

Aluminum Outdoor Wall Mount 12 -24, 48-60 F OFCCC & FT Tx

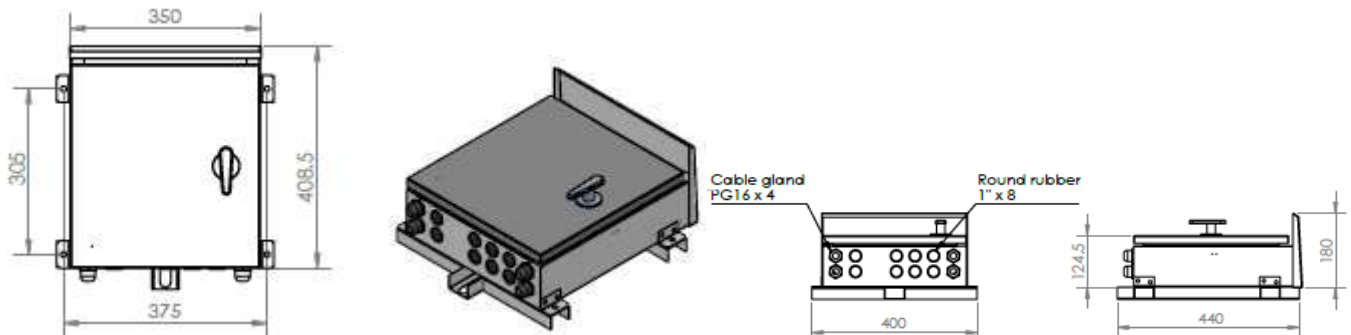
Size : 124.5 (D) x 408.5 (H) x 350 (W)
Materials : Aluminum 1.5 mm



Model : JK 12 - 24 F

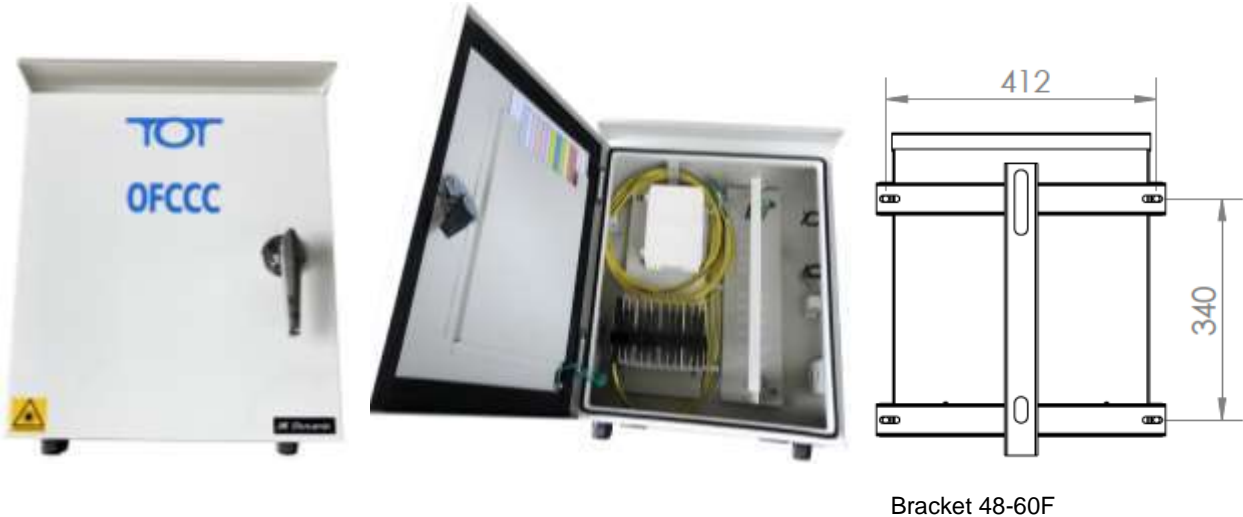
Outdoor 24 Fibers Cable in Out 12 holes

Size : 1245 (D) x 408.50 (H) x 375 (W)
Materials : Aluminum 1.5 mm

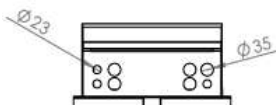


Aluminum Outdoor Wall Mount 48-60 F OFCCC & FT Tx

Size : 155 (D) x 486.50 (H) x 390 (W)
Materials : Aluminum 1.5 mm



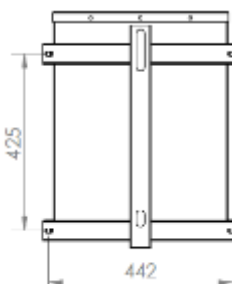
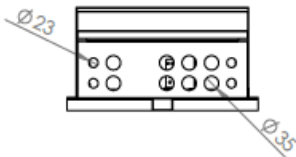
Bracket 48-60F



Model : JK - 4860FSPTTB

OFCCC & FTTx Aluminum Outdoor Wall Mount 72/120 Fibers

Size : 184 (D) x 616.4 (H) x 465 (W)
Materials : Aluminum 1.5 mm.



Bracket 120F

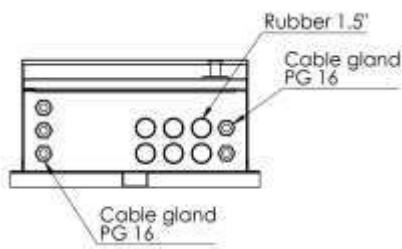
Splice Tray 12 Fibers

Model : JK – 72-120F

OFCCC & FTTx Aluminum Outdoor Wall Mount 72/120 Fibers - NEW

Size : 184 (D) x 616.40 (H) x 465 (W)
Materials : Aluminum 1.5 mm





Splice Tray for SPT

Model : JK - 72FSPTTA

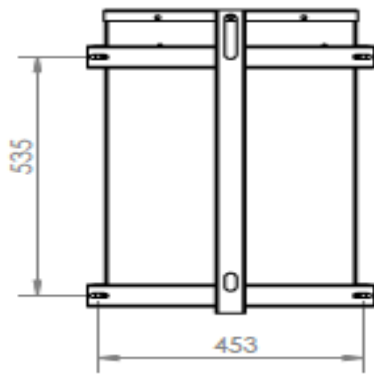
OFCCC & FTTx Aluminum Outdoor Wall Mount 128/144 Fibers Aluminum Outdoor Wall Mount 240 Fibers SC-DX

For Splitter 1 : 32 Type B with Packing Lots

Size : 170 (D) x 670 (H) x 430 (W)

Materials : Aluminum 2 mm.





