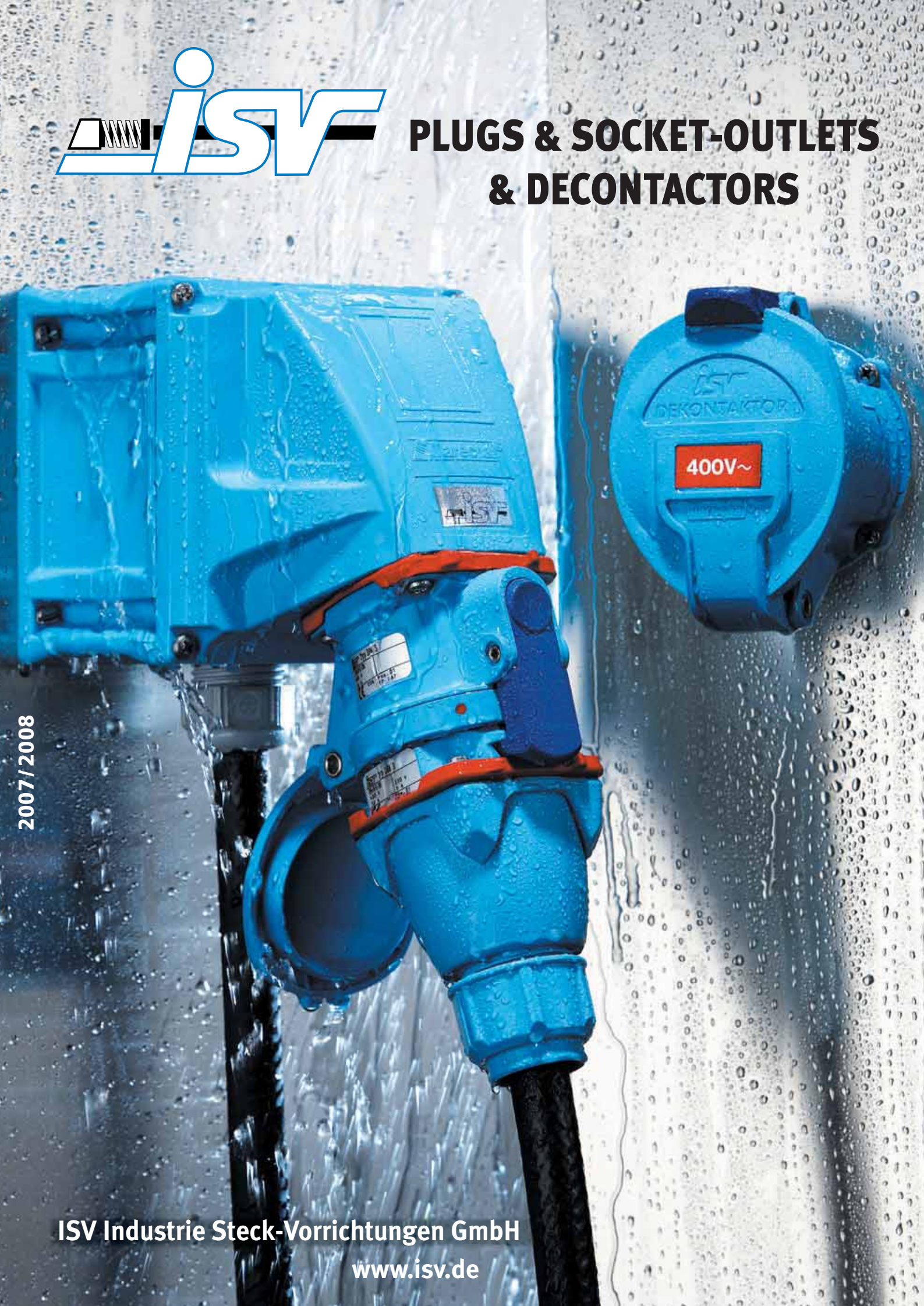
PLUGS & SOCKET-OUTLETS & DECONTACTORS



2007/2008

ISV Industrie Steck-Vorrichtungen GmbH
www.isv.de

INDUSTRIAL PLUGS & SOCKET-OUTLETS AND DECONTACTORS

5A - 700A / 12V - 1000V / IP54 - IP67

Decontactors have been used in a wide range of industrial applications, i.e. in the food industry, the iron and steel industries, foundries, mines, quarries, tunnelling, chemical industries, sewage plants, the car industry, harbours, cranes, air and rail transport, emergency services, outdoor shows and markets, industrial machinery and portable equipment of many kinds. The product range covers the complete power spectrum from mA/5A up to 700A and from 12V up to 1000V.

CERTIFIED QUALITY

ISV is a manufacturer of industrial plugs and socket-outlets in strict compliance with quality criteria. Its quality management system is certified to the ISO 9001:2000 standard. With an important export activity, ISV is a member of the Butt-Contact electrical connectors Manufacturers Association. This association guarantees an international standard ensuring a perfect interchangeability and compatibility of the products manufactured by all members as well as conformity with international standards and in particular with the Low Voltage Directive.

A BUILT-IN LOAD BREAKING CAPACITY

Decontactors are plugs and socket-outlets with an integral switching function. Up to 250A, they can break loads in complete safety. Thanks to a contact system based on silver-nickel butt contacts, the handling of the Decontactor is very easy and does not require any effort: a simple press on the socket latch makes the Decontactor break the load and the plug is ejected to its parked position. A quarter of a turn of the plug allows it to be totally withdrawn from the socket. This is done in complete safety, the circuit having already been interrupted. Therefore, in many cases, an additional mechanically interlocked switch system is no longer necessary.

MEETING THE STANDARDS

Decontactors comply with international standards:

- with IEC/EN 60309-1 for industrial plugs and socket-outlets,
- with IEC/EN 60947-3 for air-break switches, utilisation category AC22, AC23 or AC3, depending on the series.

Furthermore, they have international approvals (VDE, UL, CSA,...)

Explosion-proof "**DXN**" comply with:

- ATEX 94/9/EG and 99/92/EG
- EN 50014/18/19
- EN 50281-1-1
- IEC 60079-0 / 60079-1
- IEC/EN 60309-1

EASE OF OPERATION:

The **Decontactor** is connected.

A simple press on the latch makes the **Decontactor** break the circuit. The plug is ejected to its parked position.

Now, a simple quarter of a turn of the plug to the left for the DS and DSN ranges and to the right for DNs allows it to be totally withdrawn from the socket. This is done in complete safety as the circuit is already dead.

The plug and socket-outlet are separated: all live parts are protected thanks to the safety shutter or protection against foreign particles greater 1 mm.

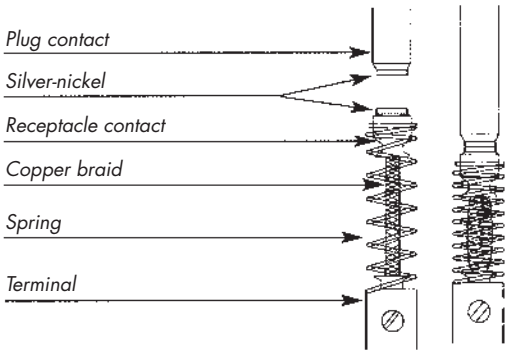
DECONTACTORS

COMBINING RELIABILITY, SAFETY AND EFFICIENCY

EXCEPTIONAL RELIABILITY OF THE CONNECTION

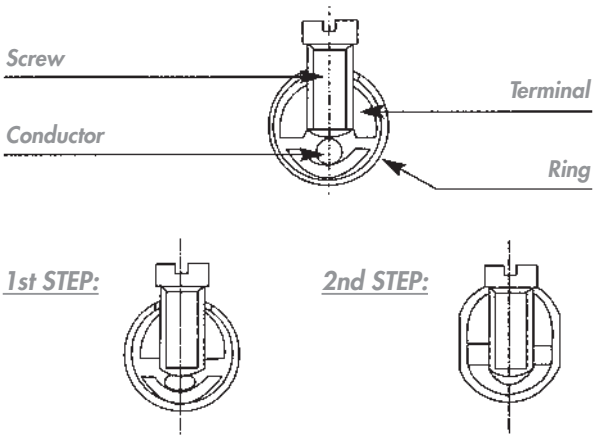
Decontactors are fitted with spring-loaded butt contacts with silver-nickel tips. Silver guarantees high quality connections because it is not affected by oxidation and remains an excellent conductor even after years of intensive use. Butt contacts ensure and maintain minimum contact resistance, thus preventing an excessive rise in temperature. Thanks to springs in the socket-outlet, the contact pressure is well-defined and remains constant even after many cycles.

