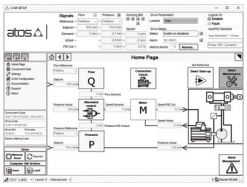
Accessories for SSP servopumps

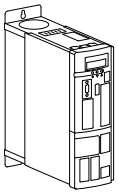
Software, cables, reactances, EMC filters and braking resistances

1 S-SW-SETUP PROGRAMMING SOFTWARE

SSP system can be easily configured connecting D-MP drive to the PC and using Atos S-SW-SETUP programming software. At the system first start-up, the software will invite the user to follow the Smart Start-Up wizard for setting all the parameters necessary for the correct start-up and operation of the system. All the main functions can in any case, be reached and modified thanks to a simple and intuitive graphic interface.
Direct access to the latest releases of programming software, manuals and fieldbus configuration files in MyAtos area at www.atos.com .
For more information about S-SW-SETUP software, see techical table **AS800**.



S-SW-SETUP
programming
software



2 RESOLVER CABLE

This cable allows to connect motor resolver to D-MP drive.

Model code

S-C-RSV	-	DB15	/	M23	/	5	*
Resolver cable						Length [m]: **5** , **10** , **15** , **20** , **30**	Series number

DB15 = from J2 DB15 connector, D-MP drive side

M23 = to M23 connector, PMM motor side

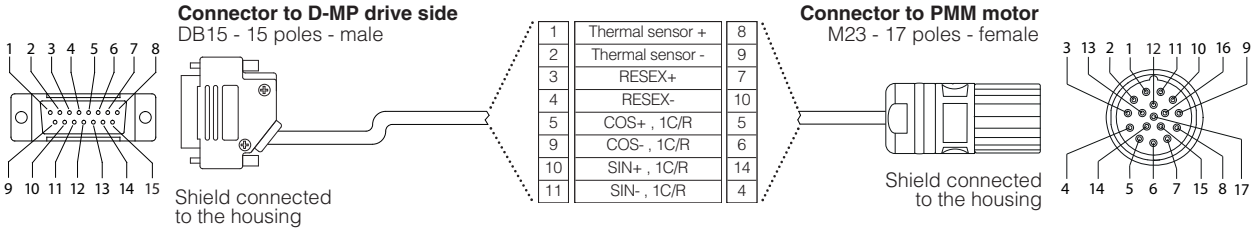
Technical specifications

S-C-RSV - cable
- paired transmission cable with overall copper screen
- self extinguishing according to IEC 60332-1-2, EN 60332-1-2, UL CSA FT-1, FT-2
- oil resistant with outer green PUR stealth type TMPU
- halogen free according to DIN VDE 0472
- -40°C to +80°C installing temperature range
- 30 V max nominal voltage
- minimum bending radius: 5 x D (D = diameter)
- RoHS and CE compliant
- manufactured acc. to UL 758 and CSA C22.2 No. 210

DB15 - connector
- DB15 male 15 poles connector to D-MP drive
- UL and CSA compliant

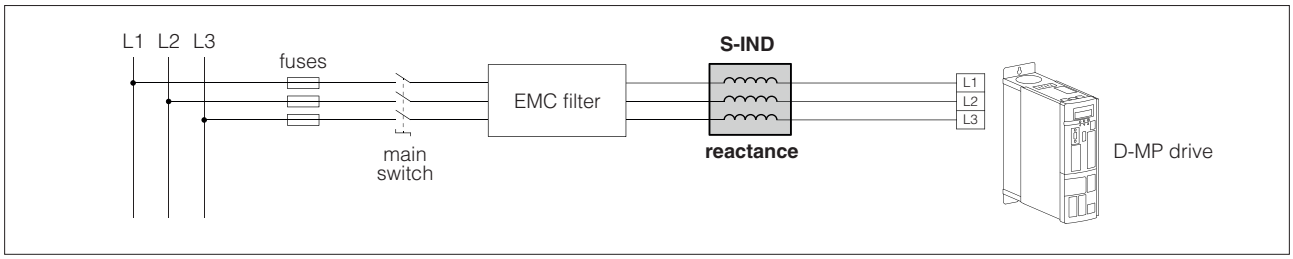
M23 - connector
- M23 female 17 poles connector to motor
- UL and CSA compliant

Resolver cable wiring diagram



3 REACTANCES

The 3-phase reactance is used to reduce harmonics on the current drawn by D-MP drive.



