

Technical Datasheet



Volume Series Pressure Switch

Models: VM2 & VM4

Key Features

- Compact and rugged design
- SPDT & DPDT Switch Outputs
- Stainless steel enclosure as standard
- Weatherproof and Flameproof execution
- All welded construction for process connection and diaphragm – reduced risk of leakage under extreme conditions
- Ranges available between 0.25bar/4psi and 700bar/10,000psi
- Variety of wetted parts including NACE compatible option
- Field adjustable set point

Series Overview

The VM pressure switch offers a compact and cost effective solution for any application where reduced space and resistance to aggressive atmospheres is necessary .

- Performance is assured by repackaging Delta Mobrey's well proven sensor technologies in a new, simple, one-piece enclosure
- Safety is maintained by a vent that prevents the enclosure becoming pressurised in the event of a sensor being damaged
- Cost is minimised through the selection of common standard options although, as with all Delta Mobrey products, a variety of optional extras are available

We can also provide similar products:

- CS Compact Pressure Switch
- P0 Sentry Pressure Switch



Product applications

Designed for volume manufacture, the VM2/4 switch is ideally suited to meet the requirements of OEM manufacturers of:

- Wellhead control safety shutdown systems
- Water or gas deluge fire protection systems
- Fuel and lubrication systems, as found on gas turbines, compressors and other rotating machinery
- Valve actuators

The choice of models available ensures the VM Series is suitable for use in:

- General purpose applications
- Aggressive outdoor atmospheres, eg: marine or coastal environments
- Hazardous areas

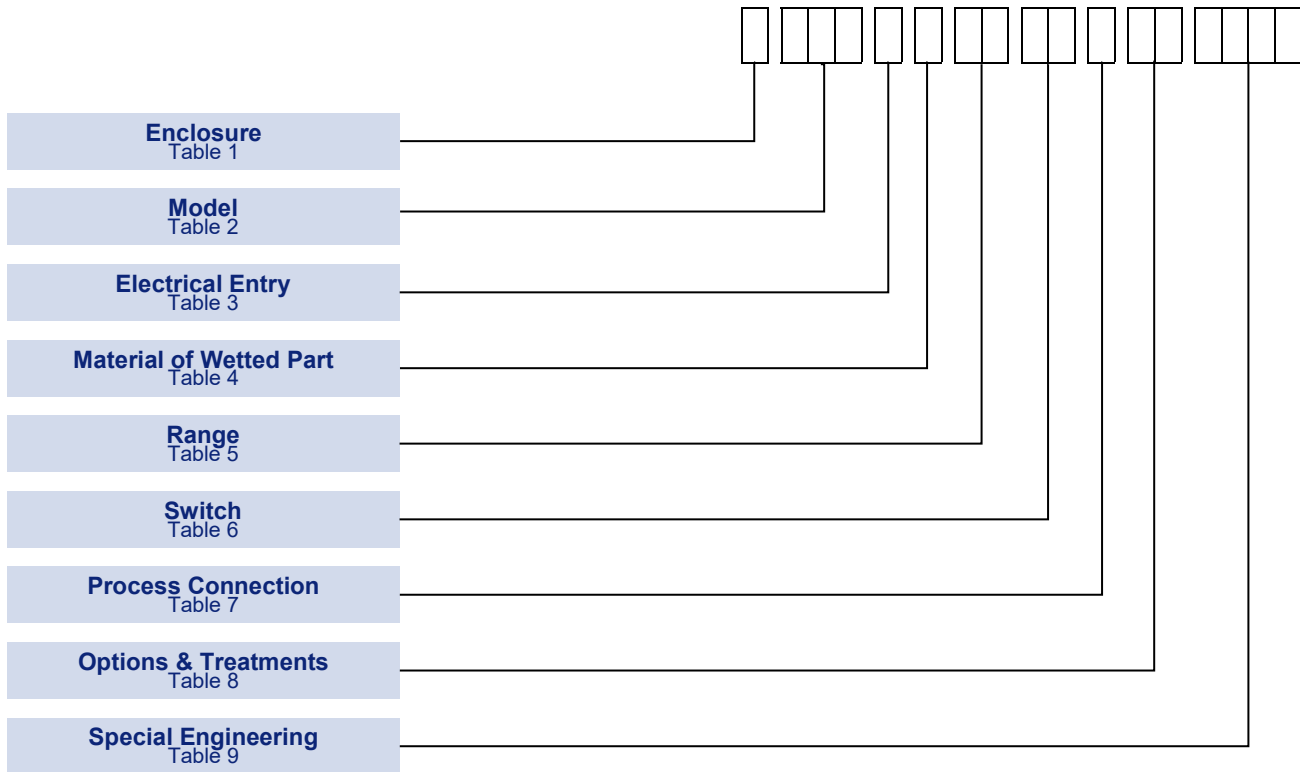
How can we help you?

