

Fiber Mountain

Sensus Patch Panel

Installation Manual

Document History

The Sensus installation manual provides detailed safety instructions, specifications and installation instructions.

The document history table that follows is used to track changes to this document, providing an historical summary as the product evolves and matures.

150-00006 Document History:

Release Version	Date	Description of Change
Rev 1	13 December, 2017	Rev 1 release is intended for general distribution
Rev 2	15 January, 2018	Functionality updates
Rev 3	6 April, 2018	Functionality and installation updates
Rev 4	9 October, 2018	LED functionality added. FCC and IC registration documented. Port mapping legend updated. Safety instructions updated.
Rev 5	9 November, 2018	Image and procedure updates

Product & Company Information

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List of Related Publications

Documents related to Sensus Installation Manual include:

Document Title	Document Part Number	Brief Description
Glass Core Operations Manual	150-00009	Glass Core Operations Manual
Sensus LCD Screen Guide	150-00007	Sensus LCD Screen Guide
Sensus Family Datasheet	DS-00122	Sensus Family Datasheet

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Please Read This Entire Manual

Important

Please read this entire guide before you install or operate this product. Give particular attention to all safety statements.

1. Safety Instructions

Standards


Icon	Meaning	Explanation
	Note	Indicates important features or instructions.
	Caution	Indicates that you may risk losing data or damaging your hardware.
	Warning	Alerts you to the risk of personal injury.
	Laser Warning	Laser output may be hazardous if viewed with magnifying optics.

Protect yourself from electric shock and your system from damage!

- This product complies with international safety and design standards. Observe all safety procedures that appear throughout this guide and the safety symbols that are affixed to this product.
- If circumstances impair the safe operation of this product, stop operation and secure this product against further operation.

Avoid personal injury and product damage! Do not proceed beyond any symbol until you fully understand the indicated conditions!

Power

	WARNING: Redundant Power – The unit is provided with redundant power system. Disconnect all supplies before servicing!
---	--

- Important! This is a Class I product. You must earth this product. This equipment may have up to two power supply cords. To reduce the risk of electric shock, two power supply cords may have to be disconnected before servicing.
- This product plugs into a socket-outlet. The socket-outlet must be near this product, and must be easily accessible.
- Connect this product only to the power source that is indicated on the rear panel of this product.
- If this product does not have a mains power switch, the power cord serves this purpose.

Laser



WARNING:

Laser Warnings: Laser output may be hazardous if viewed with magnifying optics.

Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.

Class I (21 CFR 1040.10 and 1040.11) and Class 1M (IEC 60825-1 2001-01) laser products.
Statement 291

Cables

- Always disconnect all power cables before servicing this product.
- Always pull on the plug or the connector to disconnect a cable. Never pull on the cable itself.
- Do not walk on or place stress on cables or plugs.

Factory Service

- Refer service only to service personnel who are authorized by the manufacturer.

Read and Retain Instructions

- Carefully read all safety and operating instructions before operating this equipment, and retain them for future reference.

Follow Instructions and Heed Warnings

- Follow all operating and use instructions. Pay attention to all warnings and cautions in the operating instructions, as well as those that are affixed to this equipment.

Terminology

The terms defined below are used in this document. The definitions given are based on those found in safety standards.


Service Personnel - The term “service personnel” applies to trained and qualified individuals who are allowed to install, replace, or service electrical equipment. The service personnel are expected to use their experience and technical skills to avoid possible injury to themselves and others due to hazards that exist in service and restricted access areas.

User and Operator - The terms “user” and “operator” apply to persons other than service personnel.

Ground(ing) and Earth(ing) - The terms “ground(ing)” and “earth(ing)” are synonymous. This document uses “ground(ing)” for clarity, but it can be interpreted as having the same meaning as “earth(ing).”

Electric Shock Hazard

This equipment meets applicable safety standards.

	<p>WARNING: To reduce risk of electric shock, perform only the instructions that are included in the operating instructions. Refer all servicing to qualified service personnel only.</p>
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- Electric shock can cause personal injury or even death. Avoid direct contact with dangerous voltages at all times. The protective ground connection is essential to safe operation and must be verified before connecting the power supply.
- Know the following safety warnings and guidelines:
 - **Dangerous Voltages**
 - Only qualified service personnel are allowed to perform equipment installation or replacement.
 - Only qualified service personnel are allowed to remove chassis covers and access any of the components inside the chassis.
 - **Grounding**
 - Do not violate the protective grounding by using an extension cable, power cable, or autotransformer without a protective ground conductor.
 - Take care to maintain the protective grounding of this equipment during service or repair and to re-establish the protective grounding before putting this equipment back into operation.

Federal Communications Commission (FCC) Compliance Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used

in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Fiber Mountain has not approved any changes or modifications to this device by the user. Any changes or modifications could void the user's authority to operate the equipment. See 47 CFR Sec. 15.21.

FCC ID: 2APNW - SENFG1MA

Innovation, Science and Economic Development Canada (ISED)

Compliance Statement

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

IC ID: 23833 - SENFG1MA

Installation Site

When selecting the installation site, comply with the following:

- **Protective Ground** - The protective ground lead of the building's electrical installation should comply with national and local requirements.
- **Environmental Condition** – The installation site should be dry, clean, and ventilated. Do not use this equipment where it could be at risk of contact with water. Ensure that this equipment is operated in an environment that meets the requirements as stated in this equipment's technical specifications, which may be found on this equipment's data sheet.

Installation Requirements

**WARNING:**

Allow only qualified service personnel to install this equipment. The installation must conform to all local codes and regulations.

Equipment Placement

**WARNING:**

Avoid personal injury and damage to this equipment. An unstable mounting surface may cause this equipment to fall.

To protect against equipment damage or injury to personnel, comply with the following:

- Install this equipment in a restricted access location.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other equipment (including amplifiers) that produce heat.
- Place this equipment close enough to a mains AC outlet to accommodate the length of this equipment's power cord.
- Route all power cords so that people cannot walk on, place objects on, or lean objects against them. This may pinch or damage the power cords. Pay particular attention to power cords at plugs, outlets, and the points where the power cords exit this equipment.
- Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with this equipment.
- Make sure the mounting surface or rack is stable and can support the size and weight of this equipment.
- The mounting surface or rack should be appropriately anchored. Ensure this equipment is securely fastened to the mounting surface or rack where necessary to protect against damage due to any disturbance and subsequent fall.

Ventilation

This equipment has openings for ventilation to protect it from overheating. To ensure equipment reliability and safe operation, do not block or cover any of the ventilation openings. Install the equipment in accordance with the manufacturer's instructions.

Rack Mounting Safety Precautions

Mechanical Loading

- Make sure that the rack is placed on a stable surface. If the rack has stabilizing devices, install these stabilizing devices before mounting any equipment in the rack.

**WARNING:**

Avoid personal injury and damage to this equipment. Mounting this equipment in the rack should be such that a hazardous condition is not caused due to uneven mechanical loading.

Reduced Airflow

- When mounting this equipment in the rack, do not obstruct the cooling airflow through the rack. Be sure to mount the blanking plates to cover unused rack space. Additional components such as combiners and net strips should be mounted at the back of the rack, so that the free airflow is not restricted.



CAUTION:

Installation of this equipment in a rack should be such that the amount of airflow required for safe operation of this equipment is not compromised.

Elevated Operating Ambient Temperature

- Only install this equipment in a humidity- and temperature-controlled environment that meets the requirements given in this equipment's technical specifications.



CAUTION:

If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, install this equipment in an environment compatible with the manufacturer's maximum rated ambient temperature.

Handling Precautions

- When moving a cart that contains this equipment, check for any of the following possible hazards:



WARNING:

Avoid personal injury and damage to this equipment! Move any equipment and cart combination with care. Quick stops, excessive force, and uneven surfaces may cause this equipment and cart to overturn.

- Use caution when moving this equipment/cart combination to avoid injury from tip-over.
- If the cart does not move easily, this condition may indicate obstructions or cables that may need to be disconnected before moving this equipment to another location.
- Avoid quick stops and starts when moving the cart.
- Check for uneven floor surfaces such as cracks or cables and cords.

Grounding

This section provides instructions for verifying that the equipment is properly grounded.

Safety Plugs

- Equipment protection Class I - FMI supplies a mains cord with a 3-terminal (grounding-type) safety plug. Do not defeat the safety purpose of the grounding type or polarized safety plug.

Grounding-Type Plug

To properly ground this equipment, follow these safety guidelines:

- For a 3-terminal plug (one terminal on this plug is a protective grounding pin), insert the plug into a grounded mains, 3-terminal outlet.

Note: This plug fits only one way. If this plug cannot be fully inserted into the outlet, contact an electrician to replace the obsolete 3-terminal outlet.

AC Power

This equipment is Class I equipment, it must be grounded.

- If this equipment plugs into an outlet, the outlet must be near this equipment, and must be easily accessible.
- Connect this equipment only to the power sources that are identified on the equipment-rating label normally located close to the power inlet connector(s).
- If this equipment has two power sources be sure to disconnect all power sources before working on this equipment.
- If this equipment does not have a main power switch, the power cord connector serves as the disconnect device.
- Always pull on the plug or the connector to disconnect a cable. Never pull on the cable itself.
- Unplug this equipment when unused for long periods of time.

Circuit Overload

Know the effects of circuit overloading before connecting this equipment to the power supply.

**CAUTION:**

Consider the connection of this equipment to the supply circuit and the effect that overloading of circuits might have on overcurrent protection and supply wiring. Refer to the information on the equipment-rating label when addressing this concern.

