum status.

The ATC-E mounts directly onto either ATC-D or ATC-M thermocouple tubes to form a compact stand-alone transducer to simplify the system design and save valuable racking space. The ATC-E electronics module drives both medium and low pressure gauge tubes, providing a cost effective measuring solution for higher pressures.

Active thermocouple gauges are ideally suited where a simple rugged gauge is required to measure higher pressures.

Features and Benefits

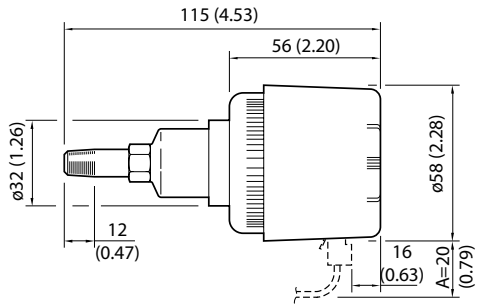
- Drive electronics mount directly on the gauge tube which simplifies the system design and saves valuable rack space.
- Wide range, regulated, internal power supply runs from standard d.c. power supplies from +13.5 to +36 V and is tolerant to voltage fluctuations.
- Standard analogue outputs of 0 to +10 V d.c. and gauge identifier allows for easy interface with a computer or PLC and provides fault output indication.
- Adjustable set-point with vacuum status LED can be used for process control and interlocking and includes a digital vacuum status signal with set-point level ready visually.
- Low output impedance and integral Faraday shield provides a high level of noise immunity and permits long cable runs of up to 100 metres.

Product Range

ATC

- ATC-D
- ATC-E
- ATC-M

ATC Dimension



A
Allowance for cable and connector

Technical Data

Power supply	+13.5 to +36 V d.c. (max 1 V ripple)
Power consumption	0.54 W maximum
Operating temperature	5 to 50 °C
Output signal	
Voltage range	2 to 10 V d.c.
Error Status	< 2 V to < 10 V d.c.
Minimum load	10 k ohms
Maximum current source	0.1 ohms
Set point	Adjust via potentiometer
Settable range	2.2 to 8.5 V
Fixed hysteresis	1.2 V
Output transistor settings	40 V, 100 mA
Total weight: electronics and module	120 g
Socket connection	FCC68, 8 way Western Electric

ATC-D, ATC-M Gauge Tubes	
Materials exposed to vacuum	Nicked plated steel, alloy 52 (iron nickel) pins, stainless steel, gold, platinum, rhodium and palladium. The ATC-D also has a small amount of RoHS compliant solder
Pressure range when used with ATC module	
ATC-D	65 to 6.5 x 10^{-2} mbar (50 to 5.10^{-2} Torr)
ATC-M	1.3 to 1.3 x 10^{-5} mbar (50 to 5.10^{-5} Torr)
Thermocouple temperature	
ATC-D at vacuum	250 °C
ATC-M at vacuum	300 °C
ATC-D at atmosphere	30 °C
ATC-M at atmosphere	6 °C
Maximum internal overpressure	
ATC-D	10.3 bar absolute
ATC-M	3.4 bar absolute
Volume	
ATC-D	0.82 cm^3
ATC-M	8.2 cm^3

ATC Active Thermocouple Gauge

ATC

Product description	Order no:
ATC-E Electronics module	D35108000
ATC-D ⅛ inch NPT gauge tube	D35512000
ATC-M ⅛ inch NPT gauge tubes	D35513000

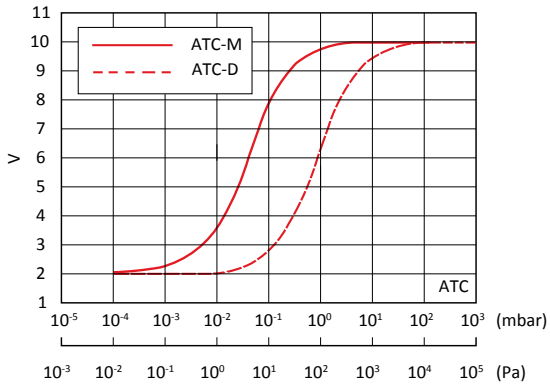
Active Gauge Cable

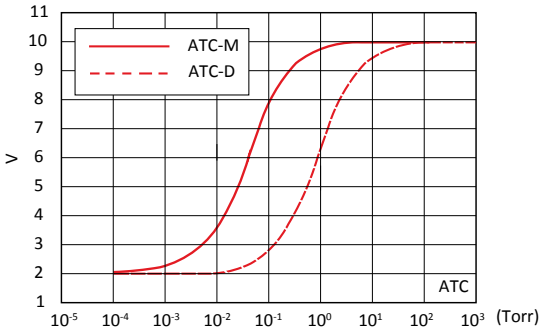
Product description	Order no:
0.5 m Active Gauge Cable	D40001005
1 m Active Gauge Cable	D40001010
3 m Active Gauge Cable	D40001030
5 m Active Gauge Cable	D40001050
10 m Active Gauge Cable	D40001100
15 m Active Gauge Cable	D40001150
25 m Active Gauge Cable	D40001250
50 m Active Gauge Cable	D40001500
100 m Active Gauge Cable	D40001999

Adapter Pipe

Product description	Order no:
NW10 Adapter Pipe ⅛ NPT Female S/S	C10501072

ATC Performance Curve





ASG2 ACTIVE STRAIN GAUGE

The Edwards Active Strain Gauge (ASG2) is a rugged, corrosion resistant diaphragm gauge which provides accurate, gas independent measurement from 2000 mbar to 1 mbar or 1000 mbar to 1 mbar. It can be used as a stand-alone transducer allowing OEMs and system builders to develop low cost, flexible solutions to their vacuum instrumentation needs. Alternatively, it can be connected to the TIC Instrument Controller where it can be combined with many other sensor types to provide a complete vacuum instrument solution.

Note: ASG adaptor cable supplied separately. This cable must be used with TIC, AGC, ADC & ADD.

Features and Benefits

- Drive electronics combined in the gauge head which simplifies system design and saves valuable rack space.
- Wide range, regulated internal power supply which runs from standard d.c. power supplies of +12 to +32 V and is tolerant to voltage fluctuations.
- Standard analogue output of 0 to 10 V d.c. which is easy to interface with a computer or PLC.
- High accuracy and stability. Accuracy of ±0.2 full scale and stability 0.1% full scale.
- Corrosion resistant, rugged design where the material exposed to vacuum is stainless steel 316 & Hastelloy C276.

