

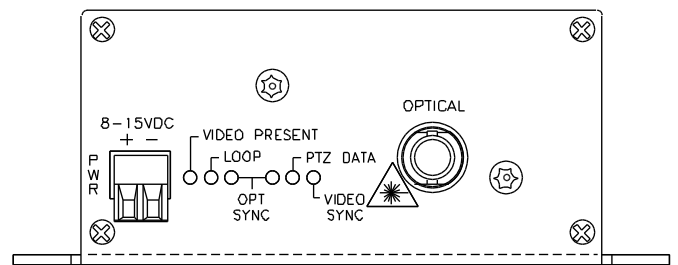


# Optelecom 9000 Series Installation and Operation Manual

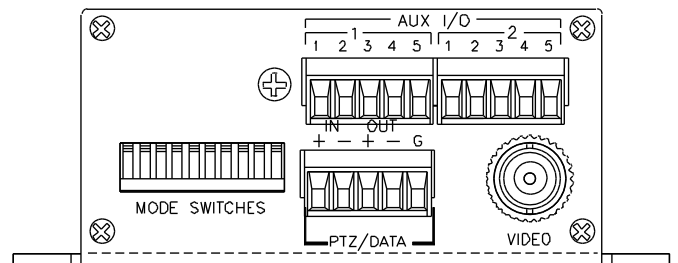
## Model 9245DT Model 9245DR

Fiber Optic Video Duplex Data  
Transmitter and Receiver  
Stand-alone Modules

For transport of one NTSC or PAL video signal, one duplex RS232, RS422, RS485, or Manchester data signal, and two duplex Option Module port signals over one optical fiber. Digital encoding and transmission techniques are utilized for the video (9-bit) and the data.



FRONT VIEW



REAR VIEW

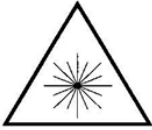


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# Safety Instructions

The safety information contained in this section, and on other pages of this manual, must be observed whenever this unit is operated, serviced, or repaired. Failure to comply with any precaution, warning, or instruction noted in the manual is in violation of the standards of design, manufacture, and intended use of the unit. TKH Security Solutions USA assumes no liability for the customer's failure to comply with any of these safety requirements.



**LASER RADIATION**  
**DO NOT VIEW DIRECTLY WITH OPTICAL INSTRUMENTS (MAGNIFIERS)**  
**CLASS 1M LASER PRODUCT**

**CAUTION:**  
**DISCONNECTED OPTICAL CONNECTORS MAY EMIT OPTICAL ENERGY.**  
**DO NOT VIEW BEAM WITH OPTICAL INSTRUMENTS (MAGNIFIERS)**

This product contains Class 1M lasers or LEDs.

- Class 1M laser product according to IEC60825-1:1993+A1+A2
- **CAUTION: Use of controls or adjustments or procedures other than those specified herein may result in hazardous radiation exposure.**
- Precautions should be taken to prevent exposure to optical radiation when the unit is removed from its enclosure or when fiber is disconnected from the unit.
- Laser radiation may be present on a fiber connection to this unit even when the power has been removed from the unit.
- This unit is intended for installation in locations where only trained service personnel have access to the fiber connections.
- The locations of all optical connections are listed in the Connection Locations and Function section of this manual.
- Optical outputs and wavelengths are listed in the Specifications section of this manual.

The optical devices used in this equipment are Hazard Level 1M. As required by IEC60825-1, the installer is responsible for insuring that the label depicted below is present in the restricted locations where this equipment is installed.

**Hazard Level 1M**

The border shall be black and the background shall be yellow



This assembly contains parts sensitive to damage by electrostatic discharge (ESD). Use ESD precautionary procedures when touching, removing, or inserting parts or assemblies.



The DC power input connector serves as a service disconnect for this module. This module is intended for installation in locations that provide suitable access to the DC power input connector.

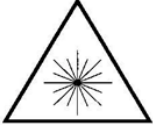


The chassis into which this unit is installed must be housed in a properly rated NEMA enclosure.



When this unit is operated in extremely elevated temperature conditions, it is possible for internal and external metal surfaces to become extremely hot. Care should be taken to insure this unit is installed in a restricted area where only properly trained service personnel have access to the unit.

Debe observarse la información de seguridad contenida en esta sección, y en otras páginas de este manual siempre que se opere, dé servicio o repare esta unidad. Si no se cumple con alguna precaución, advertencia o instrucción indicada en este manual se infringen los estándares de diseño, fabricación y el uso destinado a la unidad. TKH Security Solutions USA no asume ninguna responsabilidad si el cliente no cumple con alguno de estos requisitos de seguridad.



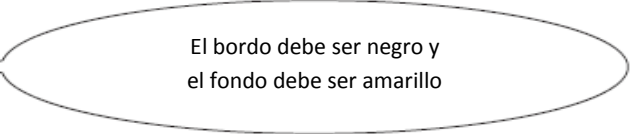
**RADIACIÓN LÁSER**  
**NO VER DIRECTAMENTE CON INSTRUMENTOS ÓPTICOS (DE AUMENTO)**  
**PRODUCTO LÁSER CLASE 1M**

**PRECAUCIÓN:**  
**LOS CONECTORES ÓPTICOS DESCONECTADOS PUEDEN AMITIR ENERGÍA ÓPTICA**  
**NO VER EL HAZ CON INSTRUMENTOS ÓPTICOS (DE AUMENTO)**

Este producto contiene rayos láser o diodos emisores de luz Clase 1M.