Bracket for Outdoor Wall 240 F



Splice Tray 12 Fiber

Splice Tray 24 Fiber

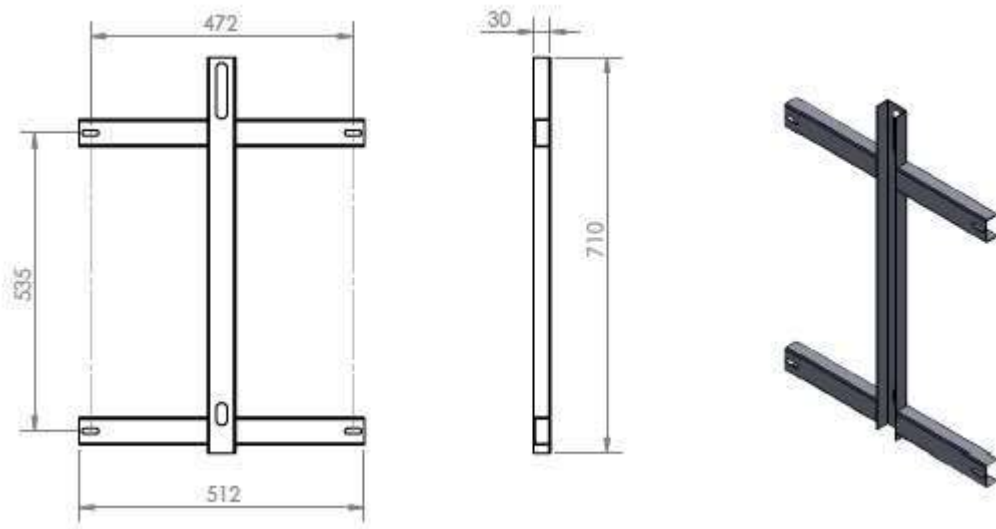
Model : JK – 128144FSPT

OFCCC Aluminum Outdoor Wall Mount 288 - 320 Fibers SC Duplex

Size : W460 x H675 x D240 mm

Material : AL 2.00 mm





Bracket for Outdoor Wall Mount 288 - 320 Fibers



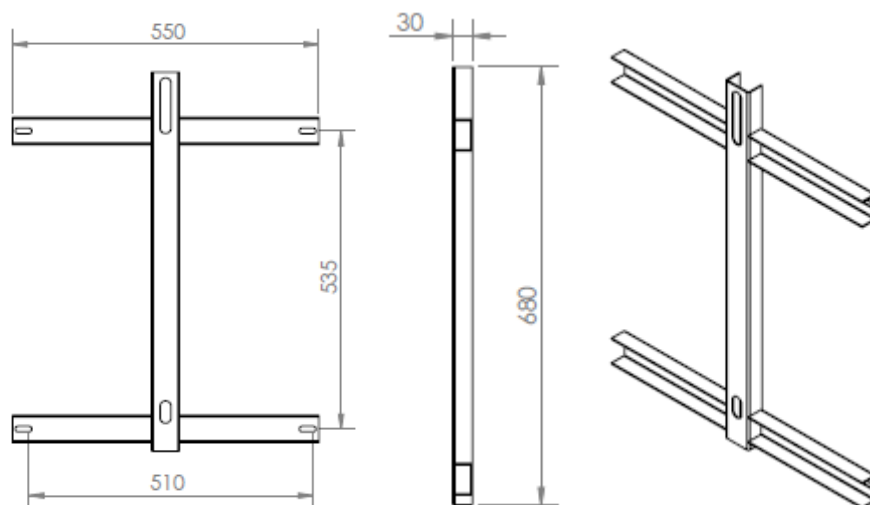
Splice Tray for SPT

Model : JK – 288FSC-DX

**OFCCC Aluminum Outdoor Wall Mount 288 Fibers
SC - Simplex**

Size : W500 x H665 x D314 mm

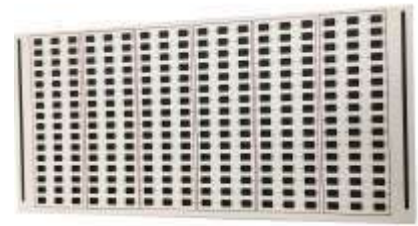
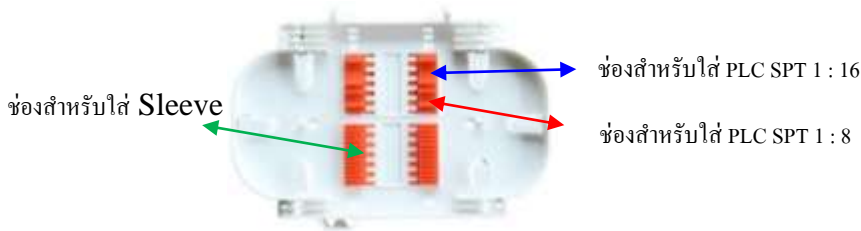
Material : AL 2.00 mm



Bracket for Outdoor Wall Mount 288 Fibers SC-SX

OFCCC 288 SC-SX for Splitter Type B

Model : JK - 288FSPTTB



Patch Panel 288 SC-SX

**OFCCC Aluminum Outdoor Wall Mount 8C/72F and 32C/72,
For Splitter 1 : 8 Type B with Packing Lots**

Size : 184 (D) x 616.4 (H) x 465 (W)
Material : Aluminum 1.5 mm.

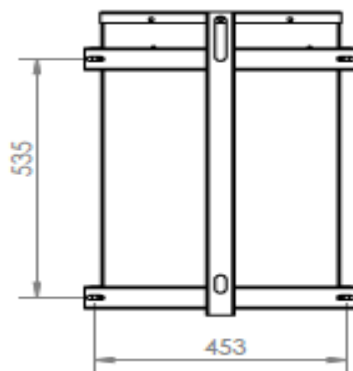


Splice Tray 12 Fibers

Model : JK - 3272FSPTTB



OFCCC Aluminum Outdoor Wall Mount 144 - 240 F



Bracket for 144 – 240 Fibers

Model : JK – 144F

Model : JK – 240FSC-DX

Mini OFCCC & FTTx 12 - 60 Fiber for Floor small type

- Size H = 94 cm w = 43 cm D = 17 cm



OFCCC & FTTx 144 Fiber for Floor

Size 995 x 430 x 200 mm



Model : JK 120-144 FF

Description

Aluminum Outdoor Wall-Mount Fiber distribution box made of Stainless and Aluminum sheet 1.5 mm and powder coated 65 micron. Aluminum Outdoor Wall Mount is available for 12, 24,48, 60, 72, 120, 128, 144 ,240 fiber in the standard beige color., the cable insertion the distributor is pre-punched for PG 21 cable glands optionally, cable can also be insert with connectors. The cable can be held in the preformed holes by a section cable inlet or cable feed through grommet depending on cable diameter.

Features / Benefits

- Provides easy access for connector FC ,SC ,LC, ST, E2000 panel
- OFCCC & FTTx 1 : 2 upto 1 : 64 PLC Splitter
- One door lockable and Key IP 65
- IP 65 protected
- 12, 24 splice tray holder
- Panel for adapter can be sliding

Material : Aluminum 1.5 & 2 mm.

Stainless sheet 1.5 mm

Bracket : EG Steel 2 mm

Size: MM.