Note: when connecting D-MP drives size 022 ÷ 060 to 3-phase power supply we recommend using a 3-phase reactance; for D-MP drives size 090 ÷ 210 the 3-phase input reactance is mandatory

Model code

S-IND	-	022	*
Reactance on the line side - 3-phase input		Size: **022** = for D-MP-*-022 **060** = for D-MP-*-060 **140** = for D-MP-*-140 **032** = for D-MP-*-032 **090** = for D-MP-*-090 **165** = for D-MP-*-165 **046** = for D-MP-*-046 **100** = for D-MP-*-100 **210** = for D-MP-*-210	Series number

General characteristics

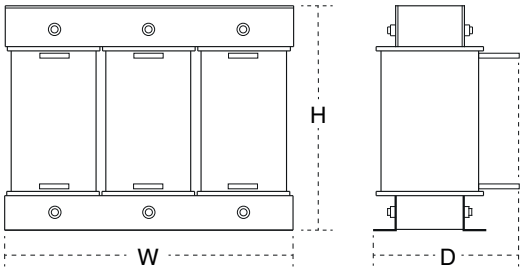
Reactance type	Reactance value [mH]	[uH]	Thermal current [Arms]	Overload current [Arms]	Mass [kg]	D-MP drive type	Supplier code
S-IND-022 20	0.48	-	27.3	54.6	3.3	D-MP-*-022 **(1)**	1LUL50017-A3-50-1
S-IND-032 20	0.33	-	39.9	79.8	5.4	D-MP-*-032 **(1)**	1LUL50018-A3-50-1
S-IND-046 20	0.23	-	57.2	114.5	8.3	D-MP-*-046 **(1)**	1LUL50020-A3-50-1
S-IND-060 20	0.19	-	71.5	143	10.3	D-MP-*-060 **(1)**	1LUL50021-A3-50-1
S-IND-090 21	-	200	110	233.3	17	D-MP-*-090 **(2)**	0LULFF090-A3-50-3
S-IND-100 21	-	147	150	318.2	21	D-MP-*-100 **(2)**	0LULFF110-A3-50-3
S-IND-140 21	-	123	180	381.8	26	D-MP-*-140 **(2)**	0LULFF150-A3-50-3
S-IND-165 21	-	100	220	466.7	28	D-MP-*-165 **(2)**	0LULFF175-A3-50-3
S-IND-210 21	-	85	260	551.5	38	D-MP-*-210 **(2)**	0LULFF220-A3-50-3

Compliant to: UL 1446 and UL 5085

(1) Reactance recommended
(2) Reactance mandatory

Note: the input reactance values are calculated in order to obtain a drop voltage of around 3% at rated current and power

Installation dimension [mm]

