



Data Sheet

Humidity control products

Introduction

A comprehensive range of humidity control products primarily intended for use in electrical/electronic enclosures etc..

Due to variations in temperature, considerable amounts of humidity can occur within sealed enclosures. This can be a serious condition causing malfunction of equipment and, in extreme cases, internal moisture can cause an enclosure to rust from the inside.

RS offers a large range of products to prevent or indicate the presence of humidity within an enclosure including desiccators, enclosure heaters, humidity indicators, differential relief valves, immersion proof breathers and drain plugs.

Complementary to the very large range of RS moulded and steel sealed enclosures, these products will find many applications for solving humidity problems, thus preventing expensive down-time and servicing difficulties.

Silica gel panel mounting indicating desiccators



A range of panel mounting desiccators containing silica gel for protection against corrosion, dampness and contamination in electronic, electrical, telecommunications and computer equipment etc. The desiccators incorporate indicator papers which are blue when the desiccator is dry and turns pink when the maximum amount of moisture has been absorbed. They are available in 10g, 30g or 50g sizes.

Ideally suited to prevent damage or malfunction in equipment subject to humidity or temperature variations. A powerful absorbing agent reduces and absorbs ingressed or in-built moisture to acceptable levels. A humidity indicator monitors saturation and indicates when reactivation is required. The desiccators can be reactivated for re-use at 120°C for four hours in a ventilated oven.

Caution: They should be allowed to cool in a sealed container.

Figure 1 10g silica gel desiccator
RS stock no. 838-726

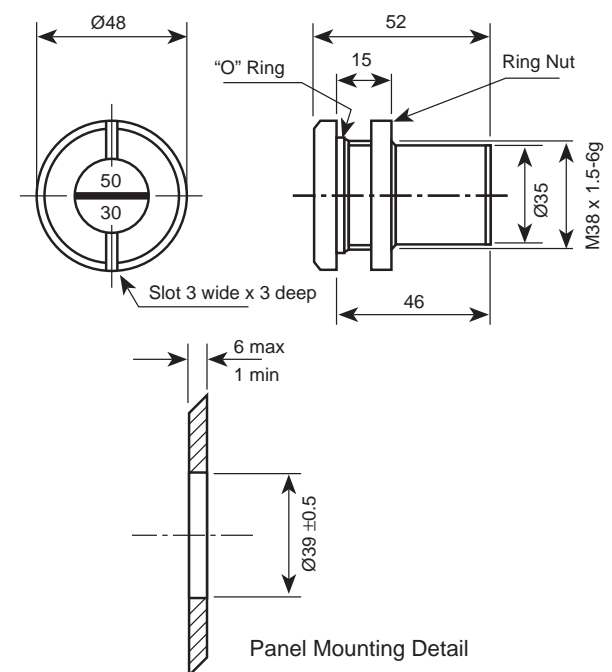


Figure 2 30g silica gel desiccator
RS stock no. 838-732

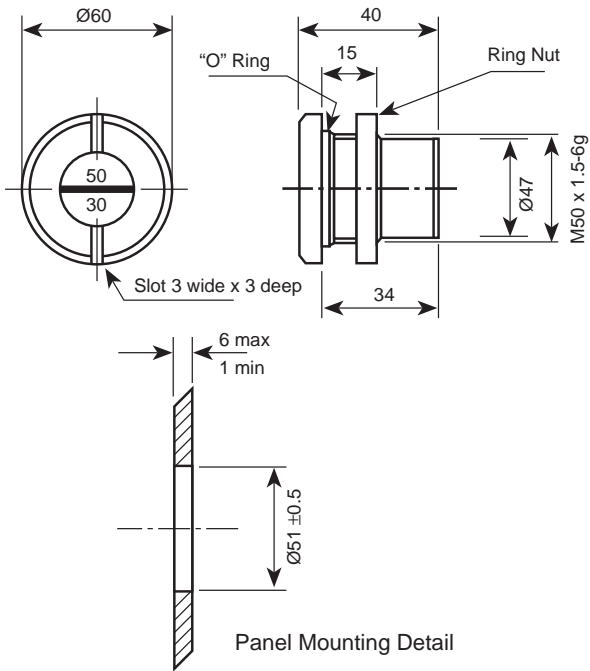
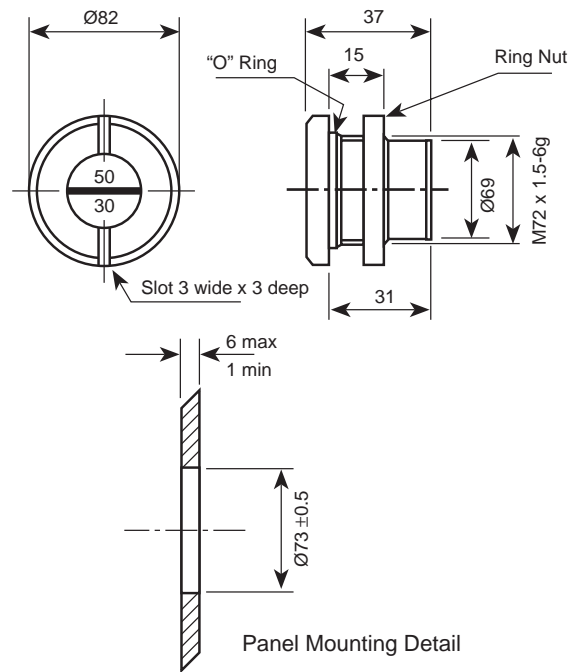


