



# ***Flowserve Solenoid Valves***

*Namur, Remote and Banjo Mounted Designs for Precision Control*



***Experience In Motion***



## Flowserve® – Solutions to Keep You Flowing

Flowserve is one of the world's leading providers of fluid motion and control products and services. Globally, we produce engineered and industrial pumps, valves, seals, systems and automation equipment, and provide a range of related flow management services. Our solutions move even the most volatile and corrosive fluids safely and securely through some of the most extreme temperatures, terrain and challenging operating environments on the planet. Flowserve products and services are specified for use in a vast range of industries, including oil and gas, chemical, power generation and various general industries.



## Flowserve Solenoid Valves

Flowserve offers a comprehensive suite of highly engineered valves, actuators, switchboxes, positioners and solenoid solutions that meet your exacting needs. Our solenoid valves allow reliable operation of pneumatically controlled valves and provide critical plant control in a variety of automated process industry applications. Solenoid valves are an essential part of any pneumatic actuated or control valve package offering remote operation, improved reliability and longer service life.

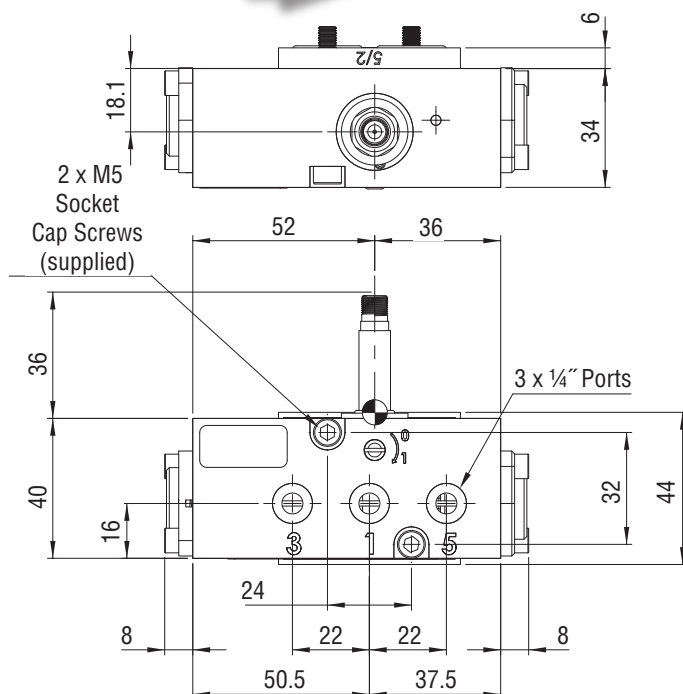
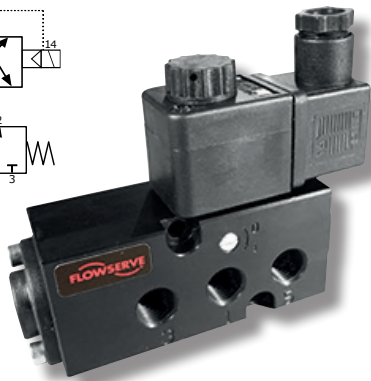
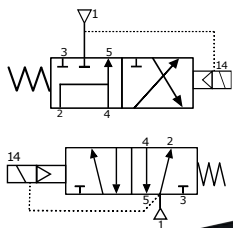
Available in a range of design configurations to meet specific application needs, Flowserve solenoid valves can be Namur (Direct) mounted onto compact actuators, Remote mounted for control valves and panels or screwed directly to the actuator air supply using a Banjo mounted design. Combined with a suitable coil to meet voltage and safety requirements, Flowserve solenoid valves ensure safe, reliable and precise actuator operation.

## Key Benefits

- Reduced costs at the asset level through prolonged service life delivered by cost competitive Flowserve package solutions.
- Improved process integrity and safer working environment when used in combination with a comprehensive range of ATEX, IECEx, NEMA, FM and CSA certified solenoid coils. NEPSI and GOST approved products are available on request.
- Simplified and convenient procurement through availability of a comprehensive suite of Flowserve custom-engineered valves, actuators, switch boxes, positioners and solenoid valves.