General Servicing Precautions



WARNING:

Avoid electric shock! Opening or removing this equipment's cover may expose you to dangerous voltages. Be aware of the following general precautions and guidelines:

- **Servicing** – Disconnect all supplies before servicing. Refer all servicing to qualified service personnel. Servicing is required when this equipment has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into this equipment, this equipment has been exposed to rain or moisture, does not operate normally, or has been dropped.
- **Wrist watch and Jewelry** - For personal safety and to avoid damage of this equipment during service and repair, do not wear electrically conducting objects such as a wristwatch or jewelry.
- **Lightning** - Do not work on this equipment, or connect or disconnect cables, during periods of lightning.
- **Labels** - Do not remove any warning labels. Replace damaged or illegible warning labels with new ones.
- **Covers** - Do not open the cover of this equipment. Refer all servicing to qualified service personnel only.
- **Moisture** - Do not allow moisture to enter this equipment.
- **Cleaning** - Use a damp cloth for cleaning.

Accessories

Use only attachments or accessories specified by Fiber Mountain Inc.





Se il vous plaît lire ce manuel en entier

Important

Se il vous plaît lire l'intégralité de ce guide avant d'installer ou d'utiliser ce produit. Accorder une attention particulière à toutes les consignes de sécurité.

2. Consignes de sécurité

Normes


Icône	Sens	Explication
	Remarque	Indique caractéristiques ou des instructions importantes.
	Prudence	Indique que vous risquez de perdre des données ou d'endommager votre matériel.
	Avertissement	Vous avertit des risques de blessures.
	Avertissement de laser	Sortie laser peut être dangereuse si on la regarde avec des optiques grossissantes.

Protégez-vous contre les chocs électriques et votre système de dommages!

- Ce produit est conforme aux normes de sécurité et de design internationaux. Observez toutes les procédures de sécurité qui apparaissent dans ce guide, et les symboles de sécurité qui sont fixés à ce produit.
- Si les circonstances compromettre l'exploitation sûre de ce produit, arrêter le fonctionnement et sécuriser ce produit contre d'autres opérations.

Éviter les blessures et endommagement du produit! Ne pas aller au-delà tout symbole jusqu'à ce que vous comprenez parfaitement les conditions indiquées!

Puissance

	AVERTISSEMENT: Alimentation redondante - L'appareil est fourni avec le système d'alimentation redondante. Débranchez toutes les fournitures avant l'entretien!
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- Important! Ce est un produit de classe I. Vous devez terre ce produit. Cet équipement peut avoir jusqu'à deux cordons d'alimentation. Pour réduire le risque de choc électrique, deux cordons d'alimentation peuvent être déconnectés avant l'entretien.
- Ce produit se branche sur une prise de courant. La prise de courant doit être à proximité de ce produit, et doit être facilement accessible.
- Connectez ce produit qu'à la source d'alimentation qui est indiqué sur le panneau arrière de ce produit.
- Si ce produit ne possède pas d'interrupteur d'alimentation secteur, le cordon d'alimentation sert à cette fin.

Laser



AVERTISSEMENT:

Avertissements laser: Sortie laser peut être dangereuse si on la regarde avec des optiques grossissantes.

Les fibres ou connecteurs débranchés risquent d'émettre des rayonnements laser invisibles à l'œil. Ne regardez jamais directement les faisceaux laser à l'œil nu, ni d'ailleurs avec des instruments optiques. Classe I (21 CFR 1040.10 and 1040.11) et Classe 1M (IEC 60825-1 2001-01) produits laser. Déclaration 291.

Câbles

- Toujours débrancher tous les câbles d'alimentation avant de réparer ce produit.
- Tirez toujours sur la fiche ou le connecteur pour déconnecter un câble. Ne tirez jamais sur le câble lui-même.
- Ne pas marcher ou placer le stress sur les câbles ou les bouchons.

Service de l'usine

Reportez-vous service uniquement au personnel de service qui sont autorisées par le fabricant.

Lisez et Conservez les instructions

Lisez attentivement toutes les instructions de sécurité et de fonctionnement avant d'utiliser cet équipement, et les conserver pour référence future.

Suivez les instructions et avertissements Respectez

Suivez toutes les instructions de fonctionnement et d'utilisation. Faites attention à tous les avertissements dans les instructions d'utilisation, ainsi que ceux qui sont apposées à cet équipement.

Terminologie

Les termes définis ci-dessous sont utilisés dans ce document. Les définitions données sont basés sur ceux trouvés dans les normes de sécurité.

Service du personnel - Le personnel de service à long terme se applique aux personnes formées et qualifiées qui sont autorisés à installer, remplacer ou équipements électriques de service. Le personnel de service sont tenus d'utiliser leur expérience et leurs compétences techniques pour éviter les blessures à eux-mêmes et les autres en raison de risques qui existent dans le service et zones d'accès restreint.

Utilisateur et l'opérateur - Les termes utilisateur et l'opérateur se appliquent aux personnes autres que le personnel de service.

Rez (ING) et de la Terre (ing) - Les termes sol (ING) et la terre (ING) sont synonymes. Ce document utilise sol (ing) pour plus de clarté, mais il peut être interprété comme ayant la même signification que la terre (ING).

Risque de choc électrique

Cet équipement répond aux normes de sécurité applicables.



AVERTISSEMENT:

Pour réduire les risques de choc électrique, ne effectuer que les instructions qui sont inclus dans la notice d'utilisation. Confiez toute réparation à un personnel qualifié seulement.

- Un choc électrique peut entraîner des blessures ou même la mort. Éviter le contact direct avec des tensions dangereuses en tout temps. La protection à la terre est essentielle pour un fonctionnement sûr et doit être vérifiée avant de brancher l'alimentation.
- Connaître les avertissements et les consignes de sécurité suivantes:
 - **Tensions dangereuses**
 - Seul le personnel de service qualifiés sont autorisés à procéder à l'installation de l'équipement ou de remplacement.
 - Seul le personnel de service qualifiés sont autorisés à retirer les capots du châssis pour accéder aux composants internes du châssis.
 - **Échouage**
 - Ne pas violer la terre de protection en utilisant un câble d'extension, câble d'alimentation, ou autotransformateur sans conducteur de protection.
 - Prenez soin de maintenir la terre de protection de cet équipement pendant le service ou la réparation et à rétablir la terre de protection avant de mettre cet équipement en service.

Innovation, Science and Economic Development Canada (ISED)

Declaration de Conformité

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. L'appareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

IC ID: 23833 - SENFG1MA

Site d'installation

Lors de la sélection du site d'installation, respecter les conditions suivantes:

- **Rez de protection** - Le fil de terre de protection de l'installation électrique du bâtiment doit être conforme aux exigences nationales et locales.
- **État de l'environnement** - Le site d'installation doit être sec, propre et aéré. Ne pas utiliser cet équipement où il pourrait être à risque de contact avec l'eau. Assurez-vous que cet équipement est utilisé dans un environnement qui répond aux exigences énoncées dans les spécifications techniques de cet équipement, qui peuvent être trouvés sur la fiche technique de cet équipement.

Exigences d'installation

	<p>AVERTISSEMENT: Seul un personnel de service qualifié pour installer cet équipement. L'installation doit être conforme à tous les codes et règlements locaux.</p>
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Équipement Placement



AVERTISSEMENT:

Éviter les blessures et les dommages à cet équipement. Une surface de montage instable peut provoquer cet équipement à l'automne.

Pour se protéger contre des dommages matériels ou corporels, respecter ce qui suit:

- Installez cet appareil dans un endroit à accès restreint.
- Ne pas installer près de sources de chaleur telles que des radiateurs, registres de chaleur, poêles ou autres appareils (y compris les amplificateurs) produisant de la chaleur.
- Placez cet équipement suffisamment près d'une prise secteur AC pour accueillir la longueur du cordon d'alimentation de cet équipement.
- Route tous les cordons d'alimentation de sorte que les gens ne peuvent pas marcher sur, placer des objets sur ou objets maigres contre eux. Cela peut pincer ou endommager les cordons d'alimentation. Faites particulièrement attention aux cordons d'alimentation au niveau des fiches, prises, et les points où les cordons d'alimentation sortent cet équipement.
- Utilisez uniquement avec un chariot, socle, trépied, support ou table spécifié par le fabricant, ou vendus avec cet équipement.
- Assurez-vous que la surface de montage ou un rack est stable et peut supporter la taille et le poids de cet équipement.
- La surface de montage ou un rack doivent être ancrés de façon appropriée. Assurez-vous cet équipement est solidement fixé à la surface de montage en rack ou si nécessaire pour protéger contre les dommages dus à toute perturbation et la chute subséquente.

Ventilation

Cet équipement a des ouvertures pour la ventilation pour protéger de la surchauffe. Pour assurer la fiabilité de l'équipement et un fonctionnement sûr, ne pas obstruer ou recouvrir l'une des ouvertures de ventilation. Installer le matériel conformément aux instructions du fabricant.

Montage en rack Mesures de sécurité

Chargement mécanique

- Assurez-vous que le rack est placé sur une surface stable. Si le support a des dispositifs de stabilisation, installer ces dispositifs de stabilisation avant de monter l'équipement dans le rack.



AVERTISSEMENT:

Éviter les blessures et les dommages à cet équipement. Montage cet équipement dans le rack doit être telle qu'une situation dangereuse ne est pas due à une charge mécanique irrégulière.

