Flexi EDGE BTS Quick Guide

This guide can be used as quick reference for Nokia Flexi EDGE BTS installation.

Nokia Flexi EDGE BTS is a modular base station for GSM/EDGE capacity and coverage. It can be installed stacked on the floor, or mounted on the wall or on the pole.

This quick guide is for stack, wall and pole installations. For other installation options, see user manuals.

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Caution

Incorrect cables and seals may not provide secured weather protection. In outdoor installations, including the outdoor cabinet, use only tested IP55 class outdoor cables with seals provided by Nokia. This is also recommended for indoor installations.

Electrostatic discharge (ESD) may damage the modules. Wear an ESD wrist strap or use a corresponding method when handling the modules.

The rear stopper is fragile. Do not attempt to lift the plinth using the rear stopper.

1 Contents of delivery

Delivery	Contents	Versions	Codes
System Module delivery	System Module (ESMA)		470246A
	4 x M5 screws		
	2 x AWG 4 (21,1 mm²) connector rubber boots.		
Dual TRX Module delivery	Dual TRX Module (EXxA)	EDGE Dual TRX Module 800 MHz (EXTA)	470214A
		EDGE Dual TRX Module 900 MHz (EXGA)	470215A
		EDGE Dual TRX Module 1800 MHz (EXDA)	470216A
		EDGE Dual TRX Module 1900 MHz (EXPA)	470217A
	Transmission sub-module (FIxA)	FIEA (8xE1 coax)	470247
		FIPA (8xE1/ T1 sym)	470248
		FIFA (2x Flexbus)	470249
	BUS cable (1054 mm)		
	Power cable (1188 mm)		
	4 x RF cables (172 mm)		
	4 x M5 screws		
	4 x cage nuts		
Dual Duplexer Module delivery	Dual Duplexer Module (ERxA)	EDGE Dual Duplexer Module 800 MHz (ERTA)	470249A
		EDGE Dual Duplexer Module 900 MHz (ERGA)	470250A
		EDGE Dual Duplexer Module 900 MHz SB-J (ERJA)	470251A
		EDGE Dual Duplexer Module 900 MHz SB-J (ERHA)	470252A
		EDGE Dual Duplexer Module 1800 MHz (ERDA)	470253A
		EDGE Dual Duplexer Module 1900 MHz (ERPA)	470254A
	2 x M5 screws		
	2 x cage nuts		

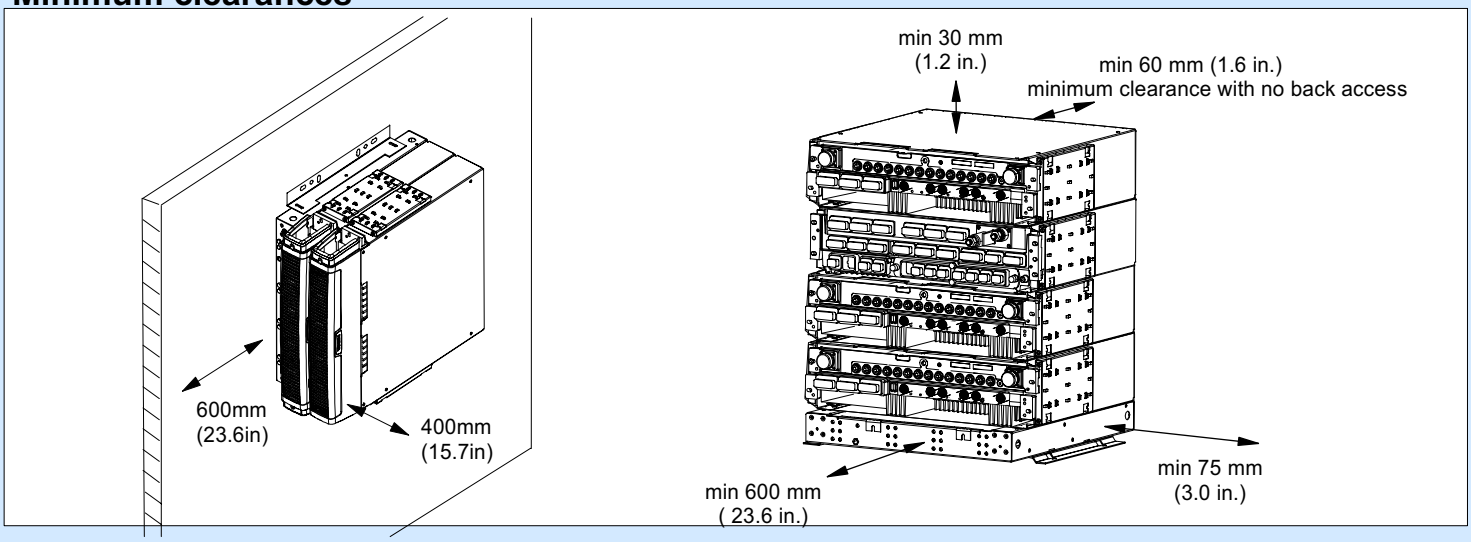
Optional items			
Plinth delivery	Mounting kit for floor, wall and pole	FMFA	470149A
	Adapter mechanics		
	Fixing plates for the casing		
	26 x screws		
	26 x spring washers		
Covers delivery	3U Front and back covers	FMCA	470239A
	Ground cable		994815A
Pole mounting kit delivery	Mounting brackets	WMPB	469978A
FPMA delivery	Power Module with DC cables		470139A
	2 x Power Module cable entries		
	Alarm cable		994820A
	2 x cable clamps		
	4 x M5 screws		
FPAA delivery	Power sub-module	FPAA	470140A
	Alarm cable		994819A
	2 x screws		
FPBA delivery	Power battery sub-module	FPBA	470141A
	Alarm cable		994819A
	2 x screws		

Check list

- ☐ Deliveries are complete.
- ☐ Equipment is not damaged.