CONSTANT CONTACT PRESSURE



SPRING ASSISTED TERMINALS

The non loosening of conductors is guaranteed by spring assisted tightening terminals that apply constant pressure on conductors.



OVERLOAD CONDITIONS

This contact system enables Decontactors to withstand overload conditions representing up to 8 times their normal rated current, e.g. during the starting up of a motor (see chapter "OVERLOAD CONDITIONS / TECHNICAL FEATURES").

SAFETY FOR OPERATORS AND MACHINES

In order to comply with safety regulations and to avoid any risk, many industrial applications combine plugs and sockets with a switch or use plugs and socket-outlets with an integral switching function such as Decontactors.

Thanks to their exceptional breaking capacity (IEC/EN 60947-3, AC22/AC23) Decontactors can break loads – up to 250A – without any danger to the user. A simple pressure on the latch is needed to turn the load off and cut the power. Thus, the socket is no longer under load, even before the plug is removed. This system offers absolute safety for the user.

SAFETY SHUTTER

Once the Decontactor is disconnected, the "total safety" shutter renders live parts inaccessible by shielding them. It prevents any danger of burning or accidental electrocution.

DIFFERENTIATION AND POLARITY

Decontactors have generally 24 different possible keying positions, thus preventing unwanted connections between products having different voltages or applications.
In order to differentiate the earth contact from the others, it is always at the centre of the insulator. The earth (ground) contact closes first and opens last, always ensuring a safe earth connection.

A simple press on the latch makes the Decontactor break the circuit.

HOUSING MATERIAL AND ROBUSTNESS

Housings are made of metal or of fibreglass-filled polyester ensuring very high resistance to the most extreme conditions of usage: impact, fire, water, chemical aggression, weather, UV...

FLEXIBILITY AND INCREASED PRODUCTIVITY

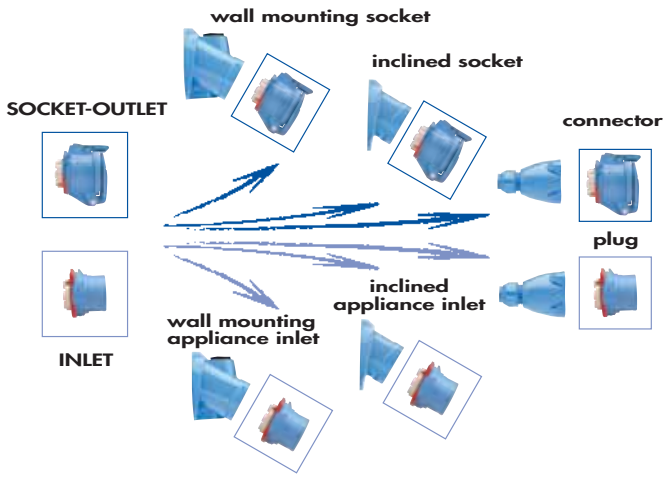
Motors or other electrified components, when connected via a Decontactor, can be displaced at any time and in complete safety. A simple press on the socket latch interrupts the current whenever the component needs repair or has to be replaced. When downtime is critical and costly, this can bring the system back on line quickly, saving time and money. The calling in of an electrician to disconnect the motor is not necessary which reduces costs even further. Many additional installations which only serve for the maintaining of production in case of a failure are needed no longer. Thanks to the Decontactor a replacement motor can be connected very quickly.

ECONOMIC EFFICIENCY

Decontactors offer an economic solution:

- They are the combination of a plug/socket-outlet and a switch in one device.
- The devices are modular and have been designed to allow the combination of different plugs with a single socket provided they are electrically compatible. Thus, a socket 3P+N+E may admit 3 different plugs: 1P+N+E, 3P+E and 3P+N+E. By this, the number of required sockets decreases and the cost of the installation is reduced.
- Thanks to their breaking capacity, Decontactors can in many cases do without costly additional installations such as the combination with switches or pilot wiring.

MODULAR DESIGN



ISV provides for an economical and effective modular system by combining accessories and electric parts upon request. This provides for easy maintenance and installation as well as reduction of stock. Singly or in combination, the different parts can be combined to form the assemblies as shown above.
Most accessories and components are available as spare parts.

OVERLOAD CONDITIONS / TECHNICAL FEATURES

In industrial installations, plugs and socket-outlets have to withstand temporary overload conditions which are either unforeseen or may occur during normal operation, i. e. due to a motor starting. The maximum value is defined by their ability to carry off the heat resulting from this overload.

In IEC/EN Publication 60309-1, the temperature rise is limited to 50 K.

I) TEMPERATURE RISE

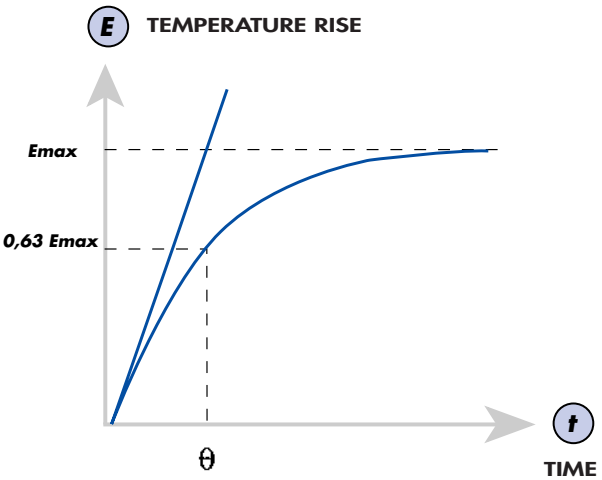
Temperature rise is linked to the overall resistance of the points of contact in series in a plug and socket:

- The socket terminal,
- The socket / plug contact interface,
- The plug terminal.

Temperature rise is proportional to the square of the current.

When a socket supplies a current "I" to an appliance, as its internal resistance is constant, terminals and contacts heat up to reach, after a certain time, a thermal equilibrium. Thermal equilibrium depends, of course, on the resistance, and also on the typical construction of the product, its mass and volume, and how the heat generated is dissipated along the conductors and the bodies.

Thermal equilibrium is reached gradually. The slope of the temperature rise curve, function of time (t), determines the time constant Θ of the product. The time constant corresponds to 63 % of the thermal equilibrium.



Two sockets of the same rating but of different designs do not heat up the same way. Those with a higher contact resistance will reach their thermal equilibrium more rapidly and the slope of their temperature rise curve will be steeper. The larger the time constant, the longer the socket takes to reach its thermal equilibrium. The major consequence of this rule is that a product with a long time constant can carry significant overloads for a period of time, without overheating.
Thanks to their design and low contact resistance, our products have long time constants.

EXAMPLE: DS TIME CONSTANT

DECONTACTOR	Time Constant (min.)
DS1 DSN1 DSN3	17
DS3 DSN6	29
DS6 DSN9	35
DS9	53
DS2	60

TEMPERATURE RISE OF DS DECONTACTORS (IN °C)

DECONTACTOR	Current	Temperature rise
DS1	30 A	30 K
DS3	50 A	35 K
DS6	90 A	35 K
DS9	150 A	38 K
DS2	250 A	47 K

II) OVERLOAD CONDITIONS

II.1) ADMISSIBLE OVERLOAD

A typical cause for temporary overload is when a motor starts up, or restarts, when, for a short time, the current is several times higher than its rated full load current.

Type of Starter	Current Coefficient
Direct	5 to 7 In
Star-Delta	2,5 In

The time constants of Decontactors are so long, that they can withstand up to 8 times their normal rated current during 1 minute without exceeding the maximum temperature rise of 50 Kelvin defined in IEC/EN 60309-1.

II.2) CALCULATION OF THE TEMPERATURE RISE

EXAMPLE:

For instance, a DS6 heats up by 35K after 35 minutes under a load of 90A, so what will the temperature rise be with an overload of 450A for 1 minute?

The thermal equilibrium for 450A will be:

$$35 \times \frac{450^2}{90^2} = 875K$$

After 1 minute the temperature rise will be:

$$875 \times 1 - \frac{1}{e^{1/35}} = 25K$$

Which is negligible. For a load of 630A for 1 minute, the temperature rise would be 49.1 K.