Delta Mobrey offers fast, efficient and knowledgeable support when and where you need it. Please visit our website at www.delta-mobrey.com to find your local support centre or call us on:

+44 (0) 1252 729 140

How to order

Switches can be configured by selecting codes representing the desired features from the tables that follow. The chart below, describes how the model code is built up. For assistance in configuring a switch that best suits your needs, please contact your local sales office.



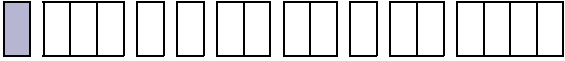
Technical Specification

Set point repeatability:	1% of the span
Storage Temperature:	*VM2* model: -35 to +80°C / -31 to +176°F *VM4* model: -20 to +80°C / -4 to 176°F
Ambient Temperature:	*VM2* model: -35 to +80°C (-31 to +176°F). SPECIAL ENGINEERING -55 to +80°C (-67 to 176°F) *VM4* model: -20 to +80°C (-4 to 176°F). SPECIAL ENGINEERING -55 to +80°C (-67 to 176°F)
Maximum Process Temperature:	At the process connection, the component parts withstand up to +80°C (+176°F). <i>For higher media temperatures, refer to Operating Instruction for installation practice or contact your local sales office.</i>
Enclosure classification:	Weatherproof / Flameproof
Ingress protection:	IP 66 / NEMA 4X
Pollution degree:	Pollution degree 3 according EN60947-5-1 (For extreme conditions where condensation may readily form, then sealed contacts should be used)
Switch output:	1 x SPDT or 1 x DPDT (2 SPDT) snap action microswitch (standard). Hermetically sealed (optional)
Electrical rating:	See Table 6
Terminal Block:	Suitable for wire section up to 2,5 mm ² / 14 AWG
Grounding connection:	One internal and one external suitable for wire section up to 4 mm ² / 12 AWG
Electrical Safety Class:	Safety electrical class 1 according IEC 61298-2:2008
Process Connection:	Rc ¼ (¼ " Bsp tr int) or ¼ - 18 NPT F (other sizes via adaptors only)
Weight:	1.5kg / 3.3lbs approx

VM Series - Flameproof
Models: VM2 & VM4

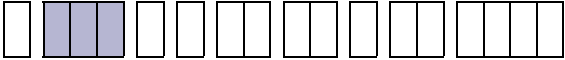
Enclosure

⁽¹⁾ Double marking ATEX and UKEx on the same product nameplate; EAC Ex marking on request.

TABLE 1 

	Code
<u>WEATHERPROOF ENCLOSURE</u>	
Aggressive Atmospheres Investment cast enclosure in austenitic stainless steel, with ingress protection IP66, NEMA type 4X	A
<u>FLAMEPROOF ENCLOSURE ⁽¹⁾</u> Approved for use in a Zone 1 & Zone 2 hazardous locations Ex db IIC T6/T5 Gb, Ex tb IIIC T75/T90°C Db IP66 The temperature class is related to the ambient temperature range see Approvals for more information	
Aggressive Atmospheres Investment cast enclosure in austenitic stainless steel, with ingress protection IP66, NEMA type 4X	R

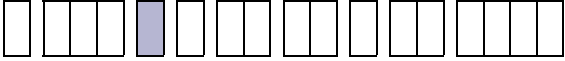
Models

TABLE 2 

		Code
Fixed Switching Differential	For applications up to 100 bar / 1500 psi Over-range up to 155 bar / 2250 psi Refer Table 5	VM2
Fixed Switching Differential	For applications up to 700 bar / 10,000 psi Over-range up to 1000 bar / 15,000 psi Refer Table 5	VM4

Electrical Entry

A certified adaptor may be assembled to the enclosure realising a 3/4-14 NPT-F or M25x1,5-F electrical entry.


