



Earthing protection



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CBM TECHNOLOGY SP. Z O.O. IS A MANUFACTURER OF EARTHING PROTECTION SYSTEMS. OUR MAIN PRODUCTS ARE COPPER-BONDED STEEL EARTHING RODS, WIRES AND TAPES.

WE HAVE BEEN DEVELOPING OUR PRODUCTS FOR MANY YEARS AND THEREFORE WE CAN OFFER PRODUCTS WHICH SATISFY EACH AND EVERY NEED OF OUR CUSTOMERS.

COPPER-BONDED STEEL EARTHING RODS, WIRES AND TAPES HAVE TENS OF YEARS CORROSION RESISTANCE AND, IN TERMS OF QUALITY AND PRICE, THEY CAN BE PLACED BETWEEN COPPER PRODUCTS AND GALVANISED STEEL PRODUCTS.

Our products meet both European and International Standards such as IEC/EN 62305-3, IEC/EN 62561-1, IEC/EN 62561-2, HD 60364-5-54, EN 50522.

FROM ITS VERY BEGINNING, THE COMPANY'S MAIN AIM WAS TO IMPROVE QUALI-TY OF ITS PRODUCTS AND PROVIDE ITS CUSTOMERS WITH WIDE TECHNICAL SUPPORT. THIS CAN BE ACHIEVED THANKS TO THE COMBINATION OF LONG-STANDING EXPERIEN-CE AND INNOVATION INTRODUCED BY YOUNG ENGINEERS.





PRODUCTS FROM CBM TECHNOLOGY COMPLIANT WITH THE PN-EN 62561-2 STANDARD

We are a manufacturer of copper-bonded steel rods, tape and wire with technical parameters accordance with the PN-EN 62561-2 Standard.

STEEL COPPER-BONDED TAPE AND WIRE (ST/CU) AND STEEL COPPER-BONDED TINNED TAPE AND STEEL COPPER-BONDED TINNED WIRE (ST/CU/SN)

The min. 0.070 mm thick copper coating provides effective corrosion resistance for dozens of years, whereas the tinned coating makes it possible for our products to be used in slightly acid and acid soil, also maintaining the corrosion resistance for dozens of years.

> VERTICAL COPPER-BONDED FORGED ROD WITH SEALING-STRENGTHENING BUSH AND THREADED ROD CONNECTED WITH A COUPLING

The 0.250 mm thick copper coating is wear resistant and it provides effective corrosion resistance for dozens of years.



THE SIGNIFICANCE OF THE COPPER COATING THICKNESS

The 0.250 mm thick copper coating on steel with a nickel sub-layer ensures the tens of years corrosion resistance in soil environment of copper-bonded earthing rods. The nickel sub-layer provides molecular connection of copper and steel and ensures the adherence and plasticity required under the PN-EN 62561-2 standard. The coating thickness plays the vital role in ensuring the tens of years corrosion resistance. During the process of driving the rod into the ground, the copper layer is exposed to the risk of scuffing but the excellent adherence to steel through the nickel sub-layer prevents the detachment of the coating from the steel core. The thickness of the copper coating, which is softer that nickel, may be reduced, however, the copper coating will always remain at least 0.150 mm thick.

Therefore, the industry standards provide for 0.250 mm copper coating in earthing rods and at least min. 0.070 mm in tapes and wires. Unlike earthing rods, tapes and wires are not exposed to mechanical damage during the installation in the ground. The 0.070 mm copper coating on the steel tape considerably decreases its resistivity, which makes it possible to use steel tapes of considerably smaller dimensions in facilities where earth fault currents occur. However, CBM Technology offers an additional tin coating (Sn) covering the copper coating so that our products can be used in acid soil and slightly acid soil.

VERTICAL RODS

VERTICAL COPPER-BONDED FORGED ROD WITH SEALING-STRENGTHENING BUSH

The 99.9% pure electrolytic copper bonded onto a drawn steel to a thickness of min 0.250 mm forms molecular and inseparable connection with the steel. The steel core has a high tensile strength of 600 N/mm². One end of the rod has decreased diameter by cold pressed this guarantees the same thickness of the copper layer on the whole length of the rod. The other end has a hole which enables the connection between the rods to increase the length.