- Producto láser Clase 1M conforme a la norma IEC60825-1: 1993+A1+A2
- **PRECAUCIÓN: El uso de los controles, ajustes o procedimientos, aparte de los aquí especificados, pueden ocasionar exposición peligrosa a la radiación.**
- Deben tomarse precauciones para evitar la exposición a la radiación óptica cuando se saque la unidad de su alojamiento, o cuando se desconecte la fibra de la unidad
- Puede haber radiación laser en una conexión de fibra a esta unidad aun cuando se haya eliminado la corriente de la unidad.
- Este equipo está destinado a instalarse en lugares donde sólo el personal de servicio debidamente entrenado tenga acceso a las conexiones de fibra.
- La ubicación de todas las conexiones ópticas se enumeran en la sección Ubicación de los conectores y funciones de este manual.
- Las salidas ópticas y longitudes de onda aparecen en la sección Especificaciones de este manual.

Los dispositivos ópticos usados en este equipo son de Nivel de Riesgo 1M. Según lo exige la norma IEC60825-1, el instalador es responsable de asegurar que la etiqueta descrita a continuación esté presente en las áreas restringidas donde se instale este equipo.



Este ensamblaje contiene piezas sensibles al daño por descargas electrostáticas (ESD, por sus siglas en inglés). Use procedimientos para prevenir las descargas electrostáticas al tocar, desmontar o insertar piezas o ensamblajes.



El conector de entrada de energía de CC sirve como desconector de servicio para este módulo. Este modulo está destinado a instalarse en ubicaciones que ofrecen acceso adecuado al conector de entrada de energía de CC.

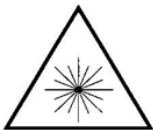


El chasis en el cual está instalada esta unidad debe estar dentro de un alojamiento debidamente calificado por NEMA.



Cuando se opera esta unidad en condiciones de temperatura sumamente elevada, es posible que las superficies internas y externas de metal se pongan extremadamente calientes. Debe tenerse cuidado para asegurar que esta unidad se instale en un área restringida donde sólo tenga acceso a la unidad el personal de servicio debidamente capacitado.

Die in diesem abschnitt und auf anderen seiten dieses Handbuchs enthaltenen Sicherheitsinformationen müssen befolgt werden, wenn diese einheit betrieben, gewartet oder repariert wird. Falls Vorsichtsmassnahmen, Warnungen oder Anweisungen in diesem Handbuch nicht befolgt werden, verstösst dies gegen die Konstruktions, und Herstellungsstandards und erfolgt im gegensatz zum vorgesehenen Verwendungszweck dieser einheit. TKH Security Solutions USA übernimmt keine Haftung für das Verabsäumen des Kunden, diese Sicherheitsanforderungen einzuhalten.



**LASER-STRAHLUNG**  
**NICHT DIREKT MIT OPTISCHEN INSTRUMENTEN (LUPEN) ANSEHEN**  
**LASER-PRODUKT DER KLASSE 1M**

**VORSICHT:**  
**ABGEKLEMMTE OPTISCHE STECKVERBINDER KÖNNEN OPTISCHE ENERGIE FREI SETZEN**  
**NICHT MIT OPTISCHEN INSTRUMENTEN (LUPEN) IN DEN STRAHL BLICKEN.**

Dieses Produkt enthält Laser oder LEDs der Klasse 1M.

- Laserprodukt der Klasse 1M gemäß IEC60825-1:1993+a1+A2
- **VORSICHT: Wenn die Bedienungselemente anders als hier beschrieben bzw. andere Einstellungen verwendet werden, kann es zu schädlicher Strahlenaussetzung kommen.**
- Es müssen Vorsichtsmaßnahmen getroffen werden, um Aussetzung an optischer Strahlung zu vermeiden, wenn die Einheit aus dem Gehäuse genommen oder die Faseroptik von der Einheit getrennt wird.
- In einer Faseroptik-Verbindung dieser Einheit kan auch dann Laserstrahlung vorhanden sein, wenn die Stromversorgung zur Einheit abgeschaltet wurde.
- Diese Einheit ist zum Einbau an Orten vorgesehen, an denen nur geschultes Personal Zugang zu den Faseroptik-Verbindungen hat.
- Die Lage aller optischen Verbindungen ist im Abschnitt über die Lage von Anschlüssen und Funktionsweise dieses Handbuchs zu finden.
- Optische Ausgänge und Wellenlängen sind im Abschnitt mit den technischen Daten dieses Handbuchs zu finden.

Die optischen Vorrichtungen in diesem Gerät haben Gefahrenstufe 1M. Wie vorgeschrieben durch IEC60825-1 ist der Installateur dafür verantwortlich, sicherzustellen, dass die unten abgebildeten Schilder an den Orten mit eingeschränktem Zugang, an denen dieses Gerät aufgestellt ist, vorhanden sind.

**Gefahrenstufe 1M**

Schwarzer Rand und  
gelber Hintergrund



Diese Baugruppe enthält Teile, die durch elektrostatische Entladungen (ESD) beschädigt werden können. Vorsichtsmaßnahmen

zum Schutz vor elektrostatischer Entladung treffen, wenn Teile oder Baugruppen berührt, ausgebaut oder eingefügt werden.



Der Gleichstrom-Eingangssteckverbinder dient als Unterbrechung der Stromversorgung für dieses Modul. Dieses Modul ist für den Einbau an Orten vorgesehen, an denen geeigneter Zugang zu einem Gleichstrom-Steckverbinder vorhanden ist.

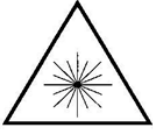


Das Gestell, in dem diese Einheit eingebaut ist, muss in einem entsprechend klassifizierten NEMA-Schutzgehäuse untergebracht sein.