III) BEHAVIOUR UNDER SHORT CIRCUIT CONDITIONS

As the butt contact closes immediately when the two solid metal parts touch, the current flows without restriction and fuses or switches can work properly.

IV) MECHANICAL AND ELECTRICAL ENDURANCE

The international standard for plugs and sockets, IEC/EN 60309-1, defines the minimum requirements industrial plugs and socket-outlets have to meet. In practice, many applications require performances in excess of this. Our products are particularly appreciated in the industry, as they outperform, by far, the minimum requirements set by the standard.

NOMINAL CURRENT	TEST VOLTAGE	POWER FACTOR (COS PHI) φ	TEST CURRENT		NUMBER OF OPERATIONS	
			Norm	**Decontactor**	Norm	**Decontactor**
10 to 20A	1.1 Un	0,6	1,25 In	**4 In**	50	50
	Un	0,6	In	In	5000	**10000**
	Un	0,6	/	**10 In**	/	**1**
21 to 29A	1.1 Un	0,6	1,25 In	**3 In**	50	50
	Un	0,6	In	In	5000	**8000**
	Un	0,6	/	**10 In**	/	**1**
30 to 40A	1.1 Un	0,6	1,25 In	**3 In**	50	50
	Un	0,6	In	In	1000	**8000**
	Un	0,6	/	**10 In**	/	**1**
41 to 59A	1.1 Un	0,6	1,25 In	**2 In**	50	50
	Un	0,6	In	In	1000	**5000**
	Un	0,6	/	**10 In**	/	**1**
60 to 70A	1.1 Un	0,6	1,25 In	**2 In**	20	**50**
	Un	0,6	In	In	1000	**5000**
	Un	0,6	/	**10 In**	/	**1**
71 to 99A	1.1 Un	0,6	1,25 In	1,5 In	20	**50**
	Un	0,6	In	In	1000	**3000**
	Un	0,6	/	**10 In**	/	**1**
100 to 125A	1.1 Un	0,7	1,25 In	**1,5 In**	20	**50**
	Un	0,7	In	In	250	**3000**
	Un	0,7	/	**10 In**	/	**1**
126 to 199A	1.1 Un	0,7	1,25 In	1,25 In	20	**50**
	Un	0,7	In	In	250	**500**
	Un	0,7	/	**10 In**	/	**1**
200 to 250A	1.1 Un	0,8	1,25 In	1,25 In	10	**50**
	Un	0,8	In	In	125	**500**
	Un	0,8	/	**10 In**	/	**1**

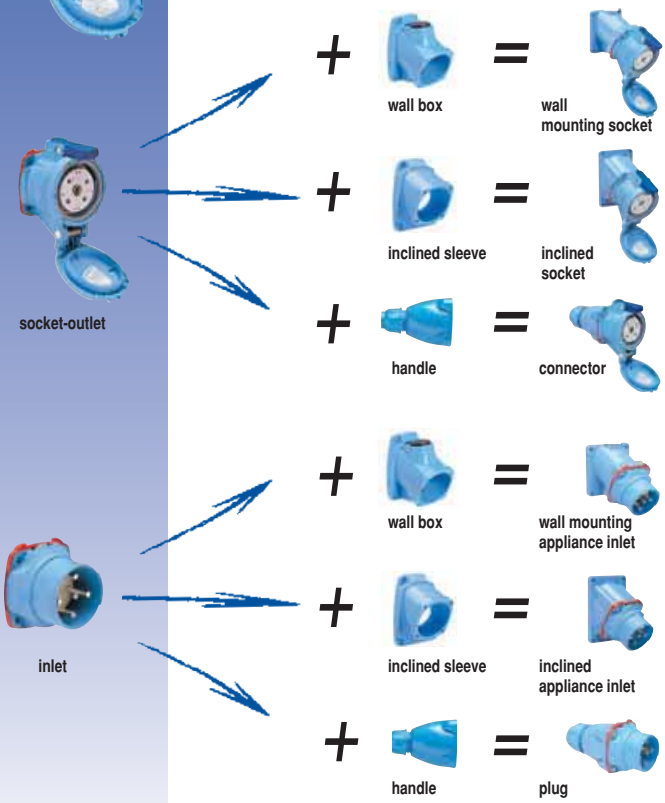
Temperature rise under 50 K

- Plugs & socket-outlets with an integral switching device (IEC/EN 60309-1, clause 2.8)
- Easy handling by a simple press on the socket latch
- Load breaking capacity according to IEC/EN 60947-3, AC22/AC23
- Very compact design
- Casings made of glassfibre-reinforced polyester
- Resistance to shocks, UV radiation, chemical agents...
- Interior keying system with 24 non-interchangeable positions
- Silver-nickel tipped contacts - not affected by oxidation
- Safety shutter
- Multipin versions (up to 37 contacts)

DSN

DECONTACTORS

From 16A to 63A
Voltage range up to 690 V AC and 250 V DC
IP 67



BASIC COMPONENTS

SOCKET OUTLET

A / V	CONTACTS	REF.
16-20A / 230V	1P+N+E	61-14015
16-20A / 400V	3P+N+E	61-14017
32A / 230V	1P+N+E	61-34015
32A / 400V	3P+N+E	61-34017
32A / 400V	3P+N+E+ 2 aux	61-34017-972
63A / 230V	1P+N+E	61-64015
63A / 400V	3P+N+E	61-64017
63A / 400V	3P+N+E+ 2 aux	61-64017-972
63A / 400V	3P+N+E+ 4 aux	61-64017-264

For additional voltages (up to 1000V), other pin configurations or multicontacts, please consult us.

INLET

A / V	CONTACTS	REF.
16-20A / 230V	1P+N+E	61-18015
16-20A / 400V	3P+N+E	61-18017
32A / 230V	1P+N+E	61-38015
32A / 400V	3P+N+E	61-38017
32A / 400V	3P+N+E+ 2 aux	61-38017-972
63A / 230V	1P+N+E	61-68015
63A / 400V	3P+N+E	61-68017
63A / 400V	3P+N+E+ 2 aux	61-68017-972
63A / 400V	3P+N+E+ 4 aux	61-68017-264

For additional voltages (up to 1000V), other pin configurations or multicontacts, please consult us.

ACCESSORIES

WALL BOX 30°, POLY

SIZE / ENTRY	REF.
for 16-20A / M25	61-1A053-418
for 32A / M25	61-3A053-418
for 63A / M32	61-6A053-419

MODULAR WALL BOX 70°, POLY

SIZE	REF.
for 16-20A	51-AAS58
for 32A	51-BAS58
for 63A	51-CAS58

WALL BOX 70°, METAL

SIZE / ENTRY	REF.
for 63A / M32	87-3A053-419

INCLINED SLEEVE 30°, POLY

SIZE	REF.
for 16-20A	61-1A027
for 32A	61-3A027
for 63A	61-6A027

MODULAR INCLINED SLEEVE 70°, POLY

SIZE	REF.
for 16-20A	51-AA757
for 32A	51-BA757
for 63A	51-CA757

INCLINED SLEEVE 70°, METAL

SIZE	REF.
for 63A	87-3A087

STANDARD HANDLE

SIZE / Ø mm	REF.
for 16-20A / 8-18	61-1A013
for 32A / 8-23	61-3A013
for 63A / 8-32	61-6A473

FLOWERPOT HANDLE

SIZE / ENTRY	REF.
for 16-20A / M25	61-1A253-25P
for 32A / M25	61-3A253-25P
for 63A / M32	61-6A253-32P

CURRENT		LOAD BREAKING CAPACITY					
					Max. conductor cross-section in mm²		
		440V	500V	690V	flexible	stranded	auxiliaries
DSN1	20A	20A	20A	–	2,5	4	–
DSN3	32A	32A	32A	32A	6	10	6
DSN6	63A	63A	63A	63A	16	25	2,5

- Plugs & socket-outlets with an integral switching device (IEC/EN 60309-1, clause 2.8)
- Easy handling by a simple press on the socket latch
- Load breaking capacity according to IEC/EN 60947-3, AC22/AC23
- Compact design
- Metal casings (up to 150A also available in poly)
- Interior keying system with 24 non-interchangeable positions
- Silver-nickel tipped contacts - not affected by oxidation
- Safety shutter

DS DECONTACTORS

From 63A to 250A
(16A - 50A on request)
Voltage range up to 690V AC and 250V DC
IP 54 (IP 66/67 as an option)

BASIC COMPONENTS

SOCKET OUTLET

A / V	CONTACTS	REF.
63-90A / 230V	1P+N+E	39-64015
63-90A / 400V	3P+E	39-64013
63-90A / 400V	3P+N+E	39-64017
125-150A / 230V	1P+N+E	39-94015
125-150A / 400V	3P+E	39-94013
125-150A / 400V	3P+N+E	39-94017
250A / 230V	1P+N+E	39-24015
250A / 400V	3P+E	39-24013
250A / 400V	3P+N+E	39-24017

For poly casings (up to 150A) or auxiliaries, please consult us.