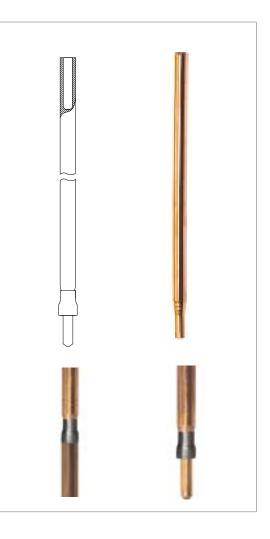
The connection of the rods is protected by sealing bush made of stainless steel which provides additional mechanical strength to the connection. The rod pin is made by cold pressed this hardened the end of rod. Therefore there is no need to use the tip. Connection of the rods complies with the requirements of IEC/EN 62561-2 "Lightning protection components (LPSC). Requirements for conductors and earth electrodes". To drive the rod into the ground, the driving stud and tup for mechanical driving or tup for hand driving must be used.

THE SEALING BUSH ADVANTAGE

- sealing the pin-feather key connection,
- strengthening the mechanical connection

Cat. no.	Diameter of rod	Length*	Material
	mm	m	
C0000172	14.2	1.2	steel copper-bonded to
C0000175	14.2	1.5	thickness of 0.250 mm,
C0000195	16.0	1.5	sealing-strengthening steel
C0000185	17.2	1.5	bush

* for special orders we supply different rod lengths up to 3 m





DRIVING STUD FOR FORGED ROD

Driving stud is to transfer the vibrations from the tup to earth rod. It should be placed in the feather key of the rod and should be imbeded with the hammer

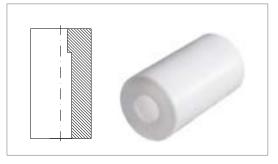
Cat. no.	Diameter of rod mm	Material
C1080375	14.2	
C1080395	16.0	steel
C1080385	17.2	



THE DRIVING STUD STABILIZER TO EMBED FORGED RODS

The driving stud stabilizer makes it possible for the driving stud to be stroke centrally in the forged rod core when grounding

Cat. no.	Diameter of rod	Material
	mm	
C1070375	14.2	
C1070395	16.0	teflon
C1070385	17.2	



TUP FOR FORGED ROD

Tup for forged rod transfers vibrations from the percussive hammer or hand hammer onto earth rod core through the driving stud placed in the feather key of the rod

Cat. no.	Diameter of rod mm	Application
C1090375		for mechanical driving using hammers with SDS-Max fastening
C1090376	14.2; 16.0	for hand driving
C1090377		for mechanical driving with Hilti TE 905 and TE 1000
C1090385		for mechanical driving using hammers with SDS-Max fastening
C1090386	17.2	for hand driving
C1090387		for mechanical driving with Hilti TE 905 and TE 1000



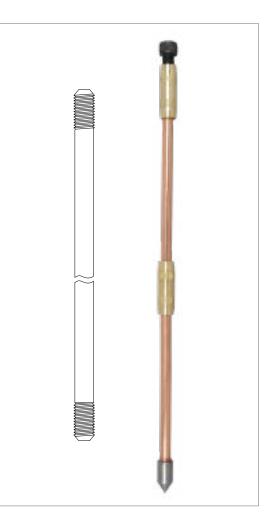
VERTICAL COPPER-BONDED EARTH ROD/GROUNDING ROD

They are made of molecularly bonded 99.9% pure electrolytic copper onto a low carbon steel core. The steel core is a bar drawn to the required diameter. The rods are highly resistant to corrosion and because the steel used has a high tensile strength 600 N/mm², they can be driven by vibrohammers to great depths.

The copper jacket is **0.250 mm** thick at all points and it ensures a lifetime for tens years.

