Leybold

THERMOVAC TTR-RN

Stability for your process

Whatever your application:

We have the right gauge to perfectly match your requirements

Industrial Applications - Vacuum measurement you can rely on

From glass coating to industrial furnaces: the presence of dust and contaminants is omnipresent in many industrial processes.
The ability to reliably measure is key for maximum uptime and efficiency!
In the past, dust and particle contamination could create issues inside Pirani gauges as they contained delicate architecture.
With our new integrated filter and robust filaments we can provide wide range vacuum measurement with peace of mind.

Power Generation - Powering the future

Power generation is one of the most important elements in driving the green revolution, from battery cell to transformer manufacture. Almost all power generation markets require tight tolerance and scalability of process.
Being able to control small and large vacuum systems enables fast development, and large scale roll-out.

Research and Development - Freedom of choice

The Research and Development sector covers many and diverse applications: we understand how important it is for this type of markets to be able to set up a process that is tailored to your needs.
This is why we have expanded the portfolio to increase the options available to you on flange type, communication protocols and more.

Analytical Instruments - Compact without compromise

With a constant drive to reduce footprint, improve reliability, and increase functionality, having cutting edge technology is crucial.
Miniaturized gauging with increased outputs helps you deliver increased control without compromise.

Robust Technology. Efficient Processes.

With the extended focus on creating efficient vacuum processes, measurement and control is becoming increasingly important. As more reliance is put on the measurement system to contol and realise these efficiencies, "Fit and Forget" products are needed, and are what Leybold provides.

Easy monitoring and control

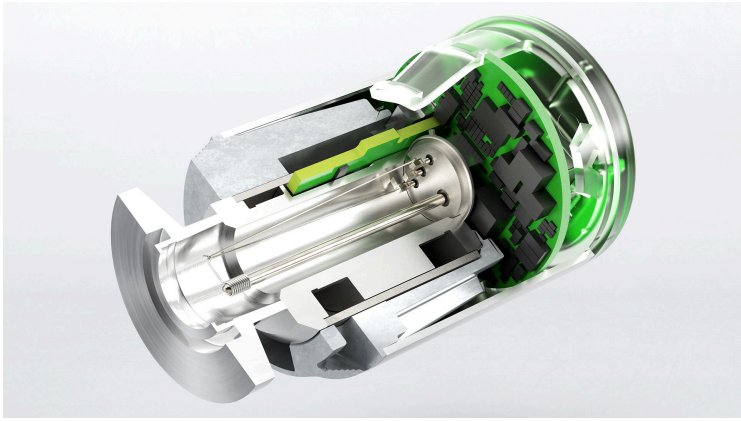
... even in the harshest of systems

With our new range of robust Pirani gauges, it is now easy to monitor and control even the harshest of systems, allowing you to optimise your systems by increasing throughput and decreasing downtime!

Robust

Our new filament technology is at the core of these gauges

With two main variants, Tungsten for standard and Platinum for harsh, we can help you to tailor your vacuum measurement system in order to "fit and forget" it.
Alongside the filament choice all RN series gauges come with an integrated filter to increase their resistance to particle contamination.



Flexibility

We have the fittings you need
The applications that these new gauges go into are varied.
Therefore we have created a system that gives you the choice, whether this be on flange type, output, or interface.

Easy serviceability

Key to a healthy system
The ability to easily service vacuum gauges is key to maintaining a healthy system
With our RN series no tools are required to complete maintenance: simply pull out the pin, and the two halves separate, allowing you to easily replace the measuring cell/electronics

Ownership

In-house manufacturing from the expert
Our range of RN gauges are designed and manufactured in-house at our UK located production company. It builds on our many years of experience in vacuum gauging so we can offer you both application and post sales support!
We want to ensure you get the most out of our products.