2 Clearances

Minimum clearances

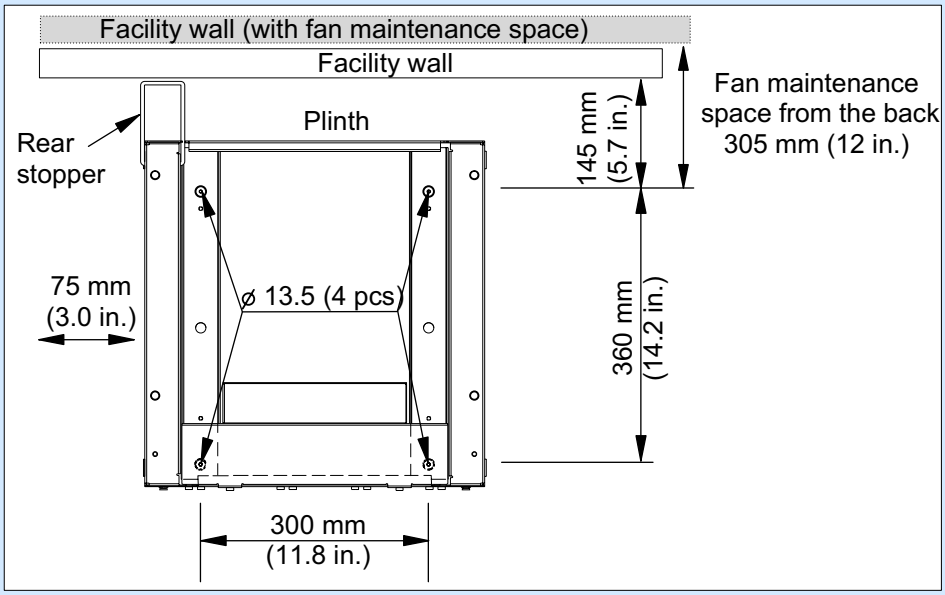


Check list

- ☐ Site meets the minimum clearances.

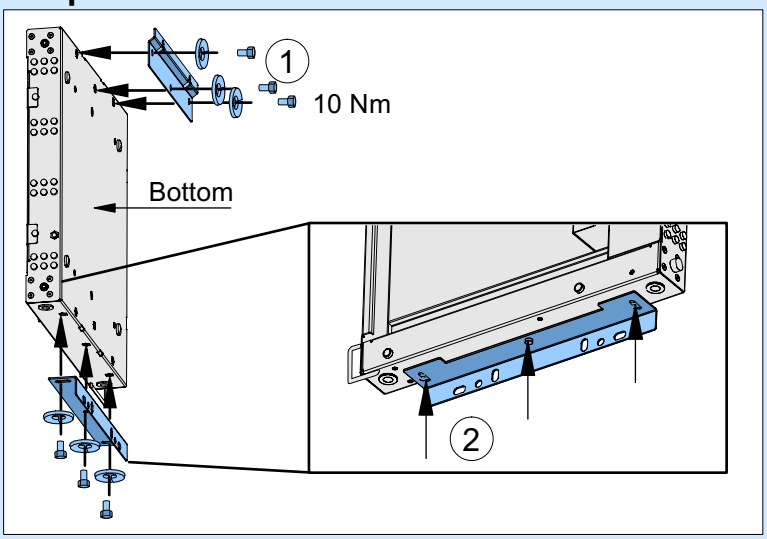
3 Installing the plinth

Plinth on the floor



1. Check the clearances around the plinth.
2. Turn the rear stopper.
3. Place the plinth on the floor, grounding points facing forward.
4. Bolt on the floor with 4 bolts, 12 mm in diameter.

Adapter mechanics



NOTE:

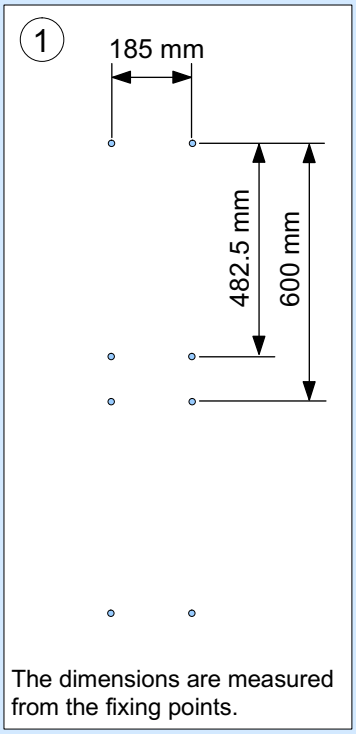
The brackets of the adapter mechanics are installed on the plinth in wall and pole installations.

1. Fix the upper brackets on the plinth with 3 screws. Secure the screws with thread locking compound.
2. Fix the lower bracket on the plinth with 3 screws, **do not tighten yet.** Secure the screws with thread locking compound.

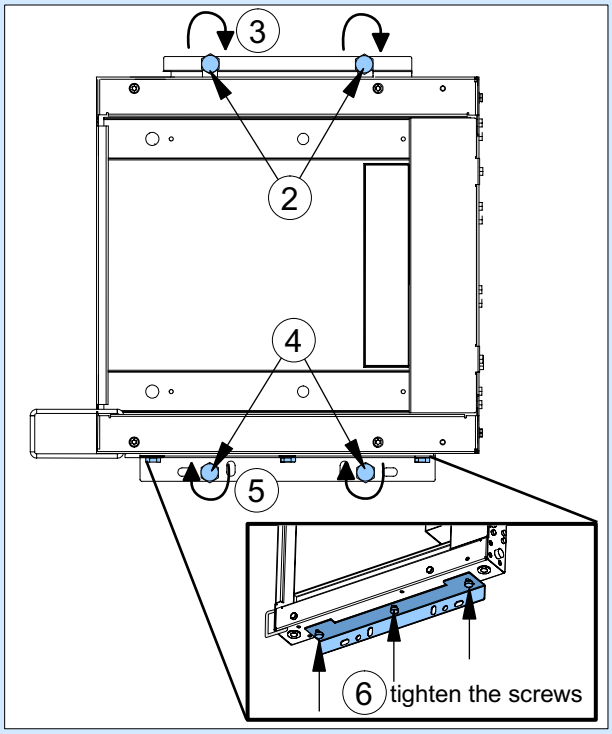
   When the screws are left loose at this point, it allows the plinth to move slightly and prevents it to get twisted in the installation phase.

