ADVANCE-GRP[EX] SERIES
OPTIMA-EX SERIES

Plugs and sockets for application in potentially explosive atmospheres - DUST

MADE OF THERMOSETTING MATERIAL

ATEX II 2D GRP

SCAME electrical solutions

ADVANCE-GRP[EX] Series - OPTIMA-EX Series

ATEX II 2D GRP

SPECIAL FEATURES

OUTSTANDING IMPACT RESISTANCE

The glass-fibre reinforced polyester used in **ADVANCE-GRP[EX]** and the high thickness of the casing walls guarantee an excellent mechanical resistance to impacts.
The **SMC** technology used to produce the casings makes **ADVANCE-GRP[EX]** an indestructible product.
The impact resistance of the casings is higher than 20J (IK10) according to EN50102, even under limit temperature conditions (-40°C +60°C).

RESISTANCE TO CHEMICAL AGENTS

The **ADVANCE-GRP[EX]** interlocked sockets and casings, thanks to the glass-fibre reinforced polyester with which they are produced, have excellent resistance to aggressive chemical substances, saline solutions, diluted acids, hydrocarbons, mineral oils, alcoholic substances. They are ideal for use in highly corrosive atmospheres.

RESISTANCE TO ATMOSPHERIC AGENTS

The structure and materials used also make **ADVANCE-GRP[EX]** a product suited for the most extreme environmental conditions. The double degree of protection IP66, guarantees an excellent seal against the entry of solid objects or liquids into the casings.
Outstanding resistance to UV radiation, exceptional reliability under environmental stress and use at both low and high ambient temperatures (-25°C +60°C).

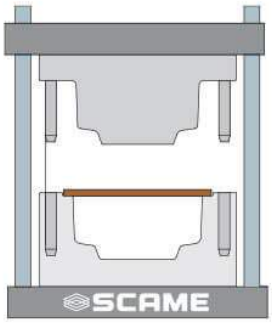
VERSIONS

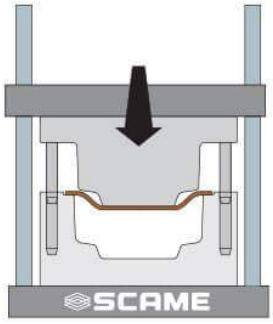
The **ADVANCE-GRP[EX]** Series includes a series of 16A, 32A, 63A interlocked sockets for installation in environments with a potential risk of explosion identified as
zone 21/22 Db-Dc (Dust) which fall under the area of application of the Atex Directive (European Directive 94/9/EC), compliant with the standards EN60079-31.
Type of protection Ex :
II 2D - Ex tb IIIC T90°C Db IP66
Ta -25°C +60°C.

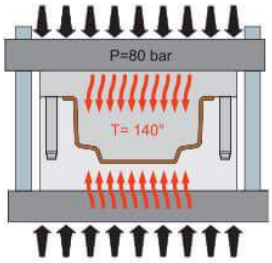
CHARACTERISTICS

The **ADVANCE-GRP[EX]** product line includes a series of 16A, 32A, 63A interlocked sockets (compliant with EN60309-4 standards) and the casings to contain them. It's the most complete range of interlocked sockets produced in GRP (*Glass Reinforced Polyester*) thermosetting material.

A unique feature which enhances the exceptional mechanical strength of **ADVANCE-GRP[EX]** products is the **SMC** (*Sheet Moulding Compound*) production process used for the casings.
SMC is a technology which uses exclusively non-woven sheets, pre-impregnated with polyester resin. This method consists in preparing the sheet material inside a mould which, equipped with a negative mould, presses the composite so as to allow compaction.







SMC is an advanced technology which enhances the quality of the raw material without reducing the high-strength characteristics during transformation; it's a high-performing technology in terms of the mechanical performance of the resultant product (glass fibre length, homogeneity of the material, integrity of the fibres).
On the contrary, the **BMC** (*Bulk Moulding Compound*) technology is a technology for moulding composite materials which uses a raw material available in "blocks" (short, charged fibres) which are subjected to high thermomechanical stress during the transformation process, consequently diminishing the mechanical properties of the details, thereby reducing the impact strength and flexural strength.