Figure 3 50g silica gel desiccator
RS stock no. 838-748



Technical specification

Parameter	RS stock no. 838-726	RS stock no. 838-732	RS stock no. 838-748
Desiccant content	10g	30g	50g
Material	Polycarbonate		
Colour	Black		
Operating temperature	-40°C to +70°C, reactivation +120°C		
Environmental protection	Resistant to alcohols, ethers, hydrocarbons, weak acids and bases		
Typical application volume IP67 enclosure	10 litres approx 6-9 months	30 litres approx 6-9 months	50 litres approx 6-9 months
IP55 enclosure	10 litres approx 3-6 months	30 litres approx 3-6 months	50 litres approx 3-6 months
Reactivation	4 hours in a ventilated oven @ 120°C Caution: Allow to cool in a sealed container		
Maximum pressure	1 bar gauge		
Maximum vacuum	500 Torr (-5 psi)		
Maximum leak rate	1×10^{-2} cc/sec		
Humidity indicating level	30% RH @ 20°C and 50% RH @ 20°C		
Tightening torque	2Nm		
Packaging	Metal foil laminate - do not open until required for use		

Molecular sieves panel mounting indicating desiccators



In certain types of equipment water vapour condensation may result in immediate equipment failure due to electrical short circuiting, visibility loss, insulation breakdown and construction material instability.

The use of a molecular sieves desiccator is recommended when an equipment may be subject to immediate failure as a result of water vapour condensation. Molecular sieves desiccators are most suitable for applications where equipments and enclosures are subject to operation at low temperatures and water vapour condensation must not occur.

An integral dual level humidity indicator signals when the desiccant is reaching and has achieved its absorption capacity by turning from blue to pink.

RS offers two panel mounting desiccators for protection against corrosion, dampness and contamination in optical, electro-optical and high voltage equipment etc.. They are available in 10g or 50g sizes.

Ideally suited to prevent damage or malfunction in equipment subject to humidity or temperature variations. A powerful absorbing agent reduces and absorbs ingressed or in-built moisture to acceptable levels. The molecular sieves absorbing agent maintains an ultra low relative humidity for extremely sensitive applications. Molecular sieves desiccators cannot be reactivated.