Technical data

Technical data

	TTR 91 RN/TTR 911 RN	TTR 96 RN/TTR 916 RN	TTR 97 RN/TTR 917 RN
Measurement range	Atmosphere to $5e^{-4}$ mbar (Atmosphere to $3.75e^{-4}$ torr)	Atmosphere to $1e^{-4}$ mbar (Atmosphere to $7.5e^{-5}$ torr)	Atmosphere to $5e^{-4}$ mbar (Atmosphere to $3.75e^{-4}$ torr)
Accuracy (mbar)	Atmosphere to 100 +-50%	100 to 10 +-50%	Atmosphere to 100 +-50%
	100 to $1e^{-3}$ +-15%	10 to $1e^{-3}$ +-15%	100 to $1e^{-3}$ +-15%
	$1e^{-3}$ to $5e^{-4}$ +-50%	$1e^{-3}$ to $5e^{-4}$ +-50%	$1e^{-3}$ to $5e^{-4}$ +-50%
Repeatability	2% of reading between 100 and $1e^{-3}$ mbar	2% of reading between 10 and $1e^{-3}$ mbar	2% of reading between 100 and $1e^{-3}$ mbar
Supply voltage (V d.c.)	15 to 48	15 to 48	15 to 48
Electrical connection	RJ45/9 Pin D-sub	RJ45/9 Pin D-sub	RJ45/9 Pin D-sub
Analogue output (21L*1***)**	0-10 V	0-10 V	0-10 V
Serial output (21L*5***/21L***0***)**	RS232 or RS485	RS232 or RS485	RS232 or RS485
Set point	0, 1, or 2 depending on model	0, 1, or 2 depending on model	0, 1, or 2 depending on model
Range	0.8 to 10.2 V	0.8 to 10.2 V	0.8 to 10.2 V
Relay contact rating	48V dc max, 500mA	48V dc max, 500mA	48V dc max, 500mA
Status indicators	360 Bright LED ring	360 Bright LED ring	360 Bright LED ring
Max cable length (m)	100	100	100
Over pressure limit (bar)	10	10	10
Operating temperature range (°C)	5 to 60	5 to 60	5 to 60
Storage temperature (°C)	-30 to 70	-30 to 70	-30 to 70
Max bake out (electronics removed)	150	150	150
Max relative humidity	80% RH up to 31°C decreasing linearly to 50% RH at 40°C and above	80% RH up to 31°C decreasing linearly to 50% RH at 40°C and above	80% RH up to 31°C decreasing linearly to 50% RH at 40°C and above
Materials exposed to vacuum	Tungsten/Rhenium, Stainless steel 316L and 304L, Glass, Ni, NiFe, Stainless steel 302S26	Platinum/Rhodium, Stainless steel 316L and 304L, Glass, Ni, NiFe, Stainless steel 302S26	Platinum/Iridium, Stainless steel 316L and 304L, Glass, Ni, NiFe, Stainless steel 302S26, PTFE
Dead volume (CM^3)	3.3	3.3	3.3
Weight (DN 16 KF)	130 grams	130 grams	130 grams
Protection class	40	40	40
Certifications	CE, UKCA	CE, UKCA	CE, UKCA
Compatible controllers	DISPLAY, GRAPHIX, IM540, TURBO.CONTROLi	DISPLAY, GRAPHIX, IM540, TURBO.CONTROLi	DISPLAY, GRAPHIX, IM540, TURBO.CONTROLi

Ordering information

Part number matrix

Prefix	Filament	Set point	Flange	Comms	Connector	Output	Other
21L	1 = Standard (TTR 91 RN)	0 = No set point	1 = DN 16 KF	1 = 0-10V	1 = RJ45	0 = Standard Leybold	0 = standard
	2 = Corrosion resistant (TTR 96 RN)	1 = 1 Set point[2]	2 = DN 25 KF	5 = RS232[4]	2 = 9 Pin D-Sub	2 = 1.9 to 10.0 V[5]	
	3 = Corrosion resistant (TTR 97 RN)[1]	2 = 2 Set points[3]	9 = DN 16 CF	0 = RS485[4]		3 = 2.2 to 8.5V[5]	
			5 = 1/8 inch			4 = 1.0 to 9V[5]	
			6 = 4 VCR				
			7 = 8 VCR				
			8 = Bare tube				

[1] RS232/485 versions of this gauge are only available with single set point
[2] Only with RS232/485
[3] Only with analogue 0-10v
[4] Only available with 9 pin D-Sub
[5] Only available with 0-10 V

Common part numbers

Part number	Product
21L1011100	TTR 91 RN - DN 16 KF
21L1091100	TTR 91 RN - DN 16 CF
21L1051100	TTR 91 RN - 1/8 inch NPT
21L1081100	TTR 91 RN - Bare Tube
21L1211100	TTR 91 RNS - DN 16 KF
21L1291100	TTR 91 RNS - DN 16 CF
21L1251100	TTR 91 RNS - 1/8 inch NPT
21L2211100	TTR 96 RNS - DN 16 KF
21L2291100	TTR 96 RNS - DN 16 CF
21L2251100	TTR 96 RNS - 1/8 inch NPT