The threads at the tips of a rod are rolled after copper bonding process, and both steel and copper are rolled into the thread, making it extremely strong. Connection of the rods using threaded coupling complies with the requirements of IEC/EN 62561-2 "Lightning protection components (LPSC). Requirements for conductors and earth electrodes".

Cat. no.	Type of	Diameter	Length	Rod		Material
	thread	of rod	of thread	lengt	h*	
	inch	mm	mm	feet	m	
C1000111				4	1.2	
C1000112				5	1.5	
C1000113	5/8 UNC	14.2	24	6	1.8	steel
C1000114				8	2.4	copper-bonded
C1000115				10	3	to thickness of 0.250 mm,
C1000121				4	1.2	sealing-streng-
C1000122				5	1.5	thening steel
C1000123	3/4 UNC	17.2	30	6	1.8	bush
C1000124]			8	2.4	
C1000125				10	3	



* for special orders we supply different rod lengths up to 3 m

THREADED COUPLING

Threaded coupling with counted bore for protecting the rod threads from damage

Cat. no.	Type of thread inch	Material
C1040302/60	5/8 UNC	brass
C1040303/72	3/4 UNC	brass





DRIVING HEAD

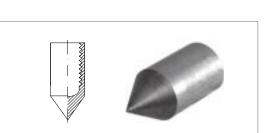
Suitable for both manual and power hammering. Can be re-used for many times

Cat. no.	Type of thread inch	Material
C1080302	5/8 UNC	ataol
C1080303	3/4 UNC	steel

Τip

Pointed hardened steel tip

Cat. no.	Type of thread inch	Material
C1060302	5/8 UNC	ataal
C1060303	3/4 UNC	steel



TUP FOR THREADED COPPER-BONDED EARTH ROD

Tup is to carry percussive hammer oscillations on driving head for threaded copper-bonded earth rod (for hammers with SDS-Max fitting only)

Cat. no.	Tup for driving head with thread type inch	Kind of driving head
C1090301	5/8; 3/4 UNC	with a hole



Conductors

COPPER-BONDED STEEL TAPE 3 MM THICK

Steel tape is molecularly bonded in electrolytic process with copper of thickness 0.070 mm. Copper coating protects against corrosion for the tens of years.

Sale unit is kilogram, the tolerance of weight \pm 5%.

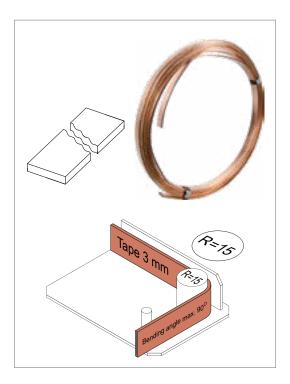
The tape width tolerance is ± 1 mm

Cat. no.	XxY	Length	Material
	mm	m	
C1100272(60M)	20 x 3	60	
C1100273(40M)	25 x 3	40	steel copper-bonded to thickness of Cu 0.070 mm
C1100279(40M)	30 x 3	40	

BENDING INSTRUCTION

According to PN/EN 62561-2 standard, the tape may be bent at a maximum angle of $90^{\circ} \pm 5^{\circ}$ and the bending radius should be equal to five times the thickness of the tape ± 1 mm.

For 3 mm tape, the bending radius should not be less than 15 mm.



TINNED COPPER-BONDED STEEL TAPE 3 MM THICK

Steel tape is molecularly bonded in electrolytic process with copper of thickness 0.070 mm and tin. Tin protective coating increases the corrosion resistance in every kind of agresive soil and also protects against theft.

Sale unit is kilogram, the tolerance of weight \pm 5%.