The glass-fibre reinforced polyester used in **ADVANCE-GRP[EX]** guarantees excellent mechanical strength and a long lifetime: this material is highly resistant to contamination, completely corrosion resistant and suited for applications requiring the use of components with low smoke emission and no halogens, **LSOH** (*Low Smoke Zero Halogen*) components. The outstanding properties of the material are also guaranteed over time, thanks to the high **RTI** value (*Relative Temperature Index*), measured to be 20,000h. Numerous verifications and tests have been carried out, even UV resistance tests, in order to guarantee the long duration of the material's initial performance.
The thickness of the walls is sufficient to offer an excellent alternative to aluminium, stainless steel or cast iron.

OUTSTANDING HEAT AND FIRE RESISTANCE

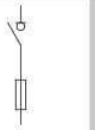
The glass-fibre reinforced polyester used in **ADVANCE-GRP[EX]** guarantees excellent heat and fire resistance: it does not propagate flames, emit halogens or smoke.
This material has outstanding flame retardancy: Glow Wire 960°C according to EN 60695-2-1; V0 according to UL94. It's suited for applications requiring the use of components with low smoke emission and no halogens, LSOH (*Low Smoke Zero Halogen*).

ADVANCE-GRP[EX] Series - OPTIMA-EX Series

ATEX II 2D GRP

SWITCHED INTERLOCKED SOCKET OUTLETS

VERSIONS WITH MECHANICAL INTERLOCK

	With switch-disconnector	16A-32A 63A
	With switch-disconnector and fuse	16A-32A 63A

REFERENCE STANDARDS

ATEX

IEC 60079-0 / EN 60079-0
Electrical apparatus for use
in the presence of combustible dust.
Part 0: General requirements.

ATEX

IEC 60079-31 / EN 60079-31
Electrical apparatus for use
in the presence of combustible dust.
Part 31: Protection by enclosures 'tD'.

EN 60309-1
Plugs, socket outlets and couplers for industrial purposes.
Part 1: general requirements.

EN 60309-2
Plugs, socket outlets and couplers for industrial purposes.
Part 2: dimensional interchangeability requirements for pin and contact-tube accessories of harmonised configurations.

EN 60309-4
Plugs, socket-outlets and couplers for industrial purposes.
Part 4: Switched socket-outlets and connectors with or without interlock.

PRODUCTS FOR USE IN A POTENTIALY EXPLOSIVE ENVIRONMENT

Scame offers products suitable for installation into environments under potential risk of explosion identified as Zone 21/22 Db-Dc and that enter into the field of application for the ATEX Directive (European Directive 94/9/CE).

SOCKET LABEL

SCAME
Via Costa Erta 15 Parre BG ITALY
2014

503.6387.F IMQ 11 ATEX 010 Ex tb IIIC T90°C Db IP66 T90°C Ta -25 +60°C		CE 0051 Ex II 2D 3P+N+⏚ 63A - 6h 346-415V~

DO NOT OPEN WHEN ENERGIZED ENCLOSURE AND WAIT AT LEAST 15 MINUTES AFTER HAVING DISCONNECTED POWER
WARNING THE CABLE ENTRY POINT CAN BE EXCEED 85°C

PLUG LABEL

SCAME 2014
Via Costa Erta 15 Parre BG ITALY
3P+N+⏚ - 32A - 6h / 346-415V~

218.EX3237 IMQ 11 ATEX 011 Ex tb IIIC Db IP66 T90°C Ta -25 + +60°C	CE 0051 Ex II 2D

DO NOT OPEN WHEN ENERGIZED IN PRESENCE OF EXPLOSIVE ATMOSPHERE

BEHAVIOUR WITH CHEMICAL AND ATMOSPHERIC AGENTS

Saline solution	Acids		Bases		Solvents				Mineral oil	UV rays
	Concentrated	Diluted	Concentrated	Diluted	Hexane	Benzol	Acetone	Alcohol		
Resistant	Limited Resistance	Resistant	Limited Resistance	Resistant	Resistant	Resistant	Resistant	Resistant	Resistant	Resistant

For specific substances please contact our technical service.

