FTTH OUTDOOR DISTRIBUTION BOX **MCO-P1-M**

Manual
(Edition 03/2021)

GK-U1483.00.000-02 IM

FTTH BOX MCO-P1-M version (hereafter, the cross-coupling) is used as an small capacity optical distribution frame for the installation of an optical cable laid/suspended/ indoors or outdoors.

The cross-coupling is intended for the branching out of optical fibers, complying with ITU-T G. 657 Recommendations, for terminating branching optical fibers on optical pigtail cords.

The cross-coupling provides a junction for the pigtail» type connectors of the optical cables of (hereafter «pigtail» cord) with connectors of single-fiber optical patch cords (hereafter SCO) with a diameter of 2-3 mm for connection to the equipment of consumers/subscribers directly or through an optical splitter.

The design of the cross-coupling provides:

– input and fastening of two dielectric optical cables introduced into the body with the outer sheath diameter from 6 to 14 mm;
– the possibility of organizing the input of the «transit loop» optical cable;
– installation of a planar optical splitter with a nominal case size LxWxH mm 60x7x4 mm (up to 2 pcs.);
– installation of SC type sockets for optical connectors (adapters) (up to 10 pcs.), Intended for the connection of pigtail and SCO cords and / or splitter inputs;
– withdrawal up to 8 SCO.

The cross-coupling has a dust and splash-proof dead-end design, (optical cable input and SCO output are made from the same side,) is made of plastic.

Structurally, the cross-coupling is a small-sized rectangular container equipped with a hinged lid with a sealing gasket at the junction of the body and lid. The cover is fastened to the body with a plastic hinge.

Sealing of optical cable and SCO inputs / outputs in the cross-coupling is provided along the outer shells using elastic gaskets installed in the grooves of the body.

Fastening in the OK and SCO cross coupling is carried out on the outer (or inner) shells using clamps or ties. The appearance of the cross-coupling is shown in Figure 1.

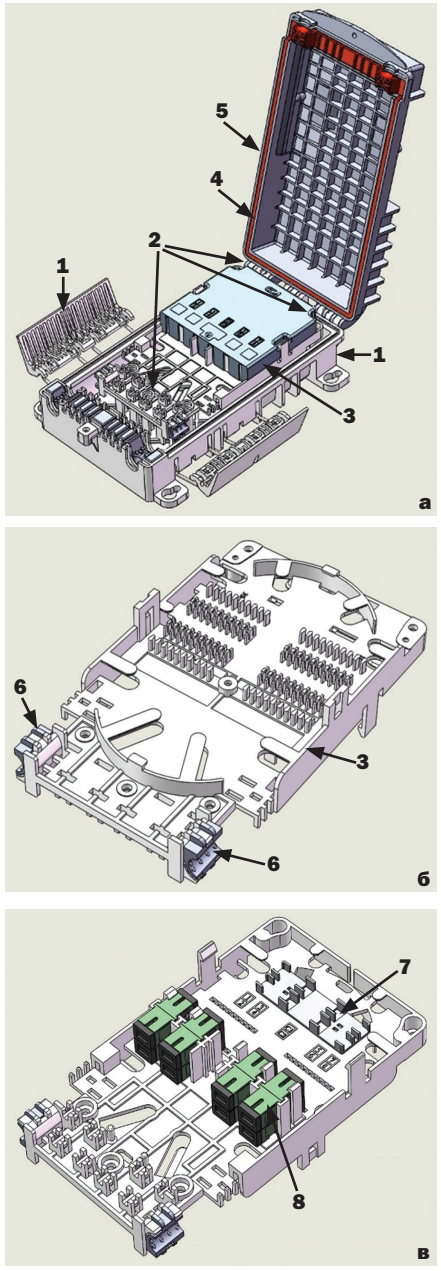


Figure 1
1 – case; 2 – fastening screw (3 pcs); 3 – insert; 4 – sealing gasket; 5 – cross-coupling cover; 6 - inserts for fastening cables with a diameter of up to 9 mm; 7 – places for the location of optical splitters; 8 – SC type optical adapters

Cross-coupling provides placement of up to 36 fiber splices protected by sleeves 4525 (length 45 mm, diameter after shrinkage 2.5 mm).

