

# 924XD SERIES

### 1-channel video w/3 duplex data/option channels

#### DESCRIPTION

The 924xD series modules digitize and transport one video, one duplex data, and two Option Module channels operating in both directions over one optical fiber. The dedicated data channel and two user selected option data types make this model pair a flexible and powerful solution.

#### **FEATURES**

Single-channel video transmitters and receivers

9-bit uncompressed digital video

High-quality video 63dBw SNR

1 duplex user-configurable data channel(s)

2 duplex user-configurable option modules

Standalone and rack-mount versions

Network Management System (NMS) compatible





The wide operating temperature range of these units makes the 9241D series well-suited for environmentally harsh applications such as traffic monitoring, video surveillance in city centers, and federal and critical infrastructures.

The 9241D series comes as a rack-mount version, suitable for a 9002, 9003-2, or 9008 power supply cabinet, or as a standalone unit. The 9241D series modules are managed with the Optelecom Network Management System (NMS).

To create a standalone version of the 9241D rack-mount card, use the 9003-2 mini chassis.



| Video                                 |  |
|---------------------------------------|--|
| Video format                          | NTSC, PAL  |
| Video input                           | 1Vpp into 75                                       |
| Connector type                        | BNC  |
| Bandwidth                             | 5Hz to 6.5MHz (-3dB)                               |
| Differential gain                     | 1.0%   |
| Differential phase                    | 0.7°   |
| Signal-to-noise ratio                 | 63dBw  |
| Video encoding                        | Uncompressed 9-bit linear PCM                      |
| Video sampling rate                   | 16MHz  |
|                                       |  |
| Option modules                        |  |
| Number of free channels               | 2x duplex  |
| A Module                              | 1x audio   |
| B Module                              | 1x user-configurable data (RS-232, RS-422, RS-485) |
| C Module                              | 1x contact closure                                 |
| D or E Module                         | 2x audio (simplex only)                            |
| GM or GR Module                       | 2x intercom audio                                  |
|                                       |  |
| Management                            |  |
| LED status indicators                 |  |
| 9241DT                                | Cupa vidaa prasant                                 |
| 9241DR                                | Sync, video present                                |
| 9245DT                                | Sync, Tx video present                             |
| 9245DR                                | Sync, not sync, loop, RC, video present            |
|                                       | Sync, not sync, loop, RC, Tx video present         |
| Management system                     | 9900 Network Management System (NMS)               |
| Power requirements                    |  |
| 9241DT                                |  |
| Voltage                               | 6VDC (chassis)                                     |
| Current                               | 700mA  |
| 9241DR                                |  |
| Voltage                               | 6VDC (chassis)                                     |
| Current                               | 700mA  |
| 9245DT                                |  |
| Voltage                               | 8-15VDC  |
| Current                               | 360mA at 12VDC                                     |
| 9245DR                                |  |
| Voltage                               | 8-15VDC  |
| Current                               | 360mA at 12VDC                                     |
|                                       |  |
| Environmental                         |  |
| Operating temperature                 | -40°C to +74°C (-40°F to +165°F)                   |
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## Specs