TECHNICAL CHARACTERISTICS

Rated current:	**16A-32A-63A**
Rated voltage:	**100÷690V~**
Frequency:	**50÷60Hz**
Insulating voltage:	**500/690V~**
Self-extinguishing GW test:	**960°C**
Self-extinguishing UL94:	**V0**
Switch-disconnectors: 16A-32A-63A	**COMMAND Series Category AC22A**
Fuse: 16A-32A 63A	**gG 10,3x38mm gG 22x58mm**
ATEX Code:	**Ⓔx II 2D**
Ex Protection type:	**Ex tb IIIC T90°C Db IP66 Ta -25°C +60°C**
Maximum permissible surface temperature:	**T90°C**
Socket outlets Protection degree:	**IP66**
Plugs Protection degree:	**IP66**
Impact Resistance:	**7J**
Sockets colour:	**Grey RAL7037**
Plugs material:	**Thermoplastic**
Plugs colour:	**Black RAL9011**

ATEX CERTIFICATE

Interlocked switch sockets: 16A-32A-63A	**IMQ 11 ATEX 010**
Plugs 16A-32A-63A:	**IMQ 11 ATEX 011**

CABLE ENTRY

Maximum entry with cable glands

Rated current (A)	Single socket	
	Upper	Lower
16A-32A	M32	M32
63A	KIT 579.EX0201 (*)	KIT 579.EX0201 (*)

(*) Cable entry in the 63A version must be done through the relevant junction box equipped with a single cable entry type M50x1.5 (Junction box Kit art. 579.EX0201).

WIRING OPERATIONS

Wiring capacity of the terminals (mm²)

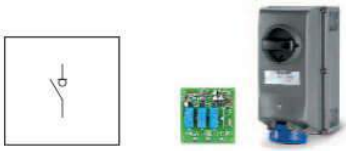
Rated current (A)	Socket outlets		Plugs	
	Min	Max	Min	Max
16A	4	4	2,5	2,5
32A	10	10	6	6
63A	25	25	16	16

(*) In case of flexible cable max 70 mm².

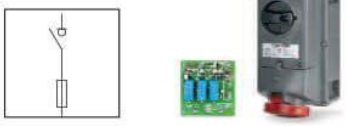
ADVANCE-GRP[EX] Series - OPTIMA-EX Series

ATEX II 2D GRP

MECHANICALLY INTERLOCKED SOCKET OUTLETS WITH I-Device IP66



Description	Socket	Hz	Volt	Colour	h	16A ⧉1	32A ⧉1	63A ⧉1
Switch-disconnector	2P+E	50/60	200-250V		6	503.1683	503.3283	503.6383
	3P+E	50/60	380-415V		6	503.1686	503.3286	503.6386
	3P+N+E	50/60	346-415V		6	503.1687	503.3287	503.6387



Description	Socket	Hz	Volt	Colour	h	16A ⧉1	32A ⧉1	63A ⧉1
Switch-disconnector and fuse (*)	2P+E	50/60	200-250V		6	503.1683-F	503.3283-F	503.6383-F
	3P+E	50/60	380-415V		6	503.1686-F	503.3286-F	503.6386-F
	3P+N+E	50/60	346-415V		6	503.1687-F	503.3287-F	503.6387-F

(*) Fuses not included.

⧉ Pack Quantity.

I-Device

An electronic device controls (Intelligence Device) the status of the interlocked socket, monitoring the electrical functionality:
- operation of the signalling and control card is guaranteed even when the load is not connected;

INDICATOR LIGHT ON	INDICATOR LIGHT FLASHING	INDICATOR LIGHT OFF
●	✳	○
indicates that the fuses are not open and all the phases are present;	signals the interruption of one or more fuses	indicates that the socket outlet is not powered
	signals the absence of a phase (*)	
indicates that the socket outlet is power;		

(*) per prodotti monofase in caso di mancanza fase/neutro la spia di segnalazione risulta spenta.