# ARF Series, 1/4", 3/2 or 5/2 way NAMUR Mounted Solenoid Valve



## Description

Solenoid valve designed for direct mounting onto 1/4 turn pneumatically operated valve actuators meeting 'NAMUR' standard fixing dimensions.

Hazardous area approved pilot operators, Ex nA, Ex mb, Ex db mb and Ex ia, NEMA 4X, NEMA 4X, 7C, 7D & 9 are available with various international approvals – ATEX, IECEx, FM, CSA.

## Features

- Screwdriver override as standard
- Cv = 1.0
- Change-over plate that allows the valve to be converted from 3/2 to 5/2 function quickly and easily for spring return and double acting actuators
- In the 3/2 position, a feature of the valve allows a proportion of clean air exhausting from the actuator to be fed back into the spring chamber, Integrated Exhaust to Spring (ETS)

## Valve Specifications

Port Connection Size	1/4"
Working Pressure	3 to 10 bar
Cv Factor	1.0
Flow Rate (at 6 bar with 1 bar pressure drop)	1000 l/min
Maximum Ambient Temperature	+80°C
Minimum Working Temperature	-20 °C

## Materials of Construction

Body	Black Anodised Aluminium
Spool	Hard Anodised Aluminium PTFE Impregnated
Spacers	Glass Filled Acetal
Seals	Nitrile
Spring	Steel Alloy
Mounting Screws	Stainless Steel
Change Over Plate and End Caps	Nylon 66 30% Glass Filled
Gasket	Nitrile

## Valve

A	R	F		5	S	3	1	-
Port		G	2					
		NPT	P					

## Coil

				0		1
				Plug	9	PG9
					F	Flying Lead
		B	24 V DC			
		R	24 V AC 50/60 Hz			
		T	110 V AC 50/60 Hz			
		L	**230 V AC 50/60 Hz			

## Example Valve and Coil Selection

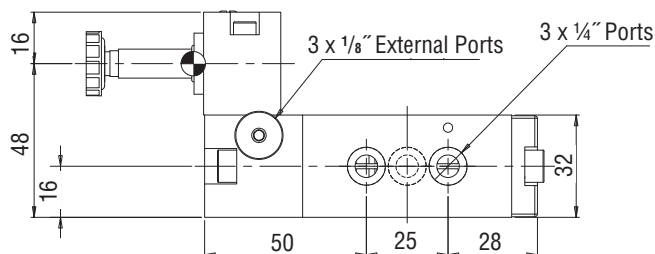
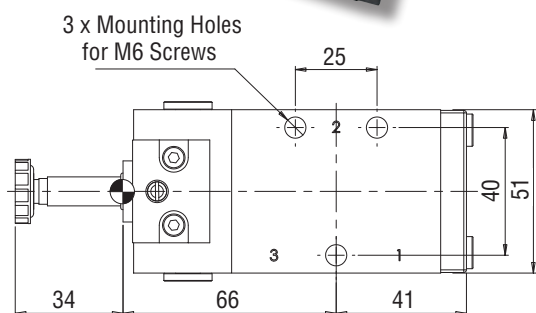
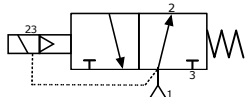
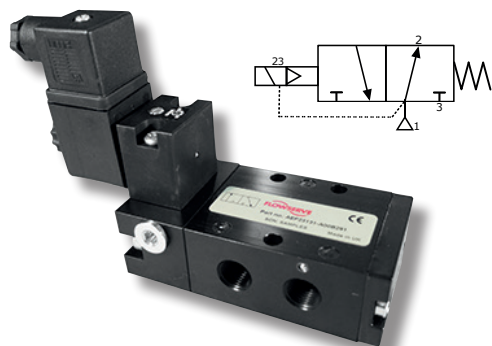
**ARFP5S3A-X0DB0F1**

Namur Valve  
NPT 1/4  
NEMA 4X, 7C, 7D & 9 coil  
FM + CSA approved  
24 V DC  
Flying lead (24", standard)

Coil Type	A	0	0	Safe Area	None
	S	0	B	Ex ia	ATEX + IECEx
	T	0	A	Ex db mb	ATEX
	U	0	A	Ex nA	ATEX
	V	0	A	*Ex mb	ATEX
	W	0	0	*NEMA 4X (Safe area)	None
Note	X	0	D	*NEMA 4X, 7C, 7D & 9	FM + CSA