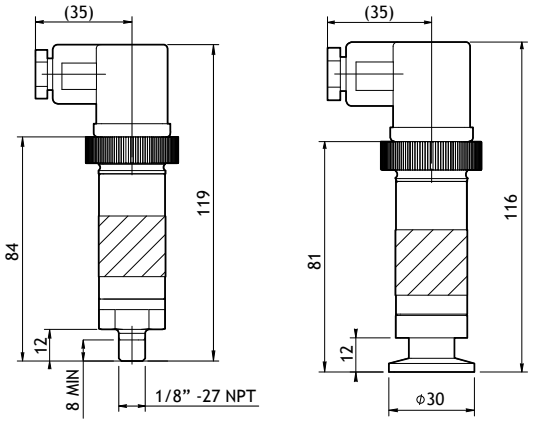
Product Range

- ASG2-1000
- ASG2-2000

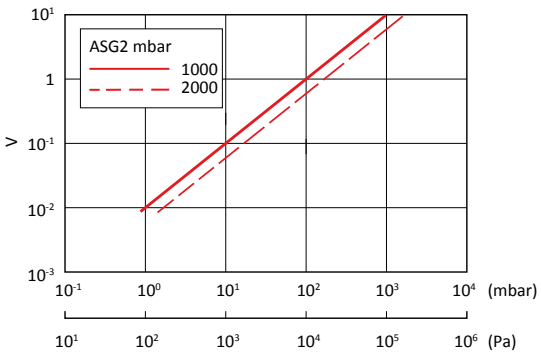
ASG2 Active Strain Gauge

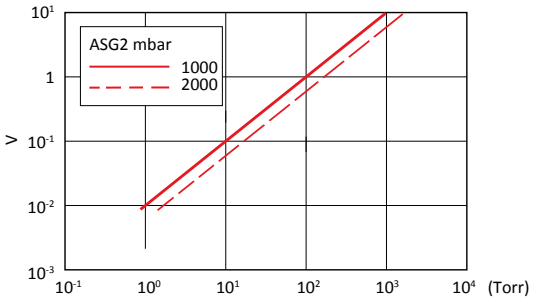
ASG2

ASG2 Dimension



ASG2 Performance Curve





Technical Data

Full scale pressure range		ASG2-1000, 1000 to 1 mbar ASG2-2000, 2000 to 1 mbar
Accuracy/stability		±0.2% full scale
Temperature coefficient		±0.03% full scale per °C
Power supply		12 to 32 V d.c.
Maximum power		0.1 W
Output signal		0 to 10 V d.c. linear
Output impedance		51 Ω ohms
Minimum load		>10 Ω k ohms
Adjustments		Set full scale and set zero
Temperature range		
Compensated	Compensated	-10 to +50 °C
Operating	Operating/Storage	-40 to +80 °C
Materials exposed to vacuum		Stainless steel 316L, Hastelloy C276
Internal volume		
Compensated	NW16	2.78 cm³
Operating	⅛" NTP	2.74 cm³
Weight		
Compensated	NW16	150g
Operating	⅛" NTP	130g
Electrical connector		4 pin Din 43650 Form A
Vacuum fitting		NW16 or ⅛" NTP
Enclosure rating		IP65

Product description	Order no:
ASG2 ⅛ Inch NPT, 1000 mbar	D35735000
ASG2 NW16, 1000 mbar	D35736000
ASG2 NW16, 2000 mbar	D35738000
ASG2 ⅛ Inch NPT, 2000 mbar	D35737000
ASG2 ⅛ Inch NPT, 1000 mbar, Certificated	D3573500C
ASG2 NW16, 1000 mbar, Certificated	D3573600C
ASG2 ⅛ Inch NPT, 2000 mbar, Certificated	D3573700C
ASG2 NW16, 2000 mbar, Certificated	D3573800C

Active Gauge Cable

Product description	Order no:
0.5 m Active Gauge Cable	D40001005
1 m Active Gauge Cable	D40001010
3 m Active Gauge Cable	D40001030
5 m Active Gauge Cable	D40001050
10 m Active Gauge Cable	D40001100
15 m Active Gauge Cable	D40001150
25 m Active Gauge Cable	D40001250
50 m Active Gauge Cable	D40001500
100 m Active Gauge Cable	D40001999

Adapter Cable

Product description	Order no:
Adapter Cable AGC-ASG	D40003160

AIM ACTIVE INVERTED MAGNETRON GAUGE

Edwards Active Inverted Magnetron (AIM) Gauges provide accurate measurement over the vacuum range of 1 x 10^{-2} to 1 x 10^{-9} mbar. These gauges have proved to be rugged and reliable in a wide range of applications, ranging from scientific instruments to industrial processes.

The AIM-X Gauge is an inverted magnetron gauge head and gauge controller combined into a single compact unit, and features a linear output for easy integration with a computer or PLC.

The XL variants have a very low external magnetic field, these are ideally suitable for use with sensitive analytical instruments or in applications where the gauge needs to be mounted in close proximity to a turbomolecular pump.

Features and Benefits

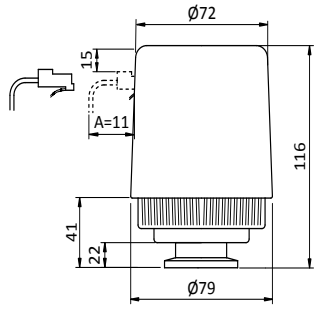
- Drive electronics combined in the gauge head which reduces the system cost and saves valuable rack space.
- Low output impedance and integral Faraday shield provides high level of noise immunity and permits long cable runs (up to 100 m).
- Low magnetic field version – XL – for sensitive applications, e.g. mass spectrometry and electron microscopy.
- Interchangeable body tube allows for rapid tube replacement without pre-calibration.
- CSA, CSA/US approved – meets safety requirements for electrical equipment for measurement.

Product Range

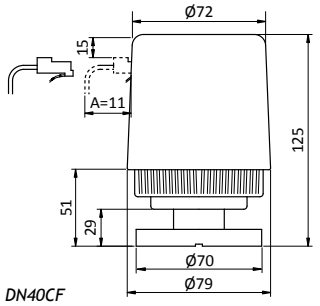
AIM

- AIM-X
- AIM-XL

AIM-X Dimension



NW25



DN40CF

Technical Data

Pressure range	
AIM-X and AIM-XL	10^{-2} to 10^{-9} mbar
Accuracy*	Typically ±30%
Maximum overpressure	10 bar absolute (145 psi)
Power supply	+13.5 to +36 V d.c. (max 1 V ripple)
Power consumption	2 W Maximum
Output signal	2 to 10 V d.c.
Set point	Open collector transistor
Maximum voltage	40 V d.c.
Current	100 mA max
Temperature range	
Operating	5 to 60 ˚C
Storage	0 to 70 ˚C
Baking (DN40CF version only)	300 ˚C with electronics removed DN40CF only
Materials exposed to vacuum	
DN40CF	Stainless steel (AISI 304 and 306), copper, ceramic, very small amount of copper braze
NW25 versions	Stainless steel (AISI 304 and 306), fluoroelastomer and soda lime glass
Internal volume	26 cm^3
Weight	0.81 kg
AIM-X NW25	810 g
AIM-XL NW25	860 g
AIM-X DN40CF	1090 g
AIM-XL DN40CF	1140 g
External interface connector	8-way FCC68/RJ45 socket
Vacuum fitting	NW25
Standards	
Electromagnetic compatibility	EN 61326 (Class B Emissions)
Enclosure rating	IP40

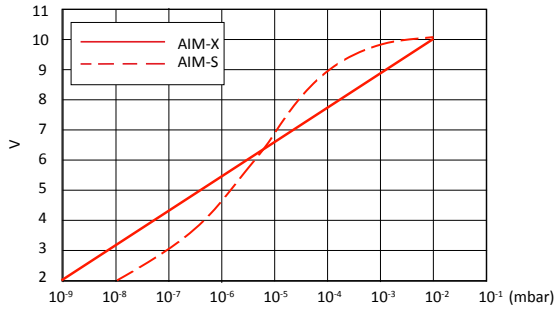
*Accuracy is reduced at the limits of the measuring range

AIM-X and AIM-XL Active Inverted Magnetron Gauge

AIM-X

Product description	Order no:
AIM-X-NW25	D14642000
AIM-X-DN40CF	D14662000
AIM-X-NW25, Certificated	D1464200C
AIM-X-DN40CF, Certificated	D1466200C
AIM-XL-NW25	D14645000
AIM-XL-DN40CF	D14665000
AIM-XL-NW25, Certificated	D1464500C
AIM-XL-DN40CF, Certificated	D1466500C

AIM-X Performance Curve



Active Gauge Cable

Product description	Order no:
0.5 m Active Gauge Cable	D40001005
1 m Active Gauge Cable	D40001010
3 m Active Gauge Cable	D40001030
5 m Active Gauge Cable	D40001050
10 m Active Gauge Cable	D40001100
15 m Active Gauge Cable	D40001150
25 m Active Gauge Cable	D40001250
50 m Active Gauge Cable	D40001500
100 m Active Gauge Cable	D40001999

Aim Body Tube Assy

Product description	Order no:
Aim Body Tube Assy – NW25	D14545801
Aim Body Tube Assy – DN40CF	D14661801

Electrical and Magnet Housing

Product description	Order no:
AIM-X Elect & Mag Housing	D14642800

Centering Ring

Product description	Order no:
NW25 Centering Ring 3D Baffle Viton	D02110000

Spares Kit Aim Body Tube

Product description	Order no:
Spares Kit Aim Body Tube	D14545802
Spares Kit Aim Body Tube DN40CF	D14661802

Nut & Bolt & Washer

Product description	Order no:
DN16CF/1.33 Nut & Bolt & Washer M4 Pk 25	C10001630
DN40CF/2.75 Nut & Bolt & Washer M6 Pk 25	C10005630

WRG ACTIVE WIDE RANGE GAUGE

The Wide Range Gauge (WRG) family offers the capability of single port pressure measurement in the range atmosphere to 10^{-9} mbar with a linear output. It's a compact solution, halving the space and connectivity hardware requirement, which can be all important in many applications. The WRG has many novel features, including a new patented striker, push-button calibration and setpoint controls and comprehensive diagnostics. The WRG is a cost-effective vacuum management solution when used either with an Edwards controller or directly integrated into the system controls.

