

# INSTALLATION MANUAL



## POsite Hybrid Cabling System

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## SAFETY NOTES



Installation, uninstallation and maintenance of this cable system may only be carried out by authorized personnel who are trained and qualified for the job.

National laws and regulations must be observed during installation, operation and dismantling. Before installation, the housing and the components used must be checked for external damage. If the wiring system is defective, it may not be usable.

## HANDLING OF THE CABLING SYSTEM



To avoid any damage due to improper installation, please keep in mind below points:

- AVOID any additional stress on the divider housing by twisting or bending when routing or locating it
- AVOID installation path around any sharp objects
- AVOID uncontrolled knocking of the divider housing on any hard object
- AVOID any contact of the divider housing with any additional substance such as glue/oil/fat etc. unless prior authorization is given by ZTT

This installation manual is a part of the general document: "User handling manual for cables and cable systems". The information, notes, warnings, etc. therefore also refer to this installation manual and must be followed. The document "User handling manual for cables and cable systems" can be found at [www.zttcable.com](http://www.zttcable.com).

## HANDLING OF FIBER OPTIC ASSEMBLIES



In order to guarantee the performance, fiber optic assemblies need to be treaded carefully and with attention on the minimum bend radius and never exposed to dirt.

The "User handling manual for cables and cable systems" is an integral part of these installation instructions and must be observed and followed.

## FUSE PROTECTION



The fuse protection must be provided by means of a circuit breaker. In the event of a short circuit, the circuit breaker must be dimensioned and rated so that it releases safely. The maximum rated current of the hybrid cable, the jumper cable and the respective mains plugs must be observed. The maximum duration of the release time must comply with local and national safety regulations.

## DISCLAIMER, LOSS OF WARRANTY



If these installation steps or individual installation steps are not carried out in accordance with these installation instructions or document "User handling manual for cables and cable systems", or if they are not carried out in accordance with the instructions, no liability and no warranty will be assumed by ZTT. For components that are not specified in more detail, the installer must use commercially available components that have been inspected, tested and approved by the manufacturer for this use.

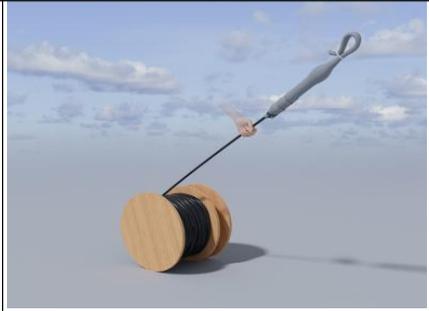
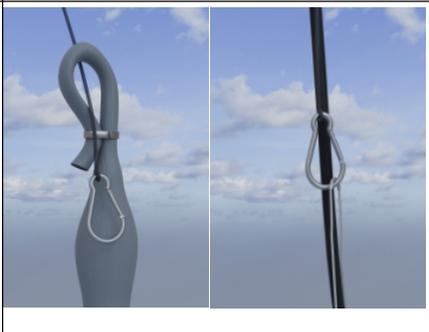
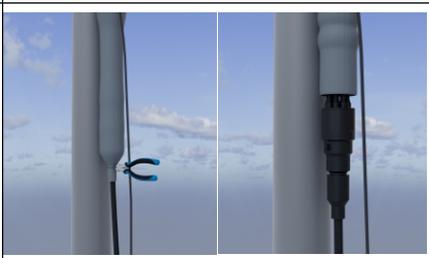
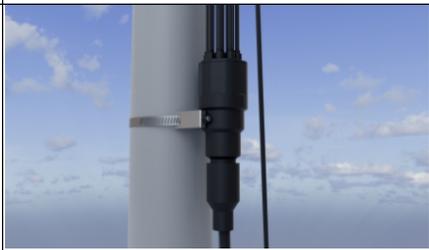
In case of any uncertainties, e.g. questions about the product, questions about installation, questions about dimensioning, please contact your ZTT partner.

## PICTURES

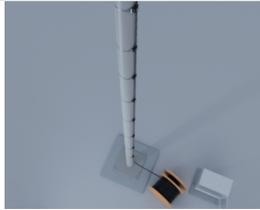
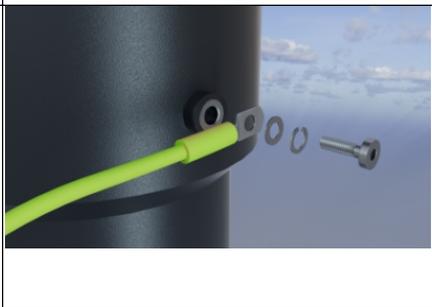
All images are for illustrative purposes only. Actual product may vary due to product enhancements.