Airflow réduit

- Lors du montage de cet équipement dans le rack, ne pas obstruer le flux d'air de refroidissement à travers la grille. Ne oubliez pas de monter les plaques d'obturation pour couvrir l'espace rack utilisé. Des éléments additionnels tels que les multiplexeurs et les bandes nettes doivent être montés à l'arrière du rack, de sorte que le flux d'air libre ne est pas limité.



ATTENTION:

Installation de cet équipement dans un rack doit être telle que le volume d'air nécessaire au bon fonctionnement de cet équipement ne est pas compromise.

Température ambiante de fonctionnement Température

- Seulement installer cet équipement dans un environnement humidité et à température contrôlée qui répond aux exigences énoncées dans les spécifications techniques de cet équipement.



ATTENTION:

Se il est installé dans un rack fermé ou à unités multiples, la température ambiante de fonctionnement de l'environnement du rack peut être supérieure à la température ambiante de la pièce. Par conséquent, installer cet équipement dans un environnement compatible avec la température ambiante nominale maximale du fabricant.

Précautions d'emploi

- Lors du déplacement d'un panier qui contient cet équipement, vérifier l'un des dangers possibles suivantes:



AVERTISSEMENT:

Éviter les blessures et les dommages à cet équipement! Déplacez tout équipement et chariot avec soin. Des arrêts brusques, une force excessive et des surfaces inégales peuvent causer cet équipement et le chariot.

- Soyez prudent lorsque vous vous déplacez ce / panier combinaison d'appareils pour éviter les blessures en cas de chute.
- Si le panier ne se déplace pas facilement, cette condition peut indiquer des obstacles ou des câbles qui peuvent avoir besoin d'être débranchés avant de déplacer cet équipement à un autre endroit.
- Évitez les arrêts et les démarrages rapides lors du déplacement du panier.
- Vérifiez pour les surfaces de plancher inégal tels que des fissures ou des câbles et cordons.

Échouage

Cette section fournit des instructions pour vérifier que l'équipement est correctement mis à la terre.

Fiches de sécurité

- Équipement de protection Classe I - FMI fournit un cordon d'alimentation avec une fiche de sécurité 3-terminal (de type mise à la terre). Ne pas contourner le dispositif de sécurité du type de mise à la terre ou la fiche de sécurité polarisée.

Mise à la terre de type plug

Pour bien la masse de cet appareil, suivre les consignes de sécurité:

- Pour une prise à 3 bornes (une borne sur cette fiche est une broche de terre de protection), insérer la fiche dans un secteur à la terre, sortie 3-terminal.
Remarque: Cette fiche se adapte une seule façon. Si cette fiche ne peut être entièrement insérée dans la prise, contactez un électricien pour remplacer la prise à 3 bornes obsolète.

AC Power


Cet équipement est un équipement de classe I, il doit être mis à la terre.

- Si cet équipement se branche dans une prise, la prise doit être près de cet équipement et doit être facilement accessible.
- Connectez cet appareil uniquement à des sources d'énergie qui sont identifiés sur l'étiquette équipement note normalement situé près du connecteur (s) d'entrée de puissance.
- Si cet équipement dispose de deux sources d'alimentation veillez à débrancher toutes les sources d'alimentation avant de travailler sur cet appareil.


- Si cet équipement ne possède pas d'interrupteur d'alimentation principal, le connecteur du cordon d'alimentation sert de dispositif de déconnexion.
- Tirez toujours sur la fiche ou le connecteur pour déconnecter un câble. Ne tirez jamais sur le câble lui-même.
- Débranchez l'appareil ne est pas utilisé pendant de longues périodes de temps.

Circuit surcharge

Connaître les effets de la surcharge des circuits avant de connecter cet équipement à l'alimentation.

	<p>ATTENTION: Tenir compte du raccordement de cet équipement au circuit d'alimentation et l'effet que la surcharge des circuits pourrait avoir sur la protection contre les surintensités et le câblage d'alimentation. Reportez-vous à l'information sur l'étiquette équipement note quand répondre à cette préoccupation.</p>
---	--

Précautions générales de viabilisation

	<p>AVERTISSEMENT: Évitez les chocs électriques! Ouvrir ou retirer le couvercle de cet équipement peut vous exposer à des tensions dangereuses. Soyez conscient des précautions générales et les lignes directrices suivantes:</p>
---	--

- **Entretien** - Débranchez toutes les fournitures avant l'entretien. Confiez toute réparation à un personnel qualifié. Une réparation est nécessaire lorsque cet équipement a été endommagé de quelque façon, comme un cordon d'alimentation ou la fiche est endommagé, du liquide a été renversé ou des objets sont tombés dans cet équipement, cet équipement a été exposé à la pluie ou à l'humidité, ne fonctionne pas normalement, ou est tombé.
- **Poignet montres et de bijoux** - Pour votre sécurité personnelle et pour éviter des dommages de cet équipement pendant le service et la réparation, ne portez pas électriquement conductrice objets tels que une montre-bracelet ou des bijoux.
- **Lightning** - Ne pas travailler sur cet équipement, ni brancher ou débrancher les câbles, pendant les périodes de foudre.
- **Labels** - Ne retirez pas les étiquettes d'avertissement. Remplacez les étiquettes d'avertissement endommagées ou illisibles par des neuves.
- **Couvre** - Ne pas ouvrir le couvercle de cet équipement et tenter service. Confiez toute réparation à un personnel qualifié seulement.
- **Humidité** - Ne pas laisser l'humidité de pénétrer cet équipement.
- **Nettoyage** - Utilisez un chiffon humide pour le nettoyage.

Accessoires

Utilisez uniquement des accessoires recommandés Fiber Mountain Inc.

3. Sensus Specifications

3.1 Sensus Chassis Specifications

Parameter	Specification	Remarks
<i>Power</i>		
Voltage	100-240 VAC @ 0.25A, 50/60 HZ	
Fuse rating	1.0A, 250V	Slow Blow
Power Consumption	<25 Watts	
<i>Environmental</i>		
Operating Temperature	0-70° C	No Condensation
<i>Mechanical</i>		
Dimensions (H/W/D)	3.45" x 17.44" x 8.67" (8.76 cm x 44.30 cm x 22.02 cm)	
Weight	4.15 lbs.	

3.2 Sensus Management Module Specifications

Parameter	Specification	Remarks
<i>Mechanical</i>		
Dimensions (H/W/D)	3.23" x 4.31" x 8.77" (8.20 cm x 10.95 cm x 22.28 cm)	
Weight	3.20 lbs.	

3.3 Sensus Patching Modules Specifications

Parameter	Specification	Remarks
<i>Mechanical</i>		
Dimensions (H/W/D)	3.23" x 6.35" x 8.87" (8.20 cm x 16.13 cm x 22.53 cm)	
Weight	3.60 lbs.	

4. Installation of Sensus

4.1 Installing Modules into the Sensus Chassis

All modules are attached to the chassis by the backplane connection point and two small spikes in the chassis. To install the patching modules:

1. Insert the management module into the designated middle slot (slot 2)
2. Push the management module all the way back until it snaps into place. The patching module should make complete contact with the backplane
3. Insert the patching modules into the designated left or right slot (slots 1 and 3). Guide pins on the bottom interior of the chassis should line up with the guides on the bottom of the patching modules. Patching modules should also make complete contact with the backplane
4. Tighten all thumbscrews in the rear to secure the modules to the chassis, two screws per module

Sensus patching modules are hot-swappable. To remove a patching module, loosen the thumbscrews on the rear of the device. Press on the screws to push the module out of the chassis.

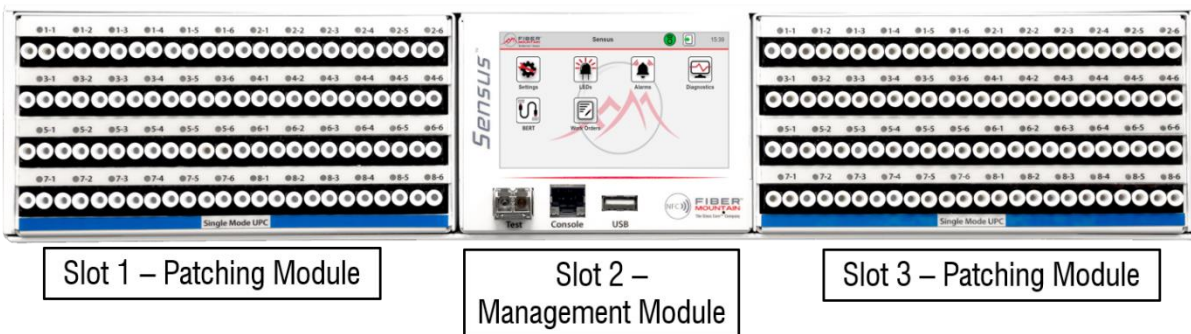


Figure 4-1 Sensus Module Slots

4.2 Fiber Cable Support Accessories (Optional)

4.2.1 Front Cable Support Fingers

The Sensus cable support fingers are used on the front of the device to maintain the proper bend tension to prevent damage to cabling. The stylus for the management screen can also be attached to the cable support fingers by the included tether. These fingers secure to the front of the rack mount ears as well as to the rack itself, and must be installed when the chassis is mounted to the rack (see Section 4.3 for instructions on cable support finger installation).