12 - 24 PORT	=	124.5 (D) x 408.5 (H) x 350 (W)
48 - 60 PORT	=	155 (D) x 486.5 (H) x 390 (W)
48 – 60 PORT	=	155 (D) x 466.5 (H) x 390 (W) TRUE
72, 120 PORT	=	184 (D) x 616.5 (H) x 440 (W) TOT new
120 PORT	=	165 (D) x 506.5 (H) x 450 (W) TRUE
128, 144, 240 PORT	=	173 (D) x 665 (H) x 430 (W)
288 – 320 Port	=	233 (D) x 675 (H) x 460 (W)
288 SC-SX	=	314 (D) x 665 (H) x 500 (W)
480 Port	=	264 (D) x 882 (H) x 560 (W)
576 Port	=	309 (D) x 882 (H) x 560 (W)

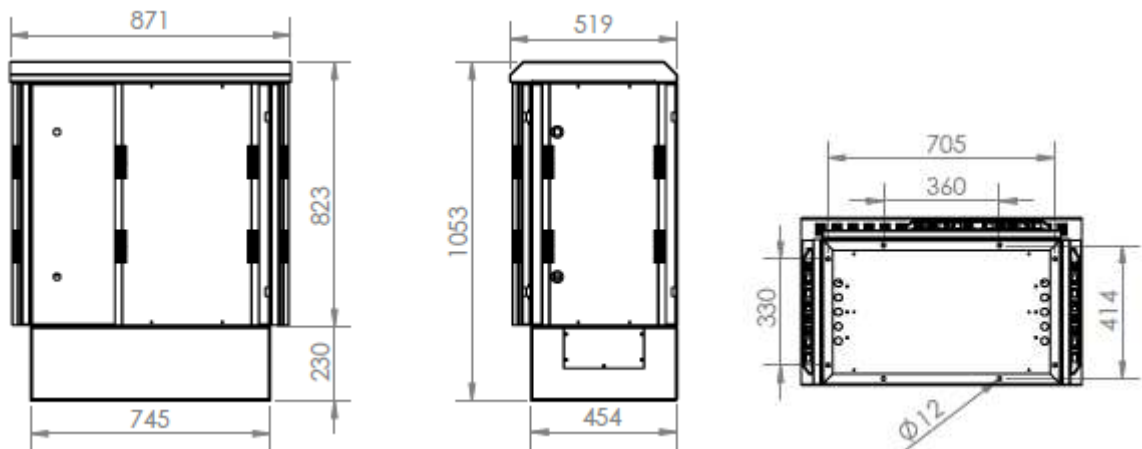
Product Code :

CODE	Product Type	Capacity	Packing	Net Weight	Gross Weight w/B
JK ODF0012	ODF 12F Outdoor Wall	12 Fibers	1 set/box	4.9 kgs.	5.80 kgs.
JK ODF0024	ODF 24F Outdoor Wall	24 Fibers	1 set/box	5.0 kgs.	5.85 kgs.
JK ODF0048	ODF 48F Outdoor Wall	48 Fibers	1 set/box	7.10 kgs.	8.05 kgs.
JK ODF0060	ODF 60F Outdoor Wall	60 Fibers	1 set/box	7.15 kgs.	8.10 kgs.
JK ODF0072	ODF 72F Outdoor Wall	72 Fibers	1 set/box	8.95 kgs.	10.20 kgs.
JK ODF0096	ODF 96F Outdoor Wall	96 Fibers	1 set/box	9.05 kgs.	10.30kgs.
JK ODF0120 D	ODF 120F Outdoor Wall	120 Fibers	1 set/box	9.05 kgs.	10.30 kgs.
JK ODF0144 S	ODF 144F Outdoor Wall	144 Fibers	1 set/box	11.25 kgs.	12.60 kgs.
JK ODF0240 D	ODF 240F Outdoor Wall	240 Fibers	1 set/box	11.60 kgs.	13.00 kgs.
JK ODF0288 D	ODF 288F Outdoor Wall	288 Fibers	1 set/box	13.20 kgs.	14.75 kgs.