The composition of the set of products and materials (included in the delivery set) used for the installation of the cross-coupling:

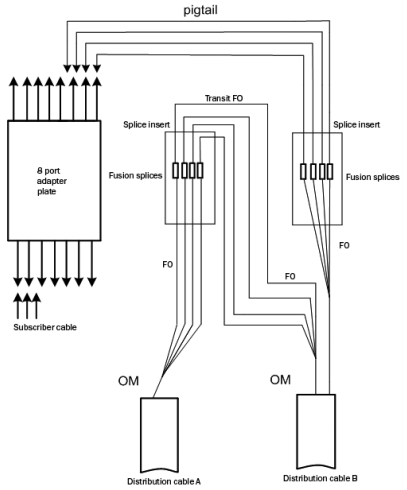
– tweezers for working with sleeves splice protection kit – 1 pc.;
– polyethylene buckle 150 mm – 6 pcs.;
– a set of parts for installation – 2 pcs.;
– silica gel – 1 pack;
– address form – 1 pc .;

To install the cross coupling, use “MCO-P1M suspension bracket” (not included in the delivery set of the cross-coupling; ordered separately).

1 Mounting the cross-coupling

The reliability of the dust and splash protection provided by the cross-coupling is ensured if the instructions in this manual are strictly followed. The surfaces of cables, cords and the sealing gasket of the coupling must be thoroughly cleaned of dirt.

The placement of the cross-coupling and the connection of the optical cable and the optical fiber to it must be carried out in accordance with the diagrams included in the design documentation. The general recommendation is to place the sleeve in a strictly vertical position with the cable inputs facing downward.



1.1 Check the delivery of the cross-coupling for completeness in accordance with the operating documents.

1.2 The placement of the cross-coupling and the connection of the optical cable (OC) and the optical fiber (OF) to it must be carried out in accordance with the diagrams included in the design documentation. The general recommendation is to place the sleeve in a vertical position with the cable inputs facing downward.

1.3 Installation of the optical cable is carried out on the insert (Figure 1, position 3), outside the coupling in a place convenient for work (on the table).

Remove the insert from the housing by unscrewing 3 fixing screws (Figure 1, position 2), remove the cover from the insert. Place the insert on a flat, horizontal surface.

Note – The back of the insert is used:

– *for connection to the branching optical fiber (loose tube of cable of direction* ***“A”****, station side);*
– *for the installation of Optical fiber/ Optical module (OF/OM) of the line cable subject to “transit” input (“transit” OM).*

The front side of the insert is used for the junction:

– cable fiber optic cable with pigtail plugs;
– pigtail cords with SCO plugs for the equipment of consumers / subscribers directly or through an optical planar splitter;
– calculation of the lengths of stock optical splitter cords.

1.4 Clean the ends of the optical cable at a length of 2.5 m.

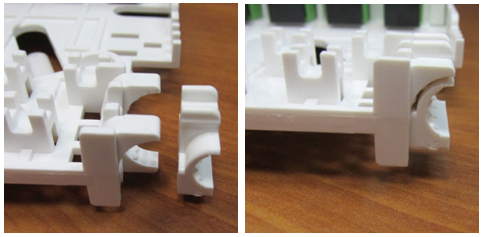
1.5 Remove the outer shell of the optical cable for a length of 2 m according to the accepted technology. Cut off the aramid threads at this distance together with the outer sheath of the optical cable, remove the central strength member.