INLET

A / V	CONTACTS	REF.
63-90A / 230V	1P+N+E	39-68015
63-90A / 400V	3P+E	39-68013
63-90A / 400V	3P+N+E	39-68017
125-150A / 230V	1P+N+E	39-98015
125-150A / 400V	3P+E	39-98013
125-150A / 400V	3P+N+E	39-98017
250A / 230V	1P+N+E	39-28015
250A / 400V	3P+E	39-28013
250A / 400V	3P+N+E	39-28017

For poly casings (up to 150A) or auxiliaries, please consult us.


socket-outlet

\+ wall box = wall mounting socket
\+ inclined sleeve = inclined socket
\+ handle = connector


inlet

\+ wall box = wall mounting appliance inlet
\+ inclined sleeve = inclined appliance inlet
\+ handle = plug

ACCESSORIES

WALL BOX 20°, METAL

SIZE / ENTRY	REF.
for 63-90A / M40	39-6A053-420
for 125-150A / M50	39-9A053-50M

WALL BOX 60°, METAL

SIZE / ENTRY	REF.
for 250A / M63	39-2A053-63M

WALL BOX 70°, METAL

SIZE / ENTRY	REF.
for 63-90A / M40	87-6A053-420
for 125-150A / M50	87-9A053-429

INCLINED SLEEVE 30°/60°, METAL

SIZE	REF.
for 63-90A (30°)	39-6A027
for 125-150A (30°)	39-9A027
for 250A (60°)	39-2A027

INCLINED SLEEVE 70°, METAL

SIZE	REF.
for 63-90A	87-6A087
for 125-150A	87-9A087

DRAW MECHANISM MADE OF STAINLESS STEEL

SIZE	REF.
Draw bars (socket side)	
for 125-150A	standard
for 250A	39-2A024-486
Plate (plug side)	
for 125-150A	standard
for 250A	39-2A014-486

HANDLES

SIZE / Ø mm	REF.
for 63-90A / 13-35	31-6A013
for 125-150A / 18-49	65-9A013...
for 250A / 34-58	39-2A013-03

METAL HANDLE

SIZE / ENTRY	REF.
for 63-90A / M40	31-6A953-40M
for 125-150A / M50	31-9A953-50M
for 250A / 45-54	39-2A915

CURRENT / LOAD BREAKING CAPACITY

	CURRENT	LOAD BREAKING CAPACITY			Max. conductor cross-section in mm²		
		440V	500V	690V	flexible	stranded	auxiliaries
DS1	30A	30A	25A	16A	6	6	6
DS3	50A	50A	40A	32A	10	16	6
DS6	90A	90A	75A	63A	25	35	1,5
DS9	150A	150A	125A	90A	50	50	1,5
DS2	250A	250A	200A	150A	95	120	1,5

- Plugs and sockets according to DIN VDE 0627
- Compulsary electrical interlocking (no on-load disconnection)
- Poly casing for DS9 (100A)
- Metal casing for DS2 and DS4 (200A and 400A)
- Wall box DS4 (400A) made of stainless steel
- Silver-nickel tipped contacts - not affected by oxidation
- Safety shutter
- Draw mechanism made of stainless steel:
  - Supplied with DS4 (400A)
  - Optional for DS 100A / 200A (see "DS Decontactors" 63-250A)

DS up to 1000 V

From 100 A to 400 A
Voltage range up to 1000 V
IP 54 (IP 66/67 as an option)

BASIC COMPONENTS

SOCKET OUTLET

A / V	CONTACTS	REF.
100A / 1000V	3P+E+2 aux	31-94223-172
200A / 1000V	3P+E+2 aux	39-24223-172
200A / 1000V	3P+N+E+2 aux	39-24227-972
400A / 400V	3P+E+2 aux	39-44013-172-00N
400A / 1000V	3P+E+2 aux	39-44223-172-00N

INLET

A / V	CONTACTS	REF.
100A / 1000V	3P+E+2 aux	31-98223-172
200A / 1000V	3P+E+2 aux	39-28223-172
200A / 1000V	3P+N+E+2 aux	39-28227-972
400A / 400V	3P+E+2 aux	39-48013-172-00N
400A / 1000V	3P+E+2 aux	39-48223-172-00N

ACCESSORIES

WALL BOX 20°, METAL

SIZE / ENTRY	REF.
for 100A / M40	39-9A053-420
for 100A / M50	39-9A053-429

WALL BOX 60°, METAL

SIZE / ENTRY	REF.
for 200A / M63	39-2A053-63M

WALL BOX 20°, STAINLESS STEEL

SIZE / ENTRY	REF.
for 200A / 36-65	39-4A025-**XXZ(*)**
for 400A / 36-65	39-4A025-**XXZ(*)**

(*) replace XX" with the appropriate suffix number that represents the cable outer diameter of your choice:
36-45 mm = **M63**
46-60 mm = **25 Z**
58-65 mm = **30 Z**

INCLINED SLEEVE 60°, METAL

SIZE	REF.
for 100A	39-9A027
for 200A	39-2A027
for 400A	39-2A027 + 39-4A127-68

HANDLE

SIZE / Ø mm	REF.
for 100A / 18-49	65-9A013 ...

METAL HANDLE

SIZE / Ø mm	REF.
for 200A / 45-54	39-2A915
for 400A / 54-73	39-4A915-**XX(*)**

(*) replace XX with the appropriate suffix number that represents the cable outer diameter of your choice:
54-57 mm = **57**
58-62 mm = **62**
63-68 mm = **68**
69-73 mm = **73**

CURRENT

DS9	100A
DS2	200A
DS4	400A

Max. conductor cross-section in mm²		
flexible	stranded	auxiliaries
50	50	1,5
95	120	1,5
150	185	1,5

- Plugs & socket-outlets with an integral switching device (IEC/EN 60309-1, clause 2.8)
- Easy handling by a simple press on the socket latch
- Load breaking capacity according to IEC/EN 60947-3, AC22
- Metal casings / for harsh conditions of use
- Interior keying system with 16 non-interchangeable positions
- Silver-nickel tipped contacts - not affected by oxidation
- Multipin versions (up to 20 contacts)
- High temperature versions available up to 130°C

DN DECONTACTORS

From 10A to 90A
Voltage range up to 500V AC and 130V DC
IP 54 (IP 67 as an option)

BASIC COMPONENTS

SOCKET OUTLET

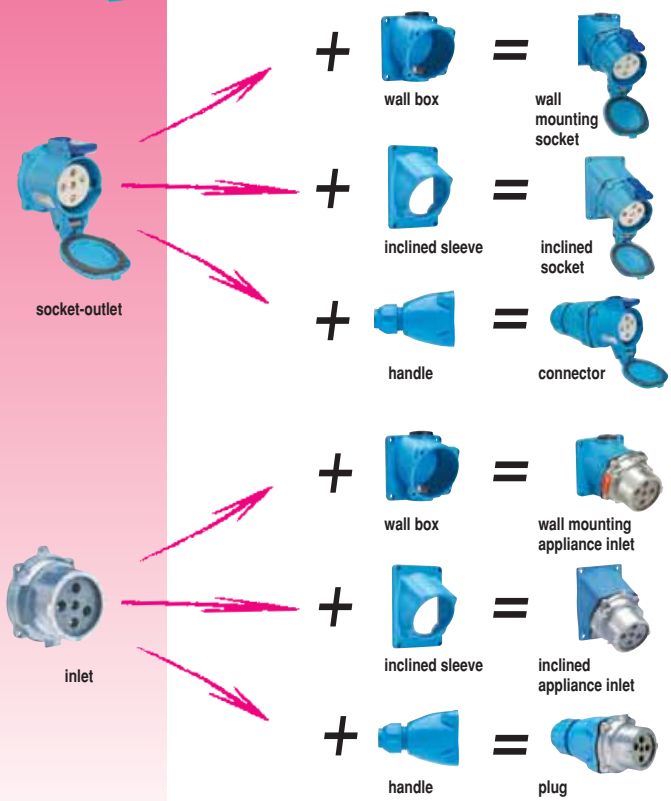
A / V	CONTACTS	REF.
10-20A / 230V	1P+N+E	19-84015
10-20A / 400V	3P+N+E	19-84017
16-30A / 230V	1P+N+E	19-14015
16-30A / 400V	3P+N+E	19-14017
32-50A / 230V	1P+N+E	19-34015
32-50A / 400V	3P+N+E	19-34017
63-90A / 230V	1P+N+E	19-64015
63-90A / 400V	3P+N+E	19-64017

For additional voltages (up to 500V), other pin configurations or multicontacts, please consult us.