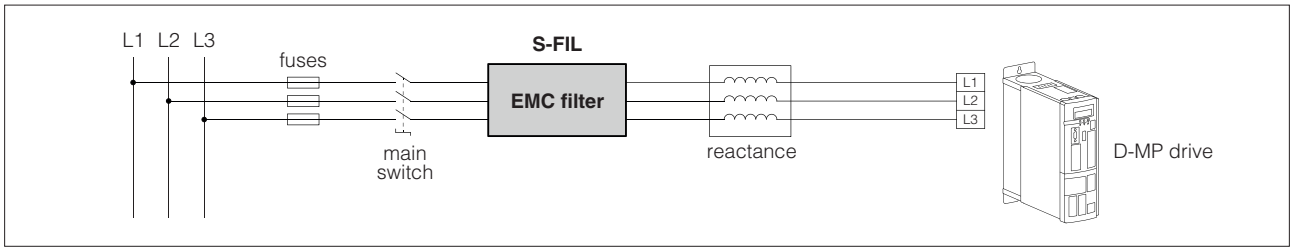


Reactance type	**W**	**D**	**H**
S-IND-022 20	150	85	150
S-IND-032 20	150	100	150
S-IND-046 20	180	120	175
S-IND-060 20	180	130	175
S-IND-090 21	320	240	165
S-IND-100 21	215	240	250
S-IND-140 21	270	300	200
S-IND-165 21	270	300	200
S-IND-210 21	270	300	250

Note: the image is intended for explanatory purposes only and may show differences in accordance to the type

4 EMC FILTERS

The EMC filters are used to improve the immunity and safety of electrical and electronic equipment from electromagnetic noise exchanged between D-MP drive and 3-phase power supply.



Note: when connecting D-MP drives to 3-phase power supply we recommend using a EMC filter

Model code

S-FIL	-	032
EMC filter - 3-phase		Size: **032** = for D-MP-*-022 and D-MP-*-032 **046** = for D-MP-*-046 **060** = for D-MP-*-060 **090** = for D-MP-*-090 **140** = for D-MP-*-100 and D-MP-*-140 **165** = for D-MP-*-165 **210** = for D-MP-*-210

General characteristics

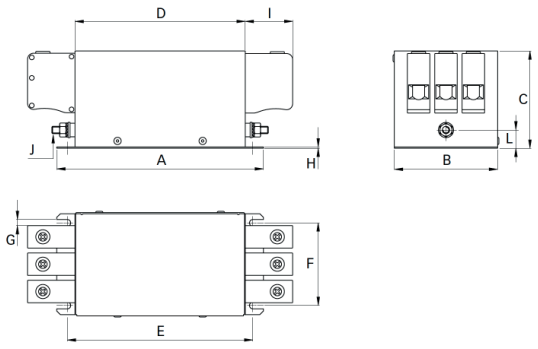
EMC filter type	Rated current @ 50°C (40°C) [A]	Typical drive power rating **(1)** [kW]	Leakage Current @ 480 VAC/50 Hz [mA]	Power loss @ 25°C/50 Hz [W]	Input-Output connections type		Mass [Kg]	D-MP drive type	Supplier code
S-FIL-032	35 (38)	22	29.4 **(2)**	6.8		-	0.7	D-MP-*-022 D-MP-*-032	FN3270H-35-33
S-FIL-046	50 (55)	30	29.4 **(2)**	12.8		-	1.2	D-MP-*-046	FN3270H-50-34
S-FIL-060	80 (88)	45	29.4 **(2)**	13.5		-	2.2	D-MP-*-060	FN3270H-80-35
S-FIL-090	100 (110)	55	29.4 **(2)**	17.1		-	2.6	D-MP-*-090	FN3270H-100-35
S-FIL-140	150 (164)	75	59.5 **(2)**	7.5	-		6.1	D-MP-*-100 D-MP-*-140	FN3270H-150-99
S-FIL-165	200 (219)	110	59.5 **(2)**	13.2	-		6.1	D-MP-*-165	FN3270H-200-99
S-FIL-210	250 (272)	130	10	80	-		9.0	D-MP-*-210	FN3270H-320-99

Compliant to: RoHS; RU; ENEC 14; CSA

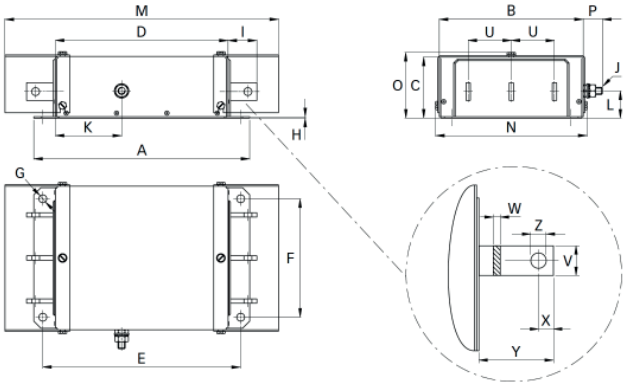
(1) Calculated at rated current, 480 VAC and cos phi = 0.8; the exact value depends upon the efficiency of the D-MP drive, motor and entire application
(2) Maximum leakage under normal operating conditions. Note: if two phases are interrupted, worst case leakage could reach 5.2 times higher levels