Installing the plinth (continued)

Plinth on the wall



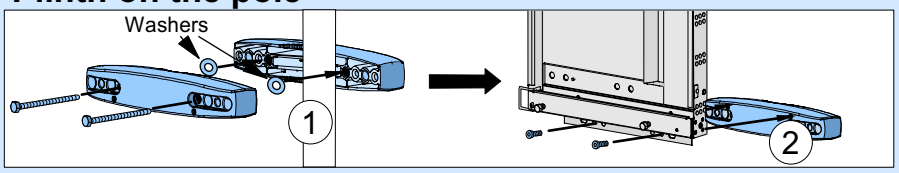
The dimensions are measured from the fixing points.

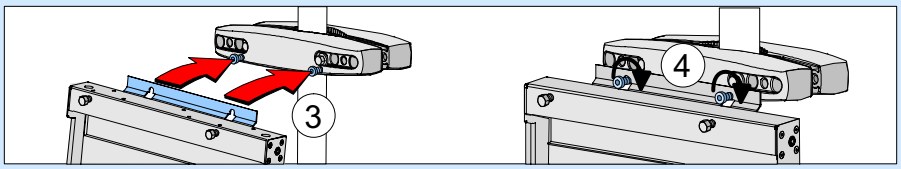


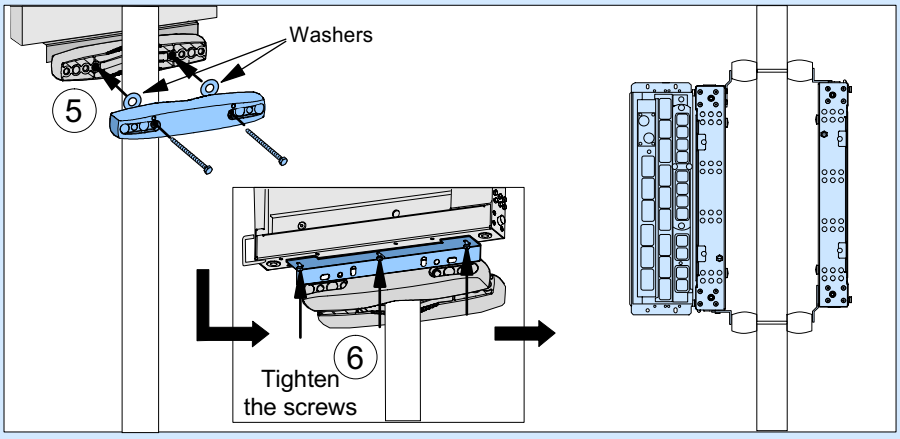
1. Mark screw locations according to the holes in adapter mechanics and drill holes.
2. Fix the mounting screws on the wall and mount the plinth.
3. Tighten the upper mounting screws.
4. Insert the lower mounting screws.
5. Tighten the lower mounting screws.
6. Tighten the adapter mechanics screws.
7. Ground the plinth. See section 4 for instructions.

TIP: It is recommended to install the plinth with the front panel facing right.

Plinth on the pole







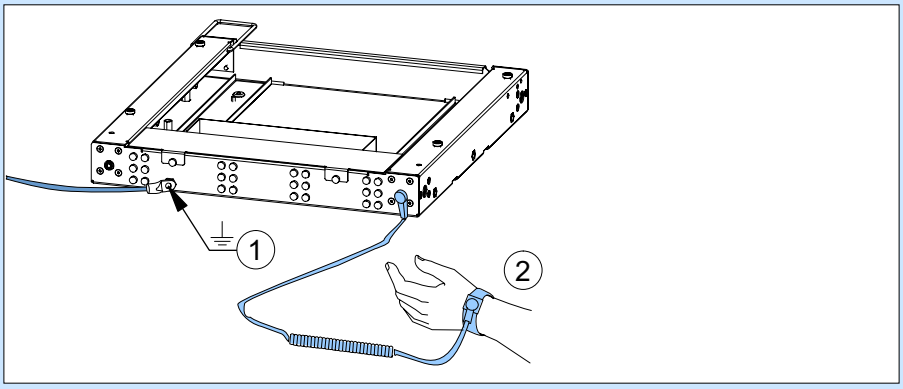
1. Fix the upper bracket on the pole and attach the mounting screws. The minimum diameter of the pole is 60 mm and maximum 300 mm.
2. Fix one half of the lower bracket on the plinth.
3. Lift the plinth on the pole.
4. Tighten the mounting screws.
5. Fix the counterpart of the lower bracket on the pole.
6. Tighten the adapter mechanics screws. Secure the screws with thread locking compound.
7. If a second plinth is required, install it on the other side of the pole mounting bracket.
8. Ground the plinth. See section 4 for instructions.

Check list

- ☐ Adapter mechanics are installed, secured with thread locking compound and tightened (for wall and pole installation).
- ☐ Plinth is installed according to instructions.
- ☐ Plinth is level and it is not twisted.
- ☐ Plinth is grounded.

4 Grounding the plinth

Grounding principle



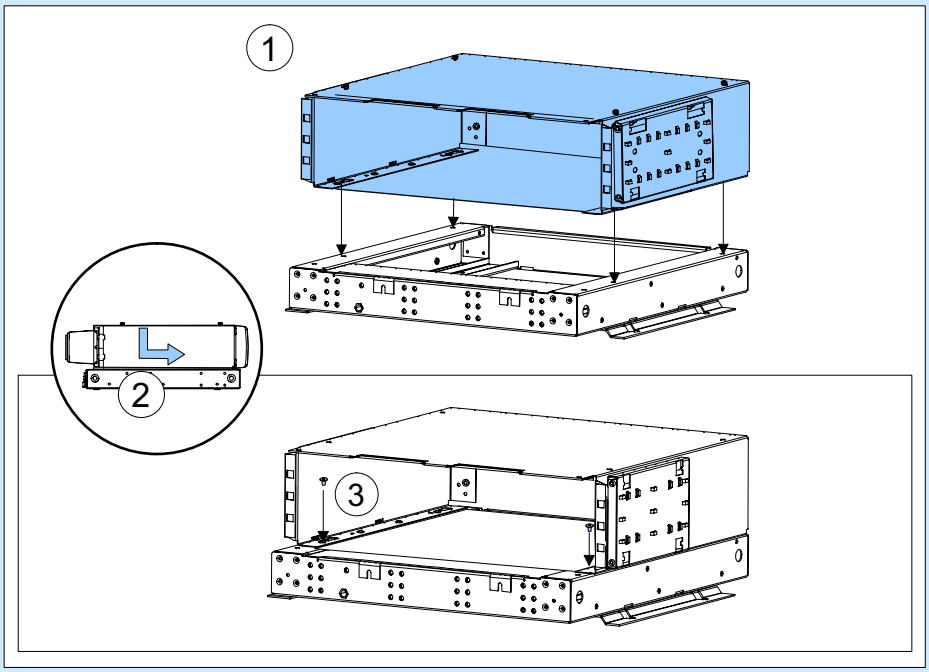
1. Ground the plinth to the site main ground.
2. Connect the wrist strap.