TABLE 3 

Description	Code (Single Entry)
M20 x 1.5 Internal ISO Thread	0
1/2 -14 NPT Internal Thread	2

Material of Wetted Parts

For reduced risk against leakage under extreme or unusual conditions the diaphragm may be welded directly to the process connection.

For *VM4* suitable for ambient temperature -55 to +80°C the construction is not all welded.

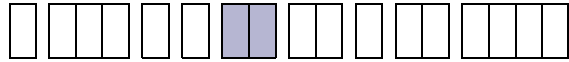
TABLE 4 

	Code
316 Stainless Steel diaphragm and process connection. All welded construction.	S
Nickel Alloy (Monel) diaphragm and process connection. All welded construction.	T

VM Series - Flameproof
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Setting Ranges

TABLE 5



Figures given in the tables are typical for the maximum mid-range settings and are for guidance only. Value will vary across the range i.e. lower at or near the bottom of the range and higher at or near the top of the range.

Table 5A

VM2			SWITCHING DIFFERENTIAL mbar			
RANGE CODE	P Max bar	RANGE bar	02	03	04	05
DB	27	0.25 to 1.6	200	260	200	260
DC		0.4 to 2.5	320	416	320	416
DE		1.0 to 6	280	364	280	364
EA	70	1.6 to 10	430	450	430	450
EB		2.5 to 16	570	741	570	751
EC	110	4.0 to 25	1200	1560	1200	1560
ED		10 to 40	2700	3500	2700	3500
EF		16 to 75	3200	4160	3200	4160
FA	155	10 to 100	4300	5600	4300	5600

Table 5B

VM4			SWITCHING DIFFERENTIAL mbar			
RANGE CODE	P Max bar	RANGE bar	02	03	04	05
U7	1000	7 to 160	12,200	15,000	12,200	15,000
V7	1000	25 to 250	20,800	25,000	20,800	25,000
W7	1000	50 to 400	28,600	36,000	28,600	36,000
Y4	1000	100 to 700	48,600	63,000	48,600	63,000

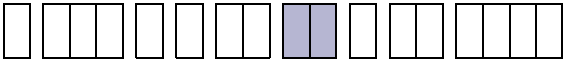
Table 5C

VM2			SWITCHING DIFFERENTIAL psi			
RANGE CODE	P Max psi	RANGE psi	02	03	04	05
DK	400	4 to 25	2.9	3.8	2.9	3.8
DP		6 to 40	4.6	6	4.6	6
DZ		16 to 100	4.1	5.3	4.1	5.3
EH	1000	25 to 160	6.2	6.5	6.2	6.5
EM		40 to 250	8.3	10.8	8.3	10.8
ER	1600	60 to 400	17	23	17	23
EW		160 to 600	39	51	39	51
EE		250 to 1000	46	60	46	60
F6	2250	160 to 1500	62	81	62	81

Table 5D

VM4			SWITCHING DIFFERENTIAL psi			
RANGE CODE	P Max psi	RANGE psi	02	03	04	05
UK	15,000	100 to 2300	177	217	177	217
VC	15,000	350 to 3500	302	362	302	362
W9	15,000	800 to 6000	415	522	415	522
YF	15,000	1600 to 10,000	705	913	705	913


Switch Options

TABLE 6 

UL/CSA RATING	IEC947-5-1 / EN 60947-5-1 RATING							Contact	Code
	Designation & Utilisation Category	Rated operational current (I _e) At rated operational voltage (U _e)	U _i	U _{imp}	VA Rating				
						Make	Break		
5 Amps @ 110/250V AC and 2 Amps @ 30V DC General Purpose Precision	AC14 D300 DC13 R300	0.6/0.3A @ 120/240 V AC 0.22/0.1A @ 125/250V DC	250V	0.8kV	AC DC	432 28	72 28	SPDT DPDT	02 03
1 Amp @ 125V AC and 0.1 Amp @ 30V DC Gold Alloy contacts - See Note	AC14 E150	0.3A @ 120VAC	125V	500V	AC	216	36	SPDT DPDT	04 05

NOTE: For low energy circuits e.g. 30V and up to 100mA, we recommend using gold alloy contact switches.
 U_i = rated insulation voltage; U_{imp} = rated impulse to withstand voltage across contacts.
 For other switch options please consult Delta Mobrey Limited
Important Note: In case of End of Line version the max rating is 0,04A at 30 V d.c. for all the contact.