\* Flying leads as standard (see 'COIL DETAILS')  
\*\* NEMA 4X, 7C, 7D and 9, frequency = 60 Hz

# AEF Series, 1/4", 3/2 way Remote Mounted Solenoid Valve



## Description

Aluminium 5 port 3 or 2 position, pilot operated solenoid valve. Hazardous area approved pilot operators, Ex nA, Ex mb, Ex db mb and Ex ia, NEMA 4X, NEMA 4X, 7C, 7D & 9 are available with various international approvals – ATEX, IECEx, FM, CSA.

## Features

- External or internal pilot air connection
- Single coil spring return function or double coil stay put function
- Convenient fixing holes to enable bracket mounting
- Pilot exhaust dust caps fitted as standard
- Interchangeable CNOMO interface coil units, including hazardous area options and screw driver manual override as standard.
- SIL2 on energising, SIL3 on de-energising when used in 3/2 mode

## Valve Specifications

Port Connection Size	1/4"
Working Pressure Internal Pilot Version	3 to 10 bar
Working Pressure External Pilot Version	3 to 10 bar
Cv Factor	1.2
Flow Rate (at 6 bar with 1 bar pressure drop)	1246 l/min
Maximum Ambient Temperature	+80 °C
Minimum Working Temperature	-20 °C

## Materials of Construction

Body and End Caps	Black Anodised Aluminium
Spool	Hard Anodised Aluminium PTFE Impregnated
Jet	Brass
Spacers	Glass Filled Acetal
Seals	Nitrile (Alternative Seals Available)
Spring	Steel Alloy

## Valve

A	E	F		3	1	3	1	-
Port		G	2					
		NPT	P					

## Coil

-					2		1
					Plug	9	PG9
						F	Flying Lead
				B	24 V DC		
				R	24 V AC 50/60 Hz		
				T	110 V AC 50/60 Hz		
				L	**230 V AC 50/60 Hz		
					Voltage		

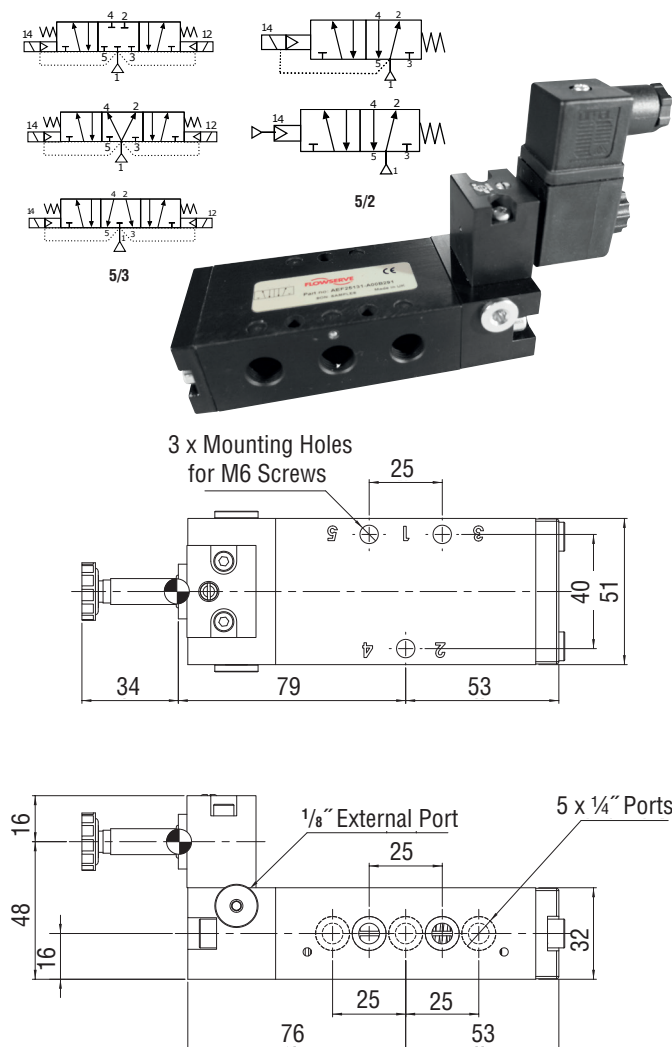
## Example Valve and Coil Selection

**AEF2313 1-X0DB2F1**

Remote 3/2 Way Valve  
G 1/4  
NEMA 4X, 7C, 7D & 9 coil  
FM + CSA approved  
24 V DC  
Flying lead (24", standard)