INLET

A / V	CONTACTS	REF.
10-20A / 230V	1P+N+E	19-88015
10-20A / 400V	3P+N+E	19-88017
16-30A / 230V	1P+N+E	19-18015
16-30A / 400V	3P+N+E	19-18017
32-50A / 230V	1P+N+E	19-38015
32-50A / 400V	3P+N+E	19-38017
63-90A / 230V	1P+N+E	19-68015
63-90A / 400V	3P+N+E	19-68017

For additional voltages (up to 500V), other pin configurations or multicontacts, please consult us.



ACCESSORIES

WALL BOX 20°, METAL

SIZE / ENTRY	REF.
for 10-20A / M25	19-8A053-418
for 16-30A / M25	19-1A053-418
for 32-50A / M32	19-3A053-419
for 63-90A / M40	19-6A053-420

WALL BOX 70°, METAL

SIZE / ENTRY	REF.
for 16-30A / M25	87-3A053-418
for 16-30A / M32	87-3A053-419
for 32-50A / M40	87-6A053-420
for 63-90A / M50	87-9A053-429

INCLINED SLEEVE 30°, METAL

SIZE	REF.
for 10-20A	19-8A027
for 16-30A	19-1A027
for 32-50A	19-3A027
for 63-90A	19-6A027

INCLINED SLEEVE 70°, METAL

SIZE	REF.
for 16-30A	87-3A087
for 32-50A	87-6A087
for 63-90A	87-9A087

STANDARD HANDLE

SIZE / TYPE / ENTRY		REF.
for 10-20A / Poly	/ 8-23 mm	19-8A013
for 16-30A / Poly	/ 8-32 mm	19-1A013
for 32-50A / Poly	/ 14-39 mm	19-3A013
for 63-90A / Poly	/ 18-49 mm	65-9A013...

METAL HANDLE

SIZE / ENTRY	REF.
for 10-20A / M25	19-8A953-25M
for 16-30A / M25	19-1A953-25M
for 32-50A / M32	19-3A953-32M
for 63-90A / M40	19-6A953-40M

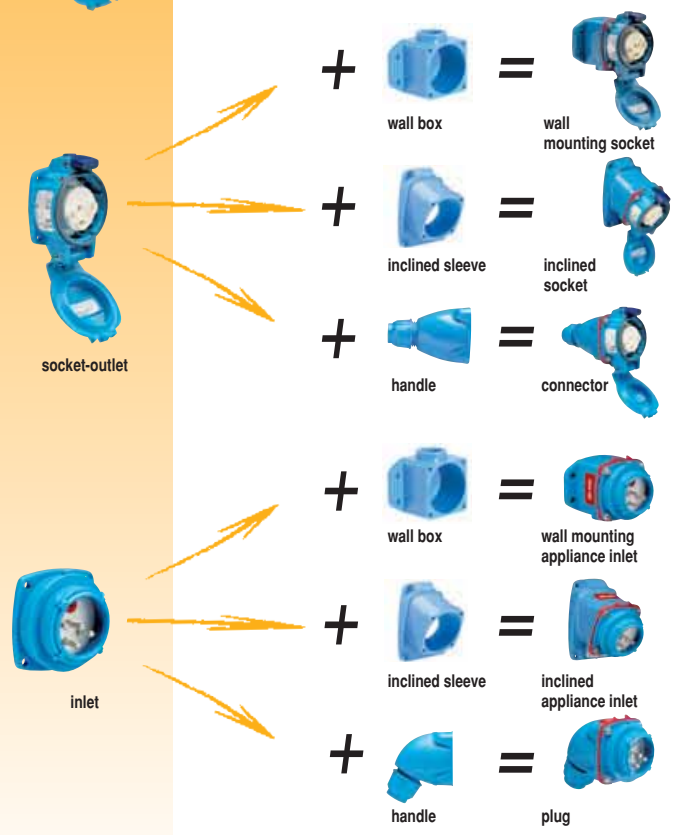
CURRENT		LOAD BREAKING CAPACITY			
				Max. conductor cross-section in mm²	
		440V	500V	flexible	stranded
DN8	20A	20A	10A	6	6
DN1	30A	30A	16A	10	10
DN3	50A	50A	32A	10	16
DN6	90A	90A	63A	25	35

- Plugs and socket-outlets according to IEC/EN 60309-1
- Compact design (minimal space required)
- Poly or metal casings
- Interior keying system with 16 non-interchangeable positions
- Silver-nickel tipped contacts - not affected by oxidation
- Live socket-outlet contacts protected against standard contact test finger (IP2X)
- High temperature versions (metal):
  - PN HT up to 185°C
  - PN Teflon up to 240°C

PN

PLUGS AND SOCKET-OUTLETS

From mA to 30 A
Voltage range up to 500 V AC and 130 V DC
IP 66 and IP 67
High temperature versions: IP 54



BASIC COMPONENTS

SOCKET OUTLET

A / V	CONTACTS	REF.
PN poly:		
mA-30A / 230V	1P+N+E	01-N4015
mA-30A / 400V	3P+N+E	01-N4017
PN metal:		
mA-30A / 230V	1P+N+E	09-N4015
mA-30A / 400V	3P+N+E	09-N4017
PN HT 185°C:		
mA-25A / 230V	1P+N+E	09-24015-185
mA-25A / 400V	3P+N+E	09-24017-185
PN Teflon 240°C:		
mA-25A / 230V	1P+N+E	09-24015-175
mA-25A / 400V	3P+N+E	09-24017-175
For additional voltages (up to 500V), other pin configurations (up to 12 contacts), please consult us.		

INLET

A / V	CONTACTS	REF.
PN poly:		
mA-30A / 230V	1P+N+E	01-N8015
mA-30A / 400V	3P+N+E	01-N8017
PN metal:		
mA-30A / 230V	1P+N+E	09-N8015
mA-30A / 400V	3P+N+E	09-N8017
PN HT 185°C:		
mA-25A / 230V	1P+N+E	09-28015-185
mA-25A / 400V	3P+N+E	09-28017-185
PN Teflon 240°C:		
mA-25A / 230V	1P+N+E	09-28015-175
mA-25A / 400V	3P+N+E	09-28017-175
For additional voltages (up to 500V), other pin configurations (up to 12 contacts), please consult us.		

ACCESSORIES

WALL BOX for PN standard version

TYPE / ENTRY	REF.
Poly / M20	01-NA095-417
Poly / M25	01-NA095-418
Metal / M20	09-NA095-417
Metal / M25	09-NA095-418

WALL BOX, METAL, for PN HT 185°C and Teflon 240°C

TYPE / ENTRY	REF.
Straight / M20	09-NA095-417
Straight / M25	09-NA095-418
Angle / M20	09-NA023-175

INCLINED SLEEVE for PN standard version

TYPE	REF.
Poly	01-NA027
Metal	09-NA027

INCLINED SLEEVE, METAL, for PN HT 185°C and PN Teflon 240°C

REF.
09-NA027

STRAIGHT HANDLE for PN standard version

TYPE / ENTRY	REF.
Poly / 8-15 mm	01-NA013
Poly / M25	01-NA253-25P
Metal / M20	09-NA953-20M
Metal / M25	09-NA953-25M

ANGLED HANDLE for PN standard version

TYPE / ENTRY	REF.
Poly / 8-18 mm	01-NA313

METAL HANDLE for PN HT 185°C and PN Teflon 240°C

ENTRY	REF.
7-13 mm	09-NA916-20M
9-18 mm	09-NA916-25M

CURRENT

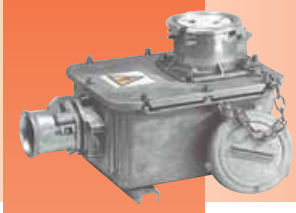
	440V	500V	Max. conductor cross-section in mm² flexible	stranded
PN	30A	20A	6	6
PN HT 185°C	25A	20A	6	6
PN TEFLON 240°C	25A	20A	6	6

- Plugs & sockets for high currents, mechanical and electrical interlocking
- Compulsory electrical interlocking (no on-load disconnection)
- Heavy duty casing (IK10)
- Pilot and auxiliary contacts: 8 for PF Quadra and 4 for PF Classic
- Silver-nickel tipped contacts - not affected by oxidation
- Use lugs (M14) to connect the inlet terminals
- Particularly suitable for use in harsh environments, such as marine, construction and steel industries, tunnelling,...