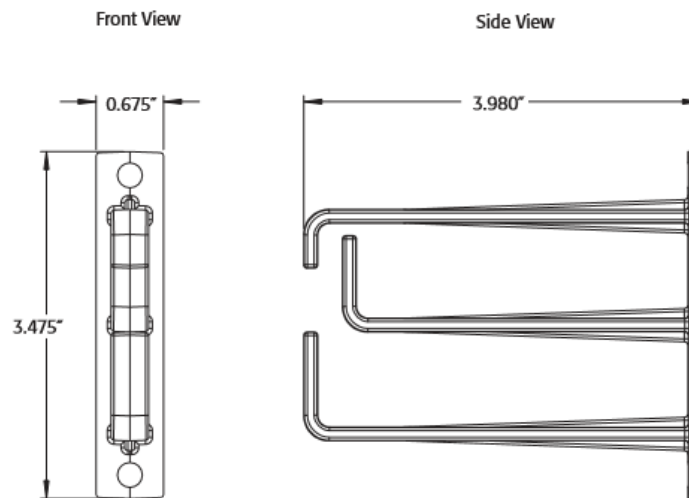


Figure 4-2: Sensus Cable Support Fingers (Catalog #: DX-FGUIDE-002)

4.2.2 Rear Cable Management Tray

Fiber Mountain also provides a cable management tray that attaches to the rear of the Sensus. For more information on installing this tray, reference the Cable Management Tray Installation Guide (FMI Document Part #: 150-00015).



Figure 4-3 Sensus Cable Management Tray (Catalog #: DX-FTRAY-002)

4.3 Attaching Sensus Cable Fingers and Rack-Mounting the Sensus Chassis

The Sensus chassis is rack mount capable and ships with rack 19" mount ears, with 21" and 23" adapters as optional accessories. These shall not be assembled on the chassis, but shall ship as part of chassis order.

Rack mount ears are attached to the sides of the chassis using the included screws. Screw length is not to exceed ¼ inch to avoid damage.

The Sensus cable fingers (optional) are used to maintain the proper bend tension to prevent damage to cabling. These fingers secure to the rack mount ears as well as to the rack itself, and must be installed when the chassis is mounted to the rack.

1. Line up the attached chassis mounting ears with the desired holes on the rack
2. Overlay cable support fingers onto the ears so that screw holes on the fingers, ears, and rack are aligned
3. Secure with standard rack screws (not supplied)

4.4 Sensus Management Module Interfaces

4.4.1 Test SFP Cage, Console Port, USB and NFC Reader

Located on the front of the Sensus Management Module are the Test SFP cage, console port, USB port, and NFC reader.

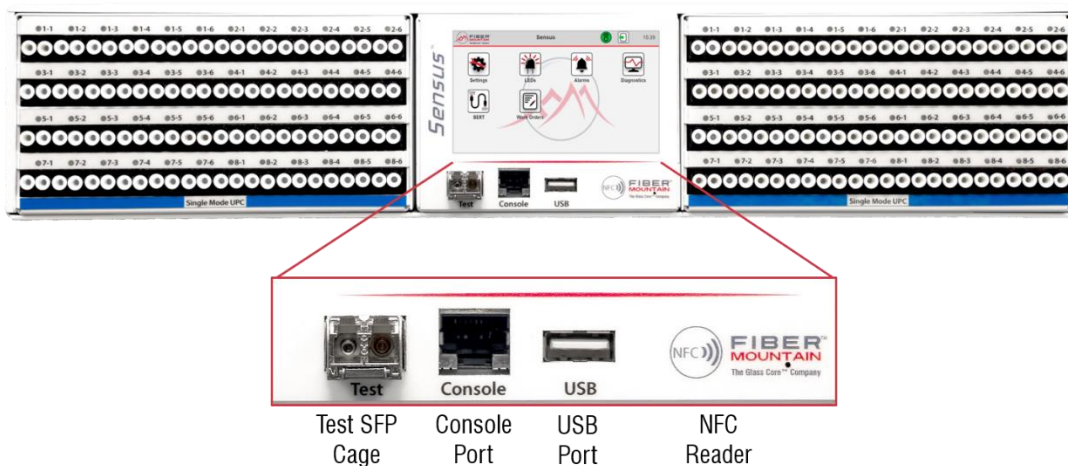


Figure 4-4 Sensus Management Module Front Ports

4.4.2 AC Power Sources and PoE

The Sensus Management Module is powered by two redundant 100-240V AC power supplies, or by Power-over-Ethernet (PoE+) interface. Sensus power supply interfaces are located on the rear of the Management Module. PoE+ is used only when AC power is unavailable. The Ethernet management port can also be used for local or remote access.

Note: PoE should not be used as a backup for AC power. In the event of power loss to both AC supplies, the Sensus device will need to be restart before PoE+ can be used.

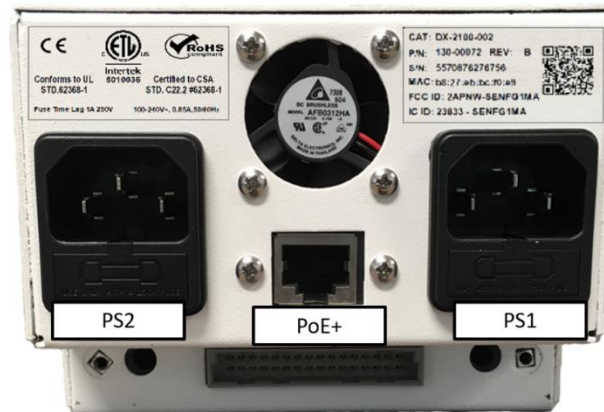


Figure 4-5 Sensus Management Module Power Sources

5. Getting Started

5.1 Craft Interface - PC Console Port Settings

The default console (COM1) port configuration should be set to 115200/8-N-1.



Figure 5-1: RJ-45 Connector

PIN	Signal	Input/Output
1	No connect	
2	DTR	Output
3	TxD	Output
4	GND	
5	GND	
6	RxD	Input
7	DSR	Input
8	No connect	

Table 1: Description of RJ-45 Connector

The default login credentials through the CLI Craft Port are as follows (case-sensitive):

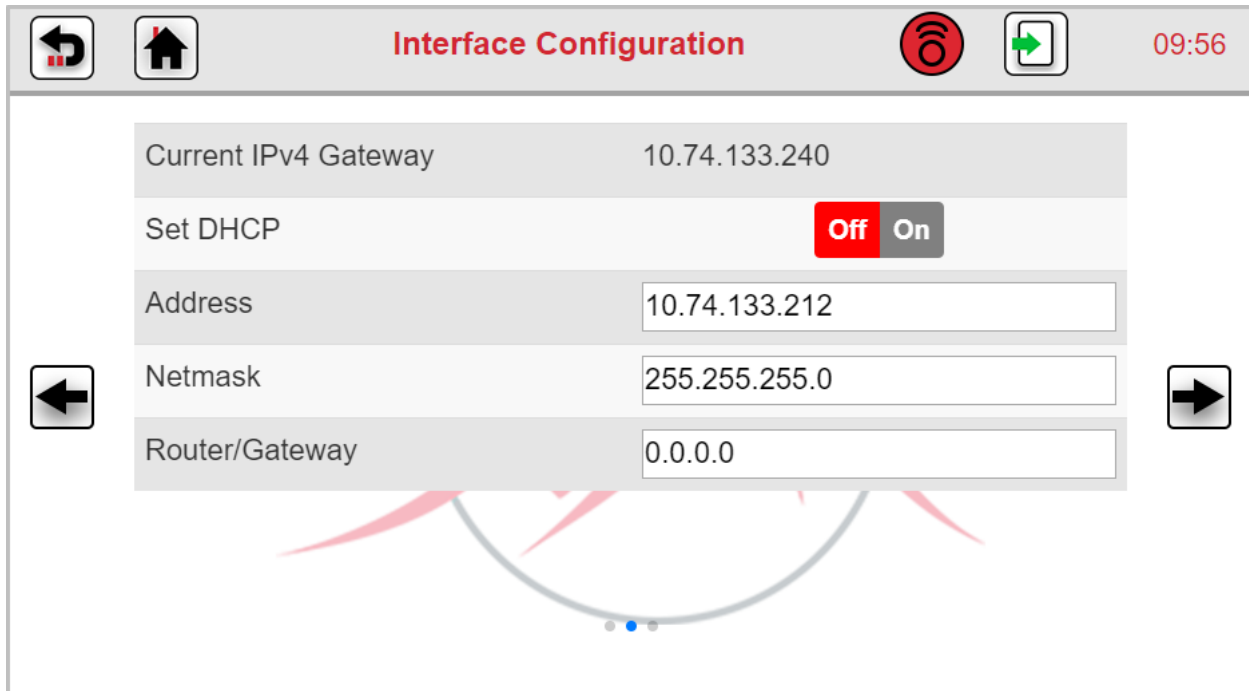
- Username: **SysAdmin**
- Password: **Password1**

5.2 Changing the Local/SSH IP Address

5.2.1 Changing IP Address from the LCD screen

Sensus devices ship from the factory with DHCP enabled, which allows the device to be auto-discovered by AllPath Director (APD). To change the IP of the Sensus, follow these steps:

1. Select the **Settings Panel** on the main menu of the screen
2. Login with username (default: LocalAdmin) and password (default: Password1)
3. Select the **Interface Configuration Panel**, and navigate to the second page. Set DHCP to “Off”
4. Input the desired IP, Netmask, Router/Gateway, and Domain Name Server into the available fields



