

Model 315M

Metal Capacitive Differential Pressure Modules

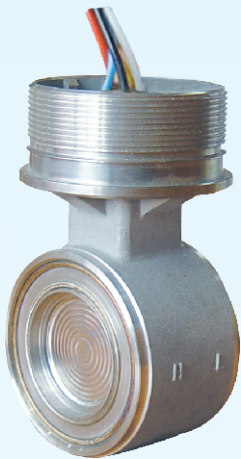


315M differential pressure module (DPM) is composed of 115C metal capacitive differential pressure sensor, with fully welded stainless steel construction. Integrated inside the 315M housing is a thermal resistor or a thermistor, which can provide, with a certain delay, the thermal information on pressure medium for temperature compensation purpose.

315M series inherit all the characteristics of BCM 115C differential pressure sensors. Moreover, if an electronics circuit board is integrated inside the outlet part of the 315M housing, the output signal can be conditioned to either current loop (4~20 mA) or 0~5Vdc (or 0~10Vdc) voltage with accuracy up to 0.1%fs (fs = full scale).

On request, 315M series can be mounted into a pair a flanges and re-calibrated further to ensure its performance.

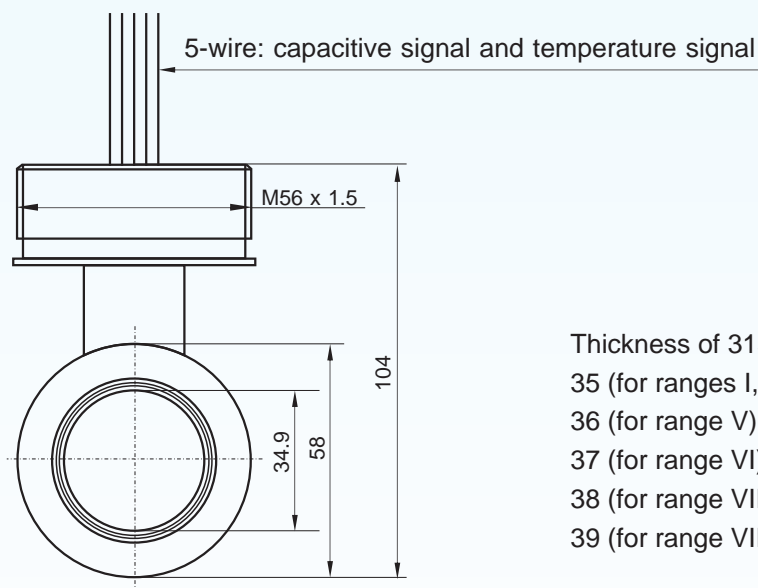
In application, model 315M is typically used to build intelligent pressure transmitters with accuracy up to 0.075 %fs.



Features

- pressure ranges & types:
 - D: 0~15 mbar, ... , 0~68.9 bar
 - G: 0~75 mbar, ... , 0~413.7 bar
 - A: 0~374 mbar, ... , 0~68.9 bar
- system pressure up to 312 bar for diff. pressure applications
- overload pressure: up to 520 bar for gauge pressure applications
- output signals:
 - capacitive signal and temperature signal
 - conditioned signals: 4~20 mA, 0~5 Vdc, or 0~10 Vdc
- accuracy: up to 0.2 %fs (for capacitive output)
up to 0.1 %fs (for conditioned signals)
- fully welded stainless steel (SS) construction
- material of diaphragm: 316L SS
option: Hastelloy-C, Tantalum, or Monel

Dimensions:



Thickness of 315M
35 (for ranges I, II III and IV)
36 (for range V)
37 (for range VI)
38 (for range VII)
39 (for range VIII, IX)

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Technical Data:

parameters		units	specifications		
pressure medium			gas, dilute liquid, paste, viscous fluid or fluid with grains, as long as it is compatible with the materials of 315M wetted parts		
differential pressure (D) ranges		mbar, D	0~15	~75; ~374; ~1,868; ~6,900; ~20,700	~374; ~1,868; ~6,900; ~20,700; ~68,900
system pressure		bar	70	140	312
differential overload pressure		bar	70	140	312
gauge pressure (G) ranges		bar, G	0~0.075; ~0.374; ~1.9; ~6.9; ~20.7; ~68.9		0~206.8 0~413.7
absolute pressure (A) ranges		bar, A	0~0.374; ~1.9; ~6.9; ~20.7; ~68.9		
overload pressure for G & A pressures		bar	140		420 520
output (o/p)	diff. capacitive (standard)	pF	90 ± 20 if the high pressure is at "H" side, 300 ± 40 if the high pressure is at "L" side.		
	conditioned o/p signal*		4~20 mA, 0.5~4.5 V ratiometric, 0~5 Vdc, or 0~10 Vdc		
ZERO offset		pF	120 ± 40 for pressure ranges 0~1,868 mbar; 140 ± 40 for other pressure ranges		
accuracy**		%fs	0.1 for conditioned output only 0.2 for pressure ranges 0~1,868 mbar; 0.5 for diff. pressure range 0~15 mbar 0.25 for other pressure ranges		
ZERO variation caused by system pressure***		%fs	0.5 for pressure ranges 0~75 mbar 0.25 for other pressure ranges		
SPAN variation caused by system pressure***		%fs	-1.5 ± 0.25 for pressure ranges 0~75 mbar -1 ± 0.25 for other pressure ranges		
long-terms stability		%fs/year	± 0.25		
operating temperature range		°C	-30 ~ +90		
storage temperature range		°C	-40 ~ +100		
temperature coefficient of ZERO		%fs/°C	± 0.0045		
temperature coefficient of SPAN		%fs/°C	± 0.009		
insulation resistance		M	> 500 @ 100 Vdc		
supply voltage (for conditioned o/p)		Vdc	24		
temperature sensor			Pt 100 (standard), Pt 500, Pt 1000, thermistor, or thermal diode (P/N=EN4148)		
electrical interface		wires	5 colored PVC insulated wires of diff. capacitive signal and the signal from temp. sensor 2 colored PVC insulated wires of 4~20 mA current loop 3 colored PVC insulated wires of voltage output		
materials	diaphragm		316L SS (standard), option: Hastelloy-C, Tantalum or Monel		
	housing		316L SS (standard), option: Hastelloy-C, Tantalum or Monel		
option: flanges			304 SS (standard), option: 316 SS, Hastelloy-C, Tantalum or Monel		

The listed specifications are subject to change without prior notice.

Reference of test conditions: temperature = 25°C, humidity = 60 %RH. All the tests are performed on 315M module of standard output signal.

*: All the listed specifications are applied only to the standard output signals of 315M modules, i.e. the diff. capacitive signal & signal from temperature sensor.

** : Other accuracies are available on request.

***: The variations of ZERO and SPAN can be eliminated when the electronics attached to the 315M is adjusted to the given system pressure.

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Ordering code of 315M modules:

example: 315M(DP) - V - 140 - A - 0.2 - t1 - 12 - 21 - Cxxxx

pressure types
315M(vDP) for very low differential pressure (DP) applications
315M(DP) for DP applications
315M(hDP) for DP applications of high system pressure
315M(AP) for absolute pressure applications
315M(GP) for gauge (relative) pressure applications

pressure ranges & types vs system/overload pressure
I = 0~15 mbarD vs 70 bar
II = 0~75 mbarD or G vs 140 bar
III = 0~374 mbarD, G, or A vs 140 bar or 312 bar
IV = 0~1,868 mbarD, G, or A vs 140 bar or 312 bar
V = 0~6.9 barD, G, or A vs 140 bar or 312 bar
VI = 0~20.7 barD, G, or A vs 140 bar or 312 bar
VII = 0~68.9 barD, G, or A vs 140 bar or 312 bar
VIII = 0~206.8 barG vs 420 bar
IX = 0~413.7 barG vs 520 bar

system or overload pressure
70 = 70 bar for DP range I
140 = 140 bar for DP ranges II~VI, G ranges II~VI, or A ranges III~VII
312 = 312 bar for DP ranges III~VII
420 = 420 bar for G range VIII
520 = 520 bar for G range IX

output signal
A = diff. capacitive signal & signal from temperature sensor (standard)
C = 4~20 mA
V1 = 0.5~4.5 Vdc ratiometric output
V2 = 0~5 Vdc
V3 = 0~10 Vdc

accuracy	
0.5 = 0.5 %fs for range I	0.25 = 0.25 %fs for other ranges
0.2 = 0.2 %fs for range II - IV	0.1 = 0.1 %fs for conditioned o/p only

temperature sensor	
t1 = Pt 100 (standard)	t2 = Pt 500
t3 = Pt 1000	t4 = thermistor
t5=thermal diode (P/N=EN4148)	

materials (flanges & exhaust valve available on request as optional parts)	
diaphragm material	flanges & exhaust valve materials
12 = 316L SS (standard)	21 = 304 SS (standard)
13 = Hastelloy-C	22 = 316 SS
14 = Tantalum	23 = Hastelloy-C
15 = Monel	24 = Tantalum
	25 = Monel

Cxxxx: This code starts with a "C" and is followed by 4 digits. This is a customized code given by the customer who will indicate on his order sheet his desired specification for the ordered 315M modules. The customer can use the 4 digits to indicate the month and date when he requests this customized specification. The BCM sales team members will confirm this customized specification on BCM's <<Order Confirmation>> document.

ordering code explanation: 315M(DP)-V-140-A-0.2-t1-12-21-C0116

315M module for DP application with measuring range = 0~6.9 bar (range V), the system and differential overload pressure = 140 bar, the output signal = diff. capacitive signal & signal from temp. sensor, the measuring accuracy = 0.2 %fso, and the temp. sensor = Pt100. This 315M will be mounted into a pair of flanges. The diaphragm material is 316L SS. The material for flanges and valve is 304 SS. The customer has indicated on his order sheet his desired specification on January 16. And this customized specification has to be confirmed by BCM sales team member on our <<Order Confirmation>> document.



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