ACCESSORIES AND COMPLEMENTARY PRODUCTS

ADVANCE-GRP[EX] Series

Description	Contacts		
Microswitch Kit for Advance GRP 16A-32A-63A for plug-inserted control	1NO/1NC	1/12	579.0100

Max 1 kit for 16A-32A sockets; Max 2 kit for 63A sockets.

Description		
Junction box Kit (63A) M50-EX (*)	1/12	579.EX0201

(*) Only for the 63A version. Cable gland M50 available upon request.

AUXILIARY CONTACTS

COMMAND Series

Description	For switches		
NC contact	16A-32A	10	590.PL004001
	63A	10	590.PL004003
NO contact	16A-32A	10	590.PL004002
	63A	10	590.PL004004

NC= normally closed.
NO= normally open.

Pack Quantity.

EXAMPLE OF BATTERY ONLY FOR EX ZONE 22

579.0030 579.0040 579.0021 579.0031 579.0022

SCAME features an in-house design department (CIT) that can quickly carry out feasibility analyses at the customer's request, as well as suitable equipment and qualified personnel for the construction, mounting and assembly of ADVANCE-GRP[EX] batteries.

ADVANCE-GRP[EX] Series - OPTIMA-EX Series

ATEX II 2D GRP

PLUGS IP66

OPTIMA-EX Series

Description	Poles	Hz	Volt	Colour	h	16A 1	32A 1	63A 1
Plug	2P+E	50/60	200-250V		6	**218.EX1633**	**218.EX3233**	**218.EX6333**
	3P+E	50/60	380-415V		6	**218.EX1636**	**218.EX3236**	**218.EX6336**
	3P+N+E	50/60	346-415V		6	**218.EX1637**	**218.EX3237**	**218.EX6337**

Pack Quantity.