Interface Configuration 09:56

Current IPv4 Gateway 10.74.133.240

Set DHCP **Off** On

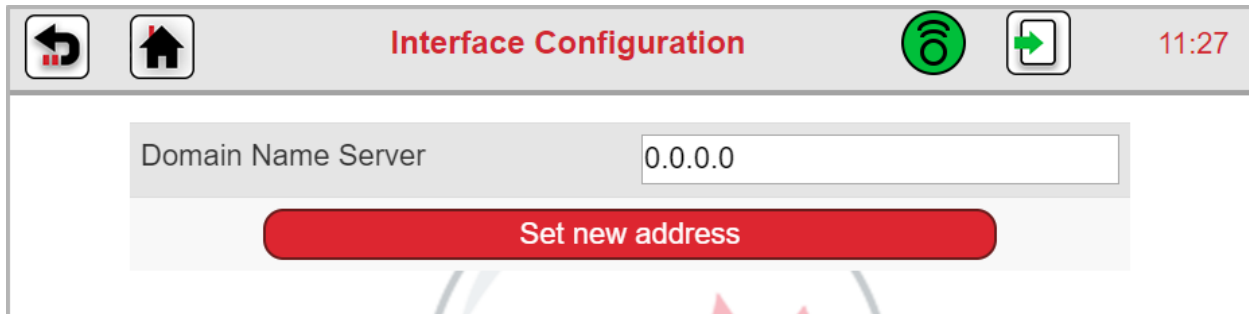
Address 10.74.133.212

Netmask 255.255.255.0

Router/Gateway 0.0.0.0

Figure 5-2: Input New IP Information

5. Navigate to the last page, select the “Set new address” button, and select “Confirm.” The IP address will now be updated



Interface Configuration 11:27

Domain Name Server 0.0.0.0

Set new address

Figure 5-3: Sensus Set New Address

5.2.2 Changing IP Address from the Craft Port

1. Configuration will be done via CLI craft (RS232) port on the Sensus or via SSH connection
2. Attach serial cable from the front panel CLI craft (RJ-45) port to DB-9 serial port on PC
3. Login with username (default: SysAdmin) and password (default: Password1)
4. To program the Ethernet interface, run the following commands:

```
>cd /
>/fimo_connect/network_config.sh
```

5. Enter the following parameters as necessary:
 - Static IP address
 - Netmask
 - Gateway
 - DNS Server
 - Host name

5.3 View current IP address

The current IP address of the Sensus is available in the Interface Configuration Panel under the Settings menu. To access the Interface Configuration Panel:

1. Using the touchscreen or the attached stylus, login with user credentials. The default credentials are
Username: LocalAdmin
Password: Password1
2. Select the **Settings Panel**
3. Select the **Interface Configuration Panel**
4. The current management address will be listed on the “Current IPv4 Address” row

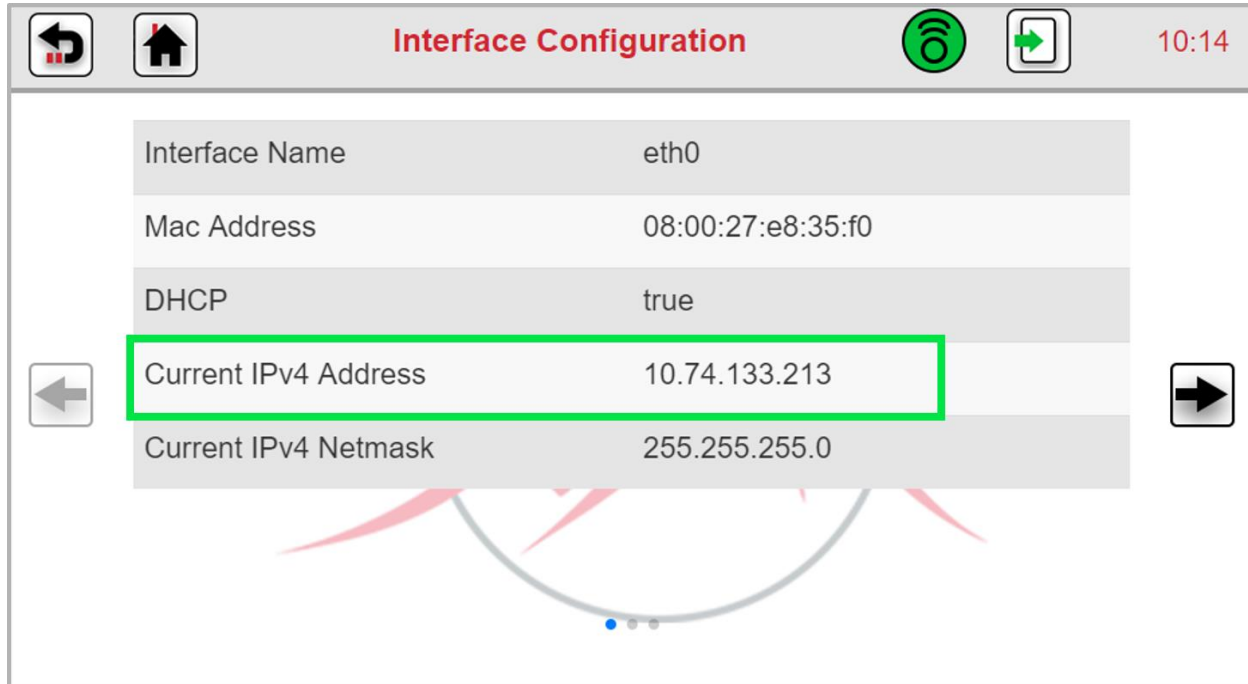


Figure 5-4: Sensus Current IP Address

5.4 Tail the Sensus log via the SSH craft port

A user can access the device's log via the SSH port using the following process:

1. Configuration will be done via CLI craft (RS232) port on the Sensus Management Module or via SSH connection
2. Attach serial cable from the front panel CLI craft (RJ-45) port or Ethernet SSH connection
3. Login with username (default: SysAdmin) and password (default: Password1), then run the following command:

```
>./dump_log.sh
```

5.5 Changing the hostname of the Sensus device

A user can change the hostname of the Sensus device through either an SSH session or the serial console port connection. However, both /etc/hostname and /etc/hosts must be modified in order for the change to take effect.

In this example, the hostname is changed from "Sensus" to "Sensus-170:"

```
Sensus login: SysAdmin
```

```
Password:
```

```
Last login: Thu Mar 8 21:17:10 UTC 2018 on tty1
```

```
Linux FMC 4.4.50-v7+ #970 SMP Mon Feb 20 19:18:29 GMT 2017 armv7l
```

```
Fiber Mountain
```

```
Welcome to the Glass Core(TM)
```

```
SysAdmin@Sensus:~$ sudo vi /etc/hostname
```

```
Sensus-170
```

```
"/etc/hostname" 1 line, 8 characters written
```

```
SysAdmin@Sensus:~$ sudo vi /etc/hosts
```

```
127.0.0.1      localhost
```

```
:::1          localhost ip6-localhost ip6-loopback
```

```
ff02::1      ip6-allnodes
```

```
ff02::2      ip6-allrouters
```

```
127.0.1.1    Sensus-170
```

```
After modification of these two files, reboot:
```

```
SysAdmin@Sensus:~$ sudo reboot
```

5.6 Changing the SFP status from the LCD screen

Users can toggle SFP functionality from the screen. Users do not need to be logged in to toggle this option.

1. Using the touchscreen or the attached stylus, select the **Diagnostics Panel** from the main menu
2. Navigate to the last page
3. Set the “SFP Cage Enable” button to “On” to enable, or “Off” to disable the SFP functionality

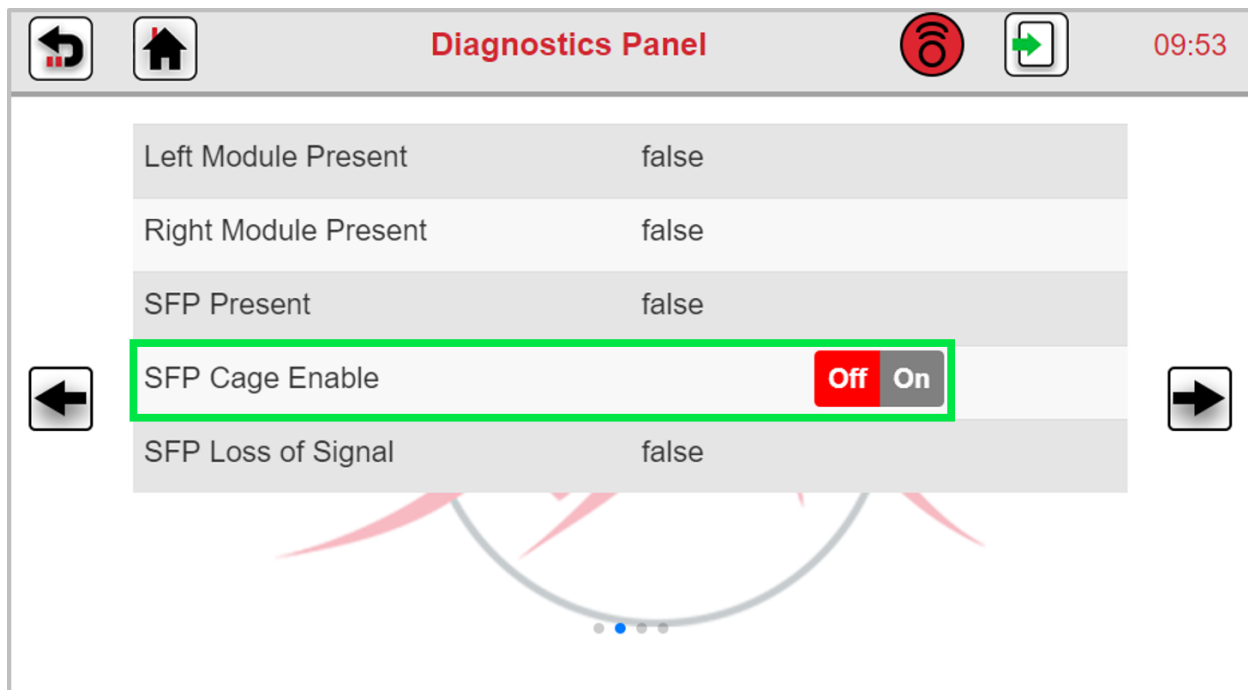


Figure 5-5: Toggling SFP Functionality

5.7 Discovering Sensus products with APD

There are three processes for discovering Sensus products within AllPath Director: auto-discovery through DHCP, auto-discovering through the device, and manual discovery through the FMI Controller in AllPath Director. All three methods are explained in detail in the Glass Core Operations Manual (Document part #: 150-00009).