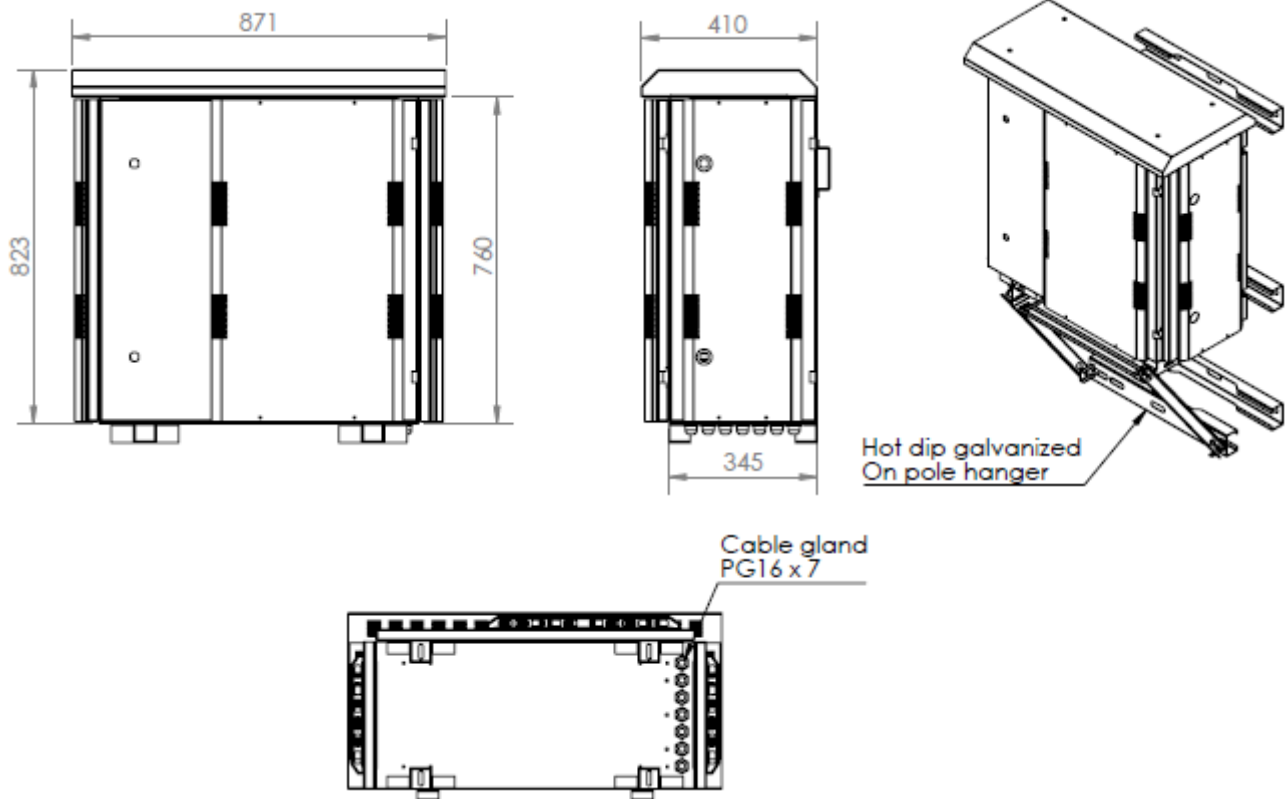
Product Code : Pigtail + Adapter SC/APC

CODE	Product Type	Capacity	Packing	Net Weight	Gross Weight
JK ODF0012	ODF 12F Outdoor Wall	12 Fibers	1 set/box	5.1 kg.	5.30 kgs.
JK ODF0024	ODF 24F Outdoor Wall	24 Fibers	1 set/box	5.2 kg.	5.60 kgs.
JK ODF0048	ODF 48F Outdoor Wall	48 Fibers	1 set/box	8.10 kg.	9.05 kgs.
JK ODF0060	ODF 60F Outdoor Wall	60 Fibers	1 set/box	8.35 kg.	9.25 kgs.
JK ODF0072	ODF 72F Outdoor Wall	72 Fibers	1 set/box	10.40 kg.	11.65 kgs.
JK ODF0096 FC	ODF 96F Outdoor Wall	96 Fibers	1 set/box	11.50kg.	12.75 kgs.
JK ODF0120 D	ODF 120F Outdoor Wall	120 Fibers	1 set/box	11.45 kg	12.70 kgs.
JK ODF0144 S	ODF 144F Outdoor Wall	144 Fibers	1 set/box	15.15 kg	16.50 kgs.
JK ODF0240 D	ODF 240F Outdoor Wall	240 Fibers	1 set/box	16.30 kg.	17.70 kgs.
JK ODF0288 D	ODF 288F Outdoor Wall	288 Fibers	1 set/box	18.90 kg.	20.45 kgs.

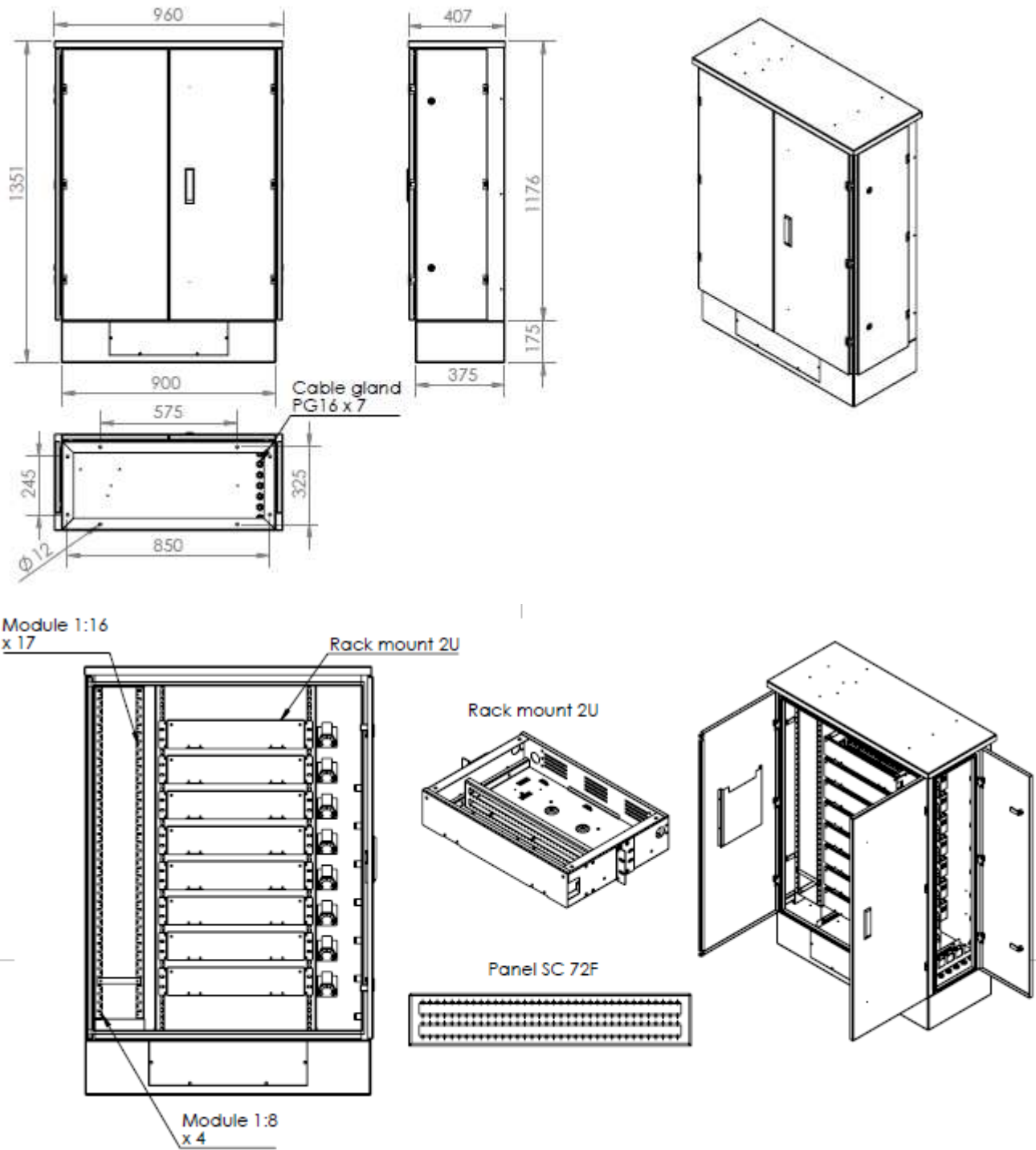
19" Aluminum Outdoor Cabinet 288 - 540 Fibers for Floor
Size H846 x W871 x D519mm
Model : JK288-540FF



19" Aluminum Outdoor Cabinet 288 - 540 Fibers on Pole
Size H823 x W871 x D410mm
Model : JK288-540P