Installation dimensions [mm] - size 032 ÷ 165

size 032 ÷ 090

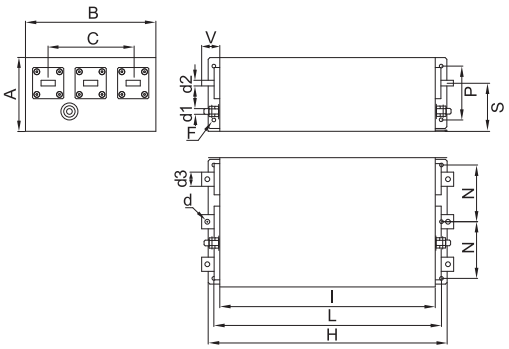


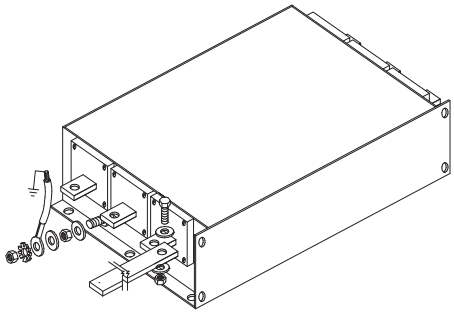
size 140 ÷ 165



EMC filter type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	U	V	W	X	Y	Z
S-FIL-032	160	70	68	130	142.5	50	5.5	1	25	M5		20										
S-FIL-046	170	85	80	140	152.5	65	5.5	1	39	M6		15										
S-FIL-060	200	95	90	170	182.5	75	5.5	1.5	45	M8		16										
S-FIL-090	230	95	90	200	212.5	75	5.5	1.5	45	M8		16										
S-FIL-140	300	200	86	240	275	165	Ø 11	2	40	M10	92	37	380	211	93	26.5	60	20	3	10	37	Ø 9
S-FIL-165	300	200	86	240	275	165	Ø 11	2	40	M10	92	37	380	211	93	26.5	60	20	3	10	37	Ø 9

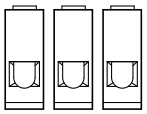
Installation dimension [mm] - size 210





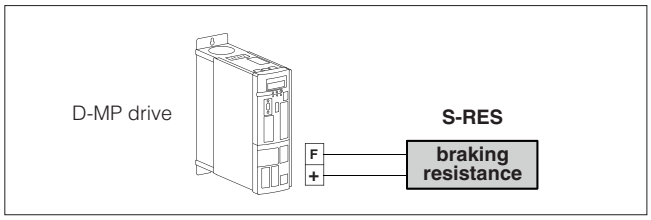
EMC filter type	**A**	**B**	**C**	**d**	**d1**	**d2**	**d3**	**V**	**F**	**H**	**I**	**L**	**N**	**P**	**S**
S-FIL-210	90	220	120	M8	M10	6	20	42	6.5	356	320	340	95	70	55

EMC filter input/output connector cross section - only for size 032 ÷ 090

EMC filter type	Solid wire [mm²]	Flex wire [mm²]	Recommended torque [Nm]	Connection type
S-FIL-032	16	10	1.5 - 1.8	
S-FIL-046	35	25	4.0 - 4.5	
S-FIL-060	50	50	7.0 - 8. 0	
S-FIL-090	50	50	7.0 - 8. 0	

5 BRAKING RESISTANCES

The braking resistances have the purpose of limiting the voltage of D-MP drive internal circuits (DC BUS) when the input stage of the line entrance is not able to recover the energy coming from the field into the network.
In these conditions, the energy supplied by D-MP drive internal circuits is transformed into heat dissipated on the external braking resistance.