Features and Benefits

- Microprocessor signal processing gives seamless transition between Pirani and magnetron outputs as well as linear output (log pressure scale).
- D-type version including cable strain relief and enhanced ingress protection – IP44.
- Low magnetic field version (SL) available for sensitive applications e.g. mass spectrometry and electron microscopy.
- Easily programmed set-point covering entire measuring range.
- Magnetron uses an advanced patented technique for highly reliable striking, even at high vacuum or in relatively contaminated conditions.

Applications

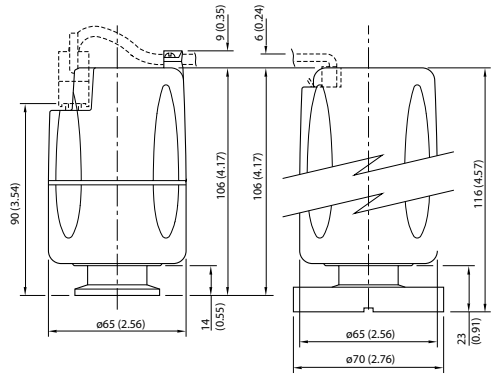
- Any vacuum system where there is a need to measure pressure over a wide range. The WRG with an AGD represents a very simple and cost effective means of achieving this.
- The linear output and equation make WRG's an attractive option for industrial OEM's where the gauge may be directly integrated into the process controller.
- The WRG is suitable for a wide range of HV and UHV applications, however if your process will spend a significant amount of time between $5x10^{-4}$ and $5x10^{-3}$ mbar then Edwards recommend using independent APG100 Pirani and AIM Penning gauges, as this will improve gauge reliability for your application.

Product Range

WRG

- WRG-S
- WRG-D
- WRG-SL

WRG Dimension



NW25 *DN40CF*

Technical Data

	WRG
Pressure range	Atmosphere to 10^{-9} mbar/Torr
Accuracy *	Typically ±15% < 100 mbar and ±30%< 10^{-3} mbar
Maximum over pressure	6 bar absolute (87 psia)
Power supply	+14.5 to +36 V d.c.
Power consumption	2 W maximum
Output signal	1.8 to 10.2 V d.c.
Adjustments	Atmosphere and setpoint
Set point	Open collector transistor
Maximum voltage	40 V d.c.
Current	100 mA maximum
Temperature range	
Operating	+5 to +60 °C
Storage	0 to +70 °C
Materials exposed to vacuum (Both NW and CF versions)	Stainless steel (AISI 304, 316, 321, 347), Fluoroelastomer, soda lime glass, Tungsten, trace of Nickel and Nickel Iron
Internal volume	26 cm^3
Weight	0.8 kg
External interface connector	8-way FCC68/RJ45 Socket
Interface cables	Use range of active gauge cables
Standards	
Electromagnetic compatibility	EN 61326 Industrial Location, Class B emissions
Enclosure rating	IP40
Pin allocation **	
1. Power supply positive	5. Signal common
2. Power supply common	6. Set-point output
3. Gauge output	7. Atmosphere calibration
4. Gauge identification	8. Not connected

*Accuracy is reduced at the limits of the measuring range

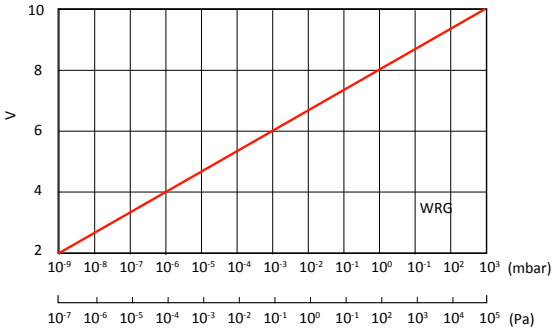
** Not shown on diagram

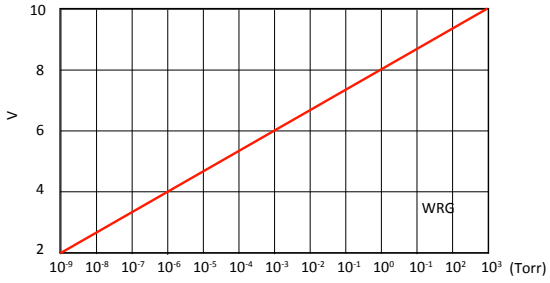
WRG Active Wide Range Gauge

WRG

Product description	Order no:
WRG-S-NW25	D14701000
WRG-S-DN40CF	D14703000
WRG-S-NW25, Certificated	D1470100C
WRG-S-DN40CF, Certificated	D1470300C
WRG-D-NW25	D14702000
WRG-SL-NW25	D14711000
WRG-SL-NW25, Certificated	D1471100C

WRG Performance Curve





Active Gauge Cable

Product description	Order no:
0.5 m Active Gauge Cable	D40001005
1 m Active Gauge Cable	D40001010
3 m Active Gauge Cable	D40001030
5 m Active Gauge Cable	D40001050
10 m Active Gauge Cable	D40001100
15 m Active Gauge Cable	D40001150
25 m Active Gauge Cable	D40001250
50 m Active Gauge Cable	D40001500
100 m Active Gauge Cable	D40001999

Centering Ring

Product description	Order no:
NW25 Centering Ring 3D Baffle Viton	D02110000

Spares Kit

Product description	Order no:
Spares Kit WRG Electrode Assy	D14701802
Spares Kit WRG Full Body Tube	D14701804
Spares Kit WRG Pirani Tube	D14701803

Body Tube

Product description	Order no:
WRG Body Tube Assy DN40CF	D14703801
WRG Body Tube Assy NW25	D14701801

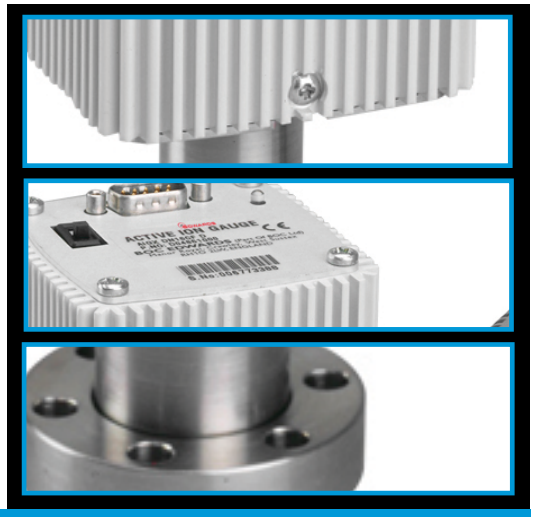
Adapter Cable

Product description	Order no:
WRG D Adapter Cable 9-Way D/Fcc68	D40003100

Elect & Mag Housing NW25

Product description	Order no:
WRG-D Elect & Mag Housing NW25	D14702800
WRG-S Elect & Mag Housing NW25	D14701800
WRG-SL Elect & Mag Housing NW25	D14711800

AIGX ACTIVE ION GAUGE



A compact Active ion gauge with dual yttria coated iridium filaments, a wide measuring range from 6.6 x 10^{-2} to 6.6 x 10^{-10} mbar (5 x 10^{-2} to 5 x 10^{-10} Torr) and a 1 V/decade linear output.

The new AIGX gauge from Edwards incorporates all the benefits of the industry standard Active gauging concept, with integral electronics and replaceable tube. The gauge has a degas facility and includes features to protect and extend the life of the filaments.

The AIGX benefits from extremely low emissions of charged particles, which makes it an excellent choice for processes where background noise is undesirable.