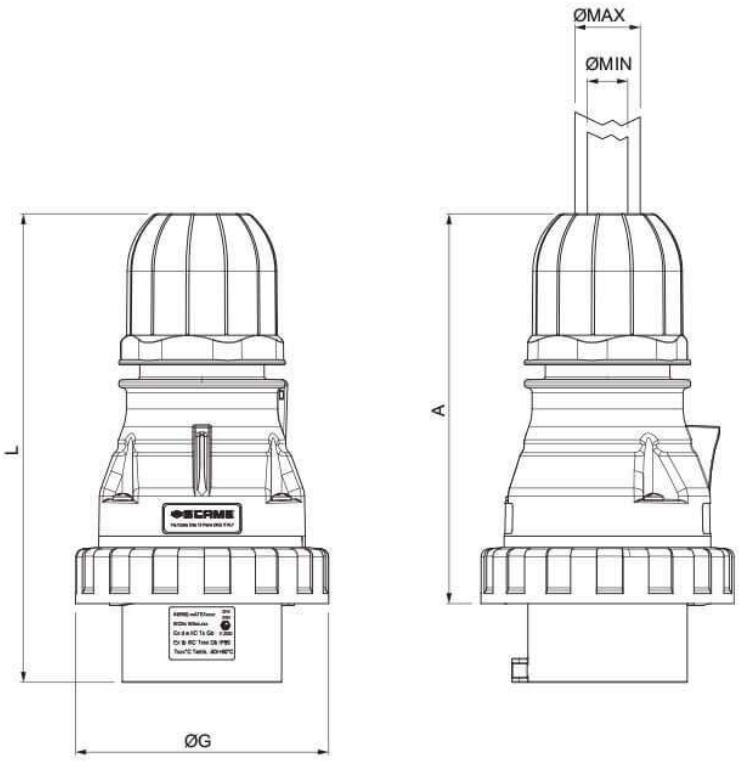
TECHNICAL FEATURES

OPTIMA-EX Series	Unit		Value		
Rated Current			**16A**	**32A**	**63A**
Code			218.16...-EX	218.32...-EX	218.63...-EX
Suitable Size cables Ground-Terminals	(mm²)		2.5	6	16
Power Supply Terminals - Tightening-Torque	(Nm)		0.8	0.8	2.2
Cable size accepted by Cable-Clamp (eg.H07RN-F)	(mm)	2P+E	10.9-14	14.1-18	22-34
		3P+E	12.1-15.5	15.7-20	22-34
		3P+N+E	13.3-17	17.5-22.5	22-34
Cable Gland/Cable-Clamp Tightening-Torque	(Nm)	2P+E	5.6	5.6	13
		3P+E	5.6	5.6	13
		3P+N+E	5.6	9	13
Cable-Gland/Cable-Clamp (Screw) - Tightening-Torque	(Nm)		-	-	0.8
Handle Screws – Tightening-Torque	(Nm)		-	-	0.9

Rated Current	Max rated current			Cable size ADVANCE-GRP[EX]	ΔT cable entry	ΔT cable
	T. amb 40°C	T. amb 50°C	T. amb 60°C			
16A	-	-	16A	4 mm² Stranded-cable	20,3 K	-
32A	-	-	25A	10 mm² Stranded-cable	21,1 K	-
63A	55A	50A	45A	25 mm² Stranded-cable	20,4 K	85°C

DIMENSIONS

OPTIMA SERIES



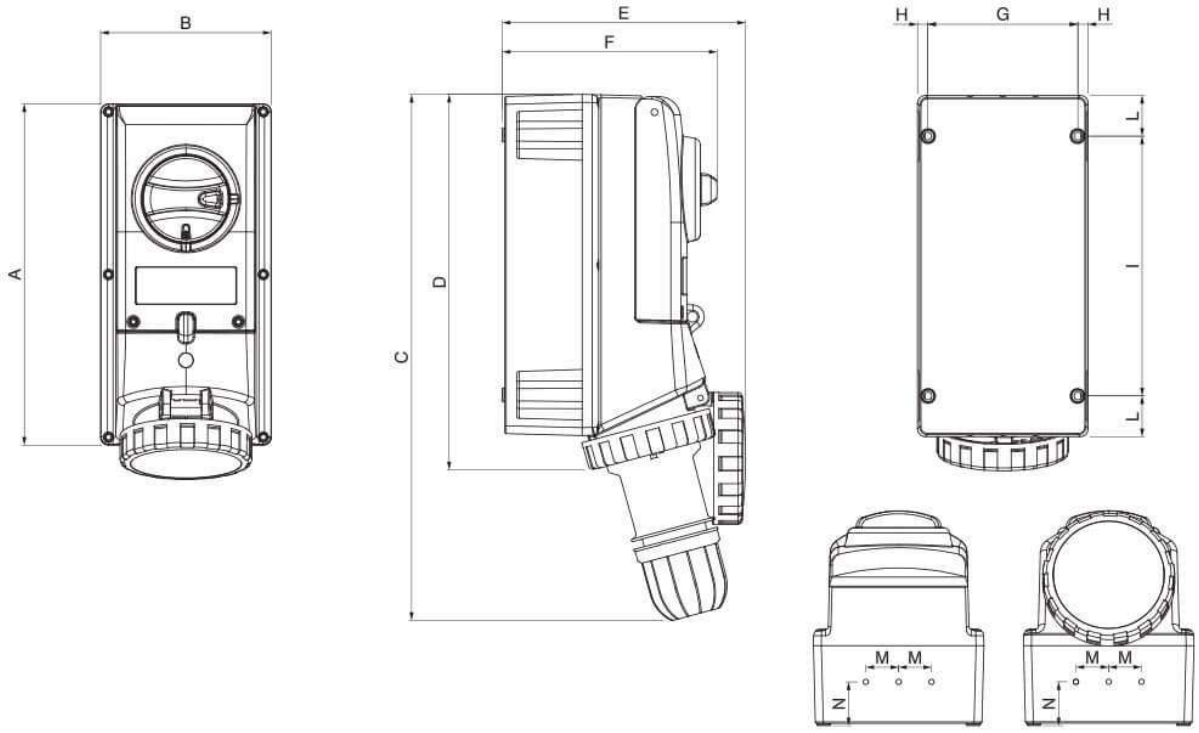
IP66	TYPE	A Min	øG	L Min
	2P+E	116	73	140,5
16A	**3P+E**	123	81	147,5
	3P+N+E	140,5	88	165
	2P+E	142,6	92	174
32A	**3P+E**	142,6	92	174
	3P+N+E	150	101	180,5
63A		166,5	112	217,5