Wenn diese Einheit bei besonders hohen Temperaturen betrieben wird, können interne und externe Metallflächen extrem heiß werden. Es muss darauf geachtet werden, dass diese Einheit in einem Bereich mit eingeschränktem Zugang aufgestellt wird, damit nur geschultes Wartungspersonal Zugang zur Einheit hat.

Les consignes de sécurité contenues dans cette section et dans le reste de ce manuel doivent être respectées à chaque fois que cet appareil est utilisé ou fait l'objet d'une maintenance ou d'une réparation. Le non-respect d'une précaution, d'un avertissement ou d'une instruction figurant dans ce manuel est une violation des normes de conception, fabrication et indication d'usage de l'appareil. TKH Security Solutions USA n'est pas responsable du non-respect de ces consignes de sécurité par le client.



**RAYONNEMENT LASER**  
**NE PAS REGARDER DIRECTEMENT AVEC DES INSTRUMENTS OPTIQUES (LOUPES)**  
**PRODUIT LASER DE CLASSE 1M**

**ATTENTION:**  
**LES CONNECTEURS OPTIQUES DEBRANCHES PEUVENT EMETTRE UNE ENERGIE OPTIQUE.**  
**NE PAS REGARDER LE FAISCEAU AVEC DES INSTRUMENTS OPTIQUES (LOUPES)**

Ce produit contient des lasers ou diodes électroluminescentes de classe 1M.

- Produit laser de classe 1M conformément à IEC60825-1:1993+A1+A2
- **ATTENTION: L' utilisation de commandes ou réglages, ou de procédures différentes de celles indiquées ici risque de provoquer une exposition dangereuse au rayonnement.**
- Prendre des précautions pour empêcher une exposition au rayonnement optique lorsque l' appareil est retiré de son boîtier ou lorsque le câble optique fibre est débranché de l' appareil.
- Un rayonnement laser pourra être présent dans un câble optique branché sur cet appareil, même une fois l'alimentation coupée.
- Cet appareil est prévu pour une installation à des endroits où seul un personnel de maintenance formé accès aux câbles optiques.
- Les points de branchement de tous les câbles optiques sont indiqués à la section Points de branchement et fonction de ce manuel.
- Les sorties et longueurs d' onde optiques figurant à la section Caractéristiques techniques de ce manuel.

Les appareils optiques utilisés dans cet équipement correspondent à un niveau de danger 1M. Comme exigé par la norme IEC60825-1, il incombe à l'installateur de s'assurer que l'étiquette ci-dessous est présente aux endroits d'accès limité où cet équipement est installé.

**Niveau de danger 1M**

La bordure doit être noire et le fond jaune



Cet ensemble contient des pièces sensibles aux décharges électrostatiques (ESD). Prendre les précautions relatives aux ESD avant de toucher, retirer ou insérer des pièces ou des ensembles.



Le connecteur d'entrée d'alimentation c.c. sert de sectionneur de maintenance pour ce module. Ce module est prévu pour une installation à des endroits donnant raisonnablement accès au connecteur d'entrée d'alimentation c.c.



Le châssis dans lequel est installé cet appareil doit être placé dans une enceinte NEMA conforme aux spécifications nominales.



Lorsque cet appareil fonctionne à une température ambiante extrêmement élevée, il est possible que les surfaces métalliques internes et externes deviennent extrêmement chaudes. S'assurer que cet appareil est installé dans une zone dont l'accès est limité à un personnel de maintenance correctement formé.

# Fiber Information

This unit was manufactured with attention to fiber cleanliness by TKH Security Solutions USA. Beyond the optical safety information contained in this manual, the following guidelines should be observed when working with optical fibers.

The biggest problem is **dirt!**

It takes very little contamination to cause problems with optical fiber connections; cleanliness is extremely important to proper operation of optical equipment.

1. Protect optical connectors by leaving the connector covers in place on unused fiber connections and on the fiber tips themselves.
2. Personnel who remove and replace fibers should be equipped with a fiber cleaning kit. These are inexpensive and can be obtained from any fiber equipment supply house. If you choose to, you can use propanol and lint-free tissue to clean fibers.
  - a. Do not use isopropanol alcohol (typically called rubbing alcohol) mixed with water. This can cause additional spots. (**Caution: *Pure isopropanol is very flammable!***)
  - b. Use lintless tissues to clean fibers.
  - c. Clean the fiber with a folded tissue moistened with the propanol, pulling the connector tip across the tissue, then turn the connector 90 degrees and repeat in a different spot on the tissue.
  - d. Don't pull the fiber across and then push it back. This will put the dirt that was cleaned off back on again.
  - e. Repeat the process on a dry, folded tissue.
3. When removing fibers, ***always*** clean them when replacing them no matter how long you had them off.
4. When connecting fibers, pay attention to the bend radius of the fibers. A general rule is to have a 3-inch (8 cm) bend radius. A bend radius less than 3 inches is an attenuator and can cause optical signal loss.
5. Installers of fiber equipment should be equipped with the equipment manuals and an optical power meter to measure the optical inputs and outputs in a system. An optical power meter is an inexpensive tool that can save much time and effort in getting optical communications links up and running. Properly equipped and trained installers can quickly determine the source of any problems that occur.

# External Wiring Information

Cable assemblies with lengths external to the unit not exceeding 3.05 meters, coiled or uncoiled, may be constructed of jacketed appliance wiring material suitable for the maximum voltage current and temperature, rated VW-1 or FT-1 or better. Cable assemblies with lengths external to the unit not exceeding 3.05 meters, coiled or uncoiled, and supplied by a limited power source or NEC Class 2 source of supply as defined in the National Electric Code, ANSI/NFPA 70, may be constructed of materials rated VW-1 or FT-1 or better with no additional requirements.