1.6 With the modular design of the optical cable, mark the optical modules (loose tube) at 10 mm from the edge of the outer shell of the optical cable. Make an annular incision of the central tube (CT) or loose tube with a stripper at 40 mm from the cut on the outer shell and remove the trimmed part of the loose tube from the optic fiber. Wipe each optical fiber with a lint-free napkin (Kim-

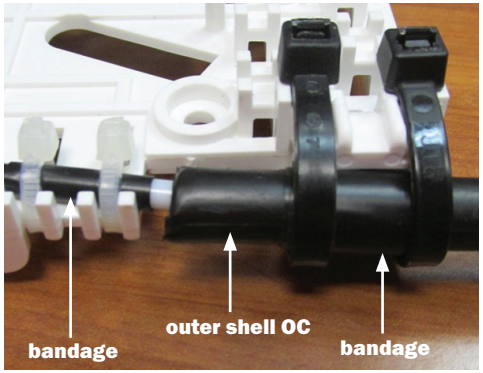
Wipes) moistened with D'Gel liquid, then with a cloth, moistened with isopropyl alcohol, then wipe dry.

With the modular design of the optical cable, make a temporary marking of each optical fiber sheath (at the end of the sheath) included in the loose tube, with a self-adhesive marker in accordance with the marking of the optical fiber, which includes the sheath.

1.7 In connection with the unification of the insert in the MCO-P1 and MCO-P1-M couplings, for fixing and better centering of the cable with a diameter of 6 to 9 mm in the sealing element of the housing, additional inserts were used in the places where the optical cable was attached to the outer shell (see photo).



Make a bandage of 2-3 turns of vinyl (insulating) tape LV1 (hereafter referred to as vinyl tape) on the outer sheath of the optical cable to the side of the cable (5 mm from the cut on the outer sheath); – standing 10 mm from the edge of the outer shell. Fasten the cable to the insert with 2 nylon ties over the bandage applied to the sheath, fix the OM bundle on the insert with 2 nylon ties over the applied bandage. remove the excess tie lengths.



1.8 Installation of loose tube and optical fiber (version MCO-P1-M/A)

1.8.1 Installation of loose tube and optical fiber on the insert: welded joints "OF OC – OF OC" – "transit" OF

1.8.1.1 Pre-lay the lengths of stock (two or three turns) of the mounted group of fiber optic cables in direction «A» between the sides of the insert and the guiding elements (the back side of the insert), lay the bundle of fiber into the middle slot of the cradle. Make a mark on the buffer coating of the cable fiber in the place of the proposed welding (in the middle of the cradle). Cut off the excess lengths of fiber.

Notes:

1. *Inserts can accommodate up to 36 pieces, when splice protection kits sleeves are stacked.*
2. *Install at least two sleeves in each slot of the cradle.*

1.8.1.2 Repeat the operations of **8.1.1** in section **"A"** of this manual for the mounted group of optic fiber and loose tube cable in direction «B». Pre-lay in the cassette the lengths of the first mounted group of fiber optic cables in the "B" direction, similar to laying the fiber of the "A" direction but in the opposite direction.

1.8.1.3 Remove the pre-installed mounted groups of optical fibers of directions "B" and "A".

1.8.1.4 Remove the temporary marking from the installed optical fiber group.

In accordance with the current technology, proceed with the optical fiber welding:

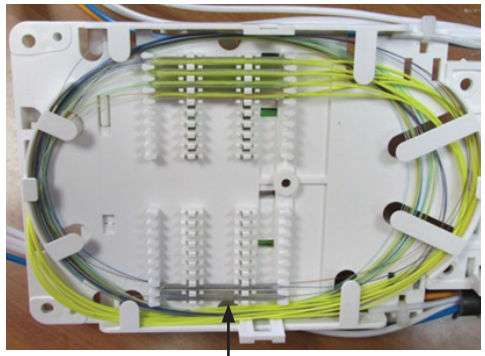
– select the first pair of installed optical fibers and push the spice protection kits onto one of the optical fibers;
– prepare the optical fiber for welding and weld;
– protect the welded joint of the optical fiber with a sleeves splice protection kit;
– install the sleeves in the corresponding slots of the cassette splice holder, put in the cassette the reserves lengths of the optical fiber;
– make sure with the help of a reflectometer that the parameters of the optical fiber welded joints comply with the requirements of the document «Standards for acceptan- make sure with the help of a reflectometer that the parameters of the optical fiber welded joints comply with the requirements of the document «Standards for acceptance measurements of elementary cable sections of trunk and intrazone underground fiber-optic transmission lines of a public communications network» (approved by order of the State Committee for Communications of Russia from 17.12.97 No. 97).