Coil Type	A	0	0	Safe Area	None	Approval
	S	0	B	Ex ia	ATEX + IECEx	
	T	0	A	Ex db mb	ATEX	
	U	0	A	Ex nA	ATEX	
	V	0	A	*Ex mb	ATEX	
	W	0	0	*NEMA 4X (Safe area)	None	
	X	0	D	*NEMA 4X, 7C, 7D & 9	FM + CSA	
Note		* Flying leads as standard (see 'COIL DETAILS')				
		** NEMA 4X, 7C, 7D and 9, frequency = 60 Hz				

# AEF Series, 1/4", 5/2 or 5/3 way Remote Mounted Solenoid Valve



## Description

Aluminium 5 port 3 or 2 position, pilot operated solenoid valve. Hazardous area approved pilot operators, Ex nA, Ex mb, Ex db mb and Ex ia, NEMA 4X, NEMA 4X, 7C, 7D & 9 are available with various international approvals – ATEX, IECEx, FM, CSA.

## Features

- External or internal pilot air connection
- Single coil spring return function or double coil stay put function
- Convenient fixing holes to enable bracket mounting
- Pilot exhaust dust caps fitted as standard
- Interchangeable CNOMO interface coil units, including hazardous area options and screw driver manual override as standard.
- SIL2 on energising, SIL3 on de-energising when used in 3/2 mode

## Valve Specifications

Port Connection Size	1/4"
Working Pressure Internal Pilot Version	3 to 10 bar
Working Pressure External Pilot Version	3 to 10 bar
Minimum External Pilot Pressure	3 bar
Cv Factor	1.2
Flow Rate (at 6 bar with 1 bar pressure drop)	1246 l/min
Maximum Ambient Temperature	+80 °C
Minimum Working Temperature	-20 °C

## Materials of Construction

Body and End Caps	Black Anodised Aluminium
Spool	Hard Anodised Aluminium PTFE Impregnated
Jet	Brass
Spacers	Glass Filled Acetal
Seals	Nitrile (Alternative Seals Available)
Spring	Steel Alloy

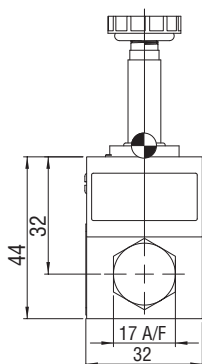
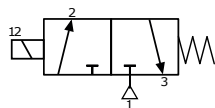
## Valve

A	E	F					1	-					2		1
A	Includes coil(s)		Assy												
V	Air Pilot Only														
Port	G NPT		2	P											
Internal Pilot Valve Type	5/2			5											
	5/3 - Mid closed			6											
	5/3 - Mid open			7											
	5/3 - Mid pressurised			8											
	5/2			E											
External Pilot Valve Type	5/3 - Mid closed			F											
	5/3 - Mid open			G											
	5/3 - Mid pressurised			H											
Operator 1	Solenoid			1											
	Air Pilot Return			5											
Operator 2	Solenoid			1											
	Spring Return			3											
	Air Pilot Return			5											

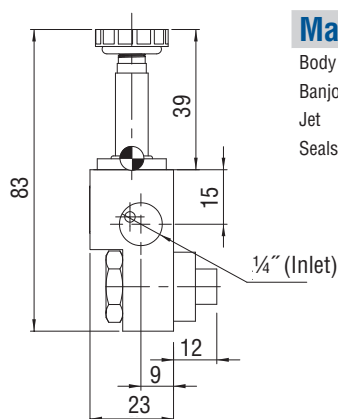
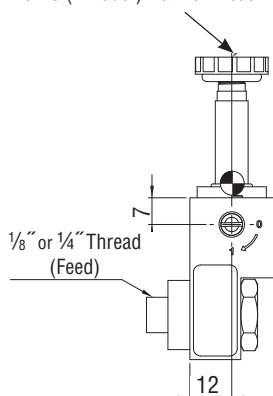
## Coil