Features and Benefits

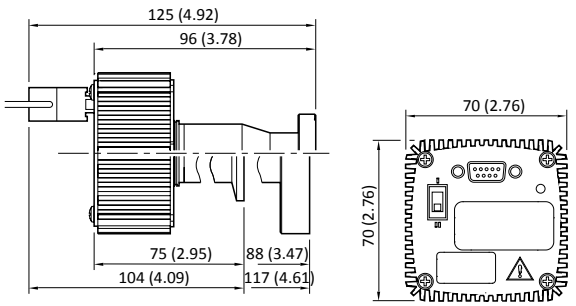
- Full 8-decade measurement capability, to 6.6 x 10^{-10} mbar (5 x 10^{-10} Torr).
- Two versions available, each with three vacuum coupling variants: 'D' versions have a 9-pin 'D' connector and standard interface;
- Up to a thirty-fold reduction in charged particle process contamination compared to leading competitors.
- Automatic filament protection against switching on at atmosphere and running or degassing at high pressure.

Pump Range

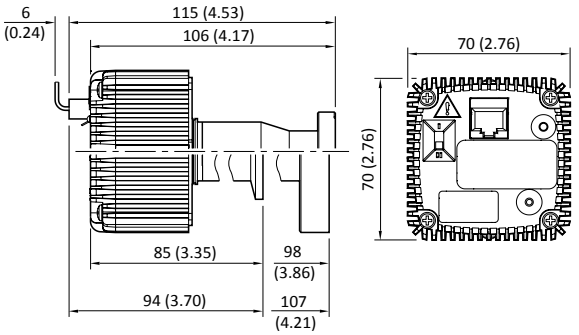
AIGX

- AIGX-D
- AIGX-S

AIGX -D Dimension



AIGX -S dimension



Technical Data

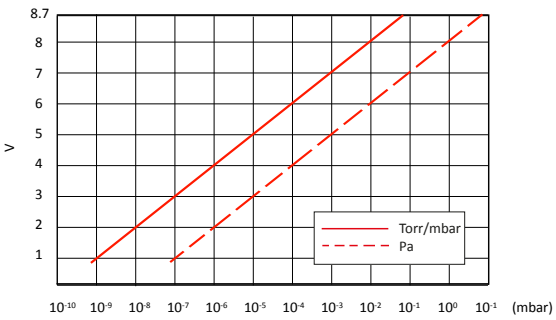
	AIGX
Pressure range	6.6 x 10^{-2} to 6.6 x 10^{-10} mbar
	(5 x 10^{-2} to 5 x 10^{-10} Torr)
Power supply	+14.5 to +30.0 V d.c.
Power consumption	Normal operation: 7 W (Max),
	Degas: 14 W (Max)
Output signal	Linear, 1 Volt/decade
Response time	1.33 x 10^{-8} mbar (>10^{-8} Torr) ~ 100 ms
	1.33 x 10^{-8} mbar(<10^{-8} Torr) ~ 1-2 s
Maximum voltage	30 V d.c.
Maximum current	100 mA max
Operating environment	Dry non conductive atmosphere
Temperature range	
Operating temperature	0 to +40 ˚C
Storage temperature	-30 to +70 ˚C

AIGX Active Ion Gauge

AIGX

Product description	Order no:
AIGX-D-NW25	D04860000
AIGX-D-DN16CF	D04861000
AIGX-D-DN40CF	D04862000
AIGX-D-NW25, Certificated	D0486000C
AIGX-D-DN16CF, Certificated	D0486100C
AIGX-D-DN40CF, Certificated	D0486200C
AIGX-S-NW25, Certificated	D0485000C
AIGX-S-DN16CF, Certificated	D0485100C
AIGX-S-DN16CF	D04851000
AIGX-S-DN40CF	D04852000
AIGX-S-DN40CF, Certificated	D0485200C
AIGX-S-NW25	D04850000

AIGX Performance Curve



Active Gauge Cable

Product description	Order no:
0.5 m Active Gauge Cable	D40001005
1 m Active Gauge Cable	D40001010
3 m Active Gauge Cable	D40001030
5 m Active Gauge Cable	D40001050
10 m Active Gauge Cable	D40001100
15 m Active Gauge Cable	D40001150
25 m Active Gauge Cable	D40001250
50 m Active Gauge Cable	D40001500
100 m Active Gauge Cable	D40001999

AIGX Fuses

Product description	Order no:
AIGX Fuses Spare Pk5	D04850805

AIGX Tube

Product description	Order no:
AIGX Tube DN40CF	D04852801
AIGX Tube Spare DN16CF	D04851801
AIGX Tube Spare NW25	D04850801

Electronics module

Product description	Order no:
AIGX-D Electronics Module SP	D04860800
AIGX-S Electronics Module SP	D04850800

Annealed Copper Gasket

Product description	Order no:
DN16CF/1.33 Annealed Copper Gasket Pk 5	C10001270
DN40CF/2.75 Annealed Copper Gasket Pk 5	C10005270

Nut & Bolt & Washer

Product description	Order no:
DN16CF/1.33 Nut & Bolt & Washer M4 Pk 25	C10001630
DN40CF/2.75 Nut & Bolt & Washer M6 Pk 25	C10005630

O-Ring

Product description	Order no:
NW25 Trapped O Ring Viton	C10514490

nAPG ACTIVE PIRANI GAUGE

Edwards nAPG series, active Pirani vacuum gauges will be available in 2 models. The nAPG-M is the standard model and measures to 10^{-3} mbar. The nAPG-LC is a corrosion resistant version with measurement to 10^{-4} mbar.

Both gauges feature compact size for easy installation, a serial output and a replaceable sensor tube. It is anticipated that the digital gauges will be compatible with the next generation of Edwards instrument and active gauge controllers and displays. They are CSA and C/US approved as well as fully RoHS compliant due to their leadfree construction.

Features and Benefits

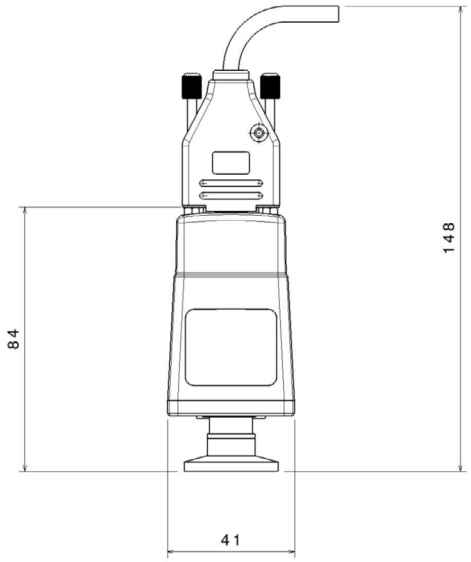
- Wide-range supply voltage allows operation from 15 to 48V d.c.
- Gauge naming allows user to store gauge identification data
- Sensor tube can be baked to 150 °C
- NW16 and NW25 flange options for easy connection to vacuum systems – other flange options on request
- Serial communications based on a simple ASCII, low latency, query and command protocol that can operated in a point to point or multidrop system with minimum overhead
- Adjustable open collector set-point output for straightforward process control and interlocking
- Remote calibration possible
- RS485, 9600baud, 8bits, 1 start bit 1 stop bit

For information on Digital Gauge DX protocol please contact Edwards.

Example Serial Commands

Read gauge Identity:	
Send:	?S751<cr>
Reply:	=S751 nAPG-LC_ RS485;D02610600A;nnnn<cr>
Hardware version; software version; gauge name	
Set pressure units:	
Send:	!S751 nnnn<cr>
Reply:	*S751 0<cr>
Name: 0000 to 9999	
Set pressure units:	
Send:	!S755 n<cr>
Reply:	*S755 0<cr>
Units: 1 = mbar, 2 = Pa, 3 = Torr	
Read gauge pressure and status bits:	
Send:	?V752<cr>
Reply =	=V752 n.nnE±nn;nnnn<cr>
Status bit masks:	
Set-point:	0x0004
Units:	0x0030

nAPG Active Pirani Gauge Dimension



Technical Data

Part Number

nAPG Range D0269xxx0

					Magnet	Comms	Tube & Flange	
D	0	2	6	9	0 - M 1 - LC	0 - RS485 5 - RS232	0 - NW16 1 - NW25 2-CF	0

Mechanical	
Mass	85g – 107g
Internal volume	5 cm^3
Enclosure rating	IP42 Vertical as shown IP40 Other orientations

Performance	
Measurement range	
nAPG-M	Atmosphere to 10^{-3} mbar
nAPG-LC	Atmosphere to 10^{-4} mbar
Accuracy	
nAPG-M Typically	±15% at <100 mbar
nAPG-LC Typically	±15% at <10 mbar
Maximum over-pressure	10 bar absolute

Operating and Storage Conditions	
Temperature range	
Operating	5° to 60° C
Storage	30° to 70° C
Bake-out with electronics removed	150° C
Humidity	80% RH up to 31° C decreasing linearly to 50% RH at 40° C and above
Maximum altitude	3000 m
Filament temperature	100° C above ambient

Electrical Data	
Electrical supply voltage	15 to 48 V DC nominal
Power consumption	1 W
Identification Resistor	10KΩ ±2%
Set-point – open collector transistor	
Rating	48 V DC 100 mA

All serial gauges are identified by a 10KΩ resistor as full gauge identification is carried out over serial communications.

nAIM ACTIVE INVERTED MAGNETRON

Edwards nAIM series, active Inverted Magnetron vacuum gauges combine the gaugehead and controller in one compact active unit. These are new digital versions of gauges that have proved to be rugged and reliable in a wide range of applications ranging from scientific instruments to industrial processes.