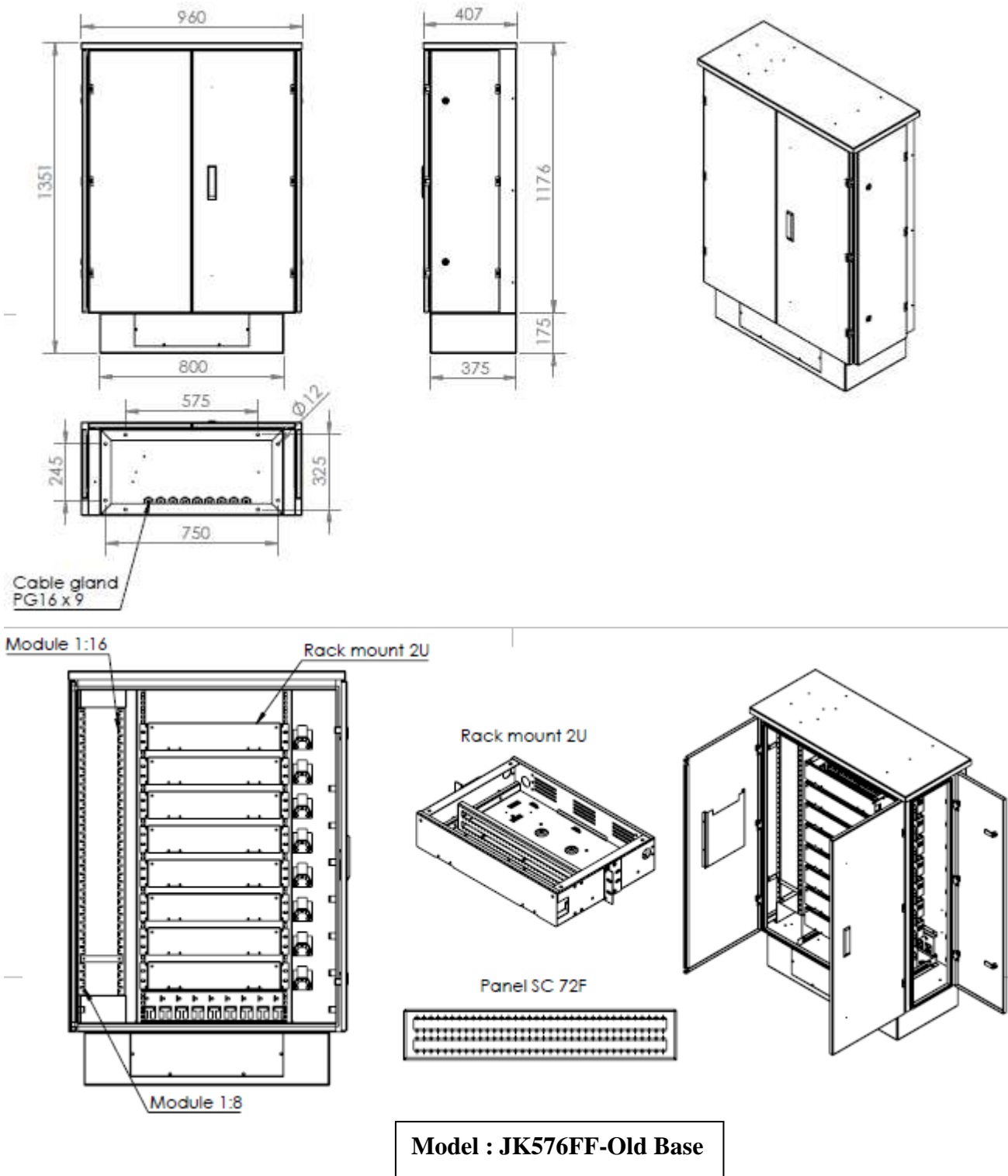


19" Aluminum Outdoor Cabinet 576 Fibers for Floor

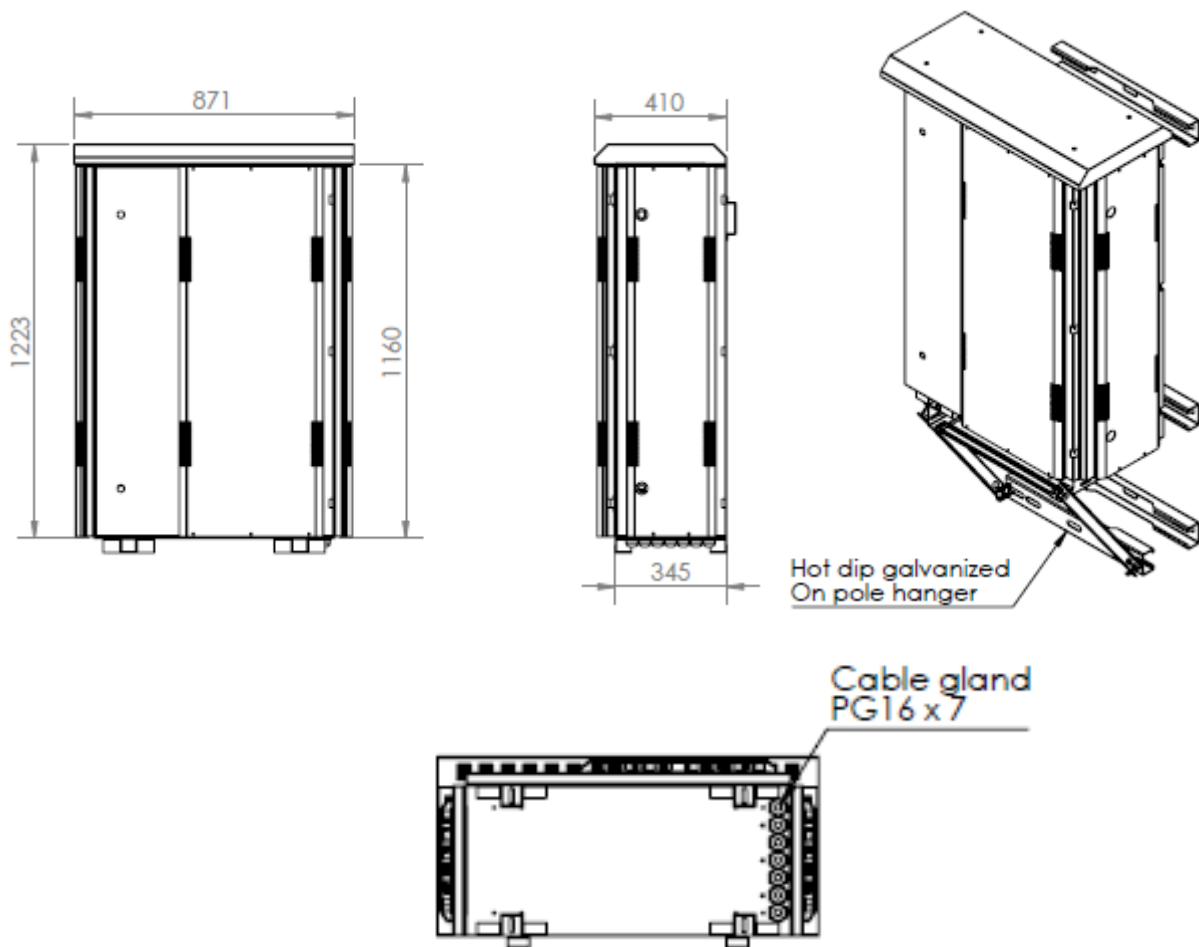


Model : JK576FF-New Base

19" Aluminum Outdoor Cabinet 576 Fibers for Floor



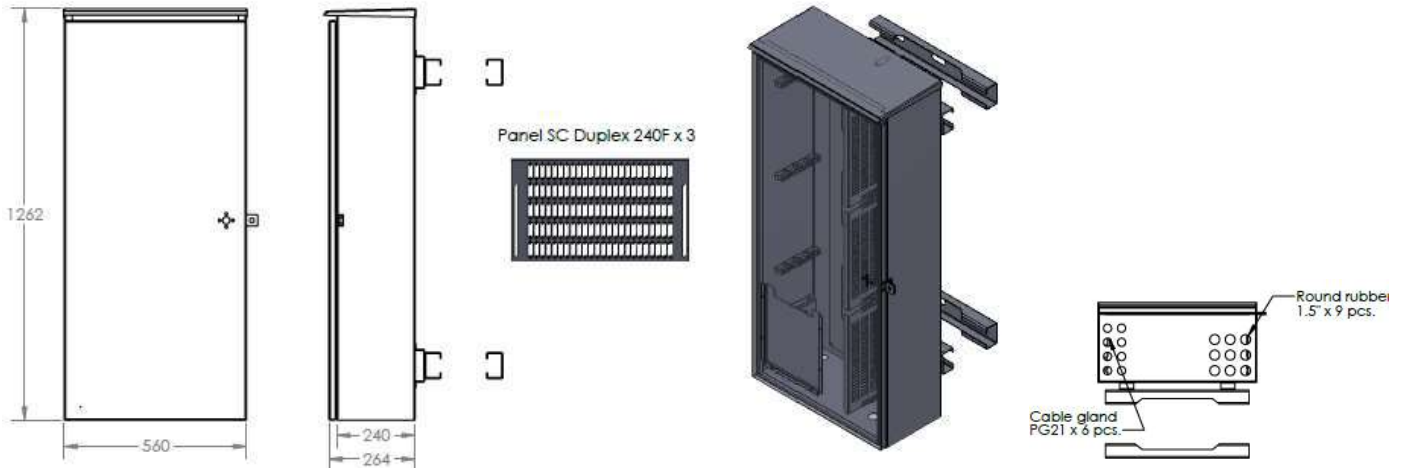
19" Aluminum Outdoor Cabinet 840 Fibers for Floor Model : JK840FF



