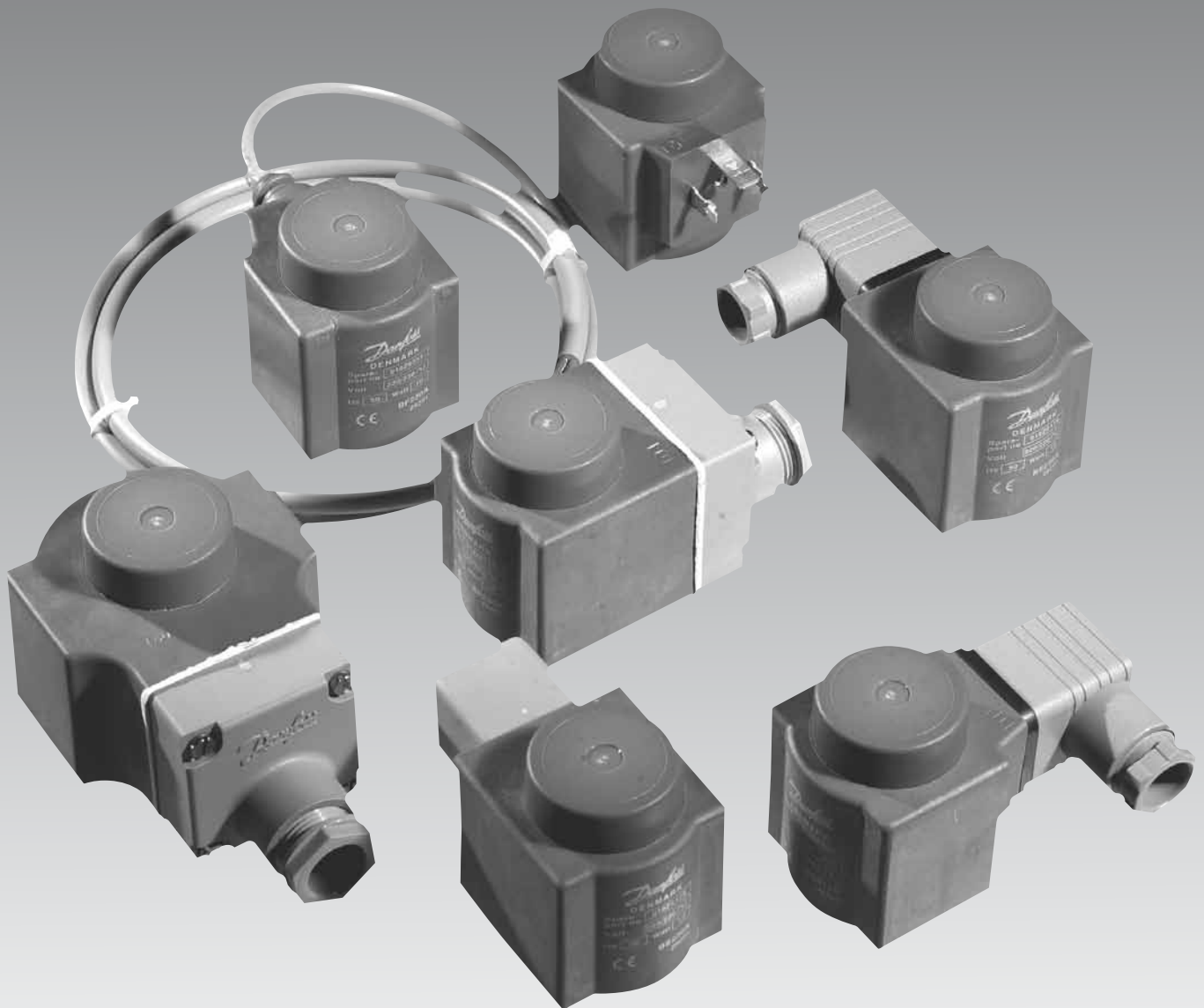
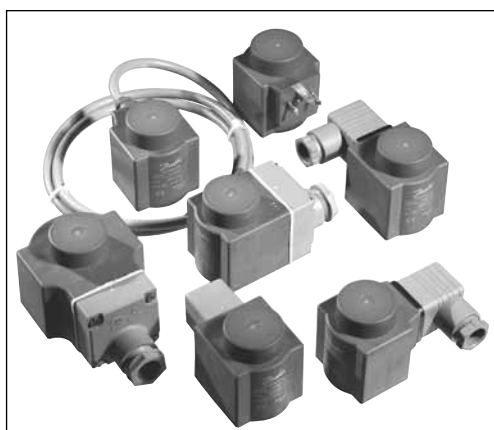


Technical leaflet

# Coils for solenoid valves

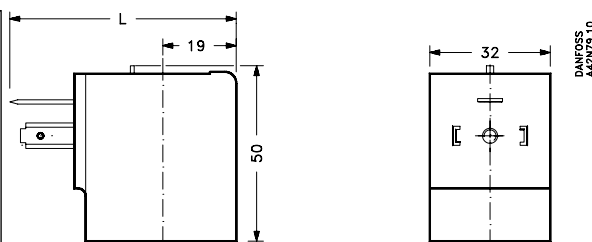



**B and A coils**

- Encapsulated coils with long operating life, even under extreme conditions
- Standard coils for a.c. or d.c.
- Standard coils from 12 V to 400 V, 50, 60 or 50/60 Hz
- Standard coils available with 3 core cable, Danfoss terminal box or for DIN plugs
- Coils can be fitted without use of tools
- Coils can only be removed with use of tools