PF

HIGH CURRENT CONNECTORS

From 315A to 600A
Voltage range up to 1000V
IP 66/67



BASIC COMPONENTS

SOCKET OUTLET

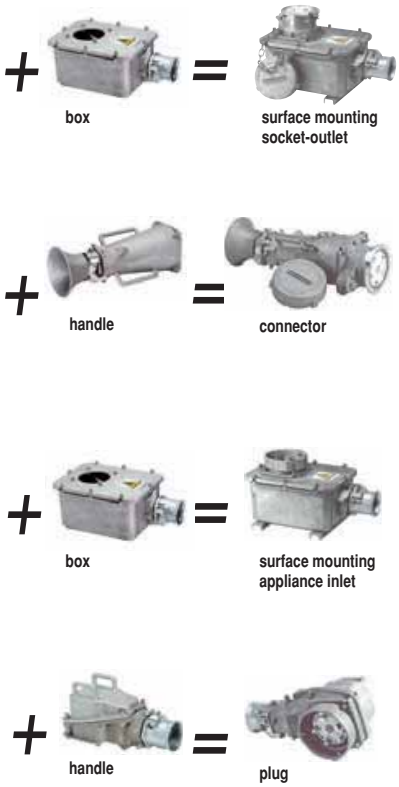
A / V	CONTACTS	REF.
PF Quadra:		
315A / 400V	3P+E+8 aux	47-34013
315A / 400V	3P+N+E+8 aux	47-34017
400A / 400V	3P+E+8 aux	47-44013
400A / 400V	3P+N+E+8 aux	47-44017
PF Classic:		
400A / 400V	3P+E+4 aux	49-44013
400A / 400V	3P+N+E+4 aux	49-44017
400A / 1000V	3P+E+4 aux	49-44243
400A / 1000V	3P+N+E+4 aux	49-44247
600A / 400V	3P+E+4 aux	49-64013
600A / 400V	3P+N+E+4 aux	49-64017
600A / 1000V	3P+E+4 aux	49-64243
600A / 1000V	3P+N+E+4 aux	49-64247

INLET

A / V	CONTACTS	REF.
PF Quadra:		
315A / 400V	3P+E+8 aux	47-38013
315A / 400V	3P+N+E+8 aux	47-38017
400A / 400V	3P+E+8 aux	47-48013
400A / 400V	3P+N+E+8 aux	47-48017
PF Classic:		
400A / 400V	3P+E+4 aux	49-48013
400A / 400V	3P+N+E+4 aux	49-48017
400A / 1000V	3P+E+4 aux	49-48243
400A / 1000V	3P+N+E+4 aux	49-48247
600A / 400V	3P+E+4 aux	49-68013
600A / 400V	3P+N+E+4 aux	49-68017
600A / 1000V	3P+E+4 aux	49-68243
600A / 1000V	3P+N+E+4 aux	49-68247


socket-outlet


inlet



ACCESSORIES

BOX for 95 to 150 mm²

SIZE	REF.
for PF Quadra 315A	47-3A023-95**X**(*)
for PF Quadra 400A	47-4A023-95**X**(*)
for PF Classic 400A	49-4A023-95**X**(*)
for PF Classic 600A	49-6A023-95**X**(*)

BOX for 185 to 240 mm²

SIZE	REF.
for PF Quadra 315A	47-3A023-24**X**(*)
for PF Quadra 400A	47-4A023-24**X**(*)
for PF Classic 400A	49-4A023-24**X**(*)
for PF Classic 600A	49-6A023-24**X**(*)

(*) replace X with the appropriate suffix number that represents the cable overall diameter of your choice:

46-50 mm → **X**=1	61-65 mm → **X**=4	76-80 mm → **X**=7
51-55 mm → **X**=2	66-70 mm → **X**=5	81-85 mm → **X**=8
56-60 mm → **X**=3	71-75 mm → **X**=6	86-90 mm → **X**=9

STRAIGHT HANDLE

SIZE	REF.
for PF Quadra 315A	47-3A013-**XX**(*)
for PF Quadra 400A	47-4A013-**XX**(*)
for PF Classic 400A	49-4A013-**XX**(*)
for PF Classic 600A	49-6A013-**XX**(*)

ANGLED HANDLE 90°

SIZE	REF.
for PF Quadra 315A	47-3A913-**XX**(*)
for PF Quadra 400A	47-4A913-**XX**(*)
for PF Classic 400A	49-4A913-**XX**(*)
for PF Classic 600A	49-6A913-**XX**(*)

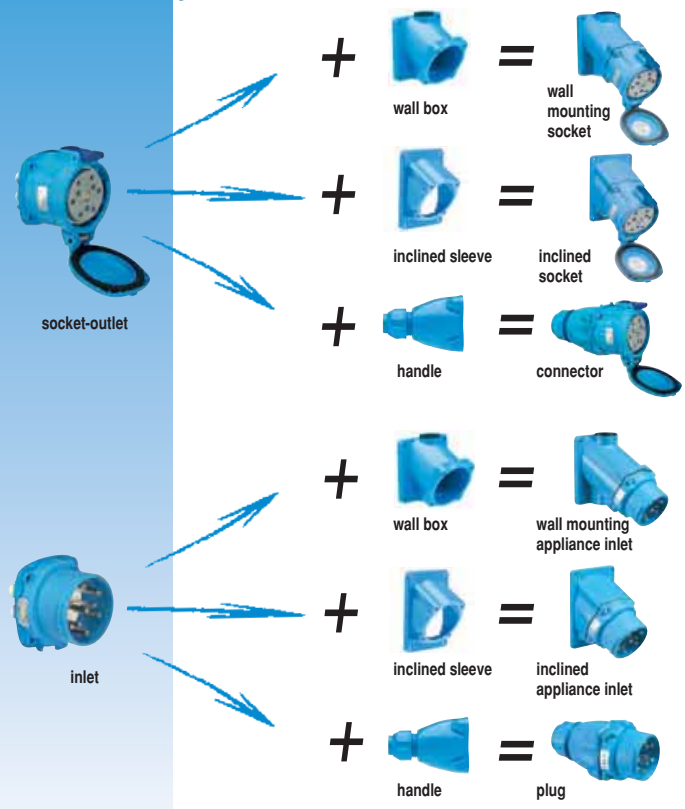
(*) replace XX with the appropriate suffix number that represents the cable overall diameter of your choice:

46-50 mm → **XX**=50	61-65 mm → **XX**=65	76-80 mm → **XX**=80
51-55 mm → **XX**=55	66-70 mm → **XX**=70	81-85 mm → **XX**=85
56-60 mm → **XX**=60	71-75 mm → **XX**=75	86-90 mm → **XX**=90

- Star delta configured sockets and Decontactors
- 7 contacts and auxiliaries
- Comply with IEC/EN 60309-1 standard
- Silver-nickel tipped contacts
- Protection degree IP 54 for DN and DS (IP 67 as an option)
- Protection degree IP 66 and IP 67 for PN

PLUGS & SOCKET-OUTLETS AND DECONTACTORS STAR DELTA

From 16 A to 150 A
Voltage up to 500 V AC
IP 54 - IP 67



BASIC COMPONENTS

SOCKET OUTLET

DEVICE A/V	CONTACTS	REF.
Poly:		
PN7C mA-25A / 500V	6P+E	01-P4061
DS7C3 32-50A / 400V	6P+E	31-34761
DS7C3 32-50A / 400V	6P+E+2 aux	31-34761-262
DS7C3 32-50A / 400V	6P+E+3 aux	31-34761-263
Metal:		
PN7C mA-25A / 400V	6P+E	09-P4061
DN9C 16A / 400V	6P+E	19-14061
DN9C 16A / 400V	6P+E+2 aux	19-14061-172
DS7C3 32-50A / 400V	6P+E	39-34761
DS7C3 32-50A / 400V	6P+E+2 aux	39-34761-262
DS7C3 32-50A / 400V	6P+E+3 aux	39-34761-263
DN7C6 63-90A / 400V	6P+E	19-64061
DS7C9 125-150A / 500V	6P+E	39-94061