Spare parts - Measuring tube

Prefix	Filament	Set point	Flange	Comms	Connector	Output	Other
E21L	1 = Standard (TTR 91 RN)	A	1 = DN 16 KF	A	A	A	A
	2 = Corrosion resistant (TTR 96 RN)		2 = DN 25 KF				

Spare parts - Measuring tube

Prefix	Filament	Set point	Flange	Comms	Connector	Output	Other
E21L	3 = Corrosion resistant (TTR 97 RN)	A	9 = DN 16 CF	A	A	A	A
			5 = 1/8 inch				
			6 = 4 VCR				
			7 = 8 VCR				
			8 = Bare tube				

Spare parts - Electronics

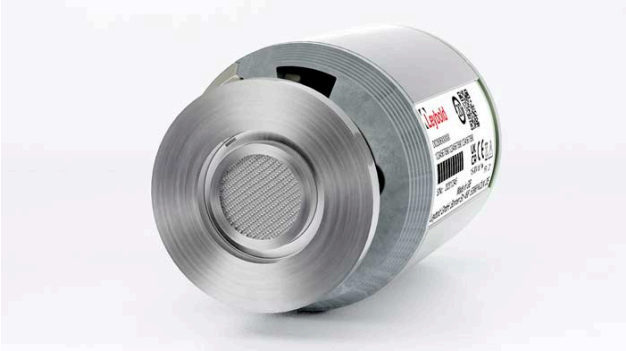
Prefix	Filament	Set point	Flange	Comms	Connector	Output	Other
E21L	1 = Standard (TTR 91 RN)	0 = No set point	A	1 = 0-10 V	1 = RJ45	0 = Standard Leybold	0 = standard
	2 = Corrosion resistant (TTR 96 RN)	1 = 1 Set point[2]		5 = RS 232[4]	2 = 9 Pin D-Sub	2 = 1.9 to 10.0 V[5]	
	3 = Corrosion resistant (TTR 97 RN)[1]	2 = 2 Set points[3]		0 = RS 485[4]		3 = 2.2 to 8.5V[5]	
						4 = 1.0 to 9V[5]	

[1] RS 232/485 versions of this gauge are only available with single set point.
[2] Only with RS 232/485.
[3] Only with analogue 0-10v.
[4] Only available with 9 pin D-Sub.
[5] Only available with 0-10 V.

360° view THERMOVAC

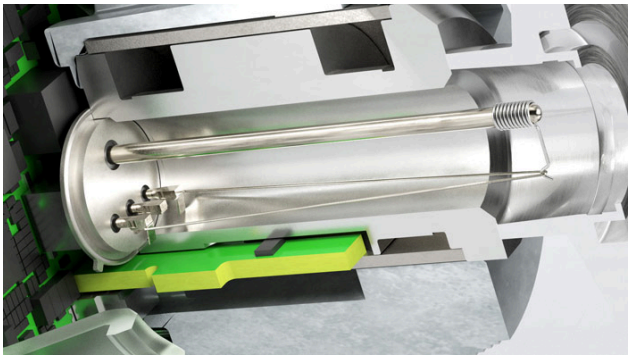
Digital or analogue interface

You now have the option of standard analogue or digital (RS232 or 485) interfaces, with no impact on gauge performance/size.



Integrated filter

The integrated filter further protects the gauge from particle contaminants, leading to a stable solution for the many years you will use it!



Filament technology

Our new filament technology gauges will provide you with a stable solution no matter your environment. With their long length, they also give great measurements across the breadth of the range.

Choice of connection

Whilst the RJ45/FCC68 connector has been popular for years, some processes prefer a "lockable" connector. That is the reason why we offer the analogue variants with a choice of D-Sub or RJ45/ FCC68.

In House manufactured electronics

With our new range we have "full control"... and as a result you have it too!
From the drawing board to manufacture this gauge has been designed to meet all your needs.

Flexible output

We appreciate the pain of qualifying new items when you have the need to upgrade of switch.
Our new gauges offer full backwards compatibility, as well as common voltage scaling: we help you save time and keep to the minimum work required.