| Mechanical           9241DT           Housing         1-slot card, 9000 series chassis           Dimensions (h x w x d)         154.9 x 20.3 x 218.4mm (6.1 x 0.8 x 8.6in)           Weight         272g (9.55cg)           9241DR         1-slot card, 9000 series chassis           Housing         1-slot card, 9000 series chassis           Dimensions (h x w x d)         154.9 x 20.3 x 218.4mm (6.1 x 0.8 x 8.6in)           Weight         272g (9.55cg)           9245DT         40.6 x 81.3 x 127.0mm (1.6 x 3.2 x 5.0in)           Housing         Standalone           Dimensions (h x w x d)         40.6 x 81.3 x 127.0mm (1.6 x 3.2 x 5.0in)           Weight         363g (12.8cz)           9245DR         40.6 x 81.3 x 127.0mm (1.6 x 3.2 x 5.0in)           Weight         36.3g (12.8cz)           9245DR         40.6 x 81.3 x 127.0mm (1.6 x 3.2 x 5.0in)           Weight         36.3g (12.8cz)           9245DR         924.0cc           Dimensions (h x w x d)         40.6 x 81.3 x 127.0mm (1.6 x 3.2 x 5.0in)           Weight         36.3g (12.8cz)           924.10DDR-MMH TX/RX         Fiber type           Melostic         40.6 x 81.3 x 127.0mm (1.6 x 3.2 x 5.0in)           Output wavelength         1310mm/1550mm           Output power   | Environmental               |  |
|--|-----------------------------|--|
| ### Standalone   | Storage temperature         | -55°C to +85°C (-67°F to +185°F)                                       |
| Page      | Relative humidity           | <95% with no condensation  |
| 1-slot card, 9000 series chassis   | Mechanical                  |  |
| Dimensions (h x w x d)         154.9 x 20.3 x 218.4mm (6.1 x 0.8 x 8.6in)           Weight         272g (9.55oz)           9241DR         Housing           Housing         1-slot card, 9000 series chassis           Dimensions (h x w x d)         154.9 x 20.3 x 218.4mm (6.1 x 0.8 x 8.6in)           Weight         272g (9.55oz)           9245DT         Housing           Housing         Standalone           Dimensions (h x w x d)         40.6 x 81.3 x 127.0mm (1.6 x 3.2 x 5.0in)           Weight         363g (12.8oz)           9245DR         Housing           Housing         Standalone           Dimensions (h x w x d)         40.6 x 81.3 x 127.0mm (1.6 x 3.2 x 5.0in)           Weight         363g (12.8oz)           Optical           9241DT/DR-MMH TX/RX           Fiber type         MM (62.5)           Output wavelength         1310nm/1550nm           Output power         -7.8bm/7-78Bm           Input sensitivity         -2.9dBm/-30dBm           System link budget         22.dB*/23.8B*           Fiber length (range)**         5M (09)           Output wavelength         1310nm/1550nm           Output power         -7.4Bm/7-74Bm           Input sensitivity         -3.  | 9241DT                      |  |
| Weight         272g (9.55oz)           9241DR           Housing         1-slot card, 9000 series chassis           Dimensions (h x w x d)         154 x 20.3 x 218.4mm (6.1 x 0.8 x 8.6in)           Weight         272g (9.55oz)           9245DT         Policy (1.6 x 3.2 x 5.0in)           Housing         Standalone           Dimensions (h x w x d)         40.6 x 81.3 x 127.0mm (1.6 x 3.2 x 5.0in)           Weight         363g (12.8oz)           9245DR         Policy (1.6 x 3.2 x 5.0in)           Housing         Standalone           Dimensions (h x w x d)         40.6 x 81.3 x 127.0mm (1.6 x 3.2 x 5.0in)           Weight         363g (12.8oz)           Optical           System in K w x d)           M (6.2 x 81.3 x 127.0mm (1.6 x 3.2 x 5.0in)           Weight           Optical           System in K w x d)           M (62.5)           Output wavelength         1310nm/1550nm           Output seviestivity         -29dBm/30dBm           System link budget         22dB*/23dB*           Fiber length (range)**         57km           Connector type         SM (09)           Output wavelength         1310nm/1550nm   | Housing                     | 1-slot card, 9000 series chassis                                       |