# Functional Description

The 9245DT transmitter accepts a composite video signal in NTSC or PAL format via the BNC video input port. This baseband video signal is sampled at a 16 MHz rate by an A-to-D converter operating with nine bits of precision. Data signals are combined into the bit stream and converted to an optical signal for transmission over the optical fiber. For the reverse direction, data comes into the transmitter via an optical receiver operating at a different wavelength than the transmitter. The received data stream is demultiplexed into data for output via the data port and the Option Module Ports.

The receiver accepts the optical signal and converts it back to a serial bit stream. The signal is deserialized and converted back into the video and data signals, which are output on the BNC and data connectors. For the reverse direction, outputs from the data port and the Option Module Ports are multiplexed together, converted to an optical signal for transmission to the transmitter on the second wavelength.

The built-in data port is dipswitch-programmable. The port may be configured for Manchester-encoded data, RS485-2-wire, RS485 4-wire, RS422, or RS232. The data port supports data at speeds up to 115.2 kbps.

The 9245DT and 9245DR support two TKH Security USA Data/Audio Option Modules. The modules operate bidirectionally. The user may select from duplex audio (Option Module type A), duplex data (Option Module type B), duplex contact closure (Option Module type C) or Stereo Audio (Option Module type D, Stereo Input, and E, Stereo Output).

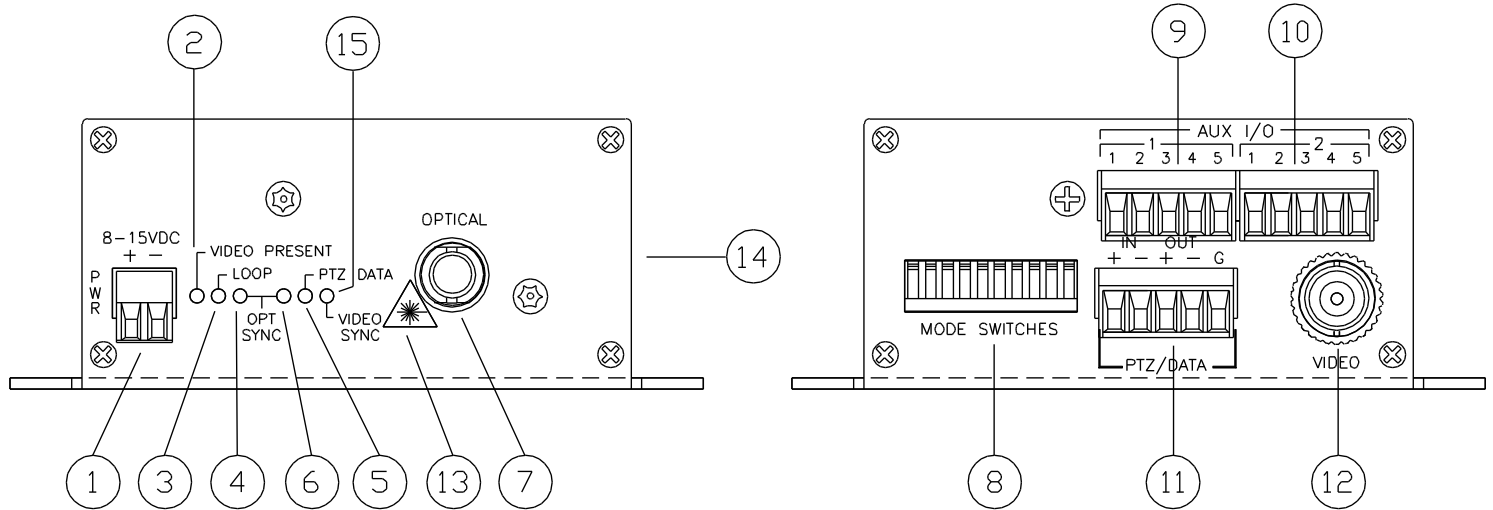
The Xs in the 9245DT(XX)-Y-ZZ and 9245DR(XX)-Y-ZZ model numbers should be replaced with the letter for the type of Option Module desired. The specific Option Modules installed are indicated by labels on the front panel and on the AUX I/O connectors.

The 9245DT and 9245DR are optically compatible with the 9241DT and 9241DR rack-mount card models.

The 9245D module has been evaluated with TKH Security USA external power adapter Model 9014 with input at 110 VAC, 60 Hz, and with TKH Security USA external power adapter Model 9011 with input between 100 and 240 VAC, 50 to 60 Hz. These power adapters are suitable for use at a temperature above 0° C, up to 40° C. The TKH Security USA PSR adapter may be used between -10° C and +60° C. If the module is to be used in an ambient outside this ambient temperature range, a power source must be used that is suitable for use at that ambient and additional evaluation of the module may be required in the end product.

# 9245DT Indicator and Connector Locations

FIGURE 1



## 1. POWER CONNECTOR

Power is applied to the module via this removable screw terminal connector. At least one of the other indicators will illuminate to provide power indication.

## 2. VIDEO PRESENT INDICATOR

This indicator will illuminate **green** when a video signal is present on the Video Input connector.

## 3. LOOP INDICATOR

This **green** indicator, when illuminated, indicates the local unit is in sync with the remote unit and the remote unit is in sync with the local unit.

## 4. SYNC INDICATOR

This **green** LED, when illuminated, indicates the local unit is in sync with the remote unit.

## 5. PTZ DATA INDICATOR

This **green** LED, when flashing, indicates the local unit is receiving data from the remote end on the built-in data port.

## 6. NOT SYNC INDICATOR

This **red** LED, when illuminated, indicates the local unit is **not** in sync with the remote unit.

## 7. OPTICAL CONNECTOR

The optical connection is made here.