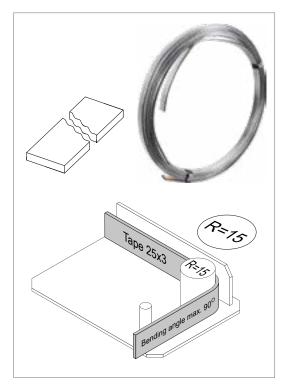
The tape width tolerance is $\pm 1 \text{ mm}$

Cat. no.	XxY	Length	Material
	mm	m	
C1100291(60M)	20 x 3	60	tinned copper-bonded
C1100292(40M)	25 x 3	40	steel, copper thickness
C1100294(40M)	30 x 3	40	min. 0.070 mm

BENDING INSTRUCTION

According to PN/EN 62561-2 standard, the tape may be bent at a maximum angle of $90^{\circ} \pm 5^{\circ}$ and the bending radius should be equal to five times the thickness of the tape ± 1 mm.

For 3 mm tape, the bending radius should not be less than 15 mm.





COPPER-BONDED STEEL TAPE 4 MM THICK

Steel tape is molecularly bonded in electrolytic process with copper of thickness 0.070 mm. Copper coating protects against corrosion for the tens of years.

Sale unit is kilogram, the tolerance of weight \pm 5%. The tape width tolerance is \pm 1 mm

Cat. no.	XxY	Length	Material
	mm	m	
C1100274(30M)	25 x 4	30	
C1100275(25M)	30 x 4	25	steel copper-bonded to
C1100275(30M)	30 x 4	30	thickness of Cu 0.070 mm
C1100281(20M)	40 x 4	20	

BENDING INSTRUCTION

According to PN/EN 62561-2 standard, the tape may be bent at a maximum angle of $90^{\circ} \pm 5^{\circ}$ and the bending radius should be equal to five times the thickness of the tape ± 1 mm.

For 4 mm tape, the bending radius should not be less than 20 mm.

TINNED COPPER-BONDED STEEL TAPE 4 MM THICK

Steel tape is molecularly bonded in electrolytic process with copper of thickness 0.070 mm and tin. Tin protective coating increases the corrosion resistance in every kind of agresive soil and also protects against theft.

Sale unit is kilogram, the tolerance of weight \pm 5%.

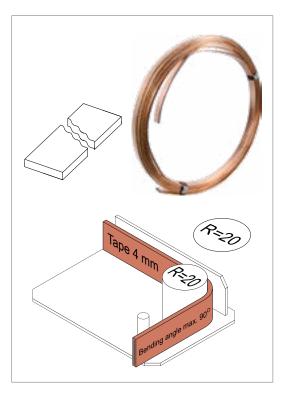
The tape width tolerance is $\pm 1 \text{ mm}$

Cat. no.	XxY	Length	Material
	mm	m	
C1100293(30M)	25 x 4	30	
C1100295(25M)	30 x 4	25	tinned copper-bonded
C1100295(30M)	30 x 4	30	steel, copper thickness min. 0.070 mm
C1100296(20M)	40 x 4	20	

BENDING INSTRUCTION

According to PN/EN 62561-2 standard, the tape may be bent at a maximum angle of $90^{\circ} \pm 5^{\circ}$ and the bending radius should be equal to five times the thickness of the tape ± 1 mm.

For 4 mm tape, the bending radius should not be less than 20 mm.





COPPER-BONDED STEEL TAPE 5 MM THICK

Steel tape is molecularly bonded in electrolytic process with copper of thickness 0.070 mm. Copper coating protects against corrosion for the tens of years.

Sale unit is kilogram, the tolerance of weight \pm 5%.

The tape width tolerance is $\pm 1 \text{ mm}$

Cat. no.	X x Y mm	Length m	Material
C1100283(20M)	40 x 5	20	steel copper-bonded to thickness of Cu 0.070 mm

BENDING INSTRUCTION

According to PN/EN 62561-2 standard, the tape may be bent at a maximum angle of $90^{\circ} \pm 5^{\circ}$ and the bending radius should be equal to five times the thickness of the tape ± 1 mm.

For 5 mm tape, the bending radius should not be less than 25 mm.