Aluminum Outdoor Wall Mount 720 Fibers on Pole

Size : W560 x H1262 x D264 mm Material : AL 2.00 mm

Model : JK-ODFW720-P



19" Aluminum Outdoor Cabinet 576 Fiber for floor

Size : H1453 x W911 x D505

Model : JK576FF

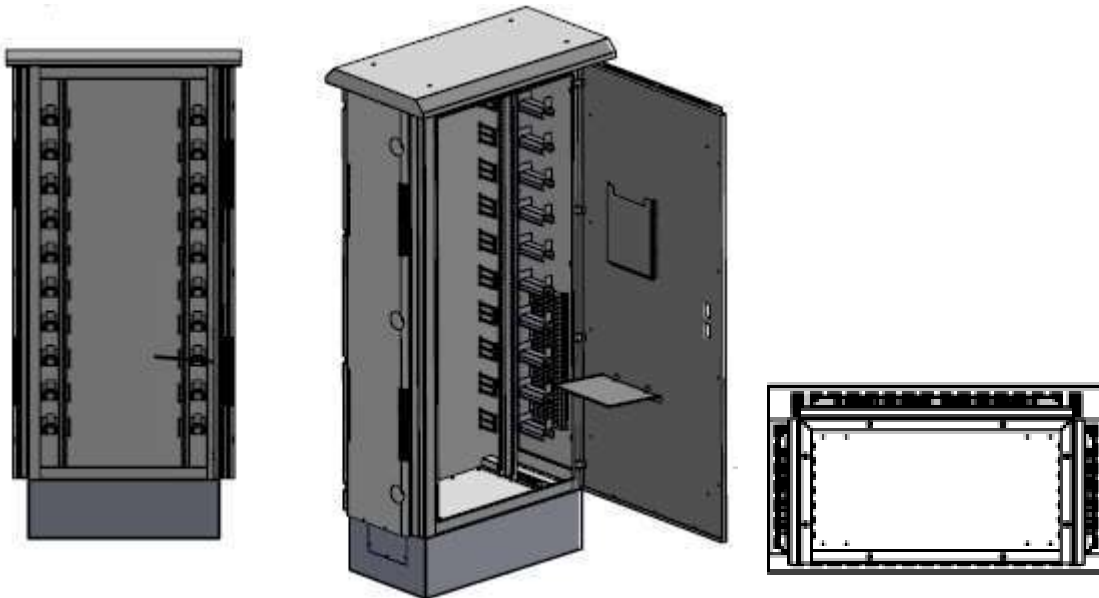
Used : AL Rack 72F 2U



AL Rack Sliding 2U 48 & 72 Fibers

Splice Tray 12 Fibers

19" Aluminum Outdoor Cabinet 1200 Fiber for floor
Size : H1900 x W911 x D505
Model : JK1200FF



FDF AL Rack 3U 72F

Features

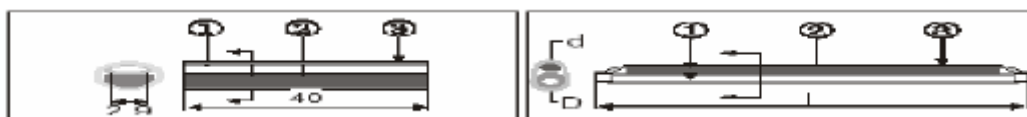
- 19" Outdoor cabinet for integration of optical distribution technique in access networks (FTTx, FTTP and FTTB)
- Assembly of standard JK FDF Rack sliding
- Shelf Unit Sliding Tray 3U
- Provided easy access of connector of FC, ST, SC, LC and E2000
- Max. capacity 360 - 1200 fibers with standard connectors
- Divided floor plate for insertion of uncut cables
- Generous cable breakout plate
- Protection class IP 65
- Completed front mounting of all fiber optic components
- increased protection for loose tubes for PG 21 cable glands
- Suitable for installation of active components
- Material – Aluminum dia. 2mm with power coating

SPLICE PROTECTIVE SLEEVE



Splice sleeve for fiber-optic fusion splices can be used to rebuild the primary coating for fiber to provide protection at the fusion joint area.

Structure : Shrinkable sleeve
Stainless steel rod



Generis Specifications :

Description	Typical diameter after heating Φ (mm)	Fusion Tube Φ (mm)	Length of the stainless steel rod l(mm)	Length of Sleeve l(mm)
45 mm	2.5	1.3	40	45
60 mm	2.5	1.3	55	60
Change of temperature	Temperature Cycle Cycles 1 cycle			- 40°C to +85°C 10 cycles 6 hr.

TOT OES-002-043-01

**OUTDOOR FIBER CROSS CONNECTING CABINET
(OFCCC for FTTx)**

1. GENERAL

1.1 This specification covers requirement of the outdoor fiber cross connecting cabinet (OFCCC) composing pole and ground mounting installation to contain the passive devices to be used by TOT public company limited.

1.2 The outdoor fiber cross connecting cabinet herein after referred to as the "Cabinet" shall be applied to provide for placing optical splitter modules and/or providing a cross connect patching facility for those splitters, optical feeder cable and optical distribution cable in outside plant of the FTTx network. The cabinet shall be typically installed between the central office (CO) or OLT (Optical Line Terminal) and optical distribution network.

1.3 Full details of this following information shall be provided in bidding document by bidder.

Product specification issued by product manufacturer.

The material and grade of material used as per Section 3.1 in this specification.

Test method and test report issued by manufacturer or third party laboratory or TOT to certify the product offered meeting the requirements.

2 GENERAL REQUIREMENTS

2.1 The general requirement

The configuration diagram of the OFCCC shall be as shown in figure 1.