Figure 4 10g molecular sieves desiccator
RS stock no. 838-754

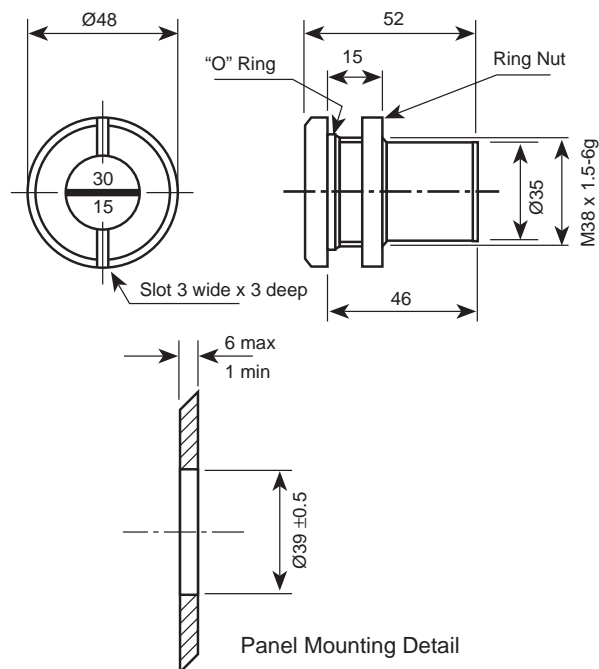
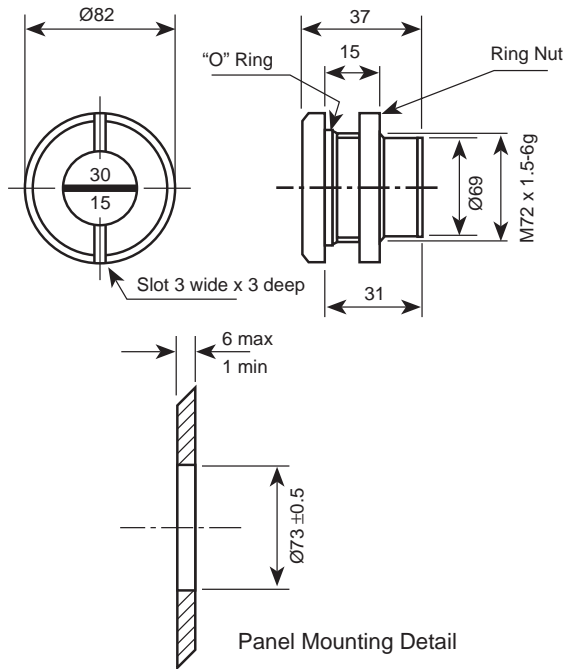


Figure 6 50g molecular sieves desiccator
RS stock no. 838-776



Technical specification

Parameter	RS stock no. 838-754	RS stock no. 838-776
Desiccant content	10g	50g
Material	Polycarbonate	
Colour	Black	
Operating temperature	-50°C to +110°C	
Environmental protection	Resistant to alcohols, ethers, hydrocarbons, weak acids and bases	
Typical application volume		
IP67 enclosure	10 litres approx 5-8 months	50 litres approx approx 5-8 months
IP55 enclosure	10 litres approx 2-5 months	50 litres approx 2-5 months
Reactivation	Reactivation not possible with molecular sieve desiccators	
Maximum pressure	1 bar gauge	
Maximum vacuum	500 Torr (-5 psi)	
Maximum leak rate	1×10^{-2} cc/sec	
Humidity indicating level	15% RH @ 20°C and 30% RH @ 20°C	
Tightening torque	2Nm	
Packaging	Metal foil laminate - do not open until required for use	

Humidity indicators

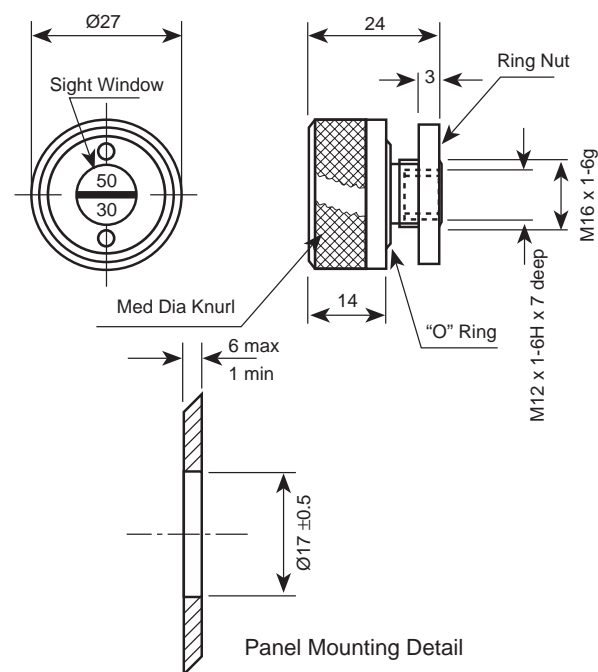


Two types of humidity indicators which can be used with the standard range of desiccators or when; desiccant, desiccant bags or dry gas is selected to maintain the internal humidity within an equipment or enclosure.

The 30/50% RH indicator (**RS** stock no. 838-798) is suitable when silica gel is being used to control the internal humidity. The 15/30% RH indicator (**RS** stock no. 838-782) is suitable when molecular sieves or dry gas is being used to control the internal humidity.

The indicators are intended to be panel mounted and require a 17mm Ø clearance hole.