TINNED COPPER-BONDED STEEL TAPE 5 MM THICK

Steel tape is molecularly bonded in electrolytic process with copper of thickness 0.070 mm and tin. Tin protective coating increases the corrosion resistance in every kind of agresive soil and also protects against theft.

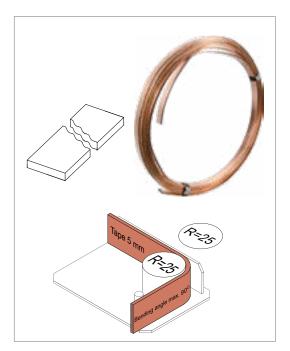
Sale unit is kilogram, the tolerance of weight \pm 5%. The tape width tolerance is \pm 1 mm

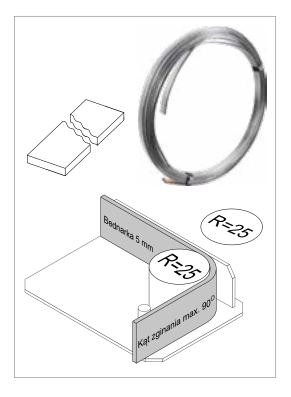
Cat. no.	X x Y mm	Length m	Material
C1100284(20M)	40 x 5	20	tinned copper-bonded steel, copper thickness min. 0.070 mm

BENDING INSTRUCTION

According to PN/EN 62561-2 standard, the tape may be bent at a maximum angle of $90^{\circ} \pm 5^{\circ}$ and the bending radius should be equal to five times the thickness of the tape ± 1 mm.

For 5 mm tape, the bending radius should not be less than 25 mm.







COPPER-BONDED STEEL WIRE Ø 8 MM

Steel wire is molecularly bonded in electrolytic process with copper of thickness 0.070 mm. Copper coating protects against corrosion for the tens of years.

Sale unit is kilogram, the tolerance of weight \pm 5%

Cat. no.	Diameter	Length	Material
	mm	m	
C1110249	Ø 8	acc. to order	
C1110249(20M)	Ø 8	20	steel copper-bonded
C1110249(60M)	Ø 8	60	to thickness of 0.070 mm
C1110249(80M)	Ø 8	80	
C1110249C250	Ø 8	acc. to order	steel copper-bonded to thickness of 0.250 mm

BENDING INSTRUCTION

According to PN/EN 62561-2 standard, the wire may be bent at a maximum angle of $90^{\circ} \pm 5^{\circ}$ and the bending radius should be equal to five times the thickness of the wire ± 1 mm.

For 8 mm wire, the bending radius should not be less than 40 mm.

TINNED COPPER-BONDED STEEL WIRE Ø 8 MM

Steel wire is molecularly bonded in electrolytic process with copper of thickness 0.070 mm and tin. Tin protective coating increases the corrosion resistance in every kind of agresive soil and also protects against theft.

Sale unit is kilogram, the tolerance of weight ± 5%

Cat. no.	Diameter	Length	Material
	mm	m	
C1110280	Ø 8	acc. to order	
C1110280(20M)	Ø 8	20	tinned copper-bonded
C1110280(60M)	Ø 8	60	steel, copper thickness min. 0.070 mm
C1110280(80M)	Ø 8	80	

BENDING INSTRUCTION

According to PN/EN 62561-2 standard, the wire may be bent at a maximum angle of $90^{\circ} \pm 5^{\circ}$ and the bending radius should be equal to five times the thickness of the wire ± 1 mm.

For 8 mm wire, the bending radius should not be less than 40 mm.





COPPER-BONDED STEEL WIRE Ø 10 MM

Steel wire is molecularly bonded in electrolytic process with copper of thickness 0.070 mm. Copper coating protects against corrosion for the tens of years.

Sale unit is kilogram, the tolerance of weight \pm 5%

Cat. no.	Diameter	Length	Material
	mm	m	
C1110250	Ø 10	acc. to order	
C1110250(20M)	Ø 10	20	steel copper-bonded to thickness of 0.070 mm
C1110250(50M)	Ø 10	50	

BENDING INSTRUCTION

According to PN/EN 62561-2 standard, the wire may be bent at a maximum angle of $90^{\circ} \pm 5^{\circ}$ and the bending radius should be equal to five times the thickness of the wire ± 1 mm.