The nAIM gauges feature compact size for easy installation, a serial output and a replaceable sensor tube. It is anticipated that the digital gauges will be compatible with the next generation of Edwards instrument and active gauge controllers and displays. They are also CSA and C/US approved as well as fully RoHS compliant due to their lead-free construction.

Features and Benefits

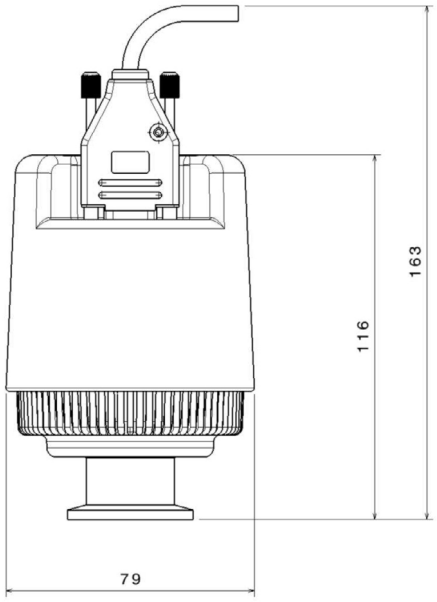
- Wide-range supply voltage allows operation from 15 to 48V d.c.
- Gauge naming allows user to store gauge identification data.
- Rapid tube replacement without pre-calibration
- Unique striker design ensures rapid striking even at high vacuum or in contaminating conditions
- Low external magnetic field version (L) for sensitive analytical instruments (patented)
- Serial communications based on a simple ASCII, low latency, query and command protocol that can operated in a point to point or multidrop system with minimum overhead
- Adjustable open collector set-point output for straightforward process control and interlocking
- RS485, 9600baud, 8bits, 1 start bit, 1 stop bit M

For information on Digital Gauge DX protocol please contact Edwards.

Example Serial Commands

Read gauge Identity:	
Send:	?S751<cr>
Reply:	=S751 nAIM_ RS485;D02610600A;nnnn<cr>
Hardware version; software version; gauge name	
Set pressure units:	
Send:	!S755 n<cr>
Reply:	*S755 0<cr>
Units: 1 = mbar, 2 = Pa, 3 = Torr	
Turn gauge On and Off:	
Send:	!C752 n<cr>
Reply:	*C752 0<cr>
State:	0 = Off, 1 = On
Read gauge pressure and status bits:	
Send:	?V752<cr>
Reply =	V752 n.nnE±nn;nnnn<cr>
Status bit masks:	
Gauge on:	0x0002
Set-point:	0x0004
Units:	0x0030 Any

nAIM Active Inverted Magnetron Dimension



Technical Data

Part Number

nAIM Range D1469xxx0

					Magnet	Comms	Tube & Flange	
D	1	4	6	9	0 - Standard 1 - Low Field	0 - RS485 5 - RS232	1 - Non-Industrial NW25 2 - Non-Industrial CF 3 - Industrial NW25 4 - Industrial CF	0

Mechanical	
Mass	0.81kg – 1.11kg
Internal volume	26 cm^3
Enclosure rating	IP42 Vertical as shown
	IP40 Other orientations
Performance	
Measurement range	
nAIM	10^{-2} to 10^{-9} mbar
Accuracy typically	±30%
Maximum over-pressure	10 bar absolute
Operating and Storage Conditions	
Temperature range	
Operating	5° to 60° C
Storage	0° to 70° C
Humidity	
	80% RH up to 31° C decreasing linearly to 50% RH at 40° C and above
Maximum altitude	3000 m
Electrical Data	
Electrical supply voltage	15 to 48 V DC nominal
Power consumption	2 W
Identification Resistor	10KΩ ±2%
Set-point – open collector transistor	
Rating	48 V DC 100 mA

All serial gauges are identified by a 10KΩ resistor as full gauge identification is carried out over serial communications.

nWRG WIDE RANGE GAUGE

Edwards nWRG series Wide Range gauges offer single port pressure measurement in the range atmosphere to 10^{-9} mbar. These are new digital versions of gauges that have proved to be rugged and reliable in a wide range of applications ranging from scientific instruments to industrial processes.

The nWRG gauges feature compact size for easy installation, a serial output and a replaceable sensor tube. It is anticipated that the digital gauges will be compatible with the next generation of Edwards instrument and active gauge controllers and displays. They are CSA and C/US approved as well as fully oHS compliant due to their lead-free construction.

Features and Benefits

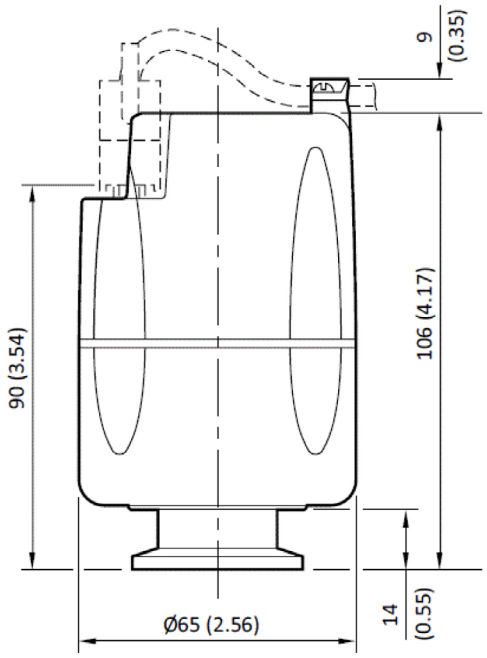
- Wide-range supply voltage allows operation from 15 to 48V d.c.
- Gauge naming allows user to store gauge identification data.
- Automatic vacuum setting of Pirani gauge element
- Unique striker design ensures rapid striking even at high vacuum or in contaminating conditions
- Low external magnetic field version (L) for sensitive analytical instruments (patented)
- Serial communications based on a simple ASCII, low latency, query and command protocol that can operated in a point to point or multidrop system with minimum overhead
- Adjustable open collector set-point output for straightforward process control and interlocking
- RS485, 9600baud, 8bits, 1 start bit, 1 stop bit

For information on Digital Gauge DX protocol please contact Edwards.