Check list

- ☐ Grounding principle is followed.
- ☐ Antistatic wrist strap is used when handling modules.

5 Installing the casings

Back cover and casings



1. Align the holes of the first casing bottom with the fixing studs on the plinth.
2. Push the casing back until it stops.
3. Attach the casing to the plinth with M5 X 6 mm screws.

NOTE:
Back covers come attached to the casings.

NOTE:
In pole and wall installations remember to install the safety catches

Torque values

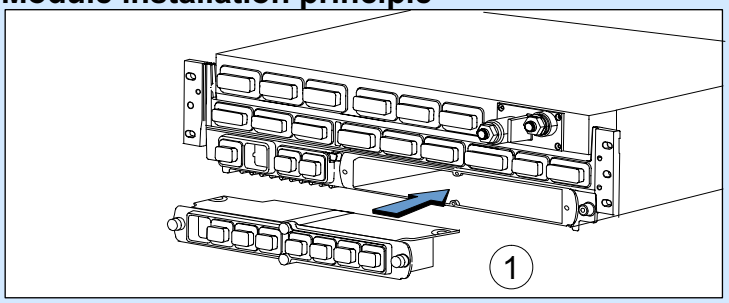
Bolt/Screw type	Size	Usage	Torque
TORX screw, pan head	M5	Cable entry, module/FCIA grounding, locking casings, rear covers, FPAA, FPBA, FPMA AC terminal cover	2.0 - 2.5 Nm (1.5 - 1.8 ft-lb)
Hexagon head screw	M10	Cabinet/plinth fixing (not included in Flexi EDGE delivery)	40.0 Nm (29.0 ft-lb)
Nut	M10	Cabinet/plinth fixing (not included in Flexi EDGE delivery)	40.0 Nm (29.0 ft-lb)
Hexagon head screw	M12	Cabinet/plinth fixing (not included in Flexi EDGE delivery)	49.0 Nm (36.1 ft-lb)
Nut	M12	Cabinet/plinth fixing (not included in Flexi EDGE delivery)	49.0 Nm (36.1 ft-lb)

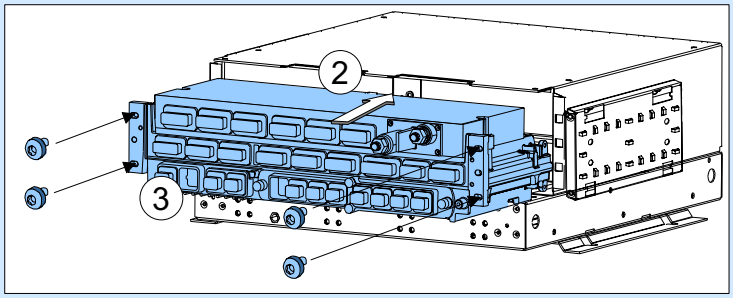
Check list

- ☐ Back covers are properly installed.
- ☐ Fixing screws are tightened.

6 Installing the modules

Module installation principle

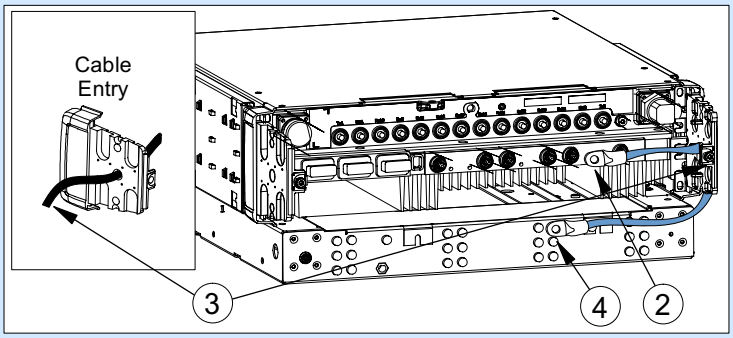




1. Install the transmission sub-module to the System Module.
2. Slide the module(s) into the casing.
3. Attach the module(s) to the casing with M5 X 25 mm screws.

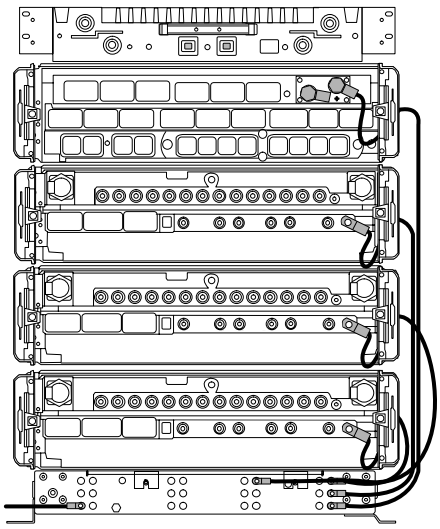
7 Grounding the modules

Grounding principle



1. Install the first module.
2. Connect the grounding cable to the module front panel.
3. Route the grounding cable through the cable entry.
4. Connect the other end of the cable to the plinth.
5. Repeat steps 3-6 with all the modules.