For 10 mm wire, the bending radius should not be less than 50 mm.



TINNED COPPER-BONDED STEEL WIRE Ø 10 MM

Steel wire is molecularly bonded in electrolytic process with copper of thickness 0.070 mm and tin. Tin protective coating increases the corrosion resistance in every kind of agresive soil and also protects against theft.

Sale unit is kilogram, the tolerance of weight \pm 5%

Cat. no.	Diameter	Length	Material
	mm	m	
C1110281	Ø 10	acc. to order	tinned copper-bonded
C1110281(20M)	Ø 10	20	steel, copper thickness
C1110281(50M)	Ø 10	50	min. 0.070 mm

BENDING INSTRUCTION

According to PN/EN 62561-2 standard, the wire may be bent at a maximum angle of $90^{\circ} \pm 5^{\circ}$ and the bending radius should be equal to five times the thickness of the wire ± 1 mm.

For 10 mm wire, the bending radius should not be less than 50 mm.





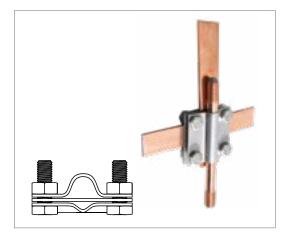
CLAMPS

CRUCIFORM CLAMPS

CRUCIFORM CLAMP WITH M10 BOLTS

Cruciform clamp – profile, bolted M10 with stainless steel separator, to connect rod to galvanized tape or circular conductor (with stainless steel separator inside protecting from corrosion between copper and zinc when different metals are connected)

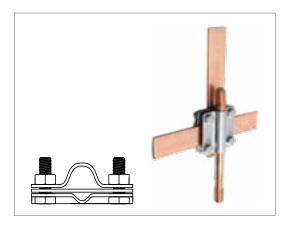
Cat. no.	Dimensions			Material
	rod St/Cu	tape	wire/cable	
	mm	mm	mm ²	
C1030432N	14.2; 16.0	≤ 40	28-78	stainless steel 2 mm, stainless steel bolts
C1030433N	17.2	≤ 40	28-78	M10



CRUCIFORM CLAMP WITH M8 BOLTS

Cruciform clamp – profile, bolted M8 with stainless steel separator, to connect rod to galvanized tape or circular conductor (with stainless steel separator inside protecting from corrosion between copper and zinc when different metals are connected)

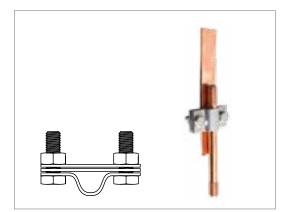
Cat. no.	Dimensions			Material
	rod St/Cu	tape	wire/cable	
	mm	mm	mm ²	
C1030495N	14.2; 16.0	≤ 40	28-78	stainless steel 2 mm, stainless steel bolts
C1030496N	17.2	≤ 40	28-78	M8



TERMINAL CLAMP

Terminal clamp – flat, bolted $2 \times M10$, with stainless steel separator inside, enables to connect rod to tape. Stainless steel separator inside protects from corrosion between copper and zinc when different metals are connected

Cat. no.	Dimensions	Material		
	rod St/Cu	tape		
	mm	mm		
C1030472N	14.2; 16.0	≤ 40	stainless steel 2 mm,	
C1030473N	17.2	≤ 40	stainless steel bolts M10	

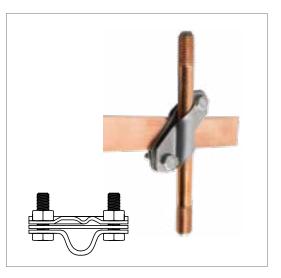


SKEW CLAMPS

SKEW CLAMP UNIVERSAL

Skew clamp universal, with stainless steel separator, to connect rod to tape or circular conductor (with stainless steel separator inside protecting from corrosion between copper and zinc when different metals are connected)