Example Serial Commands

Read gauge Identity:	
Send:	?S751<cr>
Reply:	=S751 nWRG_ RS485;D02610600A;nnnn<cr>
Hardware version; software version; gauge name	
Set pressure units:	
Send:	!S755 n<cr>
Reply:	*S755 0<cr>
Units: 1 = mbar, 2 = Pa (default), 3 = Torr	
Turn gauge magnetron element On and Off:	
Send:	!C752 n<cr>
Reply:	*C752 0<cr>
State: 0 = Off, 1 = On, 2 = Auto (default)	
Read gauge pressure and status bits:	
Send:	?V752<cr>
Reply =	=V752 n.nnE±nn;nnnn<cr>
Status bit masks:	
Gauge on:	0x0002
Set-point:	0x0004
Units:	0x0030

nWRG Active Pirani Gauge Dimension



Technical Data

Part Number

nWRG Range D1479xxx0

					Magnet	Comms	Tube & Flange	
D	1	4	7	9	0 - Standard 1 - Low Field	0 - RS485 5 - RS232	1 - Non-Industrial NW25 2 - Non-Industrial CF	0

Mechanical	
Mass	0.75 kg – 1.05kg
Internal volume	26 cm^3
Enclosure rating	IP42 Vertical as shown IP40 Other orientations
Performance	
Measurement range	
nWRG	Atmosphere to 10^{-9} mbar
Accuracy typically	±15% <100 mbar ±30% <10^{-3} mbar
Maximum over-pressure	6 bar absolute
Operating and Storage Conditions	
Temperature range	
Operating	5° to 60° C
Storage	30° to 70° C
Humidity	
	80% RH up to 31 °C decreasing linearly to 50% RH at 40 °C and above
Maximum altitude	3000 m
Electrical Data	
Electrical supply voltage	15 to 48 V DC nominal
Power consumption	2 W
Identification Resistor	10KΩ ±2%
Set-point – open collector transistor	
Rating	48 V DC 100 mA

All serial gauges are identified by a 10KΩ resistor as full gauge identification is carried out over serial communications.

CG16K DIAL GAUGE

Edwards CG16K capsule dial gauges are barometrically compensated with NW flange fittings. Designed to cover the range of 0-1040 mbar, these robust gauges provide accurate, repeatable performance even at low pressures making them equally suited for non-corrosive process plant or for laboratory applications. Fitting is simple: the gauges can be mounted direct or panel mounted using the kit supplied.

Features and Benefits

- Reading independent of gas type.
- Accurate to ±2% of full scale.
- Barometrically independent.
- Pipeline or panel mounting.
- Easy to read linear scale.

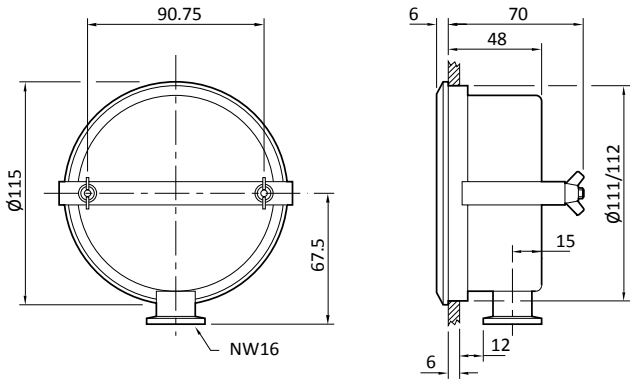
Applications

- Backfilling.
- Portable equipment.
- Degassing.
- Refrigeration.
- Flammable vapours.

Product Range

- CG16K

CG16K Dimension



Technical Data

	CG16K
Range	0-1040 mbar, 0-760 Torr
	0-125 mbar, 0.100 Torr
	0-50 mbar, 0-40 Torr
	0-25 mbar, 0-20 Torr
Accuracy	±2% of full scale deflection
Maximum applied pressure	
25 mbar version	1 bar absolute, 0 bar gauge
Other versions	2 bar absolute, 1 bar gauge
Weight	1 kg
Vacuum connection	NW16 Flange
Accessories supplied	Clamp and studs for panel mounting

CG16K Dial Gauge

Ordering information

Product description	Order no:
CG16K, 0-1040 mbar	D35610000
CG16K, 0-125 mbar	D35611000
CG16K, 0-50 mbar	D35612000
CG16K, 0-25 mbar	D35613000
CG16K, 0-760 Torr	D35630000
CG16K, 0-100 Torr	D35631000
CG16K, 0-40 Torr	D35632000
CG16K, 0-20 Torr	D35633000
CG16K, 0-1040 mbar, Certificated	D3561000C
CG16K, 0-125 mbar, Certificated	D3561100C
CG16K, 0-50 mbar, Certificated	D3561200C
CG16K, 0-25 mbar, Certificated	D3561300C
CG16K, 0-760 Torr, Certificated	D3563000C
CG16K, 0-100 Torr, Certificated	D3563100C
CG16K, 0-40 Torr, Certificated	D3563200C
CG16K, 0-20 Torr, Certificated	D3563300C

IS16K VACUUM INTERLOCK SWITCH

The IS16K vacuum interlock switch is designed to safeguard the operator by ensuring that electrical circuits in the vacuum chamber do not remain energised when the system is let up to atmosphere. Typical applications include interlocking of the HT cleaning or process circuits on thin film deposition and vacuum systems.

The IS16K is high vacuum compatible and corrosion resistant, with all wetted parts made from stainless steel. A high current rating allows direct switching of loads without additional relays or external power supplies.

Features and Benefits

- Single non-adjustable set-point, cannot be tampered with.
- Positive break switch.
- Rapid contact separation, prevents arcing.
- Breaks circuit directly, no relays required.
- Corrosion resistant materials exposed to vacuum.

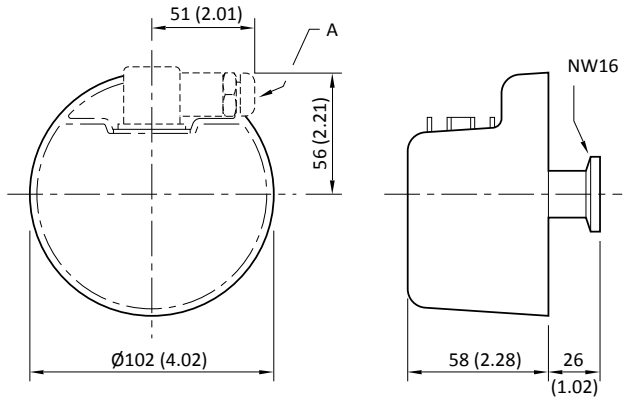
Applications

- Furnaces.
- Laboratories.
- Tank units.
- Packaging.
- General purpose pumping units.

Product Range

- IS16K

IS16K Dimension



A Mating half shown fitted

Technical Data

	IS16K
Fixed set-point	640 ±120 mbar*
Maximum switching differential	100 mbar
Maximum working pressure	1 bar gauge (2 bar absolute)
Electrical rating	10 A resistive, 5 A inductive at 250 V a.c.
Electrical connection plug	Type 283 mPm
Internal volume	7 cm^3
Materials in vacuum	Stainless steel
Leak rate	< 1 x 10^{-9} mbar ls^{-1}
Enclosure classification	IP52
Weight	0.7 kg
Vacuum connection	NW16
Accessories supplied	Mating electrical socket type 183 mPm

*Set point varies with barometric pressure

IS16K Vacuum Interlock Switch

Ordering information

Product description	Order no:
IS16K Vacuum Interlock Switch	D05914000

VS16K ADJUSTABLE VACUUM SWITCH

The VS16K is a general purpose vacuum switch with a user adjustable set-point and small switching differential. This diaphragm operated vacuum switch is high vacuum compatible and corrosion resistant with all wetted parts made from stainless steel. A high current rating allows direct switching of loads without additional relays or external power supplies.

This switch should not be used for safety critical applications. For many interlock applications the Edwards IS16K may be more suitable.

Features and Benefits

- Set-point range 30-1000 mbar.
- User adjustable.
- Reproducible.
- Changeover contacts for normally open or normally closed operation.
- Switch point independent of gas composition.

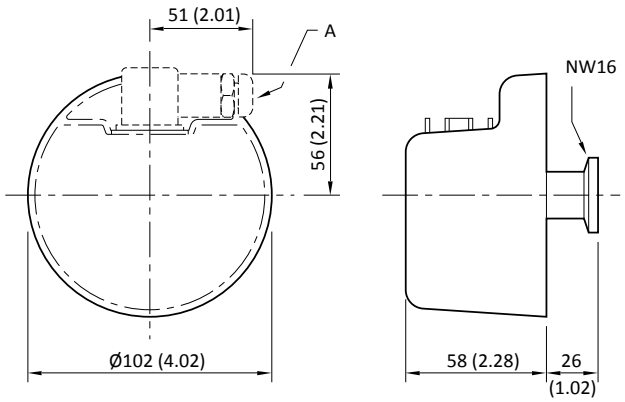
Applications

- Furnaces.
- Laboratories.
- Tank units.
- Packaging.
- General purpose pumping units.