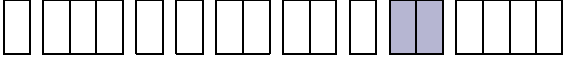
Process Connection

TABLE 7 

Adaptors are available for applications where their use is permitted. Apply for details

	Code
Rc 1/4 (1/4" BSP TAPER INTERNAL)	A
1/4 -18 NPT Internal	F


Options & Treatments

TABLE 8 

Code left blank if no options or no Special Engineering (Table 9) required.

	Code
Tropicalisation High humidity atmospheres	01
Tag Stainless steel tied to enclosure	30

Special Engineering

TABLE 9 

Last 4 digits of model code only used when special engineering is required.

	Code
End of Line Resistors (see specific TDS)	E***
Low ambient temperature execution	C***
Specific marking approval (EAC)	B***
Please consult Delta sales engineering for special requirements	TBA

VM Series - Flameproof
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Approvals



EUROPEAN DIRECTIVE

Low Voltage Directive (LVD) 2014/35/EU

Compliant to LVD

Restriction of hazardous substances (RoHS 2) 2011/65/EU

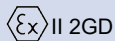
Compliant to RoHS

Pressure Equipment Directive (PED) 2014/68/EU

Compliant to PED as pressure accessory

ATEX Directive 2014/34/EU

FLAMEPROOF Certificate No. ITS03ATEX11510X



- Ex d IIC T6 Gb (-20°C≤Ta≤+65°C) or (-35°C≤Ta≤+65°C) or (-55°C≤Ta≤+65°C)
- Ex d IIC T5 Gb (-20°C≤Ta≤+80°C) or (-35°C≤Ta≤+80°C) or (-55°C≤Ta≤+80°C)
- Ex tb IIIC T75°C Db IP66 (-20°C≤Ta≤+65°C) or (-35°C≤Ta≤+65°C) or (-55°C≤Ta≤+65°C)
- Ex tb IIIC T90°C Db IP66 (-20°C≤Ta≤+80°C) or (-35°C≤Ta≤+80°C) or (-55°C≤Ta≤+80°C)



UK REGULATIONS

Electrical Equipment (Safety) Regulations 2016

Conform to UK SI 2016 No 1101 regulation

Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

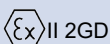
Conform to UK SI 2012 No. 3032

Pressure Equipment (Safety) Regulations 2016

Conform to UK SI 2016 No 1105 regulation

Equipment and Protective Systems Intended for use in Potentially Explosive Atmospheres Regulations 2016

Conform to UK SI 2016 No 1107 regulation



FLAMEPROOF Certificate No. ITS21UKEX0413X

- Ex d IIC T6 Gb (-20°C≤Ta≤+65°C) or (-35°C≤Ta≤+65°C) or (-55°C≤Ta≤+65°C)
- Ex d IIC T5 Gb (-20°C≤Ta≤+80°C) or (-35°C≤Ta≤+80°C) or (-55°C≤Ta≤+80°C)
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- Ex tb IIIC T90°C Db IP66 (-20°C≤Ta≤+80°C) or (-35°C≤Ta≤+80°C) or (-55°C≤Ta≤+80°C)