Model code

S-RES	-	RFH-220	/	20R	*
Alluminium housing braking resistance					Series number

Nominal power:
RFH-220 = 400 W
HPR-2000 = 1900 W
KHPR2-1200 = 2100 W
KHPR2-2000 = 3500 W

Ohmic value:
20R = 20 Ω (for **RFH-220**)
28R = 28 Ω (for **RFH-220**)
5R = 5 Ω (for **HPR-2000** and **KHPR2-1200**)
6R = 6 Ω (for **HPR-2000**)

Note: all braking resistances are available with an external IP20 protection grid and IP21 cable box with cable gland.
These protections are supplied separately and assembly on the resistance is the responsibility of the end user. Following related ordering codes: S-RES-RFH**G**-220/20R , S-RES-RFH**G**-220/28R , S-RES-HPR**G**-2000/5R , S-RES-KHPR2**G**-1200/5R , S-RES-HPR**G**-2000/6R

Power rating and thermal characteristics

Braking resistance type	Nominal power **(1)** [W]	Nominal temperature rise [°C]	Single adiabatic load **(2)** [kJ]	Ciclic load at Pn Ton<2'' **(2)** [kJ]	Thermal time constant [s]	Thermal resistance [°C/W]
S-RES-RFH-220/20R	400	350	12	15	400	0.875
S-RES-RFH-220/28R						
S-RES-HPR-2000/5R	1900	400	100	120	900	0.21
S-RES-HPR-2000/6R	1900	400	100	120	900	0.21
S-RES-KHPR2-1200/5R	2100	400	100	120	800	0.22

(1) Nominal power is intended as continuous and refers to lab conditions with the resistance suspended in air
(2) Maximum values: actual energy depends on ohmic value, mean power, load time

Electric characteristics

Braking resistance type	Ohmic value range [Ω]	Tollerance class	Thermal derivative [ppm/°C]	Max. working voltage (Vcc) [V]	Max. working voltage (Vac) **(1)** [V]
S-RES-RFH-220/20R	20	J	150	1500	1000
S-RES-RFH-220/28R	28				
S-RES-HPR-2000/5R	5	J	< 100	1500	1000
S-RES-HPR-2000/6R	6				
S-RES-KHPR2-1200/5R	5				

Compliant to: UL 508 and CSA C22.2 No. 14-13 Industrial Control Equipment; Dir. 2002/95/CE RoHS; IEC 60364; IEC 60529; IEC 60664

(1) Maximum working voltage depends of the electric solicitation harmonic content; electric load with an important high frequency component have to be verified

Drive/resistance associations

D-MP drive type	Braking resistance type	Overall resistance [Ω]	Overall average power [W]
D-MP-*-022	1 x S-RES-RFH-220/28R	28	400
D-MP-*-032	1 x S-RES-RFH-220/20R	20	400
D-MP-*-046	2 x S-RES-RFH-220/20R **(1)**	10	800
D-MP-*-060	2 x S-RES-RFH-220/20R **(1)**	10	800
D-MP-*-090	3 x S-RES-RFH-220/20R **(1)**	6.7	1200
D-MP-*-100	1 x S-RES-HPR-2000/5R	5	1900
D-MP-*-140	1 x S-RES-KHPR2-1200/5R	5	2100
D-MP-*-165	1 x S-RES-KHPR2-1200/5R	5	2100
D-MP-*-210	2 x S-RES-HPR-2000/6R	3	3800

(1) The resistance have to be connected in parallel

Note: the drive/resistance associations could change according to the average power (P average) and maximum energy value (E peak) indicated by the customer