**8. BUILT-IN DATA MODE SWITCH**

This dipswitch is used to set the data parameters for the built-in PTZ/DATA I/O Channel.

**9. AUX I/O 1 CONNECTOR**

This is the connector for Option Module position 1. Refer to the separate Option Module Manual included with your shipment for details on connections to the Option Modules.

**10. AUX I/O 2 CONNECTOR**

This is the connector for Option Module position 2. Refer to the separate Option Module Manual included with your shipment for details on connections to the Option Modules.

**11. BUILT-IN DATA CHANNEL CONNECTOR**

This is the built-in PTZ/Data I/O connector.

**12. VIDEO INPUT CONNECTOR**

This BNC connector is the input for the video signal.

**13. IEC LASER WARNING LABEL**

Refer to the Safety Instructions at the beginning of this manual.

**14. REGULATORY COMPLIANCE LABEL**

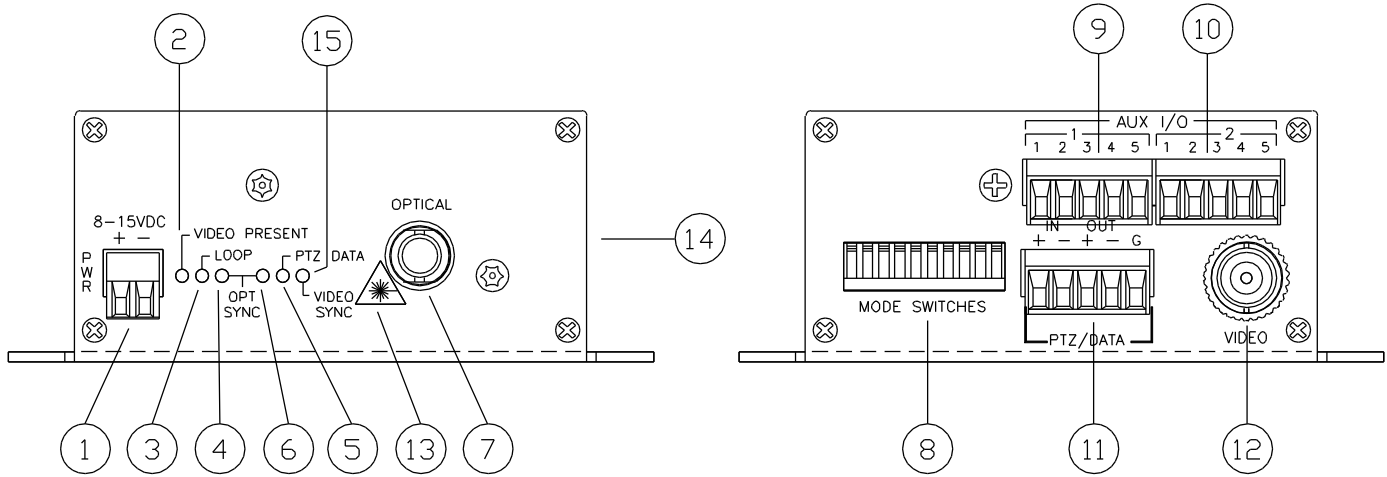
(Located on the side of the unit.)

**15. VIDEO SYNC INDICATOR**

This LED position is not installed on this unit and is, therefore, inoperative.

# 9245DR Indicator and Connector Locations

FIGURE 2



## 1. POWER CONNECTOR

Power is applied to the module via this removable screw terminal connector. At least one of the other indicators will illuminate to provide power indication.

## 2. VIDEO PRESENT INDICATOR

This indicator will illuminate **green** when a video signal is present on the Video Input connector at the *transmitter* end.

## 3. LOOP INDICATOR

This **green** indicator, when illuminated, indicates the local unit is in sync with the remote unit and the remote unit is in sync with the local unit.

## 4. SYNC INDICATOR

This **green** LED, when illuminated, indicates the local unit is in sync with the remote unit.

## 5. PTZ DATA INDICATOR

This **green** LED, when flashing, indicates the local unit is receiving data from the remote end on the built-in data port.

## 6. NOT SYNC INDICATOR

This **red** LED, when illuminated, indicates the local unit is **not** in sync with the remote unit.

## 7. OPTICAL CONNECTOR

The optical connection is made here.

**8. BUILT-IN DATA MODE SWITCH**

This dipswitch is used to set the data parameters for the built-in PTZ/DATA I/O Channel.

**9. AUX I/O 1 CONNECTOR**

This is the connector for Option Module position 1. Refer to the separate Option Module Manual included with your shipment for details on connections to the Option Modules.

**10. AUX I/O 2 CONNECTOR**

This is the connector for Option Module position 2. Refer to the separate Option Module Manual included with your shipment for details on connections to the Option Modules.

**11. BUILT-IN DATA CHANNEL CONNECTOR**

This is the built-in PTZ/Data I/O connector.

**12. VIDEO OUTPUT CONNECTOR**

This BNC connector is the output for the video signal.

**13. IEC LASER WARNING LABEL**

Refer to the Safety Instructions at the beginning of this manual.

**14. REGULATORY COMPLIANCE LABEL**

(Located on the side of the unit.)

**15. VIDEO SYNC INDICATOR**

This LED position is not installed on this unit and is, therefore, inoperative.

# Set Up and Operation of the 9245DT and 9245DR

**Please Note:** There are three auxiliary channels on the 9245DT and 9245DR. The first channel is the built-in data channel. The built-in channel is always a data channel and is set up per the instructions in the “Built-In PTZ/Data Channel Switch Settings and Connections” section below. The dipswitch is visible on the outside of the unit and the connections are via the port marked PTZ/Data.