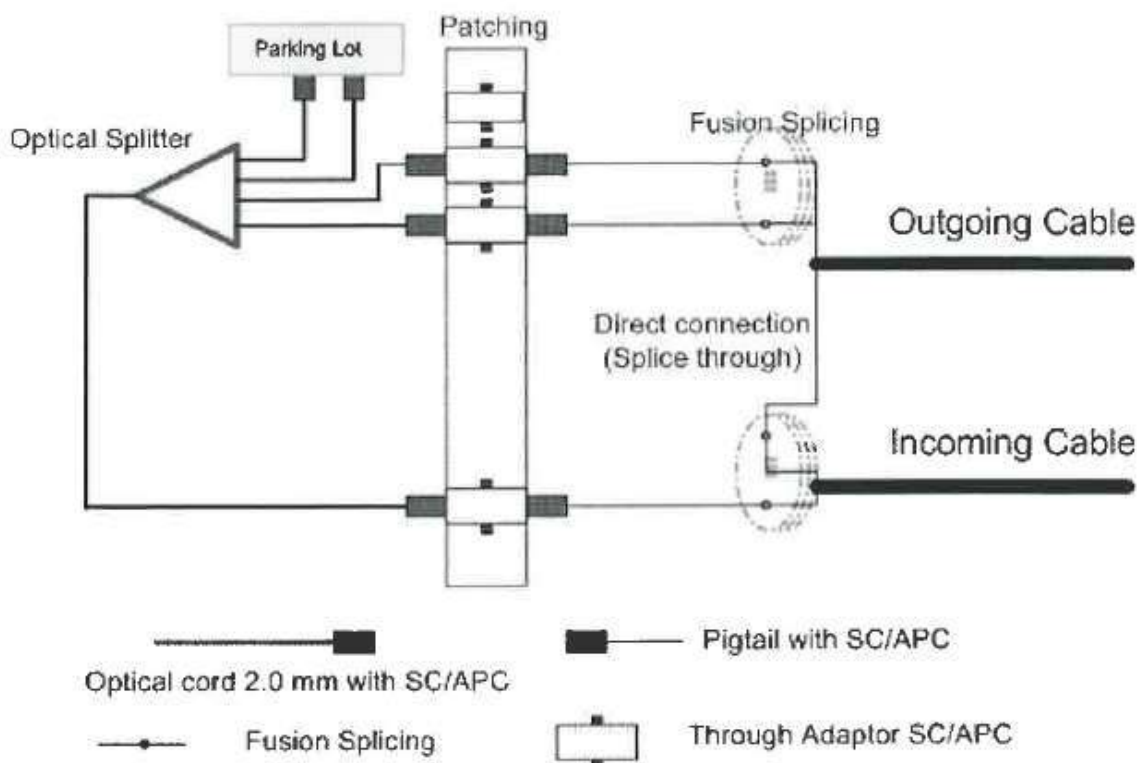


Figure 1 configuration diagram of the OFCCC

2.2. The Cabinet shall at least consist of the following components:

- a) Cabinet housing
- b) Splitter Module with connectors (type B Modular Splitter) : Separate order depends on the network design.
- c) Splitter Module Slot (see table 2 and compatible with Splitter Module)
- d) Feeder/Distribution Patch Panel with through adaptor
- e) Connector storage panel or connector storage magazine (Parking Lot) for unused output connector of splitter.
- f) Splicing Tray (hinge-able or hinging tray in case of > 1 tray/shelf or 1 tray/unit)
- g) Cable Storage
- h) Fiber management system
- i) Mounting devices
 - Pole mounting devices (In case of pole-mounted cabinet).
 - Mounting devices for cabinet installation on concrete base (In case of ground-mounted cabinet).
- j) Accessories
 - Identification label/marketing/card/card holder and record system to identify the cables, patch cords, pigtails, fibers, station route and caution sign etc.
 - Cable termination system for instance: cable attachment plate with cable clamp, cable break out unit including cable gland and strength member fixations. The termination system component quantity shall also be sufficiently provided as specified.
 - Flexible tubing, transportation (protection) tube etc.
 - Earthing facility: connection of the metal parts to each other and a connection point to the building earthing, at least one (1) earthing point shall be provided in the rack, all metallic parts of the rack shall be electrically interconnected with this earthing point.
 - Cable shield ground facility
 - Cabinet lock system with master key
- k) Instruction at least one per cabinet preparing in Thai or English language including :
 - Installation and maintenance instruction
 - Description how to manage or arrange the fiber inside cabinet
 - Drawings or pictures of fully fiber installed inside cabinet and finish installed cabinet related to applications concerned.

2.3 Design Feature Requirements

2.3.1 Specific Feature

All front access to optical components.

Supports diverse splitter module configurations 1:2, 1:4, 1:8, 1:16, 1:32, 1:64, 2:2, 2:4, 2:8, 2:16, 2:32 and 2:64.

Splitter modules design : easy to insert and remove without affecting adjacent splitter modules.

Providing to allows for storage of excess fiber while providing positive bend radius control.

Applicable for Mid-span joint (Loop-through function).

Connector type : SC/APC (Insertion , IL :S 0.2 dB ; RL , Return loss 60 dB) according to TOT specification OES-004-036-01 or latest issue or equivalent.

Through Adaptor : ceramic alignment sleeve and compatible with SC/APC connector. The duplex through adaptor or higher density is not allowable for maintenance reason to individually replace the deteriorated adaptor with the new adaptor.

Patching Panel : angled bulkhead panels or angled through adaptor patch panel and each connector panel shall provide mounting spaces for 24, 72 or 144 through adaptors or better design.

2.3.2 All critical bend positions of whole length of patch cord or fiber cord or pigtail wiring, there shall be bend control devices which have curve surface structure.

2.3.3 Manufacturing process and assembly of all components shall use international industry standard. The appearance of the cabinet shall be precise, elaborate and none of deformation, sharp edge, crack, scratch, flaw, stain, burr and other hazardous features that could result in damage to the fiber or injury to splicer or craftsman. Its functionality shall be easy for operation.

2.3.4 The cabinet shall provide the fiber pigtails/patch cords storage, cable management facilities, splicing capability, cross-connecting function, splitter flexible capability for future expansion. Its capacity shall be as specified in table 1 and 2.

2.3.5 The cabinet shall have in-hub feeder/distribution/by-pass splicing configuration up to cabinet capacity (terminations) of each cabinet size as specified in table 1 and 2

2.4 The cabinet shall have Dust-cap friendly parking lot that conveniently stores splitter output ports which are not in service (or no subscriber terminated ports) and shall conform to table 2.

2.5 Cabinet Protection

The cabinet shall be designed to provide bend radius protection, intuitive cable routing, easy fiber/connector access and physical protection.

2.6 The cabinet shall have an integrated slack storage spools or better devices for storage of excess fiber with positive bend radius control.