5.8 Password Recovery Procedure

In the event of a lost or forgotten password, the API accounts can be reset to their default through the following process:

1. Configuration will be done via Linux CLI craft (RS232) port on the Sensus Management Module or via SSH connection
2. Attach serial cable from the front panel craft (RJ-45) port or Ethernet SSH connection
3. Login with login username (default: SysAdmin) and password (default: Password1), then run the following commands:

```
>sudo rm /fimo_connect/http_user.htpasswd  
>sudo reboot
```
4. The API login credentials should now be set back to default (username: LocalAdmin; password: Password1). The user configurations can then be changed as desired.

6. Patching Module Port Mapping Legend

6.1 Front-to-Rear Mapping

6.1.1 48xDuplex LC to 4xMPO-24

For model numbers: DX-2484-002 (Single Mode) and DX-2584-002 (Multimode)

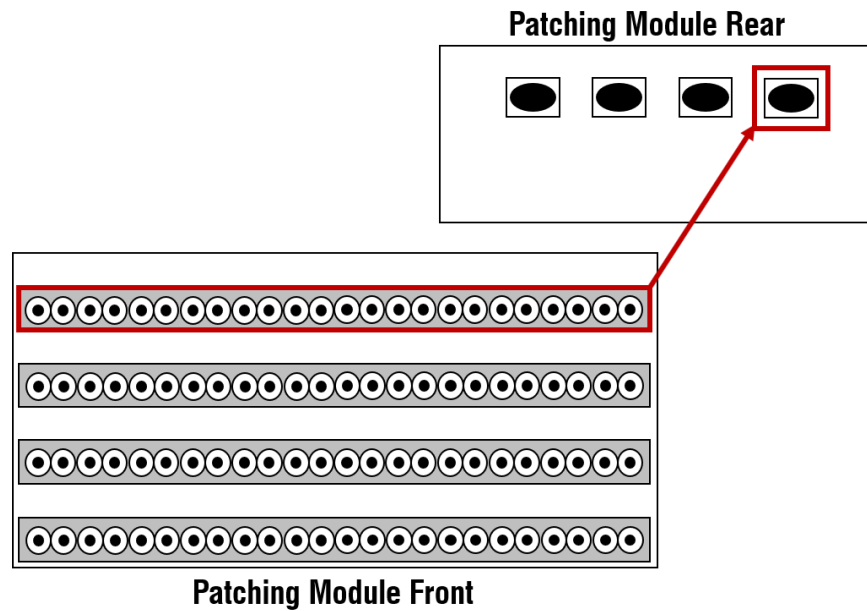


Figure 6-1 48xDuplex LC to 4xMPO-24 Port Mapping

6.1.2 24xDuplex LC to 2xMPO-24

For model numbers: DX-2444-002 (Single Mode) and DX-2544-002 (Multimode)

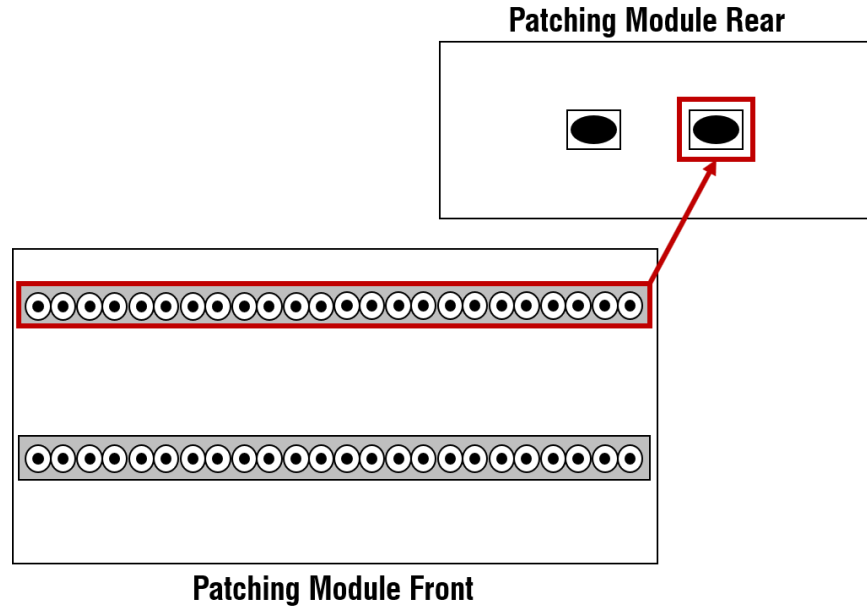


Figure 6-2 24xDuplex LC to 2xMPO-24 Port Mapping

6.1.3 48xDuplex LC to 8xMPO-12

For model numbers: DX-2482-001, DX-2482-002 (Single Mode) and DX-2582-002 (Multimode)

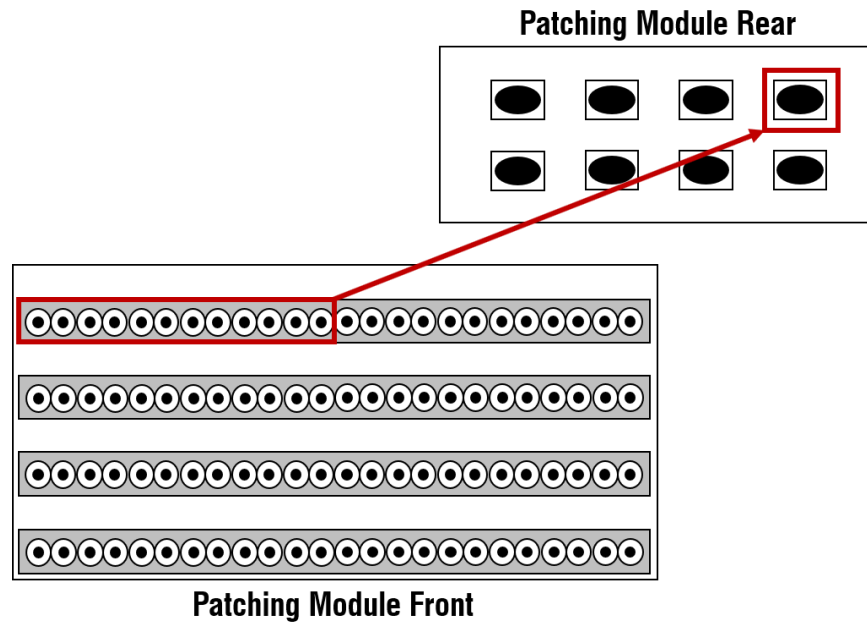


Figure 6-3 48xDuplex LC to 8xMPO-12 Port Mapping

6.1.4 24xDuplex LC to 4xMPO-12

For model numbers: DX-2442-002 (Single Mode) and DX-2542-002 (Multimode)

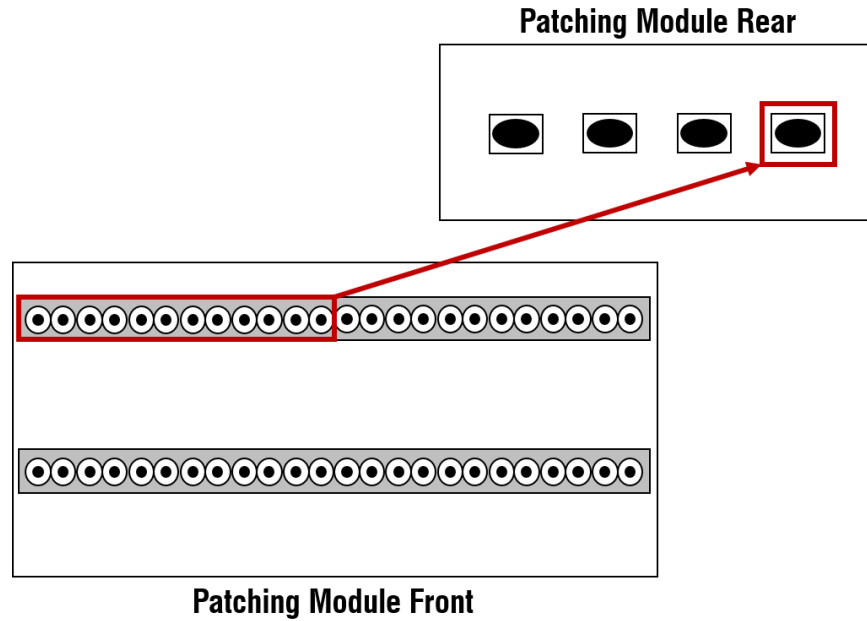


Figure 6-4 24xDuplex LC to 4xMPO-12 Port Mapping

6.1.5 48xDuplex LC to 12xMPO-8

For model numbers: DX-2488-002 (Single Mode) and DX-2588-002 (Multimode)