The second and third channels are implemented via Option Modules installed inside the unit, and are set up according to the type of module installed and the instructions in the supplied Option Modules manual. The case will have to be opened to set the switches on these Option Modules. The input/output signals are available on the connectors marked AUX I/O 1 and 2. The type of Option Module installed will be indicated by a label on the connector and on the end plate under the connector.

Set up and operation of the 9245DT and 9245DR units consists of:

- Set the switches on the Option Modules. Refer to the instructions in the Aux Ports section for opening the case to set the switches or change Option Module types. Refer to the Option Module manual for details on the switches and connections for each module type.
- Make the required audio, data, or contact closure cables to the Option Module connectors and plug the connectors into the Aux Ports on the front panel
- Connect the video input and output signals.
- Connect the fiber.
- Connect the power input.

## AUX I/O PORTS 1 AND 2 OPERATION

Aux I/O Ports 1 and 2 are supported by TKH Security USA Series Option Modules. There may be audio, data, contact closure, or intercom modules installed depending on the configuration ordered from the factory. The case must be opened to change the dipswitch settings on the installed Option Modules. Refer to the following instructions and Figures 1 and 2 to open the case.

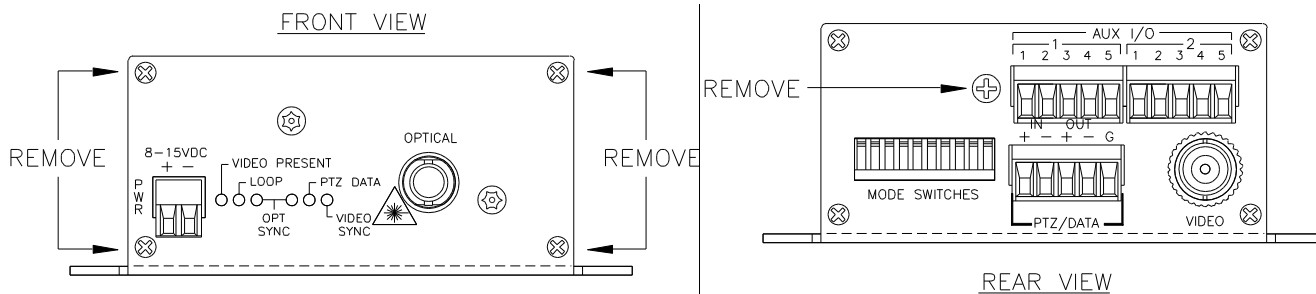


***Extreme care should be taken when performing this process.***

1. Insure that you are working in a static free environment.
2. Disconnect the power and *remove all electrical connectors.*
3. Remove the knurled nut on the BNC video connector.
4. Remove *only* the single Philips head screw from the *rear* end panel of the 9245D. *This is the end with the AUX I/O connectors.* Refer to the rear views.
5. Remove the four corner Philips head screws from the front end panel of the 9245D. *This is the end with the optical connector.* Refer to the rear views.
6. Grasp the *front* end panel and gently slide the end panel with attached circuit card assembly out of the case until the Option Module switches are visible.

7. Set the Option Module switches as required. Refer to the Option Module manual for details on setting the switches.
8. Reassemble in the reverse order. Do not over tighten the screws..

**FIGURE 3 — 9245DT**



**BUILT-IN PTZ/DATA CHANNEL SWITCH SETTINGS AND CONNECTIONS**

The PTZ data channel switch sets the data Input and output formats. Refer to Table 1 and the Input/Output connection diagrams below set and connect data signals.

<b>TABLE 1 — 9245D DIPSWITCH SETTINGS</b>										
<b>Type/Switch Position</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
RS232	ON (DOWN)	OFF (UP)	OFF (UP)	OFF (UP)	OFF (UP)	N/A	N/A	OFF (UP)	ON (DOWN)	OFF (UP)
RS422	OFF (UP)	OFF (UP)	ON (DOWN)	ON (DOWN)	ON (DOWN)	T	T	ON (DOWN)	OFF (UP)	ON (DOWN)
RS485 2-Wire	ON (DOWN)	ON (DOWN)	OFF (UP)	ON (DOWN)	ON (DOWN)	T	T	ON (DOWN)	OFF (UP)	ON (DOWN)
RS485 4-Wire	OFF (UP)	ON (DOWN)	OFF (UP)	ON (DOWN)	ON (DOWN)	T	T	ON (DOWN)	OFF (UP)	ON (DOWN)
Manchester	ON (DOWN)	ON (DOWN)	ON (DOWN)	OFF (UP)	OFF (UP)	T	T	ON (DOWN)	OFF (UP)	ON (DOWN)
Disabled	OFF (UP)	OFF (UP)	OFF (UP)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

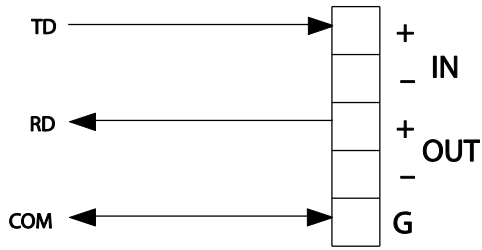
*Notes*

<sup>1</sup> N/A Switch position does not affect setting.

<sup>2</sup> T = Input Termination Setting, ON = Termination On, OFF = Termination Off. Terminations should be on for the last RS422 and RS485 input where five or fewer inputs are connected in parallel.

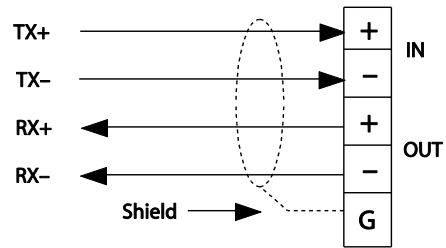
Input connections are made in the following manner.