IT IS FORBIDDEN TO USE SLEEVES FOR PROTECTING MORE THAN ONE WELDED OPTICAL FIBER CONNECTION!

Note – When shrinking the sleeves Splice Protection Kit: set the heat shrinkage mode temperature 100-110° C, heating duration 60-70 s (to prevent excessive leakage of hot melt glue during shrinkage of the sleeves, which creates difficulties for the subsequent installation of the sleeves in the splice holder), or use the welding machine mode for thermal shrinkage sleeves with a length of 40 mm.

IT IS FORBIDDEN TO MAKE SLEEVES SHRINKING ON THE HEAT SHRINKING MODE FOR SLEEVES LENGTH 60 MM.

1.8.1.5 Perform welding and protection of welded joints of all optical fibers from the composition of the group of optical fibers to be mounted in directions "B" and "A" in accordance with **1.9.1.4**. Place the welded joints one by one in the slots of the splice holder, the welded joints of the fiberglass, place the reserves of the lengths between the sides and the guide elements of the insert. The installation of the sleeves of the mounted welded joints of the optical fibers, protected by the sleeves 4525, into the splice holder shall be carried out sequentially, taking into account the numbering of the optical fibers and the conditional numbering of the optical fibers in the splice tray.

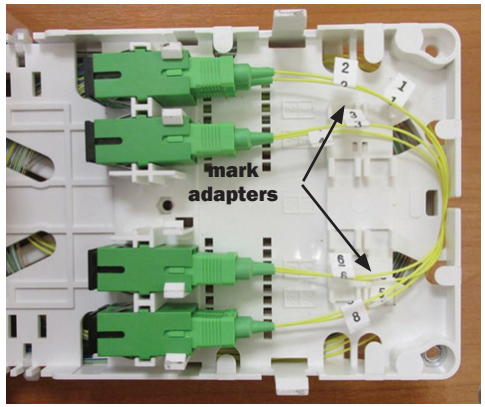


1.9 Mounting of optical fiber on the insert (welded joints "optical fiber – optical cable – optical cord1.10 "Pigtail")

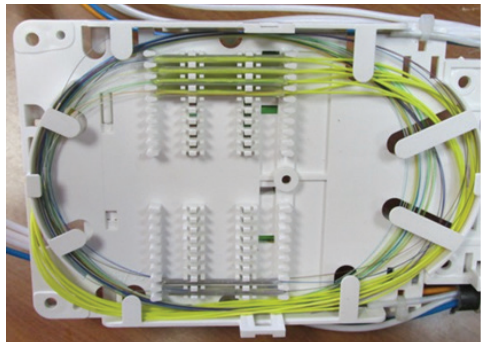
1.9.1 Lay out the optical fiber of the cable in direction "A" (branching optical fiber), mounted on a splice tray, in accordance with **1.8.1.1**.

1.9.2 Remove the dust-proof caps from the sides of the adapters of optical connectors, oriented to the side opposite to the side of the optical cable inputs on the insert. Mark the pigtail cords with self-adhesive markers near the end of the plugs of the optical connectors in accordance with the numbering of the optical ports.

Note – The numbering of the optical ports is printed on the front side of the insert, the slots marked C1 and C2 are for connecting the inputs to the splitters.



1.9.3 Temporarily connect the pigtail cords to the adapters. Lead the pigtail cords through a special slot in the upper part of the insert to its back side.



Lay out on the back side 1-2 turns of the length of stock of the «pigtail» cords between the sides and the guiding elements, Insert into the middle socket of the splice tray.

ATTENTION! The pigtail cords passing through the slot of the insert must not protrude beyond the dimensions of the insert!

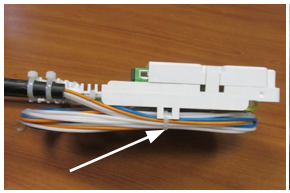
1.9.4 Make a mark with a dark pen on the cover of each mounted pigtail cord in the place of the proposed welding of the cable fiber. Cut off the excess length of the pigtail cord according to the mark. Disconnect the "pigtail" cords from the adapters. Install the dust caps on the adapters and on the pigtail plugs.