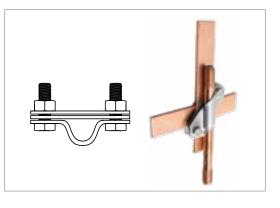
Cat. no.	Dimension	S	Material	
	rod St/Cu mm	tape parallel or squarely to rod mm	wire/cable parallel or squarely to rod mm ²	
C1030428N	14.2; 16.0	≤ 30	28-78	stainless steel 2 mm, stainless
C1030429N	17.2	≤ 30	28-78	steel bolts M8



SKEW CLAMP ROD TO TAPE

Skew clamp, with stainless steel separator, to connect rod to tape parallel or squarely. Clamp ensures good contact of rod and tape

Cat. no.	Dimensions	Material	
	rod St/Cu	tape parallel or squarely to rod	
	mm	mm	
C1030478N	14.2; 16.0	≤ 40	stainless steel
C1030479N	17.2	≤ 40	2 mm, stainless steel bolts M8

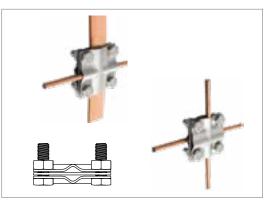


CRUCIFORM CLAMPS

CRUCIFORM CLAMP WITH M10 BOLTS

Cruciform clamp to connect conductor to conductor, bolted M10. Clamp enabling connection of two conductors

Cat. no.	Dimensions		Material
	tape St/Cu	wire	
	mm	mm ²	
			stainless steel
C1030442N	≤ 40	28-78	2 mm, stainless
			steel bolts M10

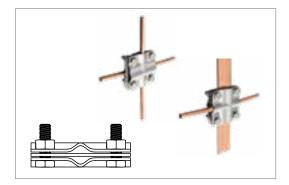




CRUCIFORM CLAMP WITH M8 BOLTS

Cruciform clamp to connect conductor to conductor, bolted M8. Clamp enabling connection of two conductors

Cat. no.	Dimensions		Material
	tape St/Cu mm	wire mm²	
C1030405N	≤ 40	28-78	stainless steel 2 mm, stainless steel bolts M8

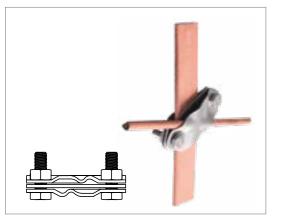


SKEW CLAMPS

SKEW CLAMP - TAPE TO WIRE

Skew clamp universal to connect rod to tape or circular conductor (with stainless steel separator inside protecting from corrosion between copper and zinc when different metals are connected)

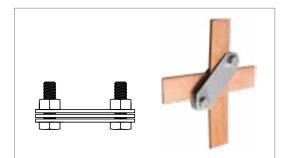
Cat. no.	Dimensions		Material
	tape St/Cu	wire	
	mm	mm ²	
			stainless steel
C1030430N	≤ 40	28-78	2 mm, stainless
			steel bolts M8



SKEW CLAMP – TAPE TO TAPE

Skew clamp, flat, to connect tape with tape, bolted 2 x M8

Cat. no.	Dimensions		Material
	tape St/Cu	tape	
	mm	mm	
			stainless steel
C1030431N	≤ 40	≤ 40	2 mm, stainless
			steel bolts M8



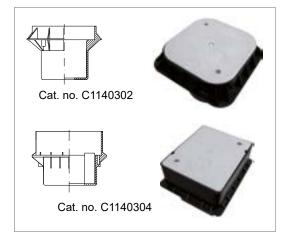
ADDITIONAL ACCESSORIES

INSPECTION PITS

Enable to control rod – earthing conductor connections with no problems as well as to make time earth resistance measurements.