# INSTALLATION MANUAL

## INSTALLATION STEPS

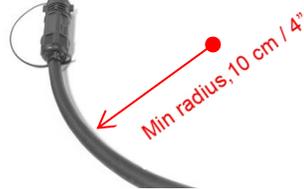
Part 1 RRH End Of Assembly		
<b>Step 1</b>	<p>Scan the QR code on the side of the reel with your smartphone. The phone jumps to the ZTT website where you will see the latest installation video and installation manual.</p>	
<b>Step 2</b>	<p>Carefully remove all packing material from the reel, including the cable divider retaining bracket.</p> <p> <b>NOTE:</b> Attach the cable reel to a suitable unwinding device. Pull slowly to unwind the cable reel.</p>	
<b>Step 3</b>	<p>Hang the hooks of the slings through the braided tubes in the rings of the net and secure the slings through the braided net and the braided net sheathing by wrapping them with rolling straps, and use lifting equipment to pull the secured sling assembly up the mast.</p> <p> <b>CAUTION:</b> Do not pull the branch directly, as this will damage the branch and the cables and fiber optic cables. You can only pull the body of the fiber optic composite cable below the branch.</p>	
<b>Step 4</b>	<p>After raising the divider to the height required, carefully cut the outer jacket protective tie with wire cutters to remove the outer packaging. As shown in the figure.</p>	
<b>Step 5</b>	<p>Use the mounting kit to secure the branch housing to the mast. Secure the hoop through the mounting kit as shown. Also make sure the grounding screw is facing forward.</p> <p> <b>NOTE:</b> The mounting brackets for the branching cable system have been inspected and tested by ZTT. ZTT assumes no responsibility or warranty for other mounting brackets not approved by ZTT.</p>	
<b>Step 6</b>	<p>Fix the cables to the mast using ZTT clamps, which are available for different profiles. The recommended spacing between clamps is 1.0m.</p> <p>The clamps should be applied to the hybrid cable starting 0.5m to 1.0m below the cable entry proceeding down to the bottom of the mast. The cable must be straight and aligned with the enclosure between the cable entry and the first cable clamp. The maximum allowable deviation at 0.5m below the cable entrance</p>	

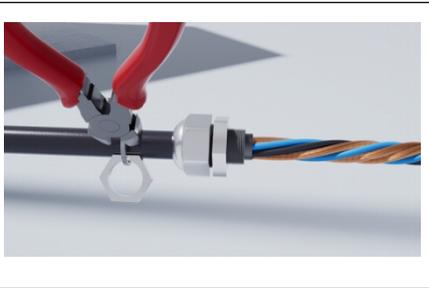
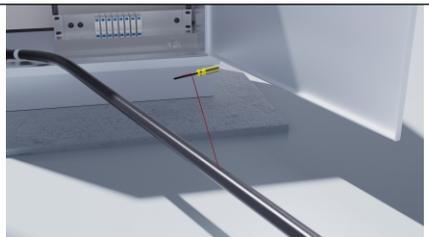
# INSTALLATION MANUAL

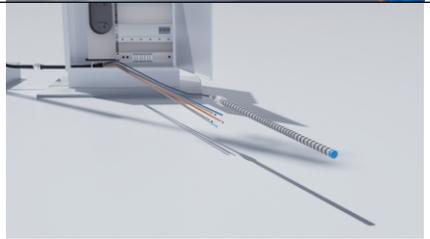
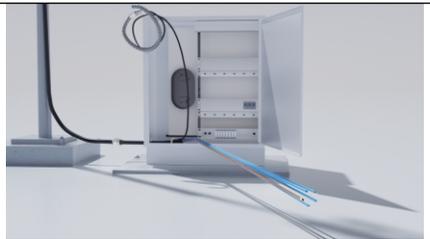
	<p>is <math>\pm 5^\circ</math>.</p>  <p>Note: The recommended spacing between clamps is 1m. The minimum bending radius of the cable is 10 times the cable diameter.</p>	
<p><b>Step 7</b></p>	<p>Once secured, remove the rope and completely remove the silver gray braided jacket of the top branch.</p>	
<p><b>Step 8</b></p>	<p>The enclosure has a cable integral earth point, connect the earth point to the hoop earth bar via the universal earth kit in the correct order: first the ground wire lug, second the washer and third the spring washer.</p> <p>Tighten the M8 earth screw to a torque of 5 N·m.</p>  <p>Take care not to damage the housing by overtightening the M8 earth screw. Attention: grounding parts, length 0.5 m, yellow/green, 16 mm<sup>2</sup>, 2*M8 lugs</p>	
<p><b>Step 9</b></p>	<p>Use the appropriate cable clamps to secure the power and fiber optic connectors. Different cable clamps are required depending on the number of taps and whether or not power tap cables are connected. Contact the ZTT sales office to select the correct cable clamps.</p> <p>The first clamp must be installed at the connector above the housing. The cable must be fixed straight and aligned with the branch.</p> <p>Do not bend the tap cable directly after the housing exit to avoid side loading on the housing exit. For power and fiber optic connectors, only the fixed non-removable portion of the connector may be secured in the plastic half shell. The removable bayonet of power connectors and the push-pull coupling mechanism of fiber optic connectors must not be clamped or otherwise subjected to mechanical stress.</p>  <p>CAUTION: Do not bend the cable excessively. The minimum bend radius for tapping power and fiber optic cables is 10 cm. Avoid side loading on power and fiber optic connectors.</p> <p>The half shells must be tightened with a suitable open-end wrench to a torque of 6 to 8 N·m. The screws on the metal U-profile must be tightened with a suitable open-end wrench to a torque of 6 to 8 N·m.</p>	