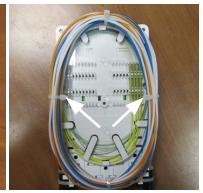
ATTENTION! PREPARATORY AND WELDING WORKS TO BE PERFORMED ALWAYS WITH EACH PIGTAIL CORD SEPARATELY, BEGINNING WITH No. 1, ACCORDING TO THE PRODUCED MARKING!

1.9.6 Connect the pigtail cords No. **1÷8** to the adapters on the side opposite of the input to the optical cable input:

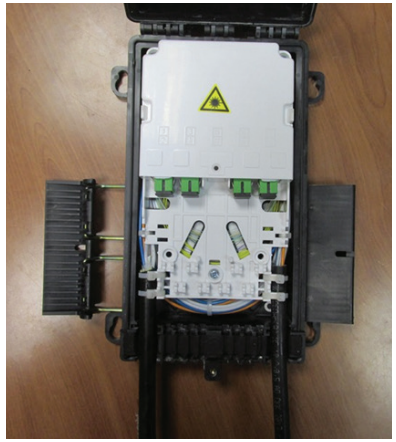
– put on the back side of the insert 1-2 turns of the stock length of the bundle of pigtail cords No. **1÷8** between the sides and the guiding elements;
– through a special slot in the upper part of the insert, bring it to the front side;
– lay out 1 turn of the length of the bundle of pigtail cords on the front side of the insert;
– connect pigtail cords No. **1÷8** to adapters No. **1÷8**, respectively;
– install the protective cover of the compartment for adapters and splitters of the insert.

1.9.7 Place the transparent cover on the insert from the side of the cradle. Lay the transit loop of the uncut modules, as indicated in the photo, fix its tie-down for the outputs of the splitters. Connect the optical output / output cords of the splitters to the adapters marked Install the protective cover of the adapter and splitter compartment of the insert.





1.9.8 Place the insert in the cross-coupling housing and fix the insert with 3 attachment screws.

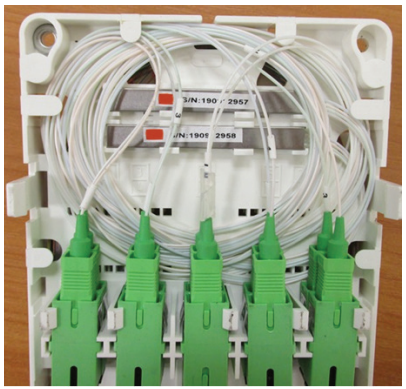


1.10 Installation and connection of splitters in the cross-section (option MCO-P1-M / S09).

1.10.1 Install the splitter / splitters (if not installed earlier) in the L2-SP insert splice tray (front side). Lay out the optical input / input cords of the splitters and connect to the adapters installed in the C1 and C2 sockets.

1.10.2 Lay out the optical output / output cords of the splitter. Connect the optical output / output cords of the splitters to the adapters marked **1÷8**.

Install the cover of the protective compartment for the adapters and splitters of the insert.

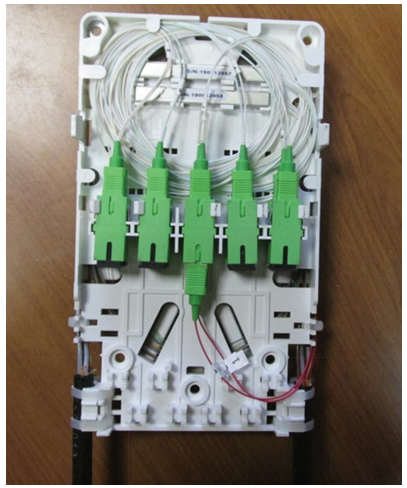


1.10.3 Carry out the installation of branching fiber optic cables of direction «A» (up to 2 pcs of optical fiber) and pigtail cords marked C1 and C2 on the insert in accordance with **1.8**.