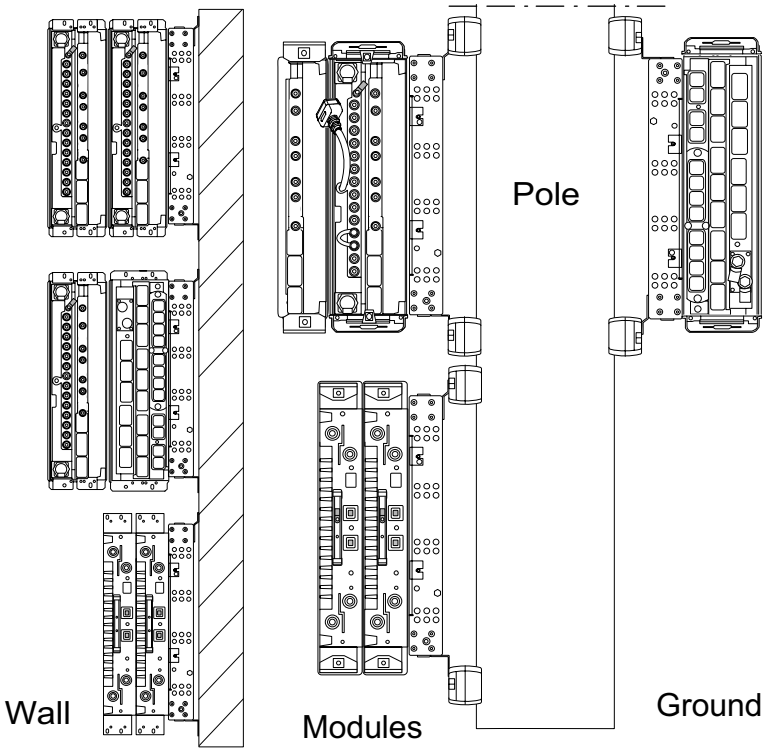
Installation example



Stack

NOTE:
Maximum 2 modules per plinth in wall and pole installations.

NOTE:
Max 5 modules for zone 4.
Max 22 U for zone 2.

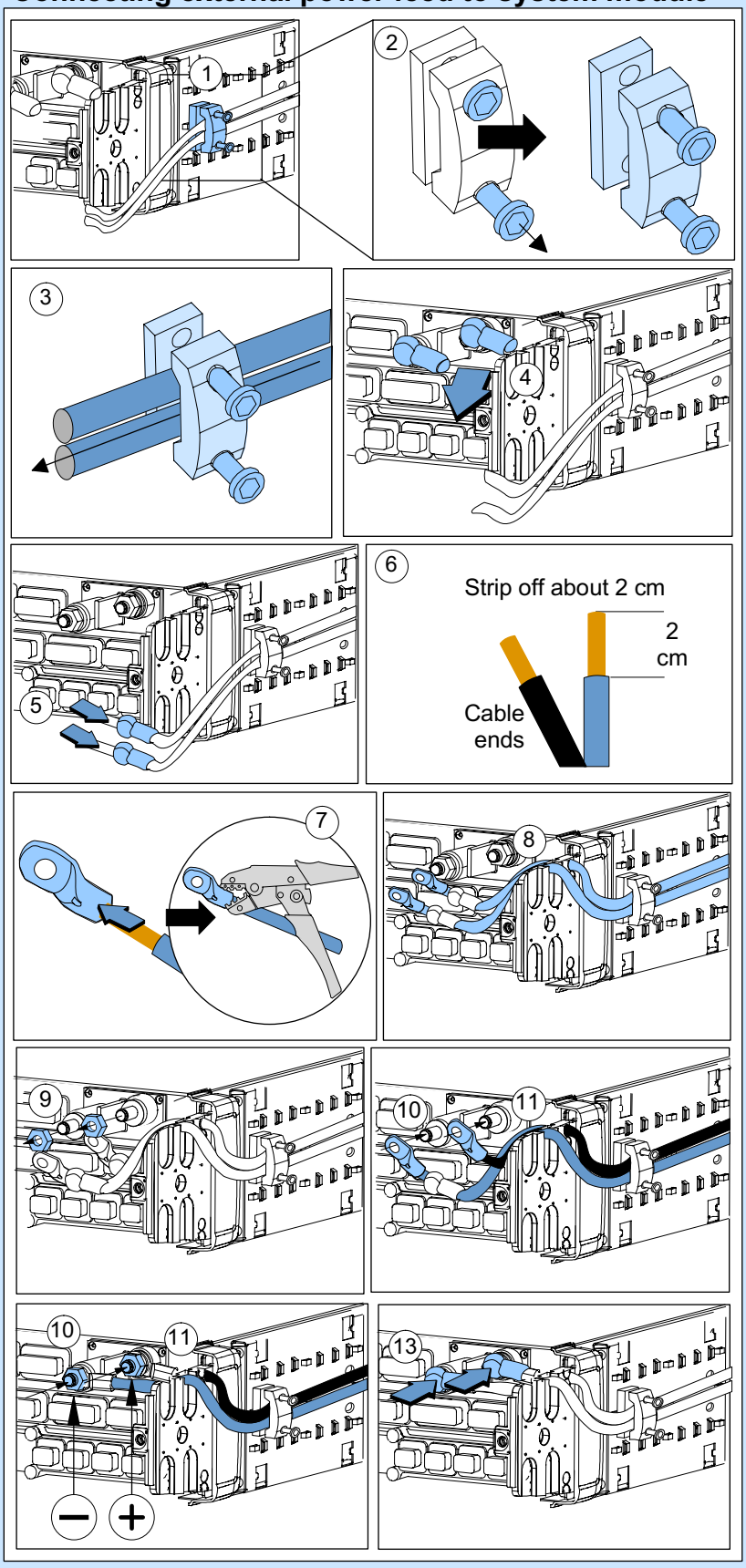


Check list

- ☐ Modules are grounded.
- ☐ Modules are level.
- ☐ Module back covers and cable entries are installed.
- ☐ Modules are properly stacked.
- ☐ Screws are tightened and secured with thread locking compound.