INLET

DEVICE A/V	CONTACTS	REF.
Poly:		
PN7C mA-25A / 500V	6P+E	01-P8061
DS7C3 32-50A / 400V	6P+E	31-38761
DS7C3 32-50A / 400V	6P+E+2 aux	31-38761-262
DS7C3 32-50A / 400V	6P+E+3 aux	31-38761-263
Metal:		
PN7C mA-25A / 400V	6P+E	09-P8061
DN9C 16A / 400V	6P+E	19-18061
DN9C 16A / 400V	6P+E+2 aux	19-18061-172
DS7C3 32-50A / 400V	6P+E	39-38761
DS7C3 32-50A / 400V	6P+E+2 aux	39-38761-262
DS7C3 32-50A / 400V	6P+E+3 aux	39-38761-263
DN7C6 63-90A / 400V	6P+E	19-68061
DS7C9 125-150A / 500V	6P+E	39-98061

ACCESSORIES

WALL BOX

DEVICE / TYPE / ∢ / ENTRY	REF.
PN7C / Poly / Straight / M20	01-NA095-417
PN7C / Poly / Straight / M25	01-NA095-418
PN7C / Metal / Straight / M20	09-NA095-417
PN7C / Metal / Straight / M25	09-NA095-418

DEVICE / TYPE / ∢ / ENTRY	REF.
DN9C / Metal / 20° / M25	19-1A053-418
DN9C / Metal / 70° / M25	87-3A053-418
DN9C / Metal / 70° / M32	87-3A053-419
DN7C6 / Metal / 20° / M40	19-6A053-420
DN7C6 / Metal / 70° / M50	87-9A053-429

DEVICE / TYPE / ∢ / ENTRY	REF.
DS7C3 / Poly / 30° / M40	31-6A053-420
DS7C3 / Metal / 20° / M32	39-6A053-419
DS7C3 / Metal / 20° / M40	39-6A053-420
DS7C9 / Metal / 60° / M63	39-2A053-63M
DS7C9 / Metal / 60° / 2,5"	39-2A023-506

INCLINED SLEEVE

DEVICE / TYPE / ∢	REF.
PN7C / Poly / 30°	01-NA027
PN7C / Metal / 30°	09-NA027

DEVICE / TYPE / ∢	REF.
DN9C / Metal / 30°	19-1A027
DN9C / Metal / 70°	87-3A087
DN7C6 / Metal / 30°	19-6A027
DN7C6 / Metal / 70°	87-9A087

DEVICE / TYPE / ∢	REF.
DS7C3 / Poly / 30°	31-6A027
DS7C3 / Metal / 30°	39-6A027
DS7C3 / Metal / 70°	87-6A087
DS7C9 / Metal / 60°	39-2A027

HANDLE

DEVICE / TYPE / ENTRY	REF.
PN7C / Poly / 8-18 mm	01-NA013
PN7C / Poly / M25	01-NA253-25P
PN7C / Metal / M25	09-NA953-25M

DEVICE / TYPE / ENTRY	REF.
DN9C / Poly / 8-32 mm	19-1A013
DN9C / Poly / 10-30 mm	19-1A013
DN7C6 / Poly / 18-49 mm	65-9A013...

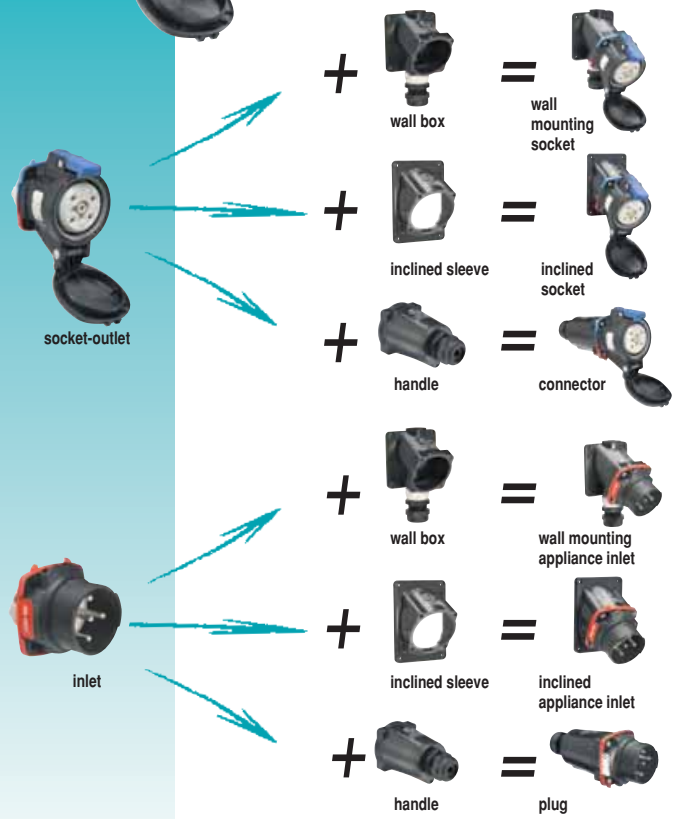
DEVICE / TYPE / ENTRY	REF.
DS7C3 / Poly / 13-35 mm	31-6A013
DS7C9 / Neoprene / 34-58 mm	39-2A013-03
DS7C9 / Metal / 40-54 mm	39-2A915

	Rated current (A)	Max. Voltage Poly (V)	Max. Voltage Metal (V)	Max. number of contacts power	Max. number of contacts auxiliaries	Max. conductor cross-section in mm² flexible	Max. conductor cross-section in mm² stranded	Max. conductor cross-section in mm² auxiliaries
PN7C	16/25	500	415	7	-	4	4	-
DN9C	16	-	415	7	2	6	6	6
DS7C3	32/50	500	500	7	3	10	16	6
DN7C6	63/90	-	415	7	-	25	35	-
DS7C9	125/150	-	500	7	-	50	70	-

- Explosion-proof plugs & socket-outlets
- With an integral switching device as defined in IEC/EN 60309-1, clause 2.8
- Silver-nickel tipped contact - not affected by oxidation
- Body made of self-extinguishing glassfibre reinforced polyester
- Very compact design
- ATEX 94/9/EC directive, EN 50014/18/19, EN50281-1-1, IEC 60079
- II2 G/D DUST T85°C EEx ed IIC T4 - T6
- Zone 1 & 2, 21 & 22

DXN DECONTACTORS

From 16 A to 63 A
Voltage range up to 690 V AC
IP 66 and IP 67



BASIC COMPONENTS

SOCKET OUTLET

A / V	CONTACTS	REF.
16-20A / 230V	1P+N+E	25-14015
16-20A / 400V	3P+E	25-14013
16-20A / 400V	3P+N+E	25-14017
32A / 230V	1P+N+E	25-34015
32A / 400V	3P+E	25-34013
32A / 400V	3P+N+E	25-34017
32A / 400V	3P+N+E+2 aux	25-34017-972
63A / 230V	1P+N+E	25-64015
63A / 400V	3P+E	25-64013
63A / 400V	3P+N+E	25-64017
63A / 400V	3P+N+E+2 aux	25-64017-972

For additional voltages (up to 690V) or other pin configurations, please consult us.

INLET

A / V	CONTACTS	REF.
16-20A / 230V	1P+N+E	25-18015
16-20A / 400V	3P+E	25-18013
16-20A / 400V	3P+N+E	25-18017
32A / 230V	1P+N+E	25-38015
32A / 400V	3P+E	25-38013
32A / 400V	3P+N+E	25-38017
32A / 400V	3P+N+E+2 aux	25-38017-972
63A / 230V	1P+N+E	25-68015
63A / 400V	3P+E	25-68013
63A / 400V	3P+N+E	25-68017
63A / 400V	3P+N+E+2 aux	25-68017-972

For additional voltages (up to 690V) or other pin configurations, please consult us.