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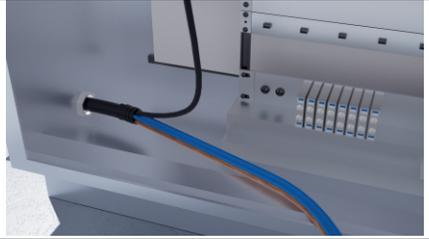
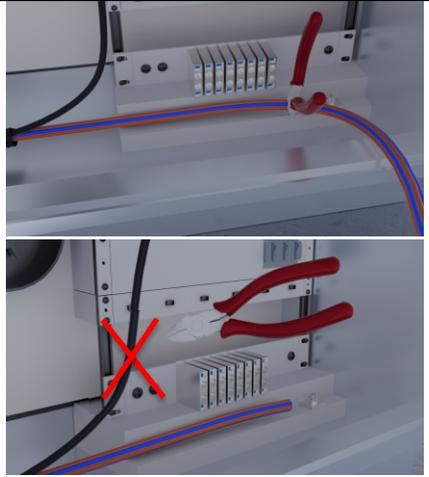
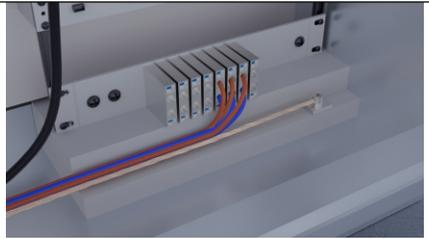
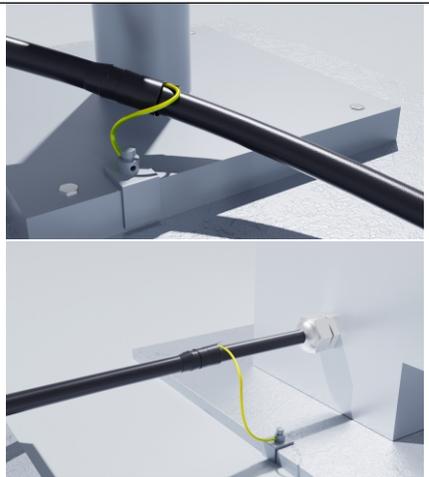
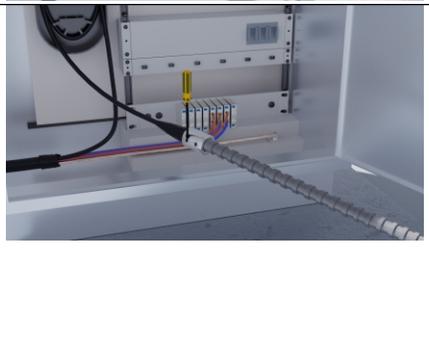
<p><b>Step 10</b></p>	<p>All connectors (fiber optic and power) are protected with waterproof (IP67) protective caps. All connectors on the tap cable are protected with waterproof (IP67) protective caps.</p> <p>Do not remove the caps if the jumper cables are not connected. When removing the caps, they should be fitted to the plug connectors to avoid dirt entering the connectors.</p>	
<p><b>Step 11</b></p>	<p>The RRH is connected via a fiber optic patch cable, which is terminated with an AARC-4 plug connector and RRH compatible interface.</p> <p>ZTT offers RRH-compatible protected fiber optic patch cords and DC power patch cords as shown in the figure.</p>	
<p><b>Step 12</b></p>	<p>Connect the AARC-4 plug connector on the fiber optic patch cord to the AARC-4 extension connector on the branch tap cable, which are labeled with numbers 1 through 9.</p> <p><b>Mating:</b></p> <p>Ensure that the connectors are all wearing their dust caps prior to installation, and the connection should be completed immediately after removing the dust caps. Align the keys and gently push the extension connector into the square plug, push it into the mating position and turn the extension connector's nut to lock the connector.</p> <p>The mating connector snaps into place and is completely stress relieved.</p> <p><b>Un-mating:</b></p> <p>Rotate to unscrew the nut of the extension fitting and pull out the extension fitting to disengage it. Immediately install the protective cap to prevent water or dirt from entering.</p> <p> <b>NOTE:</b> All ZTT fiber optic assemblies are manufactured in an industrial environment and undergo rigorous factory testing in accordance with IEC series standards. Do not remove the protective caps when not installed to prevent dust ingress.</p>	