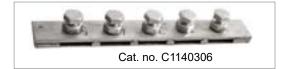
Pit C1140304 can be mounted in different kind of hardened surfaces (recommended for areas with setts because of specially designed reinforced flange). Pit C1140302 can be mounted in surfaces hardened with concrete or asphalt

Cat. no.	Dimensions length x width x height x depth mm	Material
C1140302	258 x 258 x 215 x 160	plastic pit with hardened
C1140304	260 x 215 x 210 x 110	cover



INSPECTION PIT EARTH BAR FOR PLASTIC PITS C1140302 AND C1140304

Pits number: C1140302 and C1140304 can be equipped with equipotential earth bar enables connection of five bus bars (tapes) of max. size 30×4 mm. Earth bar fit into the slots provided in the inspection pit.



LUBRICATING MEDIUM FOR COUPLINGS OF THREADED EARTHING RODS

It is used for additional protection of contacts inside coupling. When connecting rods with coupling, we recommend to pour little paste into coupling.

It can also be used as lubricating medium for driving stud making it easy to screw it out.





INSULATING TAPE FOR WRAPPING UNDERGROUND JOINTS

Insulating tape protects underground connections from soil and electrochemical corrosion

Cat. no.	Width	Length
	mm	m
C1030355	30	10
C1030356	50	10



CBM RESISTIVITY

CBM Resistivity is fine powder which increases surface area of earth electrode thus reducing resistance to earth.

It is being sold in the bags of 25 kg each.

PREPARATION

Before using it needs to be mixed with Portland cement before using in following proportion:

CBM Resistivity : cement 3 : 1



CBM DISCHARGE COUNTER

Lightning strike counter LSC-01 is a unit dedicated to mount on downconductors of lightning protection system in order to indicate and record time of direct lightning strike to the structure.

ADVANTAGES:

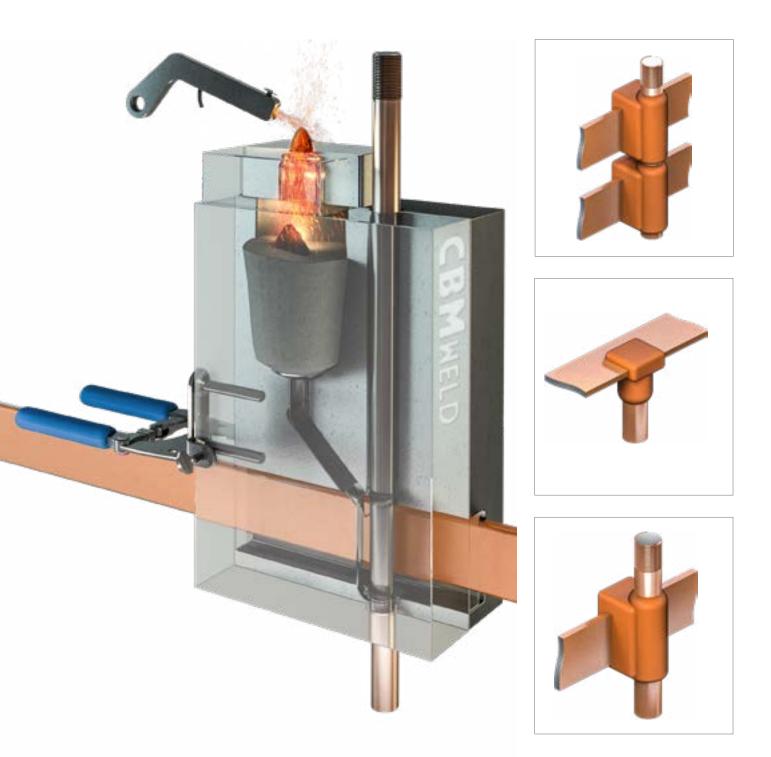
- tested in accordance with PN-EN 62561-6:2011
- maximum withstand discharge current 100 kA 10/350 μs
- registration of the number and time of discharges
- easy assembly
- battery powered
- small dimensions

APPLICATION:

- radiocommunication towers
- industrial buildings
- energy buildings
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