**FIGURE 4**



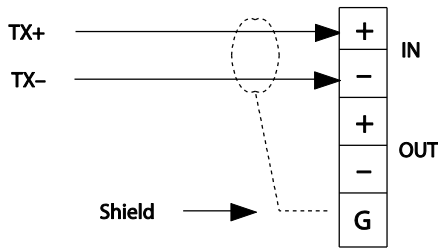
RS232 Connections  
(Arrows Indicate Signal Direction)

**FIGURE 5**



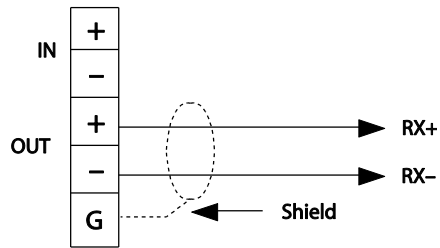
RS422/RS485 4-Wire and Manchester Connections  
(Arrows Indicate Signal Direction)  
(Manchester is usually unidirectional)

**FIGURE 6**



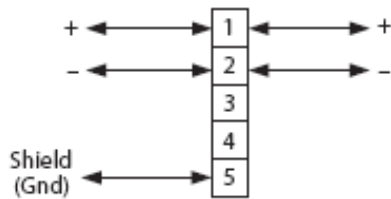
RS422/Manchester Input Connections  
(Arrows Indicate Signal Direction)  
(Manchester is usually unidirectional)

**FIGURE 7**



RS422/Manchester Output Connections  
(Arrows Indicate Signal Direction)  
(Manchester is usually unidirectional)

**FIGURE 8**



RS485 2-Wire Connections  
Note that both Input and Output connections are made to Pins 1 and 2  
(Arrows Indicate Signal Direction)



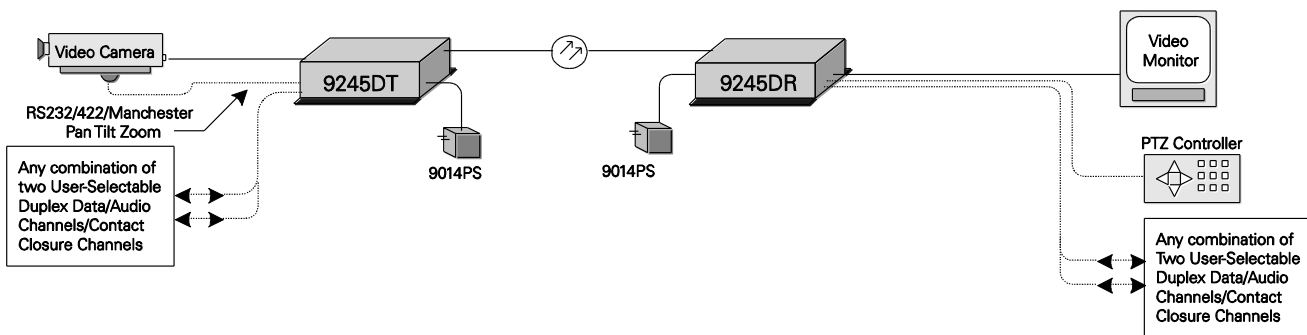
# Troubleshooting 9245D Links

The sync indicator LED on the transmitter and receiver provide information as to the optical and electrical status of the units. Troubleshooting normally starts at the transmitting end.

The SYNC LED serves multiple functions:

- **OFF** indicates no power is applied to the unit. Check the power connections and source.
- **Red** (NO SYNC, NO LOOP) indicates the local unit is not receiving sufficient optical signal from the remote unit or the local demux circuitry is not able to synchronize to the incoming signal. Check the fiber for poor connections or optical losses greater than the unit specifications.
- **Yellow** (SYNC, NO LOOP) indicates the local unit has synchronized to the incoming signal, but the remote unit has not synchronized with the local unit. Check the fiber for poor connections or optical losses greater than the unit specifications.
- **Green** (SYNC, LOOP) indicates that both local and remote units are communicating correctly.

## Typical Application of the 9245D



# Specifications for the Model 9245D

## OPTICAL

Model	MM	MM	MMH	MMH	SM
Fiber Size	50/125	62.5/125	50/125	62.5/125	09/125
Transmitter Optical Output Power (dBm)	-21	-17	-7	-7	-7
Transmitter Optical Output Wavelength (nm)	1310	1310	1310	1310	1310
Transmitter Optical Input Sensitivity (dBm)	-34	-34	-30	-30	-30
Maximum Transmitter Optical Input (dBm)	-10	-10	-5	-5	0
Receiver Optical Output Power (dBm)	-21	-17	-7	-7	-7
Receiver Optical Output Wavelength (nm)	850	850	1550	1550	1550
Receiver Optical Input Sensitivity (dBm)	-27	-27	-30	-29	-30
Maximum Receiver Optical Input (dBm)	-5	-5	0	0	0
Txmtr Opt Budget (Txmtr Out Pwr-Rcvr Input Sens) (dB)	6	10	23	22	23
Rcvr Opt Budget (Rcvr Out Pwr-Txmtr Input Sens) (dB)	13	17	23	23	23
Estimated Distance (km) 50 m <sup>1/2</sup>	3	N/A	19	N/A	N/A
Estimated Distance (km) 62.5 m <sup>1/2</sup>	N/A	4.6	N/A	19	N/A
Estimated Distance (km) 09 m <sup>1/2</sup>	N/A	N/A	N/A	N/A	57

<sup>1</sup>Range estimates based on fiber losses of 3.0 dB/km @ 850 nm and 1.0 dB/km @ 1310 nm and 1550 nm on 62.5/125 fiber, 0.35 dB/km @ 1310 nm and 0.25 dB/km @ 1550 nm on 09/125 fiber, and include a 3 dB safety factor.