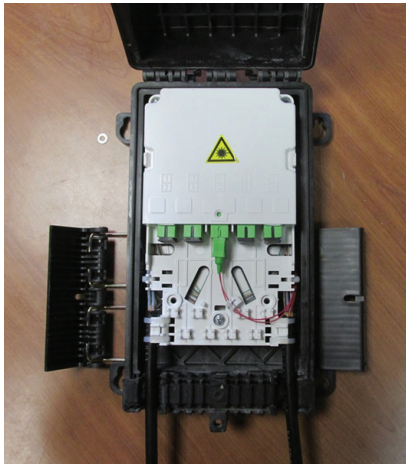
1.10.4 Install the transparent cover on the insert from the side of the splice trays. Place the transit loop of the uncut modules, secure it with nylon ties through the holes of the insert stops.

1.10.5 Connect the "pigtail" cords marked C1 and C2 to the adapters in the C1 and C2 sockets.

1.10.6 Connect the inputs of the splitters to the adapters C1 and C2.

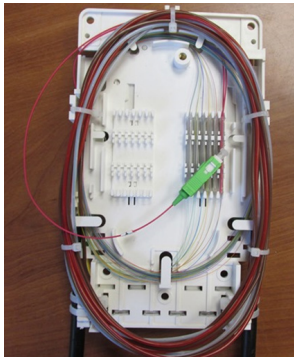


1.10.7 Place the insert in the cross-coupler body and fix the insert with 3 screws.

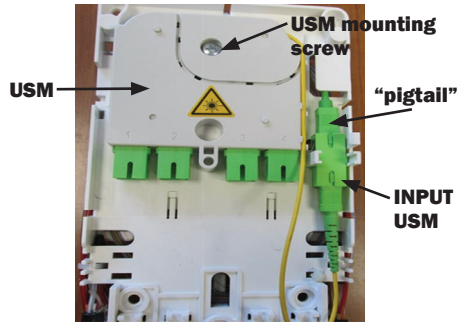


1.11 Installation and connection in the USM cross-coupling (option MCO-P1-M / SM-3).

1.11.1 On the cassette, weld the «pigtail» cord with the optical fiber according to the communication organization diagram.

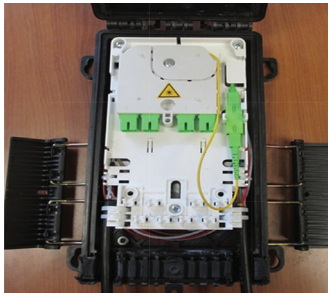


1.11.2 Then bring it to the back side of the cassette to connect it to the input of the (USM). Connect it to the (USM).

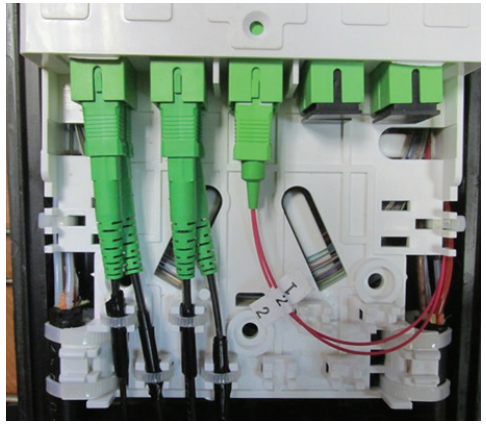


1.11.3 Place the transparent cover on the insert from the side of the cradle. Lay the transit loop of the uncut modules, secure it with nylon ties in the holes of the insert stops.

1.11.4 Place the insert in the cross-coupler body and fix the insert with 3 screws.



1.12 Connect the SCO cords (for all types of couplings) according to the communication organization diagram. If necessary, wrap vinyl tape on the SCO cords to fit them snugly into the insert sockets. Fasten the SCO cords with zip ties in the holes of the insert sockets.



2 If the bracket is used, fix the coupling on the bracket for the MCO-P1M coupling. Secure the cables with plastic ties on the bracket