| 9241DR Housing 1-slot card, 9000 series chassis  Dimensions (h × w x d) 154.9 × 20.3 × 218.4mm (6.1 × 0.8 × 8.6in)  Weight 272g (9.55oz)  Housing Standalone  Dimensions (h × w x d) 40.6 × 81.3 × 127.0mm (1.6 × 3.2 × 5.0in)  Weight 363g (12.8oz)  9245DR  Housing Standalone  Dimensions (h × w x d) 40.6 × 81.3 × 127.0mm (1.6 × 3.2 × 5.0in)  Weight 363g (12.8oz)  9245DR  Housing Standalone  Dimensions (h × w x d) 40.6 × 81.3 × 127.0mm (1.6 × 3.2 × 5.0in)  Weight 363g (12.8oz)  Optical  9241DT/DR-MMH TX/RX  Fiber type MM (62.5)  Output wavelength 1310nm/1550nm  Output wavelength 22dB*/23dB*  Fiber length (range)** 19km  Connector type SM (09)  Output wavelength 1310nm/1550nm  Output power -7dBm/-7dBm  Input sensitivity -30dBm/-30dBm  System link budget 23dB/23dB  Fiber length (range)** 57km  Connector type ST (others optional)  **For 50/125m fiber, subtract 4dB.  *** Range may be limited by fiber bandwidth.   | Dimensions (h x w x d)      | 154.9 x 20.3 x 218.4mm (6.1 x 0.8 x 8.6in)                             |
| 9241DR Housing 1-slot card, 9000 series chassis  Dimensions (h × w x d) 154.9 × 20.3 × 218.4mm (6.1 × 0.8 × 8.6in)  Weight 272g (9.55oz)  Housing Standalone  Dimensions (h × w x d) 40.6 × 81.3 × 127.0mm (1.6 × 3.2 × 5.0in)  Weight 363g (12.8oz)  9245DR  Housing Standalone  Dimensions (h × w x d) 40.6 × 81.3 × 127.0mm (1.6 × 3.2 × 5.0in)  Weight 363g (12.8oz)  9245DR  Housing Standalone  Dimensions (h × w x d) 40.6 × 81.3 × 127.0mm (1.6 × 3.2 × 5.0in)  Weight 363g (12.8oz)  Optical  9241DT/DR-MMH TX/RX  Fiber type MM (62.5)  Output wavelength 1310nm/1550nm  Output wavelength 22dB*/23dB*  Fiber length (range)** 19km  Connector type SM (09)  Output wavelength 1310nm/1550nm  Output power -7dBm/-7dBm  Input sensitivity -30dBm/-30dBm  System link budget 23dB/23dB  Fiber length (range)** 57km  Connector type ST (others optional)  **For 50/125m fiber, subtract 4dB.  *** Range may be limited by fiber bandwidth.   | Weight                      | 272g (9.55oz)  |
| Dimensions (h x w x d)         154.9 x 20.3 x 218.4mm (6.1 x 0.8 x 8.6in)           Weight         272g (9.55oz)           9245DT  | 9241DR                      |  |
| Dimensions (h x w x d)         154.9 x 20.3 x 218.4mm (6.1 x 0.8 x 8.6in)           Weight         272g (9.55oz)           9245DT  | Housing                     | 1-slot card, 9000 series chassis                                       |
| Weight         272g (9.55oz)           9245DT         Housing           Dimensions (h x w x d)         40.6 x 81.3 x 127.0mm (1.6 x 3.2 x 5.0in)           Weight         363g (12.8oz)           9245DR         Housing           Standalone         Dimensions (h x w x d)           Weight         363g (12.8oz)           Optical           9241DT/DR-MMH TX/RX           Fiber type         MM (62.5)           Output wavelength         1310nm/1550nm           Output power         -7dBm/-7dBm           Input sensitivity         -29dBm/-30dBm           System link budget         22dB*/23dB*           Fiber length (range)**         19km           Connector type         ST (others optional)           9241DT/DR-SM TX/RX         Fiber type           SM (09)         Output wavelength           Output wavelength         1310nm/1550nm           Output power         -7dBm/-7dBm           Input sensitivity         -30dBm/-30dBm           System link budget         23dB/23dB           Fiber length (range)**         57km           Connector type         ST (others optional)           *** Range may be limited by fiber bandwidth.  | Dimensions (h x w x d)      |  |