Figure 7 Humidity indicators



Technical specification

Parameter	RS stock no. 838-782	RS stock no. 838-798
Humidity indicating level	15/30% RH	30/50% RH
Material	Polycarbonate	
Colour	Black	
Operating temperature	-40°C to +70°C	
Environmental protection	Resistant to alcohols, ethers, hydrocarbons, weak acids and bases	
Maximum pressure	1 bar gauge	
Maximum vacuum	500 Torr (-5 psi)	
Tightening torque	2Nm	
Packaging	Metal foil laminate - do not open until required for use	

Double differential relief valve, (RS stock no. 838-811)



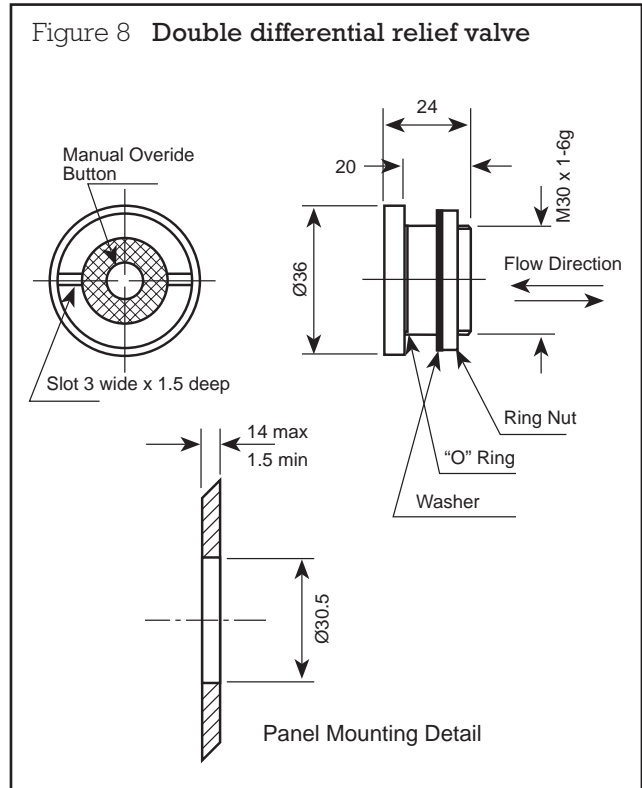
A double differential relief valve for protecting enclosures from imbalance of internal or external pressure. Manufactured from polycarbonate and stainless steel, a manual override facility enables any pressure or vacuum imbalance to be equalised before enclosure entry or cover plate removal.

They are ideal for the protecting of sealed enclosures that would otherwise be subjected to damage due to differential pressure from within or without. Typical applications are in airborne equipment, air cargo containers and other equipment subject to altitude or temperature change.

The valve requires a 30.5mm \varnothing clearance hole.

Technical specification

Parameter	RS stock no. 838-811
Humidity	5 to 90% non-condensing
Operating temperature	-40°C to +70°C
Opening pressure	Outward 1 psi Inward 1 psi
Nominal flow rate	200 l/min @ 0.5 psi above opening pressure
Max. reverse leakage	Less than 1cc per hour
Environmental protection	Resistant to alcohols, ethers, weak acids and bases
Tightening torque	5Nm



Immersion proof breather, (RS stock no. 838-805)



An immersion proof breather for use in enclosures, sealed keyboards, pressure sensitive instruments or equipment subject to driving rain and water.

Membrane keyboards and similar pressure sensitive equipments are often required to operate under adverse environmental conditions such as temperature cycling, changes in altitude, driving sand and dust and even immersion under water.

This has resulted in a requirement for a device which allows pressure equalisation but still enables the equipment to remain sealed against liquid water ingress.

The immersion proof breather is able to withstand immersion up to 1 metre for 15 minutes provided the temperature differential between the head and the water does not exceed 15°C.

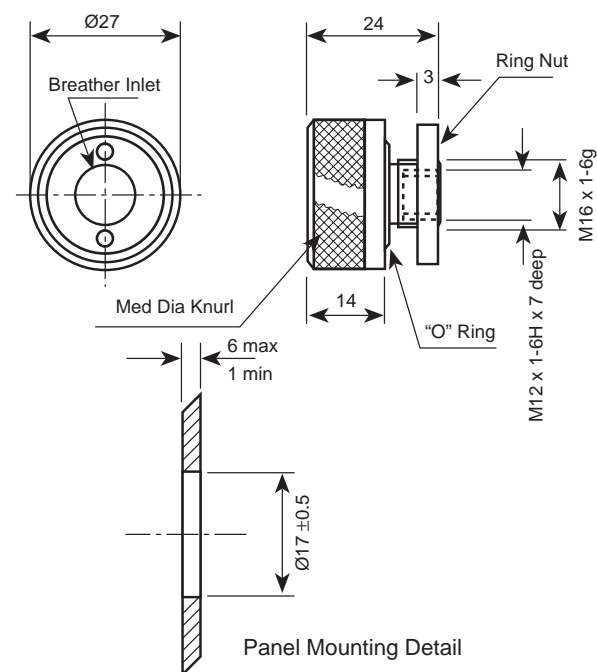
Immersion breathers, by nature of their construction, only allow a maximum flow rate of approximately 150cc/minute @ 1 psi differential.