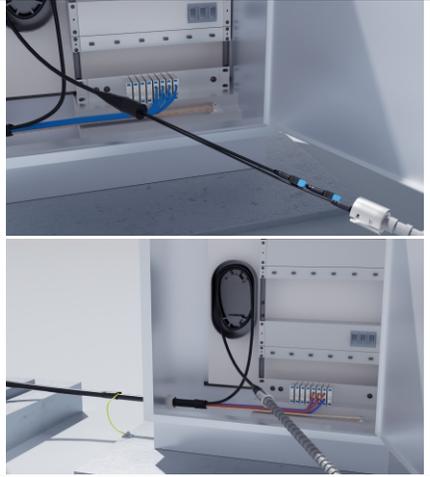
<p><b>Step 13</b></p>	<p>Remove the protective cap from the electrical connector by turning it counter-clockwise as shown.</p> <p>Connect the power receptacle (male) connector on the power jumper cable to the power plug (female) connector on the branch tap cable, which are labeled with numbers 1 through 9.</p> <p> <b>NOTE:</b> The connectors are not suitable for hot plugging and unplugging. Turn off the power before connecting or disconnecting the power connector. Otherwise the contacts will be damaged.</p> <p><b>Mating:</b> Remove the protective cap of the plug. Twist (60°) the coupling ring of the plug connector as shown to remove the protective cap. Note the locking/unlocking symbol on the coupling ring.</p> <p>Remove the protective cap of the power socket (female thread) connector on the branch tap cable. Twist (60°) the coupling ring of the receptacle connector counterclockwise as shown to remove the protective cap. Attach the two protective caps together for later reuse.</p> <p>Gently push the plug connector clockwise into the socket connector, rotate to find the key position and twist the coupling ring of the plug connector clockwise as shown until you hear and feel a "click".</p> <p>Align the white stripe on the plug with the white stripe on the socket to make it easier to find the keying location.</p> <p>Make sure the plug connector is aligned with the socket connector before twisting the coupling ring. Otherwise, the connector may be damaged.</p> <p>Avoid any tilting during mating as the connectors may be damaged.</p> <p><b>Un-mating:</b> Turn the coupling ring on the plug (not on the socket) counterclockwise to loosen the plug connector. Note the locking/unlocking symbol. Install protective cover to prevent water or dirt from entering.</p> <p> <b>CAUTION:</b> Do not bend the cable excessively. The minimum bend radius for power and fiber optic cables is 10 cm. Avoid side loading on power and fiber optic connectors.</p>	 
<p><b>Step 14</b></p>	<p>Connect the fiber optic patch cord and DC power patch cord to the RRH interface connector and the power lead terminals with RRH power outlet connectors or screws.</p>	

Part 2 Base Station End Of Assembly		
<b>Step 1</b>	After unrolling the entire hybrid cable assembly from the reel, make sure to leave the cable pull tube on the assembly for as long as possible when handling the hybrid cable assembly. The cable pull tube ensures IP65 and provides protection for the internal FO and DC tails.	
<b>Step 2</b>	To remove the protective tube, hold the tube and loosen the gland nut as shown.  <b>CAUTION:</b> Do not twist the tube at any stage of removal.	
<b>Step 3</b>	After removing the protective tube, carefully cut off the tie wrap that binds the nut.	
<b>Step 4</b>	Route the cable through the bottom entry hole of the cabinet.	
<b>Step 5</b>	Carefully place the nut over the cable near the bottom threading hole.	
<b>Step 6</b>	Mark the "stripping cutoff" at the cable entry hole with tape.	
<b>Step 7</b>	Peel back the tape on the cable, locate the ripcord, wrap it around a screwdriver (or similar tool) and drag it towards the side of the cabinet to dissect the outer sheath.	