| Housing   Standalone   | Weight                      | 272g (9.55oz)  |
| Dimensions (h x w x d)   | 9245DT                      |  |
| Weight         363g (12.8oz)           9245DR         Housing           Dimensions (h x w x d)         40.6 x 81.3 x 127.0mm (1.6 x 3.2 x 5.0in)           Weight         363g (12.8oz)    Optical  9241DT/DR-MMH TX/RX  Fiber type  MM (62.5)  Output wavelength  1310nm/1550nm  Output power  -7dBm/-7dBm  Input sensitivity  -29dBm/-30dBm  System link budget  22dB*/23dB*  Fiber length (range)**  19km  Connector type  ST (others optional)  9241DT/DR-SM TX/RX  Fiber type  SM (09)  Output wavelength  1310nm/1550nm  Output power  -7dBm/-7dBm  Input sensitivity  -30dBm/-30dBm  System link budget  23dB/23dB  Fiber length (range)**  57km  Connector type  ST (others optional)  ** For 50/125m fiber, subtract 4dB.  ** Range may be limited by fiber bandwidth.  Ordering information  | Housing                     | Standalone   |
| Standalone   | Dimensions (h x w x d)      | 40.6 x 81.3 x 127.0mm (1.6 x 3.2 x 5.0in)                              |
| Housing Standalone  Dimensions (h x w x d) 40.6 x 81.3 x 127.0mm (1.6 x 3.2 x 5.0in)  Weight 363g (12.8oz)  Optical  9241DT/DR-MMH TX/RX  Fiber type MM (62.5)  Output wavelength 1310nm/1550nm  Output power -7dBm/-7dBm Input sensitivity -29dBm/-30dBm System link budget 22dB*/23dB*  Fiber length (range)** 19km  Connector type ST (others optional)  9241DT/DR-SM TX/RX  Fiber type SM (09)  Output wavelength 1310nm/1550nm  Output power -7dBm/-7dBm Input sensitivity -30dBm/-30dBm  System link budget 22dB*/23dB*  Fiber type SM (09)  Fiber type SM (09)  Output wavelength 1310nm/1550nm  Output power -7dBm/-7dBm Input sensitivity -30dBm/-30dBm  System link budget 23dB/23dB  Fiber length (range)** 57km  Connector type ST (others optional)  ** For 50/125m fiber, subtract 4dB.  ** Range may be limited by fiber bandwidth.   | Weight                      | 363g (12.8oz)  |
| Dimensions (h x w x d)   | 9245DR                      |  |
| Optical 9241DT/DR-MMH TX/RX Fiber type MM (62.5) Output wavelength 1310nm/1550nm Output power -7dBm/-7dBm Input sensitivity -29dBm/-30dBm System link budget 22dB*/23dB* Fiber length (range)** 19km Connector type ST (others optional) 9241DT/DR-SM TX/RX Fiber length (range)** SM (09) Output wavelength 1310nm/1550nm Output wavelength 1310nm/1550nm Output power -7dBm/-7dBm Input sensitivity -30dBm/-30dBm System link budget 23dB/23dB Fiber length (range)** 57km Connector type ST (others optional) 92500tput wavelength 1500tput | Housing                     | Standalone   |
| Optical 9241DT/DR-MMH TX/RX Fiber type MM (62.5) Output wavelength 1310nm/1550nm Output power -7dBm/-7dBm Input sensitivity -29dBm/-30dBm System link budget 22dB*/23dB* Fiber length (range)** 19km Connector type ST (others optional) 9241DT/DR-SM TX/RX Fiber type SM (09) Output wavelength 1310nm/1550nm Output wavelength 1310nm/1550nm Output power -7dBm/-7dBm Input sensitivity -30dBm/-30dBm System link budget 23dB/23dB Fiber length (range)** 57km Connector type ST (others optional) **For 50/125m fiber, subtract 4dB. *** Range may be limited by fiber bandwidth.   | Dimensions (h x w x d)      | 40.6 x 81.3 x 127.0mm (1.6 x 3.2 x 5.0in)                              |
| 9241DT/DR-MMH TX/RX  Fiber type  | Weight                      | 363g (12.8oz)  |
| Output power -7dBm/-7dBm  Input sensitivity -29dBm/-30dBm  System link budget 22dB*/23dB*  Fiber length (range)** 19km  Connector type ST (others optional)  9241DT/DR-SM TX/RX  Fiber type SM (09)  