Light ring pressure indication

The light rings do not only display basic "working/not working" information. They also give precious pressure indication via pulsing patterns and guide you through the menu set up.

Wide range power supply

For customers integrating vacuum solutions directly, our gauges can take any power input from 15 V to 48 V.
Thus eliminating the need for multiple power supplies for the various vacuum components.

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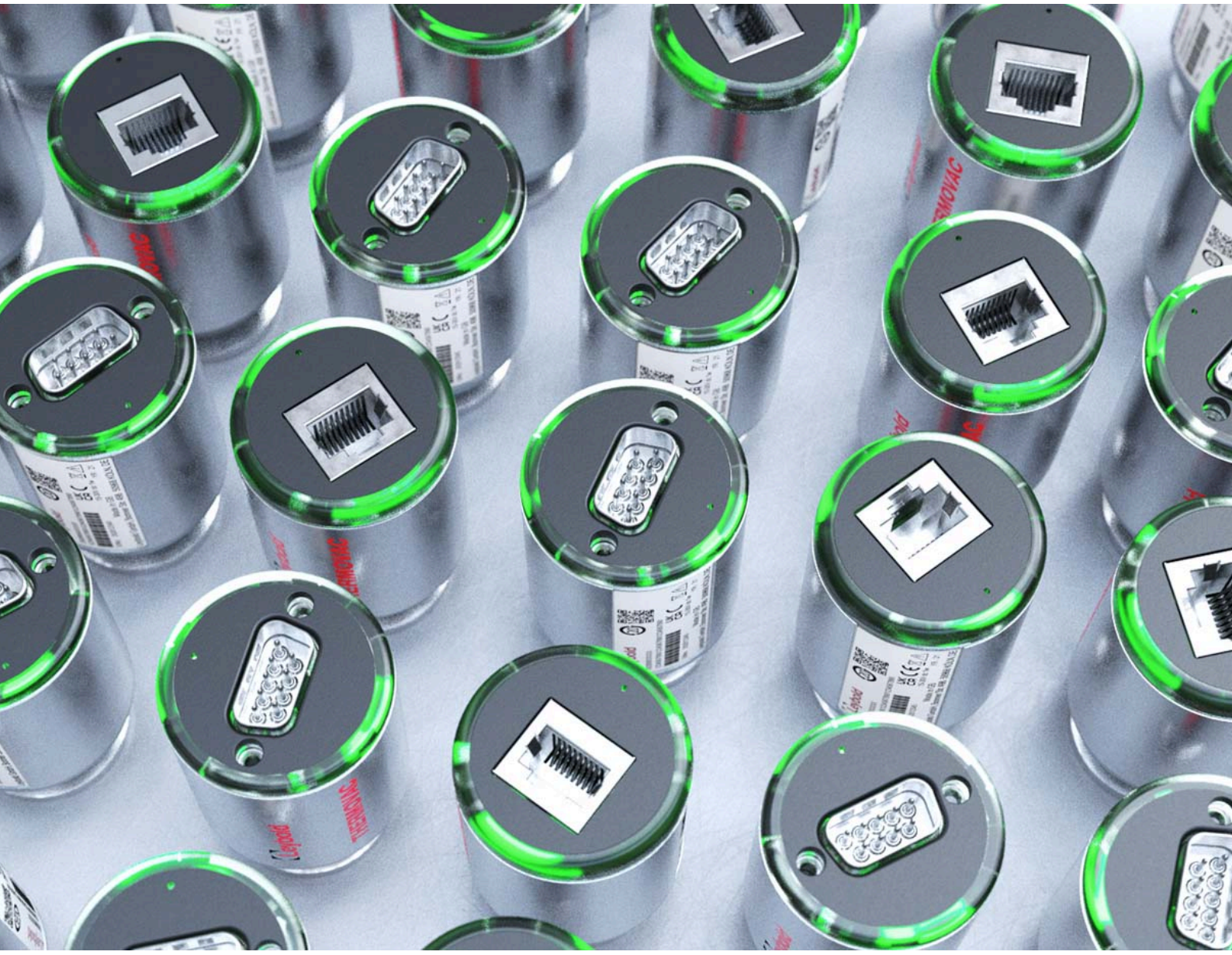

Leybold

Pioneering products. Passionately applied.