		
<p><b>Step 8</b></p>	<p>Wear gloves and carefully peel off the twisted copper tape.</p>	
<p><b>Step 9</b></p>	<p>Near the tape wrap point, carefully remove excess copper tape copper shavings with sharp-nosed pliers and cover with tape to protect the fiber optic cable from excessive bending.</p>	
<p><b>Step 10</b></p>	<p>Rotate twisted cables to loosen them.</p>	
<p><b>Step 11</b></p>	<p>Hang the black jacketed fiber optic cable unit in a loop on the outside of the top corner of the cabinet.</p> <p> NOTE: Do not bend the cable excessively. The minimum bending radius (short term) of FO (Fiber Optical) fiber optic cable is 10 cm.</p>	
<p><b>Step 12</b></p>	<p>Pull the cable out of the cabinet a little to help secure the hybrid fiber optic cable clamps at the bottom of the mast, and secure the end cables under the tower with clamps to keep the cables safe.</p>	

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<p><b>Step 13</b></p>	<p>Then tighten the inlet gland nut to secure the cable.</p>	
<p><b>Step 14</b></p>	<p>Measure the desired cable length and cut the DC cable.</p>  <p>NOTE: Do not cut the FO fiber optic cable at any time.</p>	
<p><b>Step 15</b></p>	<p>Peel off DC wire end sheath and insert DC module</p>  <p>NOTE: The Brown jacketed wire is positive (+), The Blue jacketed wire is negative (-).</p>	
<p><b>Step 16</b></p>	<p>Use universal grounding kits to connect the copper tape of the hybrid cable to the grounding electrode. Use waterproof tape to waterproof the stripped end.</p>  <p>NOTE: Grounding Kits, length 0.5 m, yellow/green, 16mm<sup>2</sup></p>	
<p><b>Step 17</b></p>	<p>Use a screwdriver to pry off the clips. Gently remove the FO (Fiber Optical) protection tube.</p>	

	 <p>NOTE: Extra-long fibers are installed in the storage box.</p>	
<b>Step 18</b>	<p>Remove the protective cap from the MTP connector and plug the MTP connector into the corresponding device.</p>  <p>NOTE: All ZTT fiber optic assemblies are manufactured in an industrial environment and undergo rigorous factory testing in accordance with IEC series standards. Do not remove the protective caps when not installed to prevent dust ingress.</p>	

## Fiber Distribution, Power Distribution

Optical unit					
RRH	A side		B side		
NO.	AARC-4plug	PIN	MTP1	MTP2	MTP3
1	1	1	1		
		2	2		
		3	3		
		4	4		
2	2	1	5		
		2	6		
		3	7		
		4	8		
3	3	1	9		
		2	10		
		3	11		
		4	12		
4	4	1		1	
		2		2	
		3		3	
		4		4	
5	5	1		5	
		2		6	
		3		7	
		4		8	
6	6	1		9	
		2		10	
		3		11	
		4		12	
7	7	1			1
		2			2
		3			3
		4			4
8	8	1			5
		2			6
		3			7
		4			8
9	9	1			9
		2			10
		3			11
		4			12

Power unit		
RRH	A side	B side
NO.		Cable labels
1	Brown	1
	Blue	2
	Ground wire	Public ground wire
2	Brown	3
	Blue	4
	Ground wire	Public ground wire
3	Brown	5
	Blue	6
	Ground wire	Public ground wire
4	Brown	7
	Blue	8
	Ground wire	Public ground wire
5	Brown	9
	Blue	10
	Ground wire	Public ground wire
6	Brown	11
	Blue	12
	Ground wire	Public ground wire
7	Brown	13
	Blue	14
	Ground wire	Public ground wire
8	Brown	15
	Blue	16
	Ground wire	Public ground wire
9	Brown	15
	Blue	16
	Ground wire	Public ground wire

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## REVISION HISTORY

Revision	Description of detailed changes	Manager/Engineer	Applicable date
Rev. A	First Version	Steven	2022-5-12
Rev. B	Step 4, 8, 11 modified	Steven	2022-9-23
Rev. C	Step 5, 10 modified	Steven	2022-12-22
Rev. D	Step 13, 17 modified	Venus	2023-1-10