A	0	0													
A	0	0													
S	0	B													
T	0	A													
U	0	A													
V	0	A													
W	0	0													
X	0	D													
Note		* Flying leads as standard (see 'COIL DETAILS') ** NEMA 4X, 7C, 7D and 9, frequency = 60 Hz													

## ADF Series, 1/8" & 1/4", 3/2 way Banjo Mounted Solenoid Valve



Port 3 (Exhaust) via M5 thread in top of Stem



### Description

Aluminium 3 port 2 position direct acting, compact solenoid valve designed for direct banjo bolt mounting onto 1/4 turn pneumatically operated valve actuators.

### Features

- Convenient single 1/8" or 1/4" Banjo bolt connection
- Compact design to suit small actuators
- 1/4" BSP mains air connection and M5 exhaust
- Screwdriver manual override standard

### Valve Specifications

Inlet Port Connection Size	1/4"
Outlet Port Connection Size	1/8" or 1/4" Banjo Bolt
Exhaust Port Connection Size	M5
Working Pressure	0 to 10 bar
Cv Factor	0.06
Flow Rate (at 6 bar with 1 bar pressure drop)	62 l/min
Maximum Ambient Temperature	+80 °C
Minimum Working Temperature	-20 °C

### Materials of Construction

Body	Black Anodised Aluminium
Banjo Bolt	Brass Nickel Plated
Jet	Black Anodised Aluminium
Seals	Nitrile & Viton

### Valve

A	D	F		3	S	3	1	-
		G	2					
		NPT	P					
	1/8"	G	1					
	1/4"	NPT	N					

### Coil

					0		1
					Plug	9	PG9
						F	Flying Lead
					B	24 V DC	
					R	24 V AC 50/60 Hz	
					T	110 V AC 50/60 Hz	
					L	**230 V AC 50/60 Hz	

### Example Valve and Coil Selection

**ADF23S31-X0YB0F1**

Banjo 3/2 Way Valve  
G 1/4  
NEMA 4X, 7C, 7D & 9 coil  
CSA approved  
24 V DC  
Flying lead (24", standard)

Coil Type	A	0	0	Safe Area	None
S	0	B		Ex ia	ATEX + IECEx
T	0	A		Ex db mb	ATEX
U	0	A		Ex nA	ATEX
V	0	A		*Ex mb	ATEX
W	0	0		*NEMA 4X (Safe area)	None
X	0	D		*NEMA 4X, 7C, 7D & 9	FM + CSA