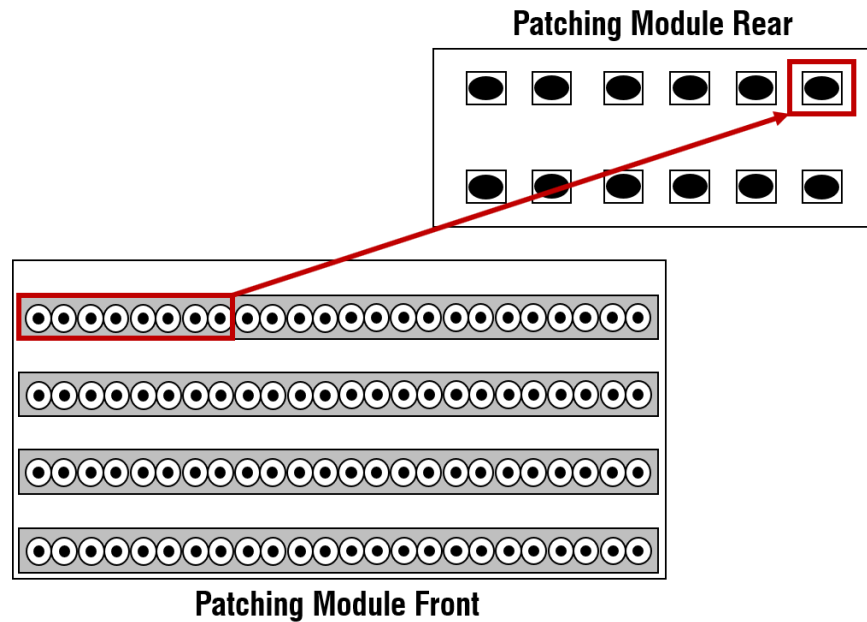


Figure 6-5 48xDuplex LC to 12xMPO-8 Port Mapping

6.1.6 24xDuplex LC to 6xMPO-8

For model numbers: DX-2446-002 (Single Mode) and DX-2546-002 (Multimode)

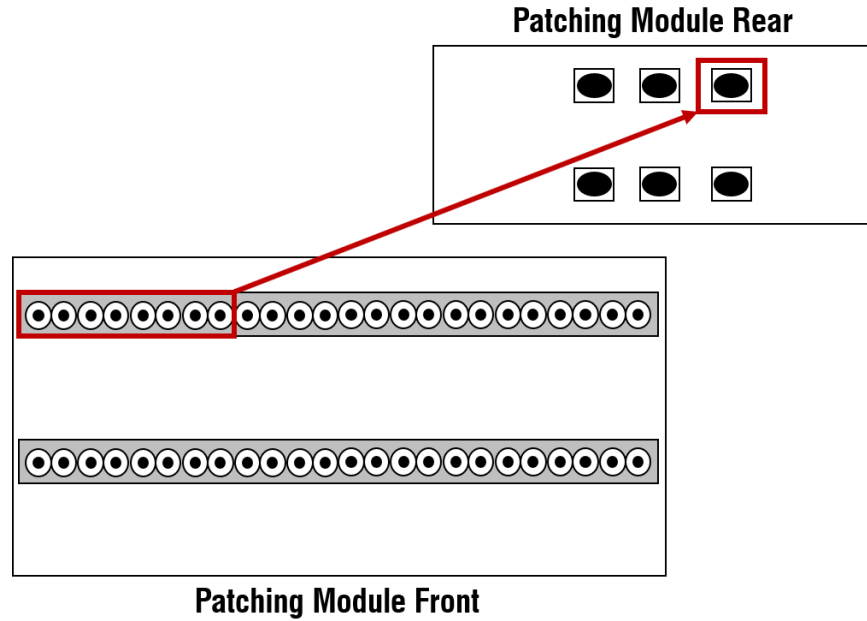


Figure 6-6 24xDuplex LC to 6xMPO-8 Port Mapping

6.1.7 12xMPO-8 to 4xMPO-24

For model numbers: DX-2864-002 (Single Mode) and DX-2964-002 (Multimode)

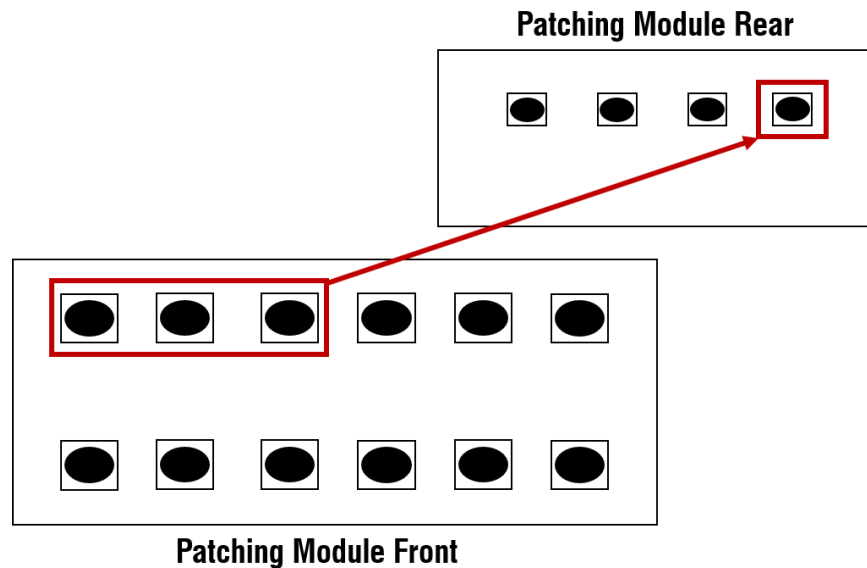


Figure 6-7 12xMPO-8 to 4xMPO-24 Port Mapping

6.1.8 6xMPO-8 to 2xMPO-24

For model numbers: DX-2834-002 (Single Mode) and DX-2934-002 (Multimode)

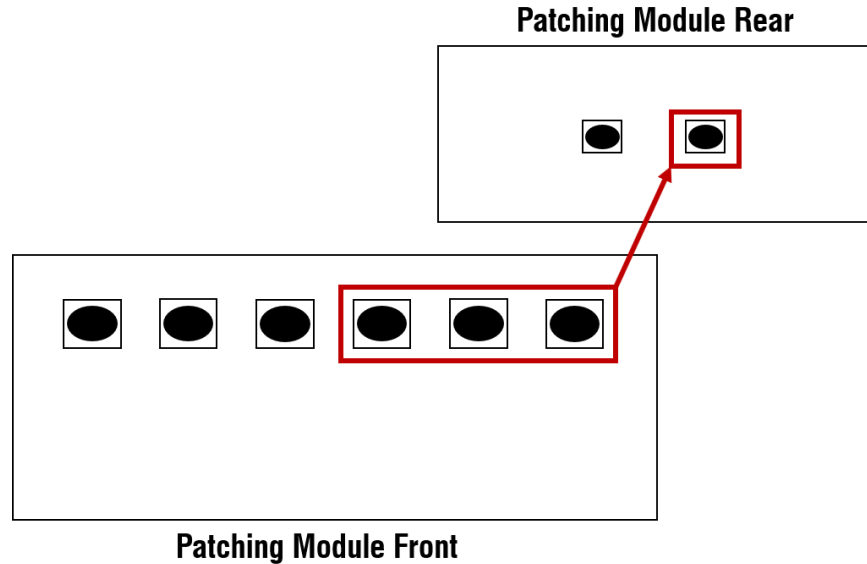


Figure 6-8 6xMPO-8 to 2xMPO-24 Port Mapping

6.1.9 36xDuplex LC to 36xDuplex LC

For model numbers: DX-2655-003, DX-2655-002 (Single Mode) and DX-2755-002 (Multimode)

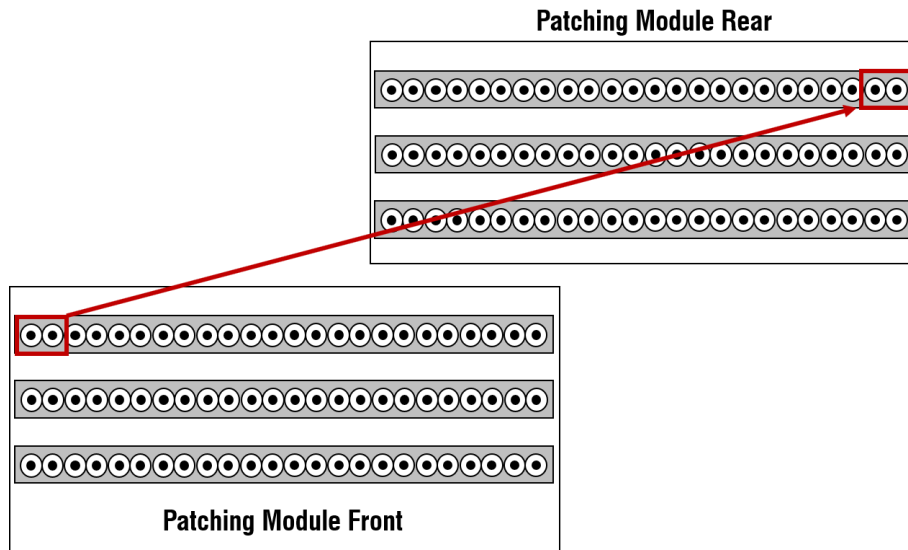


Figure 6-9 36xDuplex LC to 36x Duplex LC Port Mapping

6.1.10 12xMPO-12 to 12xMPO-12

For model numbers: DX-2852-002 (Single Mode) and DX-2952-002 (Multimode)