SPECIFIC MARKING APPROVALS



EURASIAN CONFORMITY MARK

Hazardous Areas

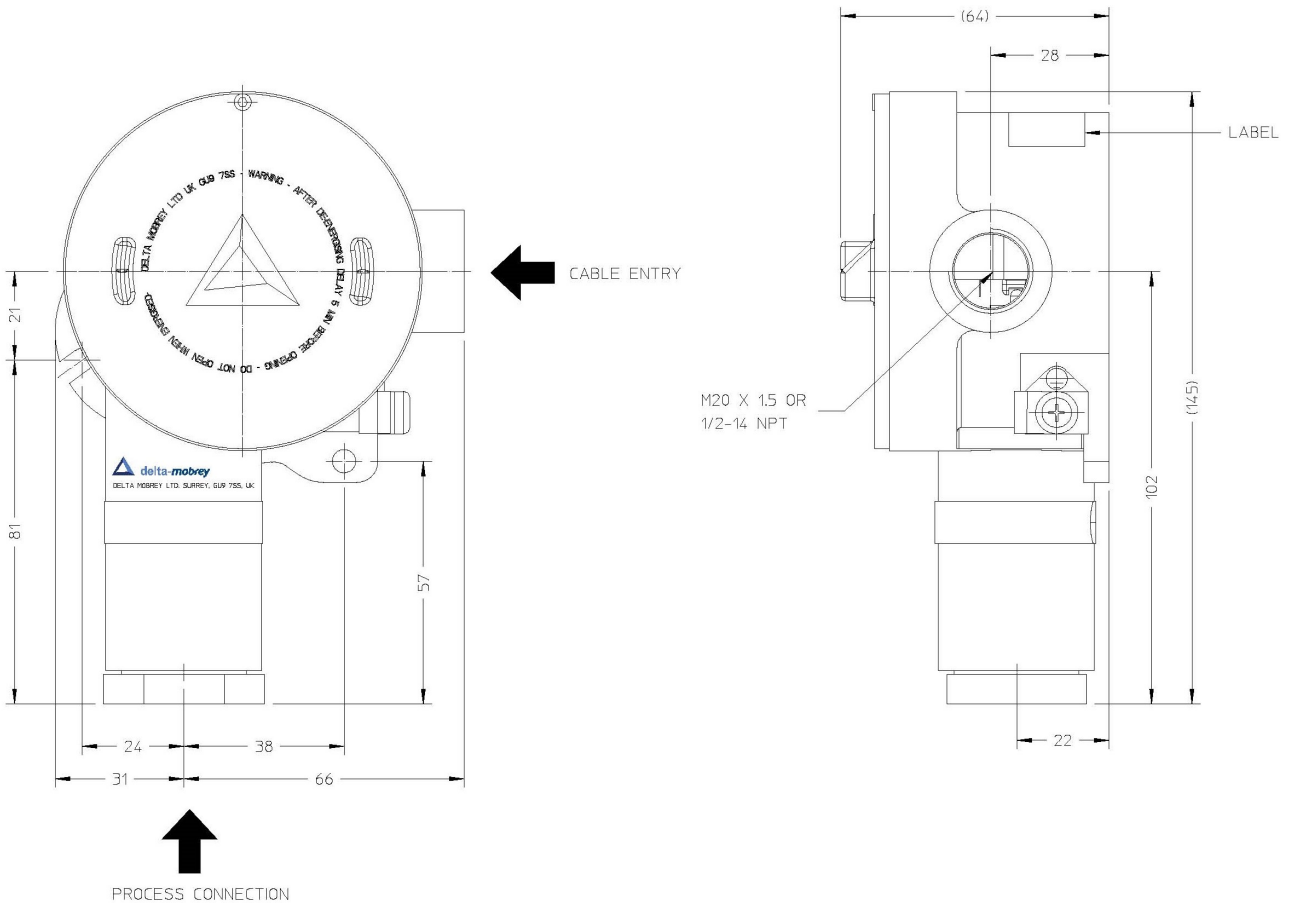
FLAMEPROOF Certificate No. EAЭC RU C-GB.HA65.B/01199/21



- 1Ex d IIC T6 Gb X (-20°C≤Ta≤+65°C) or (-35°C≤Ta≤+65°C) or (-55°C≤Ta≤+65°C)
- 1Ex d IIC T5 Gb X (-20°C≤Ta≤+80°C) or (-35°C≤Ta≤+80°C) or (-55°C≤Ta≤+80°C)
- Ex tb IIIC T75°C Db X (-20°C≤Ta≤+65°C) or (-35°C≤Ta≤+65°C) or (-55°C≤Ta≤+65°C)
- Ex tb IIIC T90°C Db X (-20°C≤Ta≤+80°C) or (-35°C≤Ta≤+80°C) or (-55°C≤Ta≤+80°C)

If EAC certification is required, this must be evidenced to our sales team at the ordering stage for correct marking of the instrument.

Dimensions



VM Series - Flame-

In the interest of development and improvement Delta Mobrey Ltd, reserves the right to amend, without notice, details contained in this publication. No legal liability will be accepted by Delta Mobrey Ltd for any errors, omissions or amendments.

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