8 Connecting external power feed

Connecting external power feed to system module



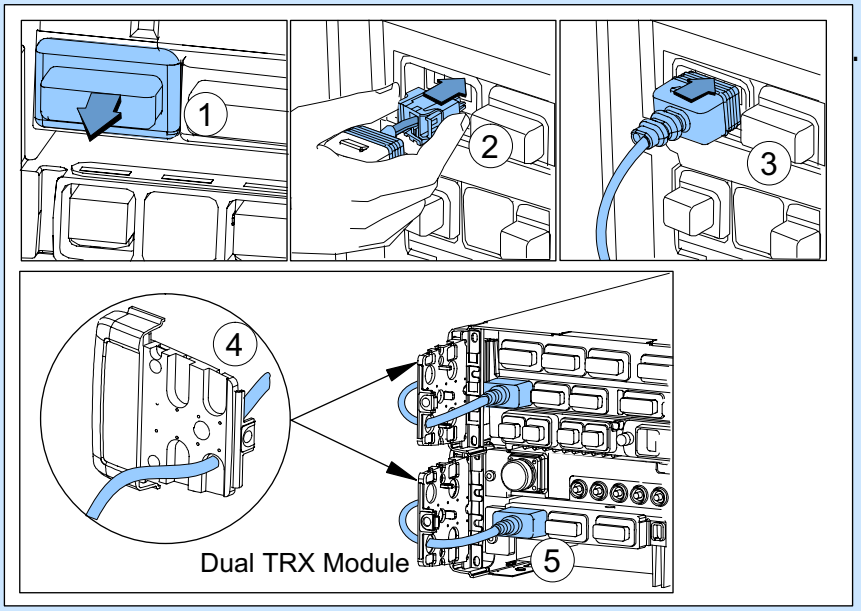
1. Install the cable clamp on the side of the casing.
2. Loosen the two screws on one of the cable clamps at the side of the casing until there is enough room to route the power cables.
3. Route the power cables through the cable clamps and through one of the left cable entries.
4. Remove the black rubber boots using adjustable wrench, and disconnect the cable lugs from the terminals.
5. Pull each cable through a rubber boot.
6. Strip about 2 cm (.8 in) of insulation from the (+) and (-) DC cables.
7. Insert the stripped end of each cable into a cable lug and crimp.
8. Route the cable through the external cable entry.
9. Detach the screws on the connectors poles.
10. Connect the blue (-) crimped wire to the (-) blue connector pole and tighten the bolt.
11. Connect the black (+) crimped wire to the (+) black connector pole and tighten the bolt.
12. Torque the 17 mm (0.7 in.) bolts (max 14 Nm).
13. Pull the black rubber boots over the lugs.
14. Tie-wrap any loose cabling and tighten the cable clamp at the side of the casing with a T10 TORX screwdriver.

Check list

- ☐ Modules are properly connected.
- ☐ Bolts are tightened.

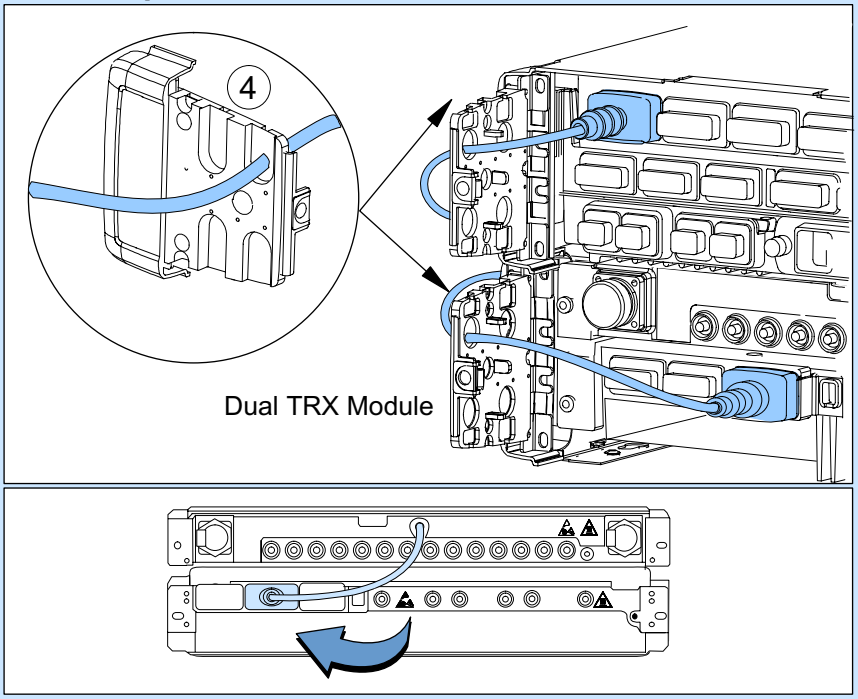
9 Cabling

Bus cables



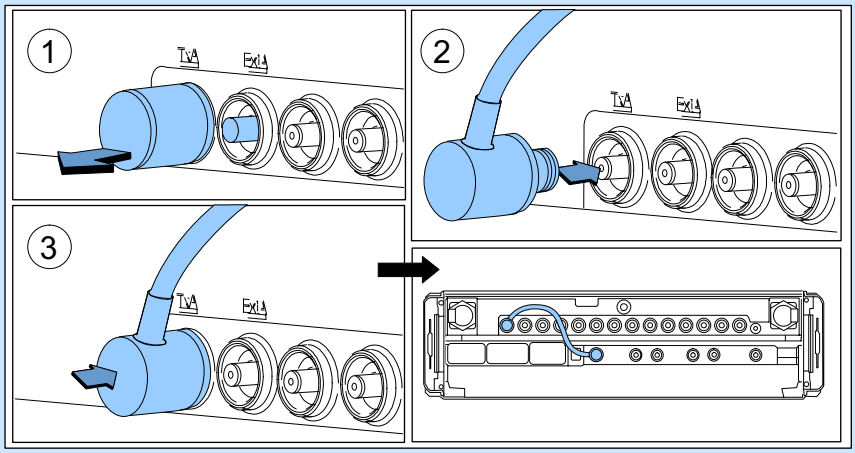
1. Remove the connector seal on the unit to uncover the connector.
2. Connect the cable to the System Module.
3. Push the connector seal firmly in place.
4. Route the cable through the external cable entry.
5. Connect the bus cable to the Dual TRX Module.
6. Repeat steps 1-5 for each of the Dual TRX Modules in the configurations.