<sup>2</sup>Range estimates may be affected by chromatic dispersion, modal dispersion, and fiber bandwidth capabilities. Multimode range estimates are based on fiber specifications of 500 Mhz/km.

## VIDEO

Video Sampling Rate/Resolution	16 Mhz, 9-bit
Video Input/Output Signal	NTSC or PAL, 1V p-p, 75W
Video Input/Output Connector	BNC
Video Bandwidth	6.5 Mhz (-3.0 dB)
SNR	≥63 dB
Differential Phase	≤1°
Differential Gain	≤2%

## DATA SPECIFICATIONS

RS232, RS422 2- and 4-wire, RS485 2- and 4-wire, Manchester (Bi-Phase, Burtle, American Dynamics), switch-selectable; Auto Baud, maximum data rate 115.2 Kbps

## POWER

Requirements	8 to 15 VDC
9225DR	370 mA @ 9 VDC
	360 mA @ 12 VDC
	350 mA @ 15 VDC

## PHYSICAL

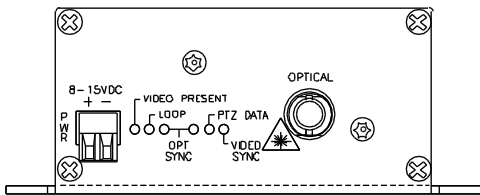
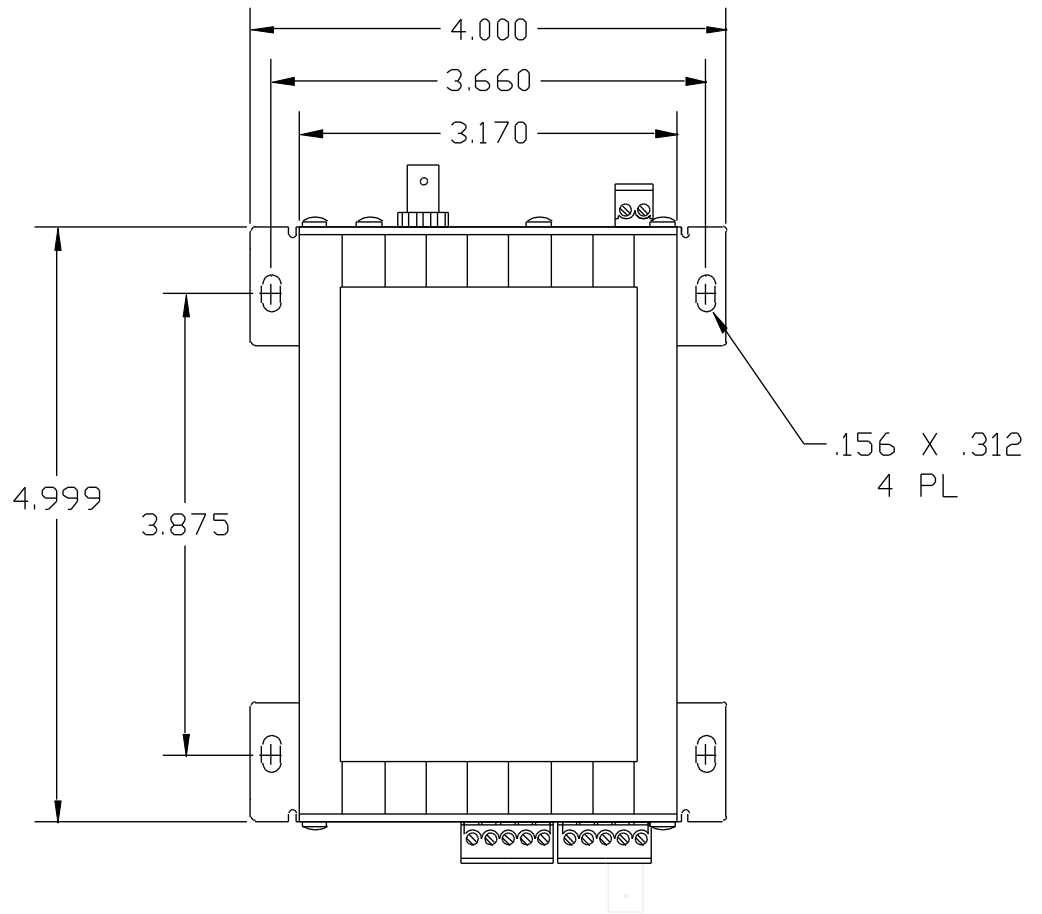
Dimensions (in inches)	1.6 H x 3.2 W x 5.0 D
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## ENVIRONMENTAL

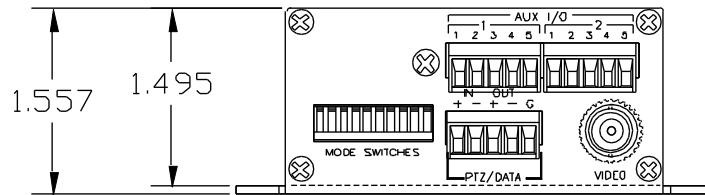
Operating Temperature	-40° C to +74° C
Storage Temperature	-55° C to +85° C
Relative Humidity	0 to 95% noncondensing

For installation in outdoor or hazardous locations, this unit should be housed in a properly rated NEMA enclosure.

# MECHANICAL



FRONT VIEW



REAR VIEW

NOTE: ALL DIMENSIONS ARE IN INCHES.



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