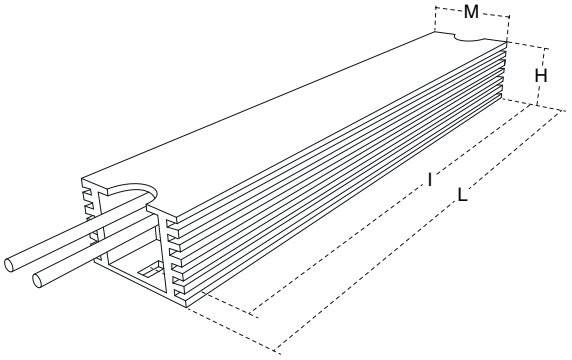
Standard

Standard		S-RES-RFH-*		S-RES-HPR-* S-RES-KHPR2-*	
		Limit	**Typical**	**Limit**	**Typical**
Dir. 2002/95/CE RoHS		compliant	compliant	compliant	compliant
IEC 60364	Component class	I	I	I	i
	Insulation resistance [MΩ] **(1)**	100	> 100	100	> 100
	Electric strength [mA] **(2)**	< 2	< 0.1	< 2	< 0.1
IEC 60529	Resistor body	IP64	IP64	IP55	IP55
	Terminals	IP00	IP00	IP00	IP00
IEC 60664	Overvoltage category	I	I	II	II
	Pollution degree	4	4	4	4

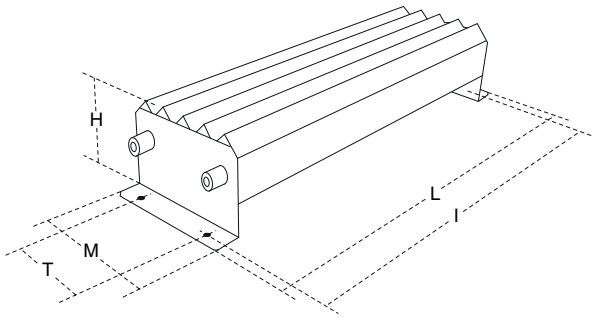
(1) Applied voltage 1000 Vcc
(2) Test voltage 3000 Vac 60''

Installation dimension [mm]

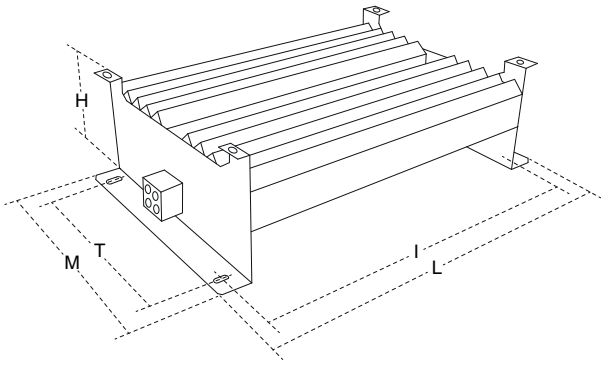
S-RES-RFH-*



S-RES-HPR-*



S-RES-KHPR2-*



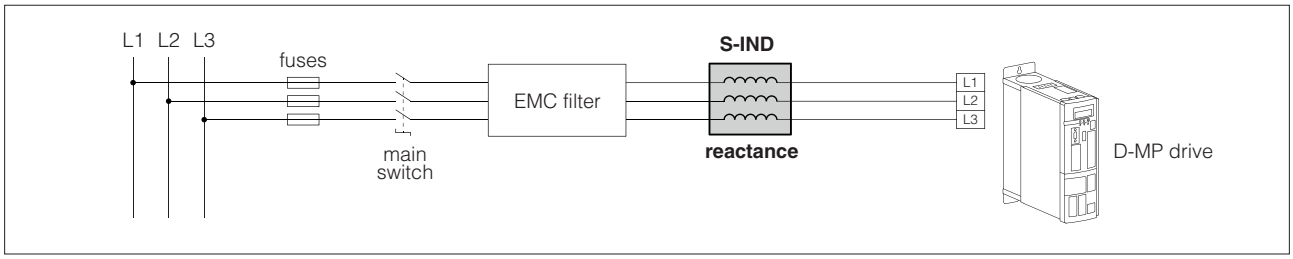
Braking resistance type	**L**	**H**	**M**	**I**	**T**	Cables length	Average mass [kg]
S-RES-RFH-220/20R	200	27	36	189	-	300	0,333
S-RES-RFH-220/28R	200	27	36	189	-	300	0,333
S-RES-HPR-2000/5R	365	73	105	350	70	450	4
S-RES-HPR-2000/6R	365	73	105	350	70	450	4
S-RES-KHPR2-1200/5R	310	115	230	295	170	-	7