Internal power cables



1. Remove the connector seal on the unit to uncover the connector.
2. Connect the cable to the System Module.
3. Push the connector seal firmly in place.
4. Route the cable through the external cable entry.
5. Connect the bus cable to the Dual TRX Module.
6. Repeat steps 1-5 for each of the Dual TRX Modules in the configurations.
7. Connect the Dual Duplexer Module cable to the Dual TRX Module.

RF cables

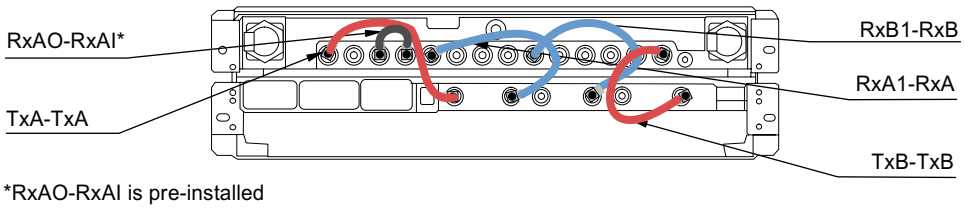


1. Remove the seals and the caps from the RF connectors.
2. Connect the RF cable to the connector. You will hear a click when it is properly connected.
3. Push the connector seal firmly in place.
4. Repeat steps 1-3 for all RF cables required in your configuration

NOTE: Leave the caps in place for the connectors that are not used.

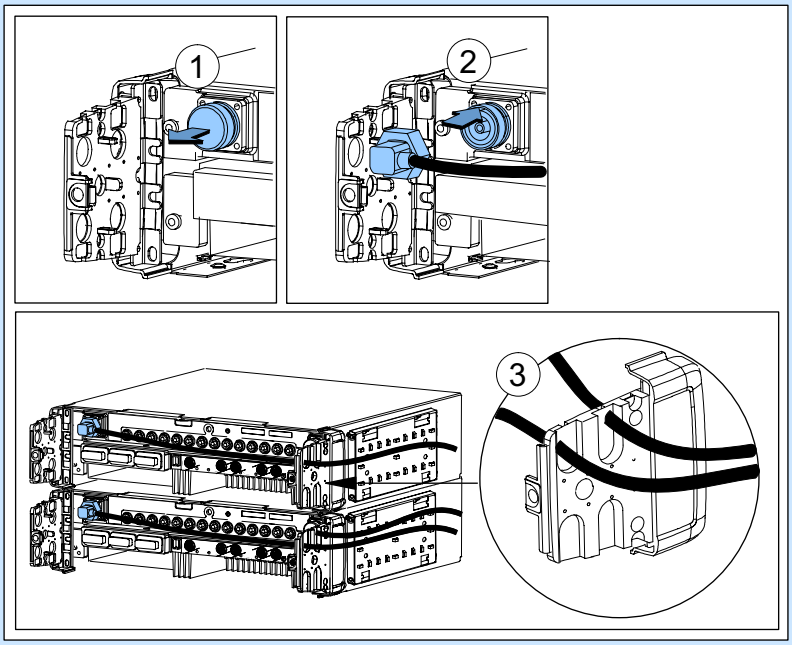
Cabling (continued)

Example of RF cabling in 2+2+2 bypass 2UD configuration (one sector)



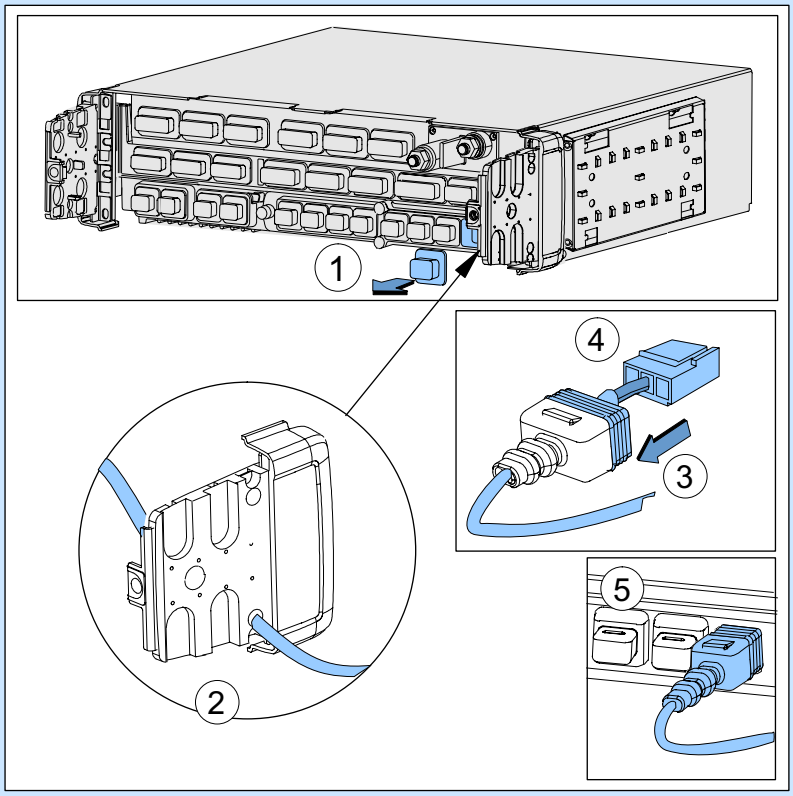
*RxAO-RxAI is pre-installed

Antenna cabling



1. Remove seals from the antenna connectors in the Dual Duplexer or Remote Tune Combiner Module. Store the connector seals for later use.
2. Connect the cable to the Dual Duplexer or Remote Tune Combiner Module.
3. Route the antenna jumper cables through the cable entry.
4. Tighten the connector with a torque wrench set to 25 Nm.
5. Repeat the previous steps for all antenna jumper cables required for your configuration