ADVANCE-GRP[EX] Series - OPTIMA-EX Series

ATEX II 2D GRP

DIMENSIONS

ADVANCE-GRP[EX] SERIES



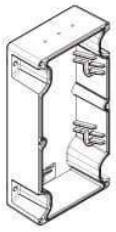
VERSION		A	B	C	D	E	F	G	H	I	L	M	N
2P+E	16A	260	130	360	280	170	164	114,5	7,75	198	31	25	33,5
3P+E	16A	260	130	365	282	175	164	114,5	7,75	198	31	25	33,5
3P+N+E	16A	260	130	390	282	182	164	114,5	7,75	198	31	25	33,5
2/3P+E	32A	260	130	390	285	189	164	114,5	7,75	198	31	25	33,5
3P+N+E	32A	260	130	400	286	185	164	114,5	7,75	198	31	25	33,5
2P+E	63A												
3P+E	63A	380	170	550	420	225	203	150	8,3	310	35	32,5	40
3P+N+E	63A												

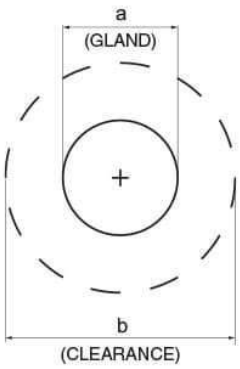
TECHNICAL FEAURES, CROSS SECTIONAL AREA AND TORQUE

RATED CURRENT			16A	32A	63A
Switch-command and/or fuse protection		Catalogue number	Terminals – Torque (Nm)		
Switch type serie Command (SCAME)		503.16.... 503.32.... 503.63....	0,8	0,8	3,6
Switch-Command & fuse 16-32A : 10:3 38 gG 63A : CH 22 X 58 63A gG		503.16...F 503.32...F 503.63...F	0,8	0,8	3,6
Earth terminals		503.16.... 503.32.... 503.63....	1,2	1,2	3,5

(Dimensions in mm)

CABLE ENTRY





16A/32A WxD (mm²)	63A WxD (mm²)
80x45	110x55

	Type cable entry M	Type cable entry PG	GLAND a (mm)	CLEARANCE b (mm)	Area A n°
16A/32A	M32		33	50	2
		PG29	37,5	50	2

NOTE:

NOTE: Use only Ex e and/or Ex tb IIIC approved glands (as relevant). Certified cable glands can only be fitted with a suitable IP rating commensurate with IP rating of the enclosure. Refer to the instructions of cable glands manufacturer.

Cable entry for 63A socket have to be done with the only one cable entry type M50x1,5 (kit type, art. 579.EX0201).

CROSS SECTIONAL AREAS AND CABLE TEMPERATURE

FINELY-STRANDED 16A: 4mm² - 32A: 10mm² - 63A: 25mm²
SINGLE-WIRE 16A: 4mm² - 32A: 10mm² - 63A: 25mm²

Rated current	Max. current			Optima-EX ΔT cable
	T. amb 40°C	T. amb 50°C	T. amb 60°C	
16A	-	-	16A	-
32A	-	-	25A	-
63A	55A	50A	45A	85°C

(Dimensions in mm)

ZP00921-GB-1

8 001636 413280

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