Product Range

- VS16K

VS16K Dimension



A Mating half shown fitted

Technical Data

	VS16K
Range of adjustment	30 to 1000 mbar
Maximum switching differential	30 mbar
Maximum working pressure	1 bar gauge (2 bar absolute)
Electrical rating	10 A resistive, 5 A inductive at 250 V a.c.
Electrical connection plug	Type 283 mPm
Internal volume	7 cm^3
Materials in vacuum	Stainless steel
Leak rate	< 1 x 10^{-9} mbar ls^{-1}
Enclosure classification	IP52
Weight	0.7 kg
Vacuum connection	NW16
Accessories supplied	Mating electrical socket type 183 mPm

Set-point varies with barometric pressure

VS16K Adjustable Vacuum Switch

Ordering information

Product description	Order no:
VS16K Adjustable Vacuum Switch	D05915000

TIC INSTRUMENT CONTROLLER

The TIC Instrument Controller provides compact control with a large, clear graphical display, an intuitive user interface and serial communications. The supplied Windows™-based PC program provides full remote setup, control and data logging functions via the RS232 interface.

Two TIC Instrument Controllers are available; the three head and six head versions can accommodate 3 or 6 active gauges.

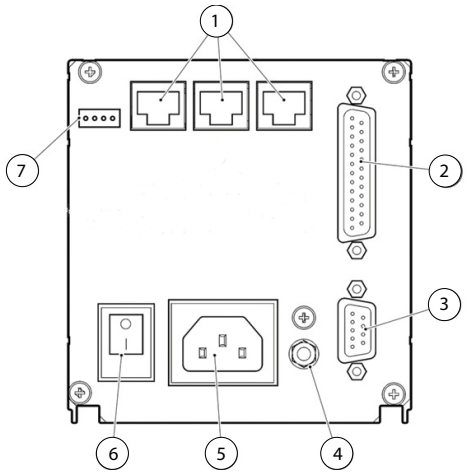
Features and Benefits

- TIC automatically recognises and controls active gauges including APG100 Pirani, convection, thermocouple, strain, inverted magnetron, wide range and active ion gauges. To enable complete integration into PC and PLC controlled processes, all TIC variants include RS232 and RS485 interface.
- TIC has six pressure related set-points, which operate open collector outputs rated at 24 V d.c. 50 mA. Using the optional relay boxes, these may be linked to 250 V a.c. changeover relays (dry non conductive atmosphere only) to provide a useful accessory control capability. All relay boxes include a logic bypass facility for further system integration.
- 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 includes lookup tables for a range of commonly encountered process gases (N_2, He, Ar, CO_2, Kr & Ne). Selecting the appropriate gas enables direct readout of the correct pressure without the need to apply conversion factors.
- TIC is packaged in a compact case and may be panel or rack (¼ 19 inch rack 3U) 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 will operate from mains supplies with voltages between 90 and 264 V a.c., and frequencies between 47 and 63 Hz. No user intervention being required.

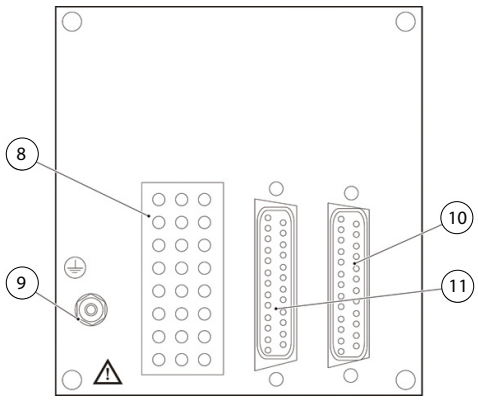
Product Range

- TIC Instrument Controller.

TIC 3 -Gauge Controller Back Panel



TIC Instrument Controller Relay Box



① Gauge inputs
② Logic interface
③ Serial comms port
④ Earth stud
⑤ Mains input
⑥ Mains on/off
⑦ Analogue outputs
⑧ Set point relay connection
⑨ Earth stud
⑩ TIC logic interface connection
⑪ User logic interface

Technical Data

	TIC Controller
Electrical Data	
Connector type	CEE/IEC 320
Electrical supply	90 to 264 V a.c., 47 to 63 Hz
Power consumption	3 head TIC 55 VA. 6 Head TIC 160 VA
Fuse	The unit is self-protecting and has no user replaceable fuse. The unit will recover once any overload is removed.
Earth stud	M4
Operating And Storage Data	
Ambient operating temperature range	0 °C to 40 °C (measured underneath TIC)
Maximum ambient operating humidity	Max 90% RH non-condensing at 40 °C
Maximum operating altitude	3000 m max
IP rating	20
IEC rated pollution degree	2
Mechanical Data	
Weight	1.7 kg
Interfaces	
Analogue output	0-10 V d.c. – one for each gauge
Serial Interface	The TIC has two built-in communications protocols, RS232 and RS485. These may be used either to interface to a PLC or, using the Windows™ PC software package supplied, connected to a PC for full monitoring and control of a TIC system.
Set-points	6 set-point (open collector) rated at 24V d.c. 50 mA can be assigned to any gauge. Use directly or in conjunction with TIC relay boxes.

TIC 6 gauge controller

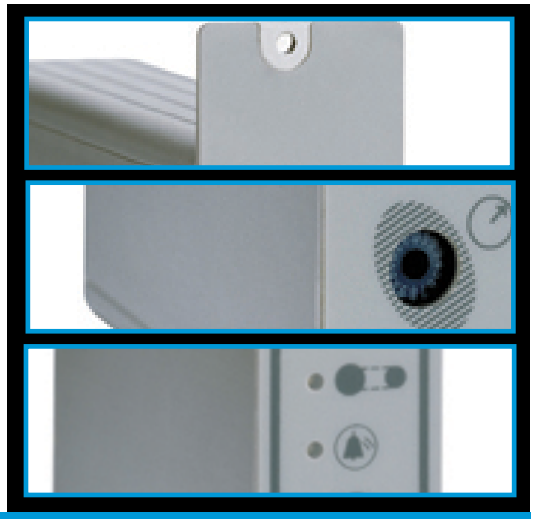
Active Gauge Cable

Product description	Order no:
0.5 m Active Gauge Cable	D40001005
1 m Active Gauge Cable	D40001010
3 m Active Gauge Cable	D40001030
5 m Active Gauge Cable	D40001050
10 m Active Gauge Cable	D40001100
15 m Active Gauge Cable	D40001150
25 m Active Gauge Cable	D40001250
50 m Active Gauge Cable	D40001500
100 m Active Gauge Cable	D40001999

Ordering information

Product description	Order no:
TIC Instrument Controller 3 Head RS232/RS485	D39700000
TIC Instrument Controller 3 Head RS232/RS485, Certificated	D3970000C
TIC Instrument Controller 6 Head RS232/RS485	D39701000
TIC Instrument Controller 6 Head RS232/RS485, Certificated	D3970100C
TIC Relay Box Instruments (3 x 2A, 250V)	D39700804
TIC Relay Box Instruments (6 x 2A, 250V)	D39701804
Linecord 2m North Euro Plug	D40013030
Linecord 2m UK Plug	D40013025
Linecord 2m US Plug	D40013020
TIC front Bezel kit	D39700803
TIC Logic interface cable 2m	D39700833
TIC RS232 Interface cable 2m	D39700834

PROFIBUS COMMUNICATIONS MODULE



Manufacturers, laboratories and research establishments are converting to fieldbus to take advantage of the reduced cabling and network equipment costs.

Edwards offers a compact, Din rail mountable module to allow Profibus protocol communications with the TIC Turbo and Instrument Controllers, or directly with Edwards DX/nEXT turbo pumps.

The TIC is a versatile, advanced system controller capable of controlling a series of vacuum pumps and up to three Edwards Active vacuum gauges. The addition of the Profibus module allows full advantage to be taken of digital multi-drop communications.

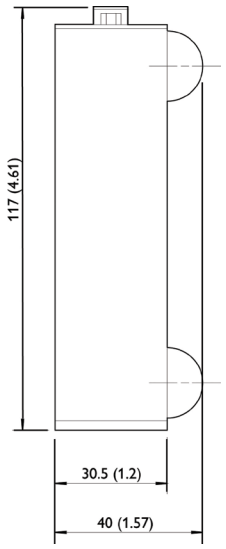
Features and Benefits

- Full profibus international accreditation.
- DIN rail or rack mounting.
- Wide operating voltage range 9-52 V.
- Simple set-up.
- Field software upgrades available.
- Retrofit to existing installations.