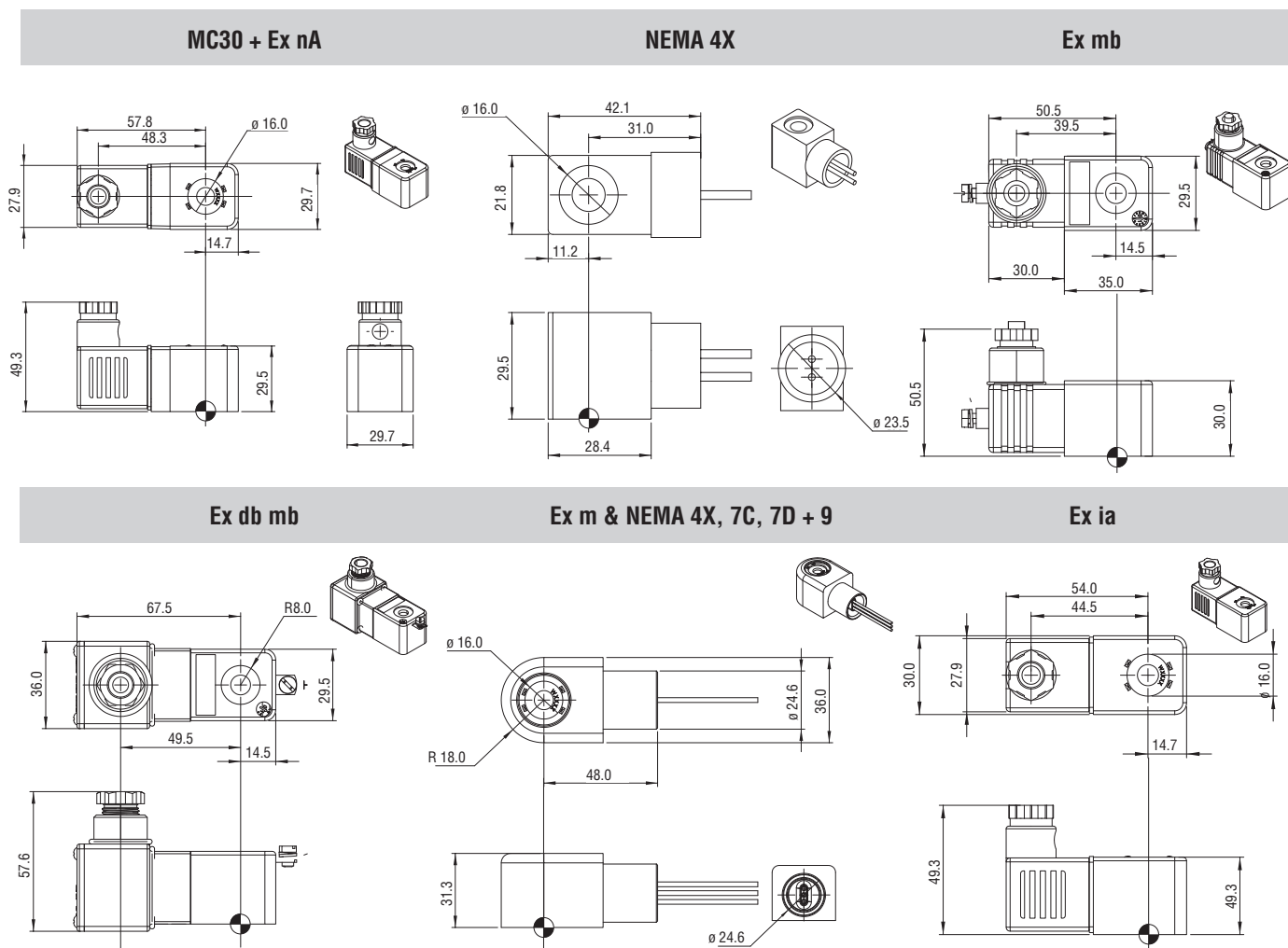
Note \* Flying leads as standard (see 'COIL DETAILS')  
\*\* NEMA 4X, 7C, 7D and 9, frequency = 60 Hz

# Coils

## COIL DETAILS

Coil Type	MC30	NEMA 4X	Ex nA IIC T5 Gc	Ex mb T4, T5	Ex db mb IIC T4, T5	Ex m T4	Ex ia IIC T6 Ga
Area Class	Safe Area	Safe Area	ATEX Zone 2	ATEX Zones 1 & 2	ATEX Zones 1 & 2	FM/CSA CL1 Zone 1	IECEX/ATEX Zone 0,1 & 2
Area Category	N/A	N/A	Cat 3 GD	Cat 2 GD	Cat 2 GD	CL1; Div 1 & 2 Gr A,B,C,D	Cat 1 GD
Ingress Protection	IP65	NEMA 4X	IP65	IP65	IP66	Nema 4, 4X,7C,7D & 9	IP65
Power Consumption DC	2.0	4.8	2.1	3.0 (T5) 3.8 (T4)	3.0 (T5) 3.8 (T4)	4.5	21.6-28.0 volts DC min 37mA switch on current
Power Consumption AC V/A	5.0	8.5	4.0 (50 Hz) 3.1 (60 Hz)	3.2 (50Hz) (T5) 2.7 (60Hz) (T5)	3.2 (50Hz) (T5) 2.7 (60Hz) (T5)	6.9	
Cable Entry	PG.9	½" NPT with 24" Flying Lead	PG.9	Flying Lead (3m)	PG.9	½" NPT with 24" Flying Lead	PG.9
Ambient Temperature	-20 to +50 °C	-20 to +60 °C	-20 to +50 °C	-20 to +65 °C	-50 to +50 °C	-20 to +60 °C	-40 to +50 °C
Magnetic Wire Class	H	H	H	H	H	H	H

## COIL DIMENSIONS (mm)







## Your Contact:



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