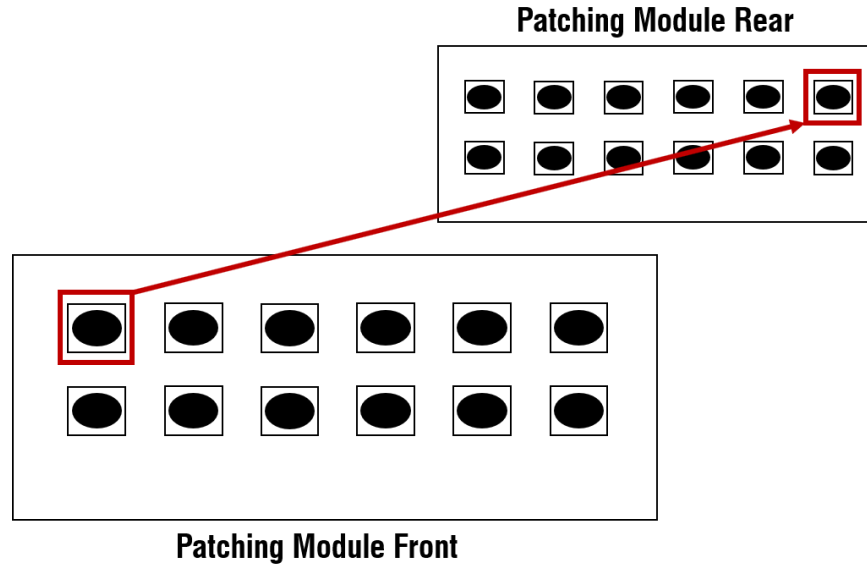


Figure 6-10 12xMPO-12 to 12xMPO-12 Port Mapping

6.1.11 12xMPO-24 to 12xMPO-24

For model numbers: DX-2854-002 (Single Mode) and DX-2954-002 (Multimode)

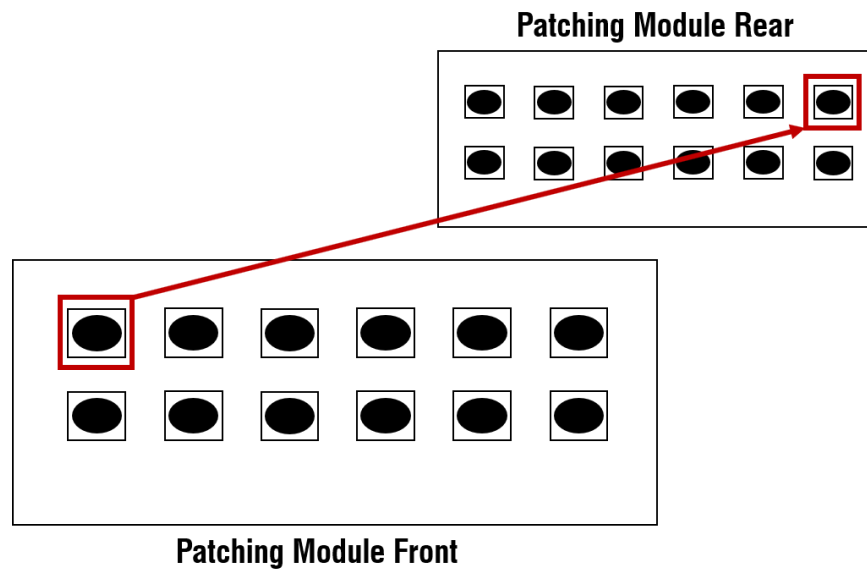
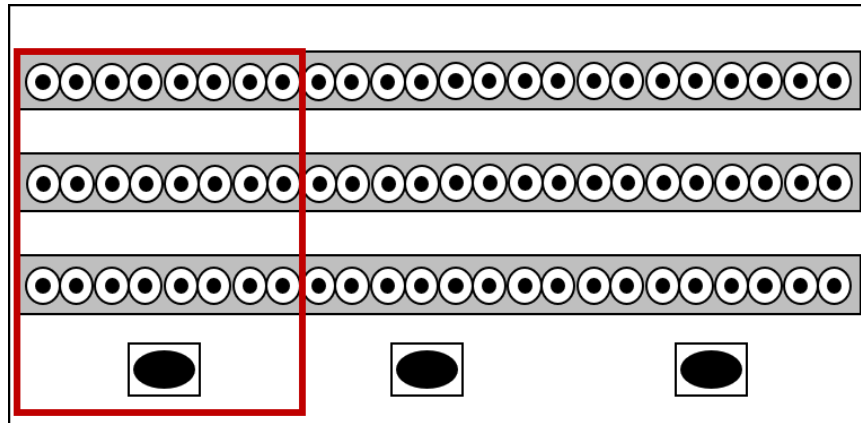


Figure 6-11 12xMPO-24 to 12xMPO-24 Port Mapping

6.2 Front-to-Front Mapping

6.2.1 36xDuplex LC to 3xMPO-24

For model numbers: DX-2674-002 (Single Mode) and DX-2774-002 (Multimode)

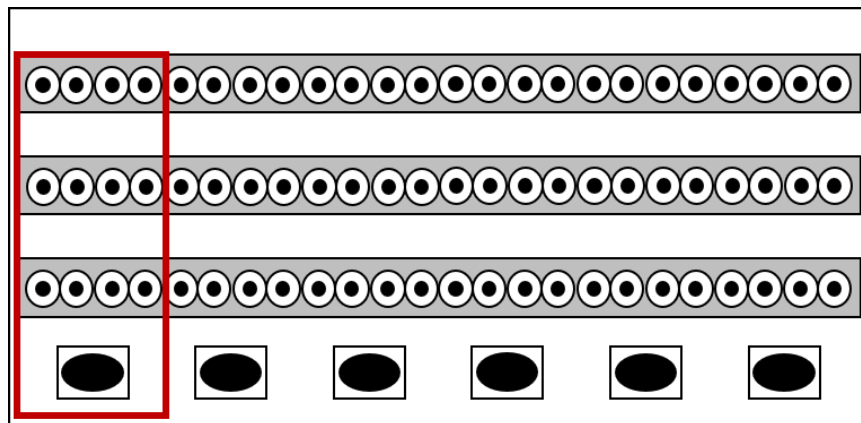


Patching Module Front

Figure 6-12 36xDuplex LC to 3xMPO-24 Port Mapping

6.2.2 36xDuplex LC to 6xMPO-12

For model numbers: DX-2672-002 (Single Mode) and DX-2772-002 (Multimode)

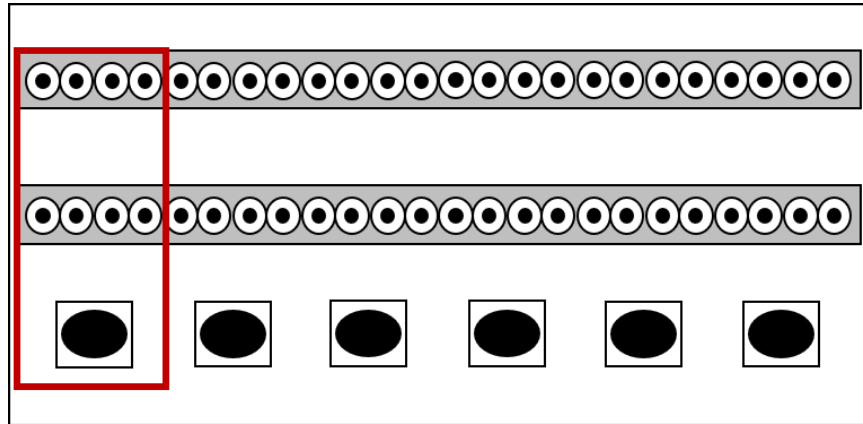


Patching Module Front

Figure 6-13 36xDuplex LC to 6xMPO-12 Port Mapping

6.2.3 24xDuplex LC to 6xMPO-8

For model numbers: DX-2646-002 (Single Mode) and DX-2746-002 (Multimode)

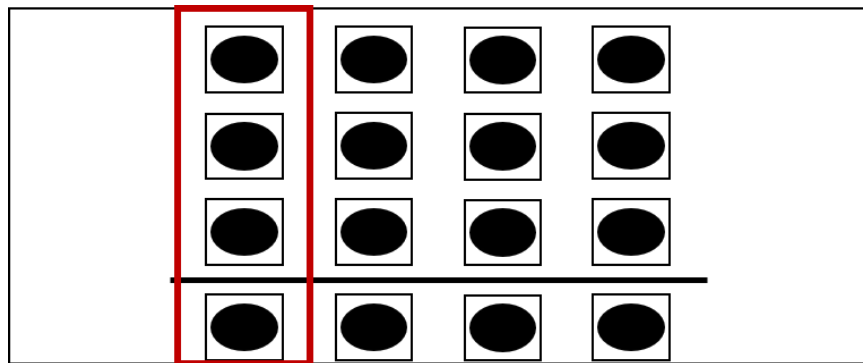


Patching Module Front

Figure 6-14 24xDuplex LC to 6xMPO-8 Port Mapping

6.2.4 12xMPO-8 to 4xMPO-24

For model numbers: DX-2884-002 (Single Mode) and DX-2984-002 (Multimode)



Patching Module Front

Figure 6-15 12xMPO-8 to 4xMPO-24 Port Mapping

7. ICID Capability and Cable Presence

Sensus ports can detect presence of both ICID and non-ICID cables. When a cable is inserted into the port, the port's LED will flash four times. The LED flashes green for ICID cables and amber for non-ICID cables.





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