They should not therefore be considered for rapid decompression applications.

Technical specification

Parameter	RS stock no. 838-805
Material	Polycarbonate
Colour	Black
Operating temperature	-40°C to +75°C
Environmental protection	Resistant to alcohols, ethers, hydrocarbons, weak acids and bases
Technical performance Flow rates	10cc/min @ 3.5wg 50cc/min @ 11.0wg 100cc/min @ 18.5wg 150cc/min @ 29.0wg
Max. application volume	Typically 60 litres (based on 20°C change)
Tightening torque	2Nm
Max. immersion depth	1 metre for 12 hours
Filtration	Protection against dust (0.5µm nominal)

Figure 9 Immersion proof breather



Drain plug and panel bush adaptor, (RS stock no. 838-827)



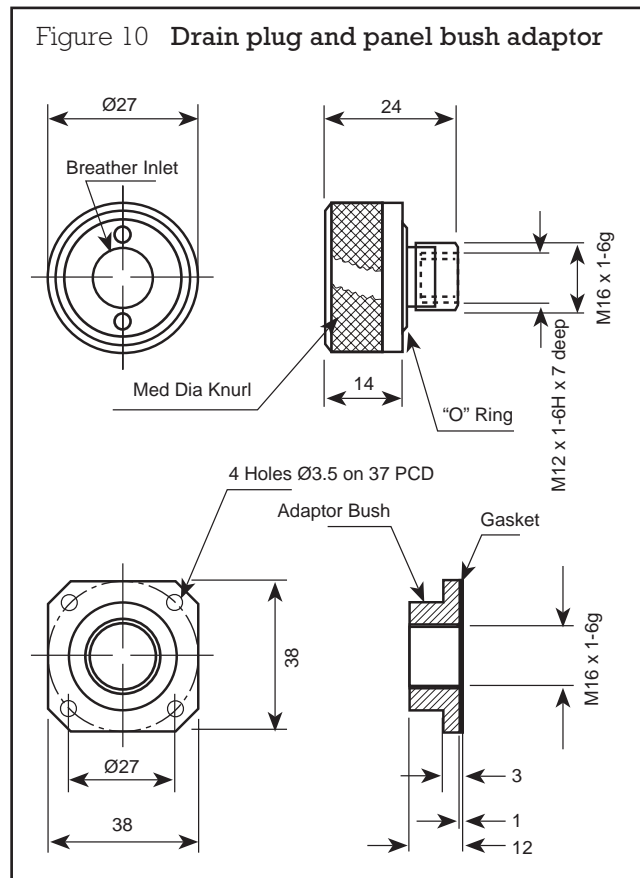
A simple plastic drain plug which prevents the accumulation of liquid water which may encourage corrosion, mould, growth or obstructions if the accumulated water freezes.

Ideally suited for enclosures as the panel bush adaptor enables the drain plug to be mounted and demounted from outside the equipment. An integral filter prevents limited dust ingress and insect intrusion.

Typical applications are: where pneumatic controls are within an enclosure, giving rise to moisture formation due to the expansion from valve exhausts.

Technical specification

Parameter	RS stock no. 838-827
Material	Polycarbonate
Colour	Black
Operating temperature	-40°C to +70°C
Typical flow rate	30cc/min
Environmental protection	Resistant to alcohols, ethers, weak acids and bases
Adaptor thread size	M16 x 1-6g
Tightening torque	2Nm (drain plug)



The information provided in RS technical literature is believed to be accurate and reliable; however, RS Components assumes no responsibility for inaccuracies or omissions, or for the use of this information, and all use of such information shall be entirely at the user's own risk. No responsibility is assumed by RS Components for any infringements of patents or other rights of third parties which may result from its use. Specifications shown in RS Components technical literature are subject to change without notice.