Product Range

- Profibus
- TIC Profibus
- DX/nEXT Profibus

Profibus Communication Module Dimensions



Technical Data

	Profibus
Electrical Data	
Electrical supply	
TIC Profibus module	9-52 V d.c. 5 W (switch on surge 500 mA)
Ambient operating temperature	0 to 40 ˚C
Ambient storage temperature	-30 to 70 ˚C
Max ambient operating humidity	90% RH non-condensing
Max operating altitude	2000 m
IP rating	IP30 – indoor use only
Mass	0.28 kg
Connectors	
DC power connector (supplied)	2-way receptacle. Mating part is cable mount terminal block (supplied). Suitable parts include: Phoenix MSTBV 2.5/2-G-5.08:Weidmuller BLZ 5.08/2: Amp796634-2: IMO 21.950/2
Profibus connector	
Connector type	9-way sub-miniature ”D” type socket
Profibus data signals	Electrically compliant with RS485 specification isolated from chassis
Profibus power supply	10 mA supply (protected for external terminator resistors if required)
Chassis	For Profibus cable screen convention
Repeater control signal	Digital signal, nominally 0-5 V but with series 340 ohm resistor. High = module transmitting. Low = receiving or idle
RS232 connector TIC version	9-way sub-miniature ”D” type plug
RS232 protocol	9600 baud, 1 stop bit, 8 data bits, no parity
Cables	
Profibus cable	Should be screened and comply with EN50170
RS232 cable TIC version	15 m max. Screening not required.
DX pump connection	Connection must be either directly to the DX pump flying lead or an Edwards DX pump extension cable.

Profibus Communications Module

Ordering information

Product description	Order no:
TIC Profibus Communications Module	D39754000
DX/nEXT Pump Profibus Communications Module	D39755000

ADC ACTIVE DIGITAL CONTROLLER

The Edwards Active Digital Controller (ADC) is a compact single gauge controller and display. It features a bright LED display and simple push-button controls.

The ADC automatically recognises compatible Edwards gauges, loads the appropriate look-up table and displays the pressure in commonly used vacuum units.

Two versions are available; the standard ADC simply displays the pressure in choice of units, and the enhanced ADC includes a second gauge connection, two set-point relays, two analogue outputs and an RS232 interface. The ADC mk2 enhanced controller can now support 2 different gauges, e.g. APG100 and AIM.

Features and Benefits

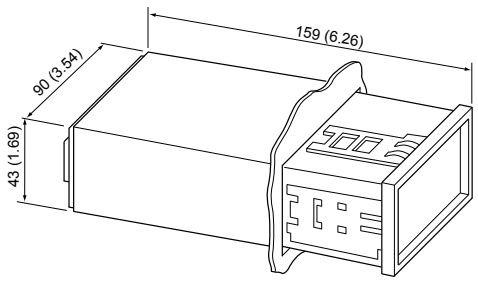
- Plug and measure operation means you simply plug in the mains supply, connect the gauge and ADC displays the measured pressure.
- The ADC supports Edwards gauges with a total measuring range of 2000 to 1 x 10^{-9} mbar (1500 to 7.5 x 10^{-10} Torr).
- Bright LED display gives clear, long distance readability.
- The ADC displays units in mbar, Torr, Pascal or Volts.
- Small 1/8 DIN enclosure, may be panel or bench mounted.
- Simple push-button control makes operation highly intuitive.

Product Range

ADC

- ADC
- ADC MKII

ADC Dimensions



Technical Data

	ADC
Active gauge compatibility	
Standard	APG100, APG-L, APG-MP, APG-M, APGX-H, APGX-L, WRG
Enhanced	Up to two gauges from the standard version plus AIM-X, AIM-S & ASG
Display	High brightness green LED display (0.47" high)
	Units – mbar/Torr/Pa/Volts
Electrical supply	100 to 240 V Aa.c.47 to 63 Hz
Dimensional Data	
Panel cut-out	92 + 0.8 x 45 + 0.6 mm (3.62" x 1.77") to DIN43700
Panel thickness	1.5mm (0.06") min
Weight	0.33 kg
Operating and storage data	
Operating temperature	0 to 40 ˚C
Storage temperature	-30 to 70 ˚C
Max ambient operating humidity	90% RH non condensing at 40 ˚C
Standards	
Electrical safety	BS EN 61010-1
Electrical noise immunity	BS EN 61326 (Industrial location, class B emissions)
Flame retardant case materials	UL94 V1
Enclosure rating	IP40
Enhanced features	
Two analogue output	0-10 V d.c.
Two set-point relays, volt-free single pole change-over	1A at 48 V d.c./2A at 24 V d.c.
Serial output	RS232

ADC Active Digital Controller

Ordering information

Product description	Order no:
ADC Standard	D39590000
ADC mkII Enhanced	D39591500
ADC Standard, Certificated	D3959000C
ADC mkII Enhanced, Certificated	D3959150C

Active Gauge Cable

Product description	Order no:
0.5 m Active Gauge Cable	D40001005
1 m Active Gauge Cable	D40001010
3 m Active Gauge Cable	D40001030
5 m Active Gauge Cable	D40001050
10 m Active Gauge Cable	D40001100
15 m Active Gauge Cable	D40001150
25 m Active Gauge Cable	D40001250
50 m Active Gauge Cable	D40001500
100 m Active Gauge Cable	D40001999

TIC Interface Cable

Product description	Order no:
TIC RS232 Interface Cable 2 m	D39700834

Linecord

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

GASCHECK G3

Introduced as an enhanced replacement for the popular GasCheck 3000, the Gascheck G3 incorporates a new backlit dot matrix LCD for improving viewing in poor lighting and leak rate indication by both flashing LED and sounder, for easier use in all environments. In addition the GasCheck G3 has a new tactile keyboard with fewer keys and improved temperature stability for better performance in uncontrolled areas.

Features and Benefits

- Detect leaks with automatic and direct display of gas leak rate.
- New, simple to interpret graphical icon display menu. Choice of readings in cc/sec, mg/m^3 or ppm.
- Rapidly detects almost any known gas mixture – particularly sensitive to ammonia, argon, butane, helium.
- Data logging facility – 10 data points with date and time stamp.

Applications

- Quality assurance testing on manufactured component seals.
- Laboratory applications, such as the detection of leaks from gas chromatographs, from mass spectrometers, from gas cylinders and fittings.
- Industrial applications, such as the detection of leaks from gas installations, in cylinder receiving rooms, from pipeline assemblies, the detection of leaks from stored gases and the detection of vapours released from stored chemicals.
- Medical applications, such as the detection of leaks from gas bottles and pipelines and leak testing of membrane materials, glove boxes and so forth.
- Pneumatic applications, such as leak testing of pipeline joints, gaskets and so forth.

Technical Data

	GasCheck G3
Detector	Micro thermal conductivity sensor
Min detectable limits of some common gases:	
R134A	5.8 x 10^{-5} cc/sec
Helium	1.0 x 10^{-5} cc/sec
Argon	3.5 x 10^{-5} cc/sec
Carbon Dioxide	4.0 x 10^{-5} cc/sec
Sulphur Hexafluoride	2.2 x 10^{-5} cc/sec
Response/recovery time	
Short probe	1 s
Long probe	9 s
Data logging	10 data points with date and time stamp
Batteries	4 off AA Alkaline or NiMH
Operating temp range	0 to 50 ˚C
Storage temp range	-25 to 70 ˚C
Length with 110 mm, short probe	390 mm
Length with 300 mm, long probe	580 mm
Storage Case	420 x 320 x 97 mm
Unpacked weight	0.5 kg
Packed weight	1.6 kg
Electrical noise immunity	EN61326, class B emissions

GasCheck G3

Ordering information

Product description	Order no:
GasCheck G3	D14132000

Accessories

Product description	Order no:
B series long probe	D14128802
Gas check battery holder	D14130802
Gas check nozzle	D14130800
Short probe for b series for gas check	D14128801

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 worldwide 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.

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