Transmission cables

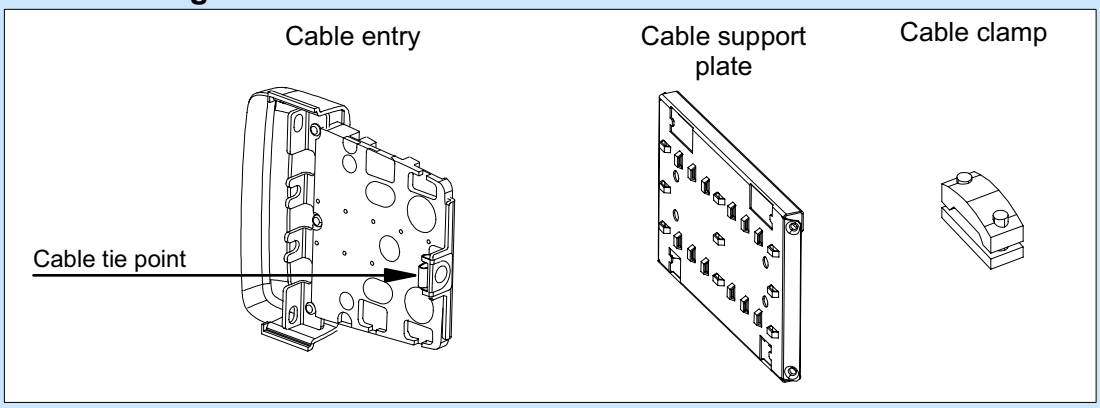


1. Remove connector seals from the transmission sub-module connectors. Store the connector seals for later use.
2. Route the antenna jumper cables through the cable entry.
3. Pull back the connector seal covering the transmission cable connector (TNC connector excluded).
4. Connect the cable to the transmission sub-module.
5. Push the cable connector seal firmly in place.
6. Repeat the previous steps for all transmission cables required for your configuration.
7. Make sure that all the connector seals are properly installed.

Check list

- ☐ All cables are connected according to the configuration.
- ☐ BTS external cables or cables between the modules on different plinths are routed via external cable entries.
- ☐ Connector seals are **firmly in place.**

Cable routing and cable ties



1. Route the cables through external cable entries.
2. Fix to cable tie points with cable ties.

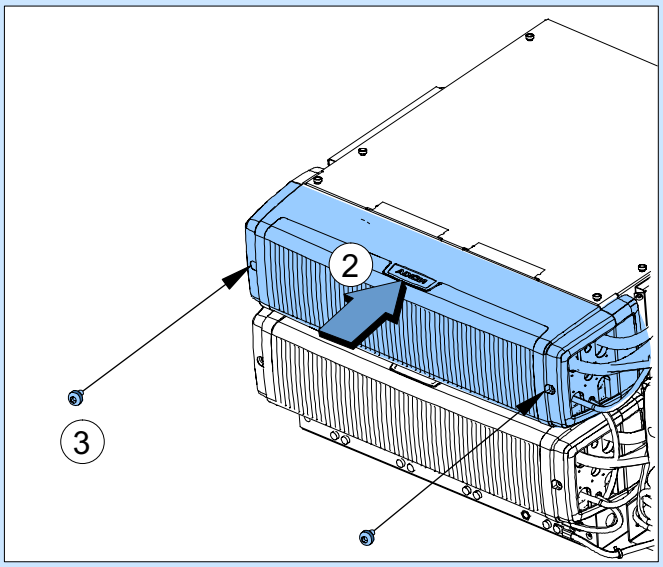
Cables that are routed through external cable entries: antenna cables, external power feed, transmission cables, grounding cables. bus cables, internal power cables, RF cables..

10 Powering up and commissioning the BTS

1. Power up the site and check the LEDs.
2. Commission the BTS.

11 Installing module front covers

Module front covers



1. Fix the safety catch.
2. Place the cover on top of the module front panel.
3. Fix the screws.

Torque values

Bolt/Screw type	Size	Usage	Torque
TORX screw, thumb	M4	Transmission submodules (FIFA, FIEA, FIPA)	2.5 Nm (1.8 ft-lb)
TORX screw, thumb	M4	Wide-band Combiner Sub-module (EWxx)	2.0 - 2.5 Nm (1.5 - 1.8 ft-lb)
TORX screw, pan head	M4	Fan plate assembly	1.2 - 1.6 Nm (0.9 - 1.2 ft-lb)
TORX screw, thumb	M5	Mounting modules on rack or casings (EXxA, ERxA, ESMA,ECxA, FPDA, FPMA)	3.0 Nm (2.2 ft-lb)
TORX screw, thumb	M5	Front covers	2.0 - 2.5 Nm (1.5 - 1.8 ftl-b)
DC Power terminal nut	M10	ESMA, FPDA DC power terminals	10.0 - 14.0 Nm (7.0 ft lb -9.8 ft-lb)
Antenna connector	7/16"	Antenna jumper cables (not inlcuded in Flexi EDGE delivery)	25 Nm (18.5 ft-lb)

Check list

- ☐ Module front panel covers are installed.

Installation check list

Perform these checks to make sure that the installation is complete:

- ☐ Delivery is complete and undamaged.
- ☐ Site meets the minimum clearances.
- ☐ Adapter mechanics are installed (for wall and pole installation).
- ☐ Plinth is installed according to the instructions.
- ☐ Plinth is grounded.
- ☐ Modules are installed according to the instructions.
- ☐ Modules are grounded to the plinth.
- ☐ External power cables are connected.
- ☐ Dual Duplexer Module cable is connected to the Dual TRX Module.
- ☐ Bus cables are connected.
- ☐ Internal power cables are connected.
- ☐ RF cables are connected.
- ☐ Antenna jumper cables are connected.
- ☐ Transmission cables and sub-modules are connected.
- ☐ Optional cables (EAC, Synchronisation, Site support interface, FPA interface, LMP, LMUcables) are connected.
- ☐ BTS external cables or cables between the modules on different plinths are routed via external cable entries.
- ☐ All boots and caps are properly connected and IP-sealed.
- ☐ Only Nokia provided cables are used for transmission and alarm cables.
- ☐ BTS is switched on and all units are ready for commissioning.
- ☐ Module front covers are installed.
- ☐ Site is clean and installation completed.

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