ACCESSORIES

WALL BOX 30°, POLY

SIZE / ENTRY	REF.
for 16-20A / M20	25-1AB53
for 32A / M25	25-3AB83
for 63A / M25	25-6AB53

MODULAR WALL BOX 70°, POLY

SIZE / ENTRY	REF.
for 16-20A / M20	25-1AB58
for 32A / M25	25-3AB58
for 63A / M32	25-6AB58

INCLINED SLEEVE 30°, POLY

SIZE	REF.
for 16-20A	25-1A027
for 32A	25-3A027
for 63A	25-6A027

MODULAR INCLINED SLEEVE 70°, POLY

SIZE	REF.
for 16-20A	25-1A757
for 32A	25-3A757
for 63A	25-6A757

POLY HANDLE

SIZE / ENTRY	REF.
for 16-20A / M20	25-1A753
for 16-20A / M25	25-1A253-25P
for 32A / M25	25-3A783
for 63A / M32	25-6A253-32P

DX and PX

Please ask for our ATEX certified DX (metal decontactors 16 A – 200 A, 690 V max., increased safety "ed") and PX ranges (metal plugs and socket-outlets, 16 A – 415 V max., increased safety "ed")!

RATED VOLTAGE IEC/EN 60309-1

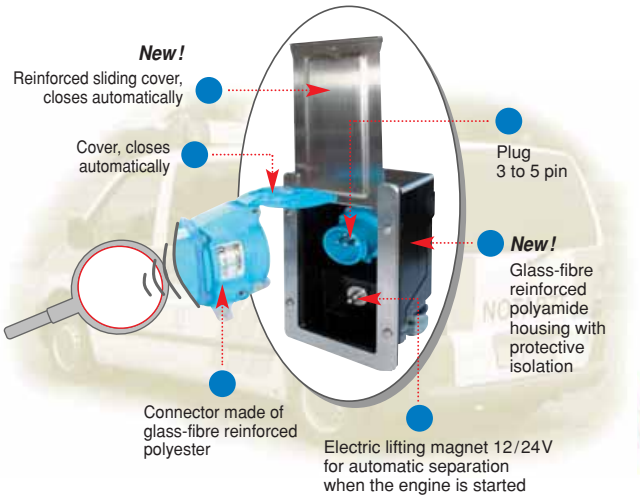
	440V	500V	690V	Max. conductor cross-section in mm² flexible	stranded	auxiliaries
DXN1	20A	20A	–	2,5	4	–
DXN3	32A	32A	32A	10	16	–
DXN3 + 2 aux	32A	32A	–	10	16	2,5
DXN6	63A	63A	63A	16	25	–
DXN6 + 2 aux	63A	63A	–	16	25	2,5

RETTBOX®/RETTBOX®-air

for rescue and fire brigade vehicles

Automatic ejection of the connector when the engine is started

- Rettbox®: power supply
- Rettbox®-*air*: power and compressed air supply
- Housing made of glass-fibre reinforced polyamide with protective isolation
- Butt contacts with silver-nickel tips
- Automatic ejection brought about by an electric lifting magnet 12V/24V
- Sliding lid and socket cover close automatically
- Very compact design, the unit is supplied pre-wired
- 3 to 5 contacts, option: auxiliaries



Automatic separation when the vehicle is started up

Power → RETTBOX®

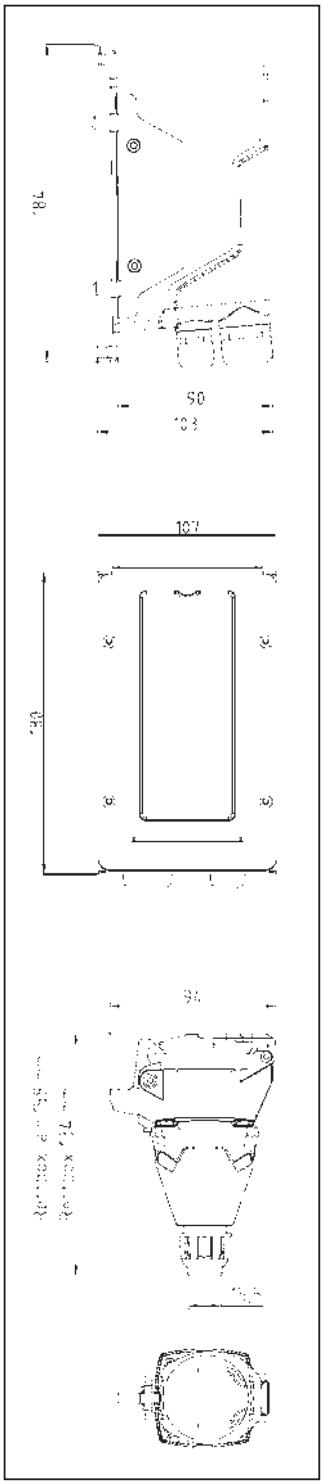
or

Power and compressed air → RETTBOX®-*air*

Compressed air

Power and compressed air in one supply line

Dimensions:



Installation dimensions (cut-out in vehicle):
83 x 163 mm (W x H)

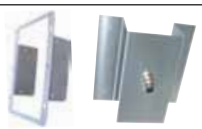
RETTBOX®

Power supply A-V	Lifting magnet V	Contacts	Ref.
Loading Box pre-wired			
16A - 12V	12V	+/- E	**61-16059-RKX-12U (*)**
16A - 24V	24V	+/- E	**61-16089-RKX-24U (*)**
16A - 230V	12V	1P+N+E	**61-16015-RKX-12U (*)**
16A - 230V	24V	1P+N+E	**61-16015-RKX-24U (*)**
16A - 230V	12V	1P+N+E+2 aux	**61-16175-RKX-12U (*)**
16A - 230V	24V	1P+N+E+2 aux	**61-16175-RKX-24U (*)**
16A - 400V	12V	3P+N+E	**61-16017-RKX-12U (*)**
16A - 400V	24V	3P+N+E	**61-16017-RKX-24U (*)**
(*) Replace X with the appropriate suffix (1-9) that represents the required length of cable (1 m - 9 m)			
Connector RETTBOX® cable 4 m included			
16A - 12V		+/- E	**61-13059-RK4-L (*)**
16A - 24V		+/- E	**61-13089-RK4-L (*)**
16A - 230V		1P+N+E	**61-13015-RK4-L (*)**
16A - 230V		1P+N+E+2 aux	**61-13175-RK4-L (*)**
16A - 400V		3P+N+E	**61-13017-RK4-L (*)**
(*) RK4 = with 4 m cable. Replace "4" if another length of cable is required: i.e. RK5 = 5 m			

RETTBOX®-air

Power supply A-V	Lifting magnet V	Contacts	Compressed air	Ref.
Loading Box pre-wired (power and compressed air)				
16A-12V	12V	+/- E	13 bar	**61-16059-AKX-12U (*)**
16A-24V	24V	+/- E	13 bar	**61-16089-AKX-24U (*)**
16A-230V	12V	1P+N+E	13 bar	**61-16015-AKX-12U (*)**
16A-230V	24V	1P+N+E	13 bar	**61-16015-AKX-24U (*)**
(*) Replace X with the appropriate suffix (1-9) that represents the required length of cable (1 m - 9 m)				
Connector RETTBOX®-air supply line 4 m included, power and compressed air in one cable				
16A-12V		+/- E	13 bar	**61-13059-AK4-L (*)**
16A-24V		+/- E	13 bar	**61-13089-AK4-L (*)**
16A-230V		1P+N+E	13 bar	**61-13015-AK4-L (*)**
(*) AK4 = with 4 m cable. Replace "4" if another length of cable is required: i.e. AK5 = 5 m				

Ceiling suspension device
for supply line, made of stainless steel, including cable gland / tube gland.



with cable gland for Rettbox®	**61-1AHUT-RRR-L**
with cable gland for Rettbox®-*air*	**61-1AHUT-AAA-L**

Installation dimensions Rettbox®/ Rettbox®-*air*: 83 x 163 x 94 mm (W x H x D)
Outer frame: 107 x 180 mm (W x H)
Height with lid slid out: 318 mm
Weight without connector: 1200 g

Member of the Butt-Contact electrical connectors Manufacturers Association (BECMA)

ISV INDUSTRIE STECK-VORRICHTUNGEN GMBH
Im Lossenfeld 8 · D 77731 WILLSTÄTT-SAND (Germany)
Tel.: +(49) (0) 78 52 / 91 96 0 · Fax: +(49) (0) 78 52 / 91 96 19
www.isv.de / E-Mail: info@isv.de

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