**Contents**

Coil type	Enclosure	Power consumption		Page
		a.c.	d.c.	
<b>B-series, 13.5 mm system</b>				
BA	IP 00-IP 65	9 W	15 W	3
BD	IP 00-IP 65	15 W	-	3
BB	IP 00-IP 65	10 W	18 W	4
BE/BF	IP 67	10 W	18 W	5
BG	IP 67	12 W	20 W	6
BN ( hum-free)	IP 67	20 W	-	7
BO ( EEx mII T4)	IP 67	10 W	10 W	8
BP ( Ex mbII T4)	IP 67	12 W	10.5 W	9
<b>A-series, 9 mm system</b>				
AB	IP 00-IP 65	4.5 W	5 W	10
AC	IP 00-IP 65	7 W	10 W	10
AK	IP 00-IP 65	-	3 W	11
AL	IP 00-IP 65	4 W	-	11
AM	IP 00-IP 65	7.5 W	9.5 W	11
<b>Power Connector for coil type AB and AC</b>	IP 65			12
<b>Power connector for coil type AK, AL, AM, BA, BD, BB</b>	IP 65			13
<b>Power (LED + Varistor) Indicator Connector for coil type AK, AL, AM, BA, BD, BB</b>	IP 65			14
<b>Power (LED + Varistor) Indicator Connector for coil type AB and AC</b>	IP 65			15
<b>Universal electronic multi-timer Type ET 20 M</b>	IP 00-IP 65			16

**BA/BD Coils**


Weight 0.16 kg	L [mm]
Without cable plug	54
With protective cap	71
With cable plug	79

**Technical data**

Design	In accordance with VDE 0580	
Voltage tolerance	220 and 380 V a.c. coils: +10%, -15%. 230/400 V a.c. coils: +6%, -10%. Other a.c. coils with NC valve: +10%, -15% Other a.c. coils with NO valve and all d.c. coils: ± 10%	
Power consumption, cut in	BA	39 VA a.c. coils only
	BD	54 VA
Insulation of coil windings	Class H according to IEC 85	
Connection	Spade connector in accordance with DIN 43650 form A	
Enclosure, IEC 529	IP00 with spade connec. IP 20 with protective cap, IP 65 with cable plug	
Ambient temperature	BA	Max. +40°C
	BD	Max. +50°C
Duty rating	Continuous	

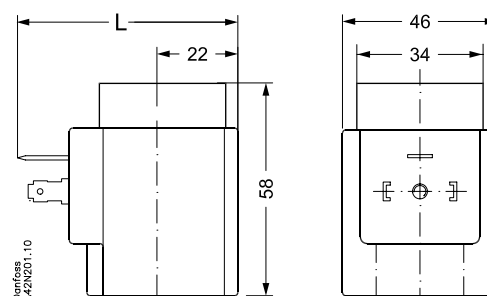
**Ordering BA/BD Coils**

Compatibility for Valve type	Coil type	Power consumption holding	Coil type	Supply voltage	Frequency Hz	Code no.
See data sheets for valves	BA	9 W 19VA	BA024A	24 a.c.	50	<b>042N7508</b>
			BA048A	48 a.c.		<b>042N7510</b>
			BA115A	115 a.c.		<b>042N7512</b>
			BA230A	220-230 a.c.		<b>042N7501</b>
			BA240A	240 a.c.		<b>042N7502</b>
			BA380A	380-400 a.c.		<b>042N7504</b>
	BD	15 W 29 VA	BA024B	24 a.c.	60	<b>042N7520</b>
			BA115B	115 a.c.		<b>042N7522</b>
			BA220B	220 a.c.		<b>042N7523</b>
			BA012D	12 d.c.	d.c.	<b>042N7550</b>
			BA024D	24 d.c.		<b>042N7551</b>
			BD024A	24 a.c.		50
BD110A	110 a.c.	<b>042N7599</b>				
BD230A	230 a.c.	<b>042N7591</b>				

Contact Danfoss for delivery of coils for other voltages

Symbol	Description	Enclosure	Code no.
	Protective cap (pack of 100 pcs.)	IP 20	<b>018Z0282</b>
	Cable plug according to DIN 43650-A PG 11	IP 65	<b>042N0156<sup>1)</sup></b>

1) Ordering see page 13

**Coils type BB-Clip on version**


Weight 0.24 kg	L [mm]
Without cable plug	62
With protective cap	77
With cable plug	85

**Technical data**

Design	In accordance with VDE 0580
Voltage tolerance	220 and 380 V a.c. coils: +10%, -15%. 230/400 V a.c. coils: +6%, -10%. Other a.c. coils with NC valve: +10%, -15% Other a.c. coils with NO valve and all d.c. coils: ± 10%
Power consumption, cut in	44 VA a.c. coils only
Insulation of coil windings	Class H according to IEC 85
Connection	Spade connector in accordance with DIN 43650 form A
Enclosure, IEC 529	IP 00 with spade connec. IP 20 with protective cap, IP 65 with cable plug
Ambient temperature	Max. +50°C /+80°C - see table below for details
Duty rating	Continuous

**Ordering BB Coils**

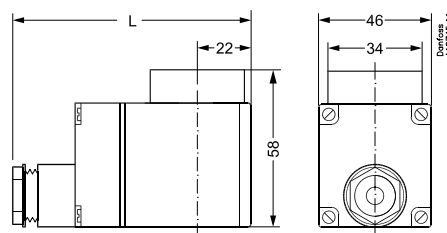
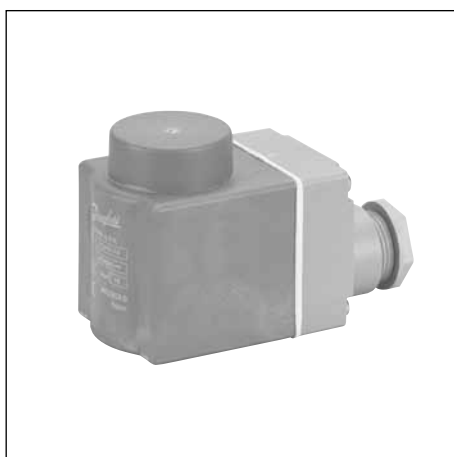
Compatibility for Valve type	Power consumption holding	Coil type	Supply voltage	Frequency Hz	Ambient temperature [°C]	Code no.	
All 2/2-way valves	10 W 21 VA	BB024AS	24 a.c.	50	80	<b>018F7358</b>	
		BB115AS	115 a.c.			<b>018F7361</b>	
		BB230AS	220-230 a.c.			<b>018F7351</b>	
		BB240AS	240 a.c.			<b>018F7352</b>	
		BB380AS	380-400 a.c.			<b>018F7353</b>	
		BB024BS	24 a.c.			60	<b>018F7365</b>
	18 W	BB110CS	110 a.c.	50/60	50	<b>018F7360</b>	
		BB230CS	220-230 a.c.			<b>018F7363</b>	
		BB012DS	12 d.c.			d.c.	<b>018F7396</b>
		BB024DS	24 d.c.				<b>018F7397</b>

Contact Danfoss for delivery of coils for other voltages

Symbol	Description	Enclosure	Code no.
	Protective cap (pack of 100 pcs.)	IP 20	<b>018Z0282</b>
	Cable plug according to DIN 43650-A PG 11	IP 65	<b>042N0156<sup>1)</sup></b>

1) Ordering see page 13

Description	Application	Code no.
O-ring ( pack of 10 pcs.)	Sealing of clip-on coil	<b>018F0094</b>

**Coils type BE/BF-Clip on version**


Weight 0.30 kg	L [mm]
With terminal box	94
With 1 m cable	65

**Technical data**

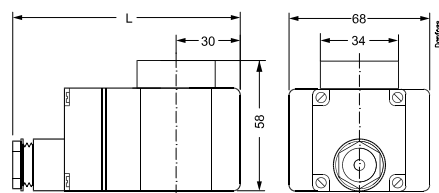
Design	In accordance with VDE 0580
Voltage tolerance	220 and 380 V a.c. coils: +10%, -15%. 230/400 V a.c. coils: +6%, -10%. Other a.c. coils with NC valve: +10%, -15% Other a.c. coils with NO valve and all d.c. coils: ± 10%
Power consumption, cut in	44 VA a.c. coils only
Insulation of coil windings	Class H according to IEC 85
Connection	BE - coils : Terminal box, Pg 13.5; BF - coils : 1 m 3-core flying lead
Enclosure, IEC 529	IP 67
Ambient temperature	Max. +50°C /+80°C - see table below for details
Duty rating	Continuous

**Ordering BE/BF Coils**

Compatibility for Valve type	Power consumption holding	Coil type	Supply voltage	Frequency Hz	Ambient temperature [°C]	Code no.	
						BE - coils With terminal box	BF - coils With cable
All B - 2/2-way valves.	10 W 21 VA	BE024AS	24 a.c.	50	80	<b>018F6707</b>	<b>018F6257</b>
		BE048AS	48 a.c.			<b>018F6709</b>	<b>018F6259</b>
		BE115AS	115 a.c.			<b>018F6711</b>	<b>018F6261</b>
		BE230AS	220-230 a.c.			<b>018F6701</b>	<b>018F6251</b>
		BE240AS	240 a.c.			<b>018F6702</b>	<b>018F6252</b>
		BE380AS	380-400 a.c.			<b>018F6703</b>	<b>018F6253</b>
		BE024BS	24 a.c.			<b>018F6715</b>	<b>018F6265</b>
	60	BE115BS	115 a.c.	<b>018F6710</b>	<b>018F6260</b>		
		BE220BS	220 a.c.	<b>018F6714</b>	<b>018F6264</b>		
		BE110CS	110 a.c.	<b>018F6730</b>	<b>018F6280</b>		
	18 W	50/60	BE230CS	230 a.c.	<b>018F6732</b>	<b>018F6282</b>	
			BE012DS	12 d.c.	<b>018F6756</b>		
		d.c.	BE024DS	24 d.c.	<b>018F6757</b>		

Contact Danfoss for delivery of coils for other voltages

	Application	Code no.
O-ring ( pack of 10 pcs.)	Sealing of clip-on coil	<b>018F0094</b>
Danfoss terminal box for type BN, BE and BG coils	IP 67 Enclosure	<b>018Z0081</b>
Danfoss terminal box with LED indication for type BN, BE and BG coils	48-220 V d.c. 24-250 V a.c., 50/60 Hz	<b>018Z0089</b>

**Coils type BG-Clip on version**


Weight 0.50 kg	L [mm]
With terminal box	112

**Technical data**

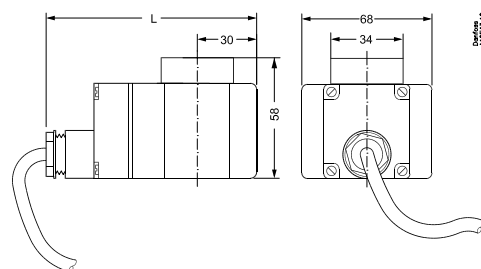
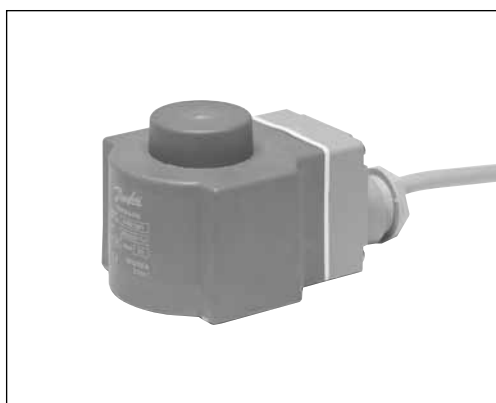
Design	In accordance with VDE 0580
Voltage tolerance	220 and 380 V a.c. coils: +10%, -15%. 230/400 V a.c. coils: +6%, -10%. Other a.c. coils with NC valve: +10%, -15% Other a.c. coils with NO valve and all d.c. coils: ± 10%
Power consumption, cut in	55 VA a.c. coils only
Insulation of coil windings	Class H according to IEC 85
Connection	Terminal box; Pg 13.5
Enclosure, IEC 529	IP 67
Ambient temperature	Max. +80°C
Duty rating	Continuous

**Ordering BG Coils**

Compatibility for Valve type	Power consumption holding	Coil type	Supply voltage	Frequency Hz	Code no.
All 2/2-way valves.	12 W 26 VA	BG024AS	24 a.c.	50	<b>018F6807</b>
		BG110AS	110 a.c.		<b>018F6811</b>
		BG230AS	220-230 a.c.		<b>018F6801</b>
		BG240AS	240 a.c.		<b>018F6802</b>
		BG380AS	380-400 a.c.		<b>018F6803</b>
		BG024BS	24 a.c.		60
	BG110BS	110 a.c.	<b>018F6813</b>		
	BG220BS	220 a.c.	<b>018F6814</b>		
	20 W	BG012DS	12 d.c.	d.c.	<b>018F6856</b>
		BG024DS	24 d.c.		<b>018F6857</b>

Contact Danfoss for delivery of coils for other voltages

Description	Application	Code no.
O-ring ( pack of 10 pcs.)	Sealing of clip-on coil	<b>018F0094</b>
Danfoss terminal box for type BN and BG coils	IP 67 Enclosure	<b>018Z0081</b>
Danfoss terminal box with LED indication	48-220 V d.c. 24-250 V a.c., 50/60 Hz	<b>018Z0089</b>

**Coils type BN-Clip on version  
Hum-free coil**


Weight 0.60 kg	L [mm]
With 1 m cable	112

**Technical data**

Design	In accordance with VDE 0580
Voltage tolerance	220 and 380 V a.c. coils: +10%, -15%. 230/400 V a.c. coils: +6%, -10%. Other a.c. coils with NC valve: +10%, -15% Other a.c. coils with NO valve and all d.c. coils: $\pm 10\%$
Power consumption, cut in	24 VA
Insulation of coil windings	Class H according to IEC 85
Connection	1 m 3-core flying lead ; Pg 13.5
Enclosure, IEC 529	IP 67
Ambient temperature	Max. +50°C
Duty rating	Continuous

**Ordering BN Coils**

Compatibility for Valve type	Power consumption holding	Coil type	Supply voltage	Frequency Hz	Code no.
All 2/2-way valves.	20 W 26 VA	BN230CS	220-230 a.c.	50/60	<b>018F7301</b>
O-rings ( pack of 10 pcs.)		Sealing of clip-on coil			<b>018F0094</b>

**Coils type BO  
Eex m II T4**


- For explosion-risk environments, such as where flammable liquids and gases are produced, transported or tapped
- Approvals for use in Zone 1 according to Directive 94/9/EC (ATEX 100A) EN50014 and EN50028
- Medium temperature: Up to +90°C
- Ambient temperature: Up to +40°C
- IP 67 version with 5 m 3-core flying lead
- Seal kit as a.c.cessory for extremely wet and aggressive environments (please contact Danfoss)

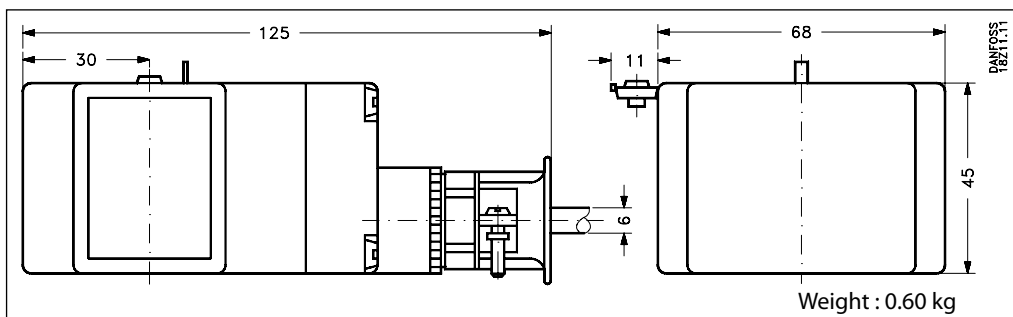
**Technical data**

Voltage tolerance	± 10%
Insulation of coil windings	Class H according to IEC 85
Connection	5 m 3-core flying lead
Enclosure, IEC 529	IP 67
Ambient temperature	-40°C → 60°C
Duty rating	Continuous
Media temperature	Max. +90°C

**Ordering BO Coils**
**Conformity certification EX DEMKO 99ATEX 128981X**

Compatibility for Valve type	Power consumption holding	Coil type	Supply voltage	Frequency Hz	Code no.
All B-series valves	10 W 21 VA	BO024C	24 a.c.	50/60	<b>018Z6595</b>
		BO048C	48 a.c.		<b>018Z6594</b>
		BO110C	110 a.c.		<b>018Z6593</b>
		BO230C	230 a.c.		<b>018Z6592</b>
		BO240C	240 a.c.		<b>018Z6591</b>
	10 W	BO024D	24 d.c.	d.c.	<b>018Z6596</b>

	Description	Application	Code no.
	Seal kit	Wet environment	<b>018Z0090</b>

**Dimensions and weight**




**Coils type BP  
EEx m II T4**


- The coils are suitable for use in installations where flammable liquids and gases are produced, transported or tapped
- Approved for use in Zone 1 according to Directive 94/9/EC (ATEX 100A)  
EN60079 - 0 : 2006  
EN60079 - 18 : 2004  
EN50281 - 1 - 1 : 1998
- Grade of enclosure IP 67
- Supplied with 3 m moulded-in 3-core cable

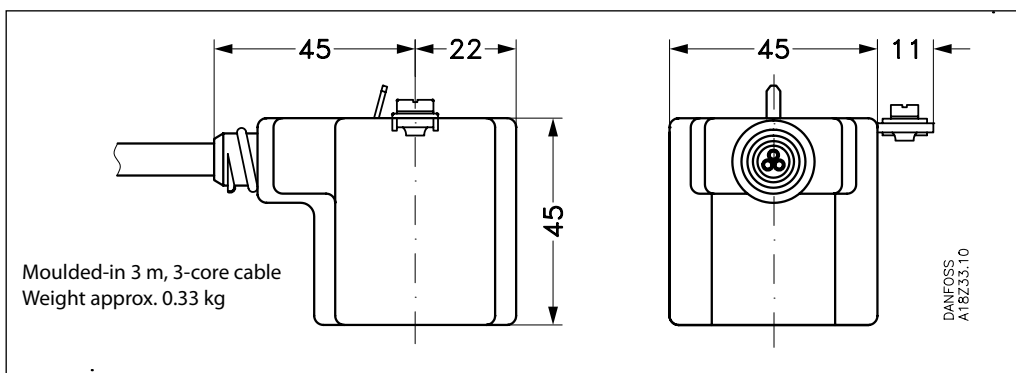
**Technical data**

Voltage tolerance	± 10%
Insulation of coil windings	Class H according to IEC 85
Connection	3 m 3-core cable
Enclosure, IEC 529	IP 67
Ambient temperature	Max. -40°C → +60°C
Duty rating	Continuous
Media temperature	Max. +90°C

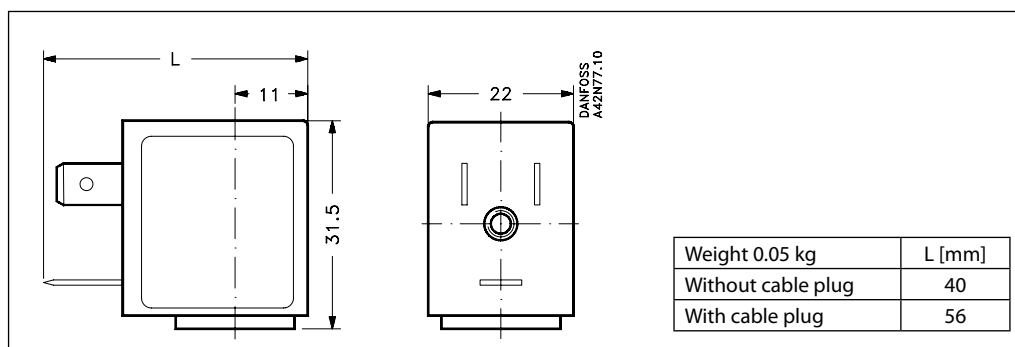
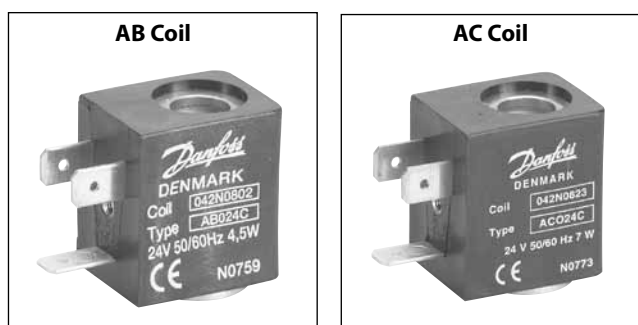
**Ordering BP Coils**
**Conformity certification EX DEMKO 99ATEX 125688X**

Compatibility for Valve type	Power consumption holding	Coil type	Supply voltage	Connection	Code no.
All B-series valves	12 W 12 W 10.5 W	BP024A BP230A BP024D	24 V 50 Hz 220V 50 Hz 24 V d.c.	3 m	<b>018Z6643</b> <b>018Z6653</b> <b>018Z6623</b>

	Description	Application	Code no.
	Seal kit	Wet environment	<b>018Z0090</b>

**Dimensions**

**Special requirements:**

The supply must be secured against a too high power compmion in case of a short circuit.

**Coils type AB and AC**

**Technical data**

1,411 mm	In accordance with VDE 0580	
Voltage tolerance	± 10%	
Power consumption, cut in	AB	9.5 VA a.c. coils only
	AC	15.7 VA a.c. coils only
Insulation of coil windings	Class H according to IEC 85	
Connection	Spade connectors, 6.3 x 0.8 mm	
Enclosure, IEC 529	IP 00 with spade connector, IP 65 with cable plug	
Ambient temperature	AB	Max. +50°C
	AC	Max. +50°C
Duty rating	Continuous	

**Ordering AB/AC Coils**

1,411 mm	Coil type	Power consumption holding	Coil type	Supply voltage	Frequency Hz	Code no.	
See data sheets for valves	AB	4.5 W 6.3 VA	AB024C	24 a.c.	50/60	<b>042N0802</b>	
			AB110C	110 a.c.		<b>042N0804</b>	
			AB230C	220-230 a.c.		<b>042N0800</b>	
			AB240C	240 a.c.		<b>042N0801</b>	
	AC	7 W 10 VA	AB012D	12 d.c.	50/60	d.c.	<b>042N0806</b>
			AB024D	24 d.c.		<b>042N0803</b>	
			AC024C	24 a.c.		<b>042N0823</b>	
			AC110C	110 a.c.		<b>042N0825</b>	
			AC230C	220-230 a.c.		<b>042N0821</b>	
			AC240C	240 a.c.		<b>042N0822</b>	
10 W	AC024D	24 d.c.	d.c.	<b>042N0824</b>			

Contact Danfoss for delivery of coils for other voltages

Symbol	Description	Enclosure	Code no.
	Cable plug for 6.3 x 0.8 mm spade connectors	IP 65	<b>042N0139<sup>1)</sup></b>

1) Ordering see page 12

**Coils type AK, AL and AM**

**Technical data**

Design	In accordance with VDE 0580	
Voltage tolerance	± 10%	
Power consumption, cut in	AL	10 VA
	AM	22.5 VA a.c. coils only
Insulation of coil windings	Class H according to IEC 85	
Connection	Spade connector in accordance with DIN 43650 form A	
Enclosure, IEC 529	IP 00 with spade connector, IP 65 with cable plug	
Ambient temperature	AL	Max. +50°C
	AM	Max. +50°C
Duty rating	Continuous	

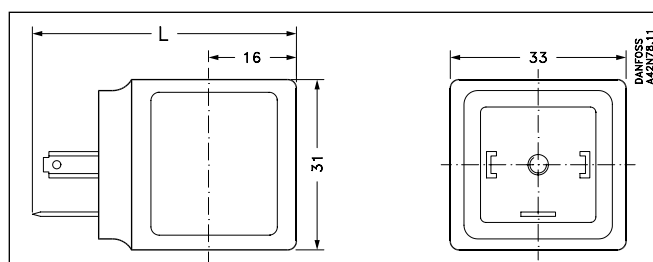
**Ordering AK/AL/AM Coils**

Compatibility for Valve type	Coil type	Power consumption holding	Coil type	Supply voltage	Frequency Hz	Code no.
See data sheets for valves	AM	7.5 W 15 VA	AM024C	24 a.c.	50/60	<b>042N0842</b>
			AM110C	110 a.c.		<b>042N0845</b>
			AM230C	220-230 a.c.		<b>042N0840</b>
			AM240C	240 a.c.		<b>042N0841</b>
	AL	4W	AM012D	12 d.c.	d.c.	<b>042N0848</b>
			AM024D	24 d.c.		<b>042N0843</b>
	AK	3 W	AL230C	230 a.c.	50/60	<b>042N0864</b>
				AK024D	24 d.c.	d.c.

Contact Danfoss for delivery of coils for other voltages

Symbol	Description	Enclosure	Code no.
	Protective cap (pack of 100 pcs.)	IP 20	<b>018Z0282</b>
	Cable plug according to DIN 43650-A PG 11	IP 65	<b>042N0156<sup>1)</sup></b>

1) Ordering see page 13

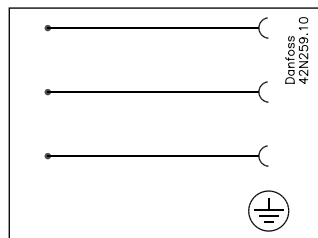
**Dimensions and weight**


Weight 0.10 kg	L[mm]
Without cable plug	48
With protective cap	64
With cable plug	72

**Features**

**Power Connector**

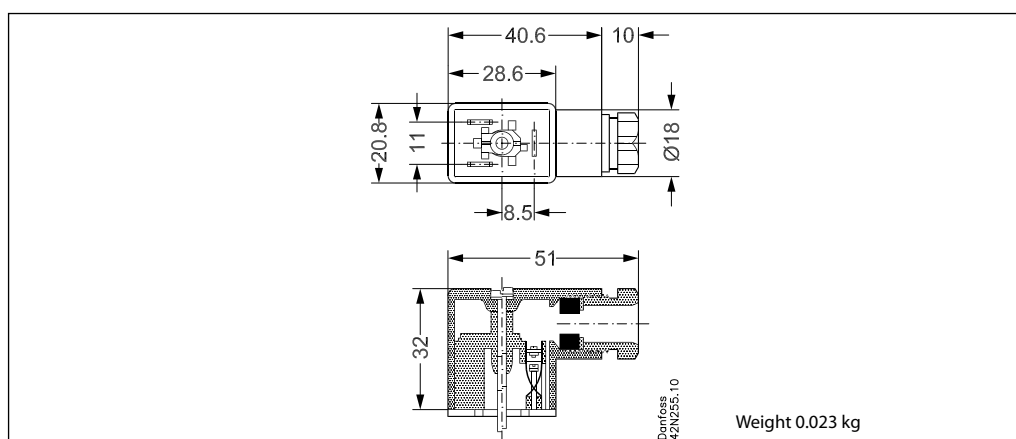
- Industrial standard 11 mm
- For use with Danfoss coil type AB and AC
- a.c./d.c. all voltages up to 250 V
- Enclosure: Up to IP 65
- Ambient temperature: Up to +80°C

**Technical data**


Type	GM 209 N (Bl.a.c.k)
Design	DIN 43650-B
Cable gland	PG 9
Poles	2 + I
Max. voltage	250 V a.c./d.c.
Approvals	US CSA
Protection class	IP 65 (IEC 60529)
Max. operating current	16 A
Contact resistance	≤ 4m Ω
Cable diameter	4,5 to 7 mm
Wire cross section	Max. 1,5 mm <sup>2</sup>
Ambient temperature	-25 to + 80°C
Materials	Contacts: CuZn (Tin plated) Terminal block: PA Flat gasket: NBR Housing: PA

**Ordering**

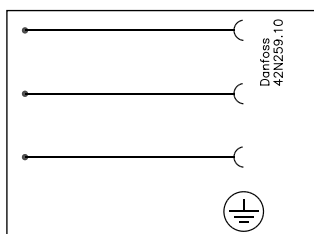
Symbol	Description	Code no.
	Cable plug for 6.3 x 0.8 mm spade connectors Suitable for coil types AB + AC	<b>042N0139</b>

**Dimensions and weight**


**Features**

**Power Connector**

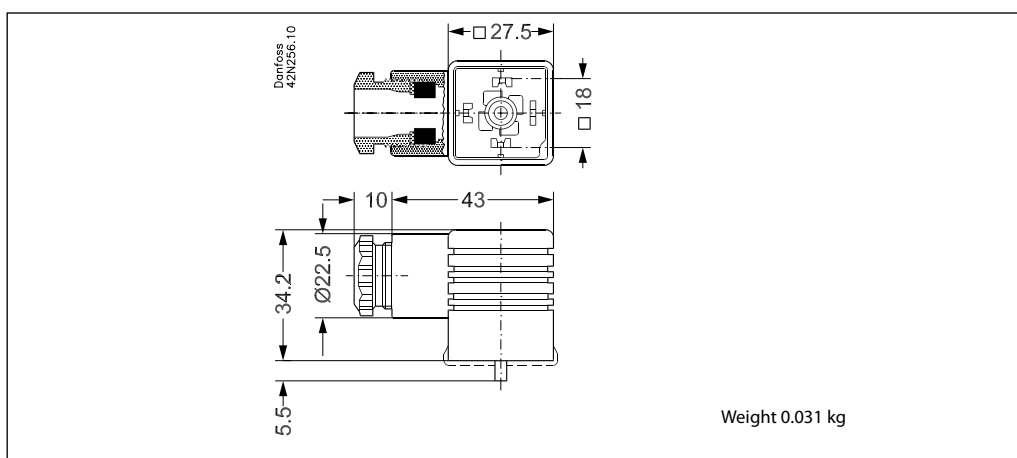
- For use with Danfoss coils type AK, AL, AM, BA, BD and BB
- AC/DC all voltages up to 250 V
- Enclosure: Up to IP 65
- Ambient temperature: Up to +125°C

**Technical data**


Type	GDM 2011 J (Grey)
Design	DIN 43650-A
Cable gland	PG 11
Poles	2,3 + PE
Max. voltage	250 V a.c./d.c.
Approvals	US CSA
Protection class	IP 65 (IEC 60529)
Max. operating current	16 A
Contact resistance	≤ 4m Ω
Cable diameter	6 to 9 mm
Wire cross section	Max. 1,5 mm <sup>2</sup>
Ambient temperature	-40 to + 125°C
Materials	Contacts: CuSn (Tin plated) Terminal block: PA Profiled gasket: NBR Housing: PA

**Ordering**

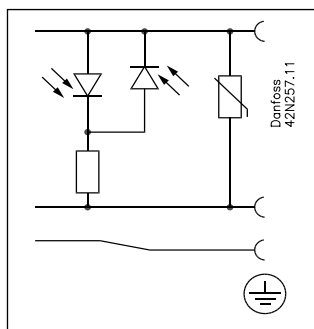
Symbol	Description	Code no.
1	Cabel plug according to DIN 43650-A PG 11 Suitable for coil types AK, AL, AM, BA, BD, BB	<b>042N0156</b>

**Dimensions and weight**


**Features**

**Power (LED + Varistor) Indicator Connector**

- For use with Danfoss coils type AK, AL, AM, BA, BD and BB
- 24 V a.c./d.c. and 230 V a.c. versions
- Enclosure: Up to IP 65
- Ambient temperature: Up to +60°C

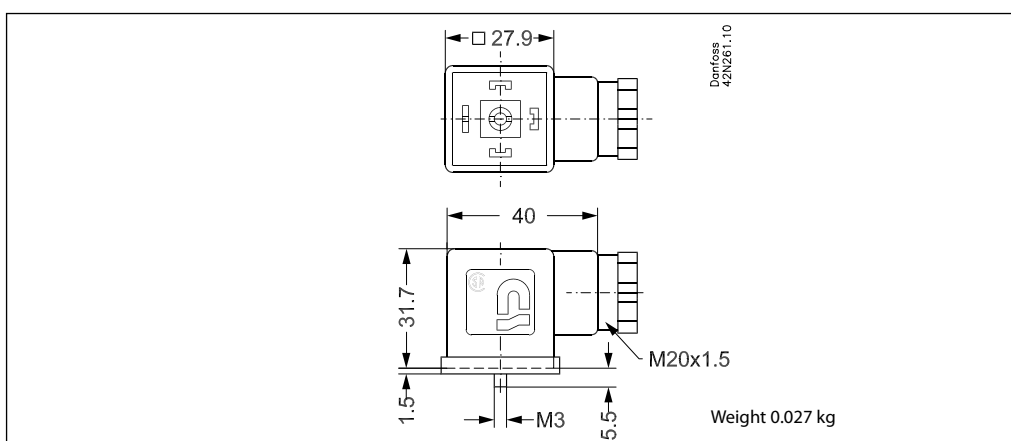
**Technical data**


Design	EN 175301-803 A	
Supply voltage tolerance	± 10%	
Power consumption	Max. 5 mA	
Protection class	IP65 (IEC 60 529)	
Max. operating current	1,5 A clamping contact	
Contact resistance	≤ 4 m Ω	
Protection against wrong polarity	yes	
Cable diameter	6 to 8 mm and 8 to 10 mm	
Wire cross section	Max. 1,5mm <sup>2</sup>	
Ambient temperature	-25 to + 60°C	
Materials	Contacts:	CuZn, Cu/Sn-plated
	Terminal block:	PA6 + 30% FG, bla.c.k
	Flat gasket:	NBR LABS-free
	Housing (translucent):	PA6
	Wire holder:	PA6.6 + 50% FG P7,5 bla.c.k

**Ordering**

1,411 mm	LED colour	Build in VDR <sup>1)</sup> resistor	Code no.	Suitable for coil types
24 V a.c./d.c.	Red	Yes	<b>042N0263</b>	AK, AL, AM, BA, BD, BB
230 V a.c.	Red	Yes	<b>042N0265</b>	

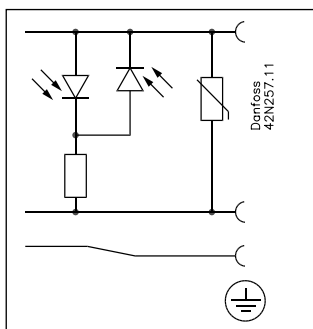
1) Protects against voltage peaks

**Dimensions and weight**


**Features**

**Power (LED + Varistor) Indicator Connector**

- For use with Danfoss coil type AB and AC
- 24 V a.c./d.c. and 230 V a.c. versions
- Enclosure: Up to IP 65
- Ambient temperature: Up to +60°C

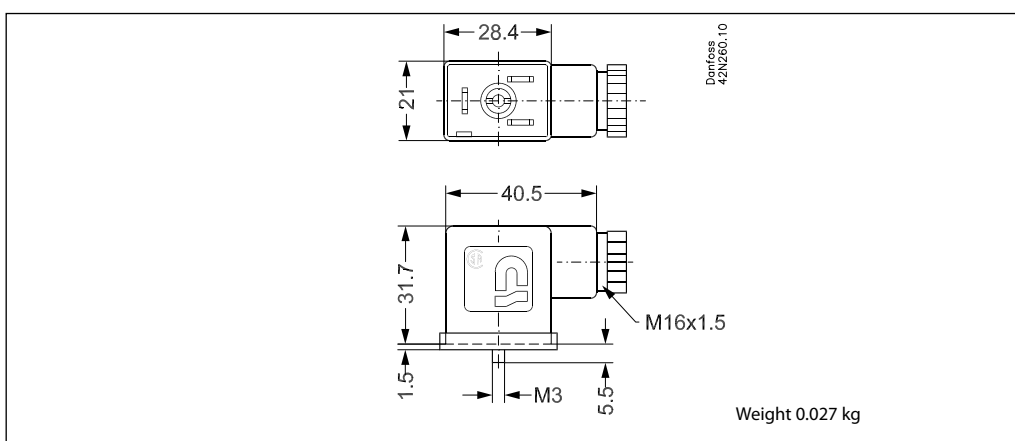
**Technical data**


Design	Industrial form	
Supply voltage tolerance	± 10%	
Power consumption	Max. 5 mA	
Protection class	IP 65 (IEC 60 529)	
Max. operating current	1,5 A clamping contact	
Contact resistance	≤ 4m Ω	
Protection against wrong polarity	yes	
Cable diameter	5 to 6 mm and 6 to 9 mm	
Wire cross section	Max. 1 mm <sup>2</sup>	
Ambient temperature	-25 to + 60°C	
Materials	Contacts:	CuZn, Cu/Sn-plated
	Terminal block:	PA6 + 30% FG, bla.c.k
	Flat gasket:	NBR LABS-free
	Housing (translucent):	PA6
	Wire holder:	PA6.6 + 50% FG P7,5 bla.c.k

**Ordering**

Voltage	LED colour	Build in VDR <sup>1)</sup> resistor	Code no.	Suitable for coil types
24 V a.c./d.c.	Red	Yes	<b>042N0267</b>	AB, AC
230 V a.c.	Red	Yes	<b>042N0269</b>	

<sup>1)</sup> Protects against voltage peaks

**Dimensions and weight**


Features



**Universal electronic multi-timer Type ET 20 M**

- Outside adjustments
- Light weight and small size
- External adjustable timing from 1 minute to 45 minutes with 1 to 15 seconds drain open
- One solid state timer fits all coil voltages from 24-240 V a.c
- Light diodes for indication
- All in one unit
- Manual override (test button).

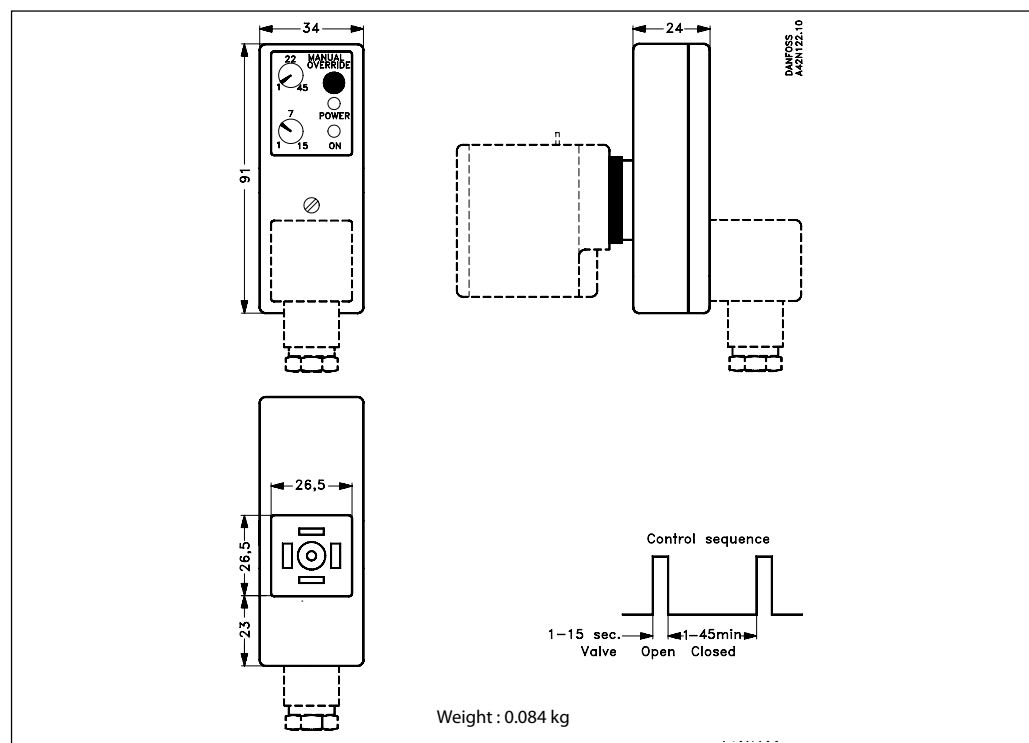
Technical data

Type	ET 20 M
Voltage	24-240 V a.c/ 50-60 Hz.
Power rating	Max. 20 Watt
Enclosure	IP 00, IP 65 with cable plug
Electrical connection	DIN connector ( DIN 43650-A)
Ambient operating temperature range	-10°C to +50°C
Function	Start with pulse
Interval timer	0-45 min.
"On" timer	0-15 Sec.

Ordering

Voltage	<b>Code no.</b>	Suitable for coil types
24-240 V a.c.	<b>042N0185</b>	AK, AL, AM, BA, BD, BB

Dimensions and weight



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