Note: tolerance of ± 2% on all nominal dimensions

6 OBSOLETE COMPONENTS - only for series 10

6.1 Reactances

The 3-phase reactance is used to reduce harmonics on the current drawn by D-MP drive.



Note: when connecting D-MP drives size 022 ÷ 060 to 3-phase power supply we recommend using a 3-phase reactance
For D-MP drives size 090 ÷ 210 the 3-phase input reactance is mandatory

Model code

S-IND	-	**022**
Reactance on the line side - 3-phase input		Size: **022** = for D-MP-*-022 **060** = for D-MP-*-060 **140** = for D-MP-*-140 **032** = for D-MP-*-032 **090** = for D-MP-*-090 **165** = for D-MP-*-165 **046** = for D-MP-*-046 **100** = for D-MP-*-100 **210** = for D-MP-*-210

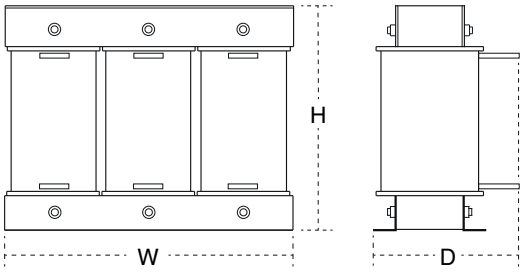
General characteristics

Reactance type	Reactance value [mH]	Nominal current [A]	Overload current [A]	Mass [kg]	D-MP drive type	Supplier code
S-IND-022	0.470	23.4	46.9	6	D-MP-*-022 **(1)**	054R4900
S-IND-032	0.294	37.5	74.9	6	D-MP-*-032 **(1)**	054R49001
S-IND-046	0.235	46.9	93.7	6.5	D-MP-*-046 **(1)**	054R49003
S-IND-060	0.198	55.8	111.6	8	D-MP-*-060 **(1)**	054R49004
S-IND-090	0.132	83.7	167.4	9	D-MP-*-090 **(2)**	054R48005
S-IND-100	0.110	100.0	200.0	12	D-MP-*-100 **(2)**	054R48006
S-IND-140	0.080	137.9	275.7	14	D-MP-*-140 **(2)**	054R48007
S-IND-165	0.067	165.0	331.0	14	D-MP-*-165 **(2)**	054R48016
S-IND-210	0.055	202.0	404.0	20	D-MP-*-210 **(2)**	054R48017

(1) Reactance recommended
(2) Reactance mandatory

Note: voltage drop of 1,5% calculated for 3-phase power supply 400 Vrms, frequency 50 Hz and at nominal current

Installation dimension [mm]