- 2.7 The cabinet shall have angled bulkhead panels or angled through adaptor patch panel or better devices for eliminating 90 degree bends to ensure a positive fiber management of optical jumpers(patch cords) and for reducing the risk from the laser light for eyes safety.
- 2.8 The cabinet shall incorporate with cable clamp kit to secure the cables to the inside of the cabinet.
- 2.9 The bottom of the cabinet (for only ground mounted) shall be enclosed with a moisture barrier. The back side (outside) of the cabinet (for only pole mounted type) shall provide the space and cable loop bar for cable storage.
- 2.10 The cable entry/exit hole shall be fitted with a flexible membrane to resist any moisture that may accumulate in the cabinet.
- 2.11 The Splitter Module used for this specification shall be type B Modular Splitter (connectorized, 2.0 mm. diameter, 2 meters optical cord) conforming to TOT specification OES-001-076-02 (Fiber optic splitter), or latest issue.
- 2.12 The cabinet (only ground type) shall be designed to minimize condensation inside the housing, thus reducing the potential for corrosion by forming the air chamber in the cabinet base which separated and provides temperature and moisture isolation of the terminal housing from the ground.
- 2.13 The cabinet (only ground type) shall be designed to accept in any or all of (minimum) four conduits approx. 3" (76 mm.) diameter opening in the section between cabinet housing and concrete base.
- 2.14 The cabinet shall be sealed with a full, weather-tight gasket or extrusion rubber gasket or equivalent to inhibit entrance of rain insects and other contaminants.
- 2.15 Each door panel shall be equipped with the wind latch to secure door in an opened position while working inside the housing.
- 2.16 The cabinet shall be designed for theft proof lock system and prevent the loss of any cabinet parts due to the theft remove them from outside of cabinet without open the cabinet door. There shall be no all fasteners (bolts, nuts etc.) of cabinet which are allowed to directly loosen before opening the cabinet.
- 2.17 Color of coating, all surface of the cabinet shall be powder coated with light white color or suitable color which TOT acceptance committee approved.
- 2.18 The Cabinet shall accommodate a variety of cables via sealed cable gland or equivalent. Cables shall be secured with standard grip clamps achieving excellent pull strength characteristics.
- 2.19 All dimensions of the cabinet and its components such as thickness, width, depth, height etc as specified in this specification (if any) shall include the coated material.
- 2.20 The patch panel shall design at least one horizontal or one vertical arrangement of through adaptor having minimum spacing of 25 mm (measured between center to center of both adjacent adaptor). The running number of fiber count shall start from the uppermost left (is no. 1) to bottommost left of first column and continue to the next

column respectively (top to bottom and left to right).

- 2.21 The bidder can propose the different design of the cabinet from as specified in this specification which having better performance and easier-operation than requirements in this specification. TOT bidding evaluation committee or the person entrusted will considerate the design concept proposed and make a decision.

2. TECHNICAL REQUIREMENTS

2.1 Material Requirements

- 3.1.1 Housing of cabinet shall be made from aluminum sheet of minimum 2 mm thickness or stainless steel sheet of minimum 1.5 mm thickness, which resists deterioration when exposed to the ultraviolet ray of the sun for long life.
- 3.1.2 The metal base of cabinet shall be constructed from stainless steel or aluminum sheet. The material of metal base shall have adequate thickness or fabricated with proper strength member so that the base can bear the weight of cabinet housing and its full load to be accommodated.
- 3.1.3 All following metallic parts shall made from stainless steel
- a) Hinge
 - b) Wind latch to secured the door in an opened position
 - c) Bolt, Nut and all fasteners
 - d) Other majority structure or essential components
- 3.1.4 All non-metal material parts shall resist to the deterioration (such as due to the thermal etc.) when installed in the field under the outdoor environment.
- 3.1.5 All metal hardware and metal part shall be resistant to the corrosive influences they may encounter in normal use.

3.2 Mechanical Requirements

Performance	Conditions	Requirements	References
3.2.1 Appearance	<ul style="list-style-type: none"> Examination with the unaided naked eye 	<ul style="list-style-type: none"> No defects which will adversely affect product performance 	-
3.2.2 Adhesion cross cut tape test	<ul style="list-style-type: none"> Examination on coated housing surface of cabinet. 	<ul style="list-style-type: none"> all coated housing surface of cabinet shall be finished with a durable weather resistant powder coated or equivalent. Inspection after doing this test shall show a minimum of adhesion for the squares to be 95% in adhesion rate of classification 4 B as specified in this test. 	ASTM D-3359-87 or latest issue, test method B or equivalent.

3.2.3 Shelf Endurance (for patching drawer type shelf)

Each patching shelf (without through adaptor) shall be loaded with 2 kg weight that mounted on the middle position of the shelf and it shall be opened by sliding-out the drawer tray to its extreme position. This drawer tray shall then be closed again by sliding-in the drawer tray into its extreme position until it locks. This sequence shall be repeated 100 cycle times.

After completion the test, the sample shall be examined with naked eyes for damage and the sample shall not appear the deformation, flaws, defects or cracks that could impair functionality.

2.3.4 Shelf Endurance (for pivot of swing type shelf)

Each patching and/or splicing shelf (without through adaptor) shall be loaded with 2 kg weight that mounted on the middle position of the shelf and it shall be opened by swing-out the pivoting part to its extreme position(at 90 degree). This pivoting part shall then be closed again by swing the pivoting part into its extreme position until it locks. This sequence shall be repeated 100 cycle times.

After completion the test, the sample shall be examined with naked eyes for damage and the sample shall not appear the deformation, flaws, defects or cracks that could impair functionality.

2.3.5 Through Adaptor Endurance

Each side of through adaptor shall be terminated and re-terminated with standard connector. Each side of through adaptor shall withstand a minimum mating/demating of 500 times according to IEC-61300-2-2 . After test check the appearance (as specified below) and the attenuation and return loss change per connector before and after test shall be less than 0.2 dB and 2 dB respectively when used the 1310, 1550 nm source wavelength.

The appearance : the sample shall be examined with naked eyes for damage and the sample shall not appear the deformation, flaws, defects or cracks that could impair functionality.

3.3 Environmental Requirements

Performance	Conditions	Requirements	References
3.3.1 Protection Rating (dust/water)	<ul style="list-style-type: none"> See References 	<ul style="list-style-type: none"> No evidence of water intrusion Dust-protected IP 65 or equivalent 	IEC 60529 or equivalent

4. MARKING

The cabinet shall be identifiable by the manufacturer 's name or trademark. Part Number shall be clearly located on the cabinet to provide traceability (if required).

5. ORDERING INFORMATION

TOT CODE	Coverage Area Size* (Subscribers)	Cabinet capacity** (Terminations)	Mounting Application	Packing (Set)
	64	72	Pole	1
	128	144	Pole	1
	256	288	Pole	1
	128	144	Ground	1
	256	288	Ground	1
	384	432	Ground	1
	512	576	Ground	1
	768	864	Ground	1

Table 1 Ordering Information

*The subscribers shown are defined for optical centralized network design. The other coverage area size of cabinet shall be specified on order. In some sites may require cabinet in different number of subscribers or terminations depending on network design so that the cabinet shall have all features and ordering information related to its cabinet size.

** Cabinet capacity (Terminations) is the total quantity of the through adaptor terminated in OFCCC.

Coverage Area Size* (Subscribers)	Cabinet capacity** (Terminations)	Mounting Application	Cable In/Out ports	Splitter module Slots	Dust-cap friendly parking lot
64	72	Pole	4	6	8 F
128	144	Pole	4	9	16 F
256	288	Pole	6	12	32 F
128	144	Ground	4	9	16 F
256	288	Ground	6	12	32 F
384	432	Ground	8	24	32 F
512	576	Ground	8	32	32 F
768	864	Ground	8	48	32 F

Table 2 Detail for Ordering information

-End of Specification-