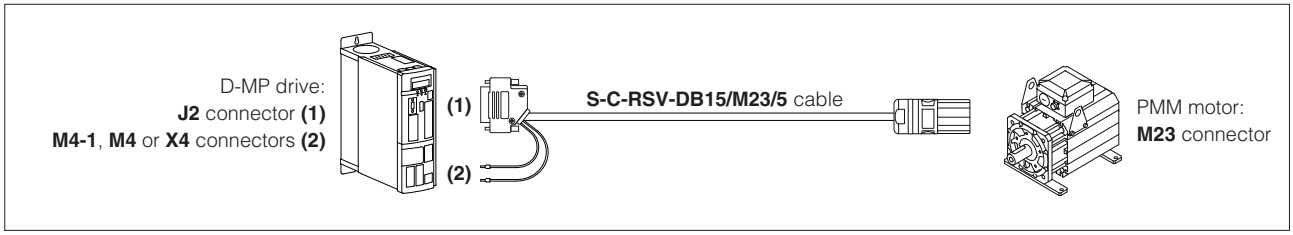


Reactance type	**W**	**D**	**H**
S-IND-022	180	115	200
S-IND-032	180	115	200
S-IND-046	180	120	200
S-IND-060	180	130	200
S-IND-090	180	160	165
S-IND-100	240	140	215
S-IND-140	240	150	215
S-IND-165	240	140	280
S-IND-210	240	170	280

Note: the image is intended for explanatory purposes only and may show differences in accordance to the type

6.2 Resolver cable

This cable allows to connect motor resolver to D-MP drive.



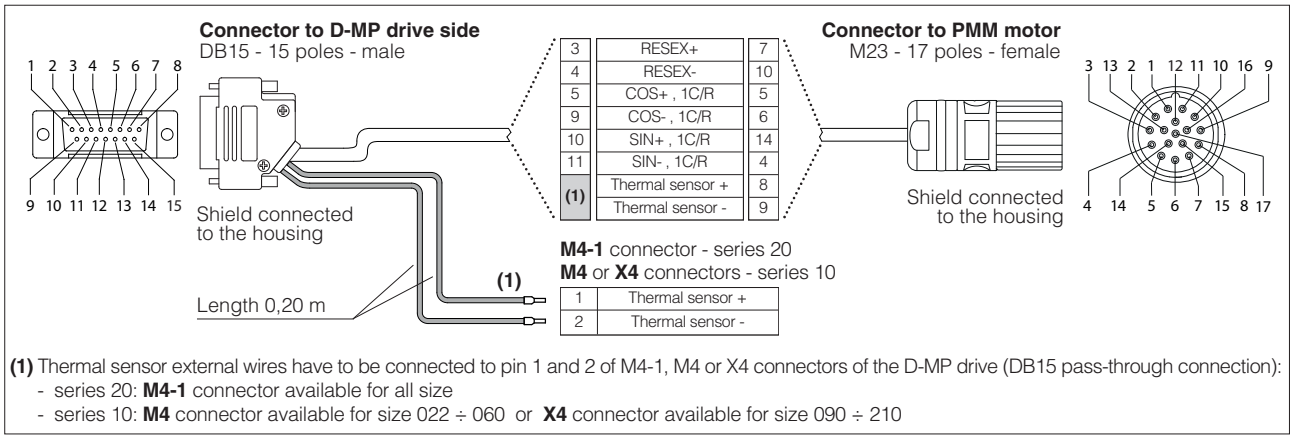
Model code

S-C-RSV	-	**DB15**	/	**M23**	/	**5**
Resolver cable						Length [m]: **5** , **10** , **15** , **20**
DB15 = from J2 DB15 connector, D-MP drive side				**M23** = to M23 connector, PMM motor side		

S-C-RSV-DB15/M23/* - technical specifications

- DB15 male 15 poles connector to D-MP drive
- M23 female 17 poles connector to motor
- two external wires for thermal sensor (KTY and PT)
- paired transmission cable with overall copper screen
- self extinguishing according to IEC 60332-1-2, EN 60332-1-2, UL CSA FT-1, FT-2
- oil resistant with outer green PUR stealth type TMPU
- halogen free according to DIN VDE 0472
- -40°C to +80°C installing temperature range
- 30 V max nominal voltage
- RoHS and CE compliant
- minimum bending radius: 5 x D (D = diameter)

Resolver cable wiring diagram



(1) Thermal sensor external wires have to be connected to pin 1 and 2 of M4-1, M4 or X4 connectors of the D-MP drive (DB15 pass-through connection):
- series 20: **M4-1** connector available for all size
- series 10: **M4** connector available for size 022 ÷ 060 or **X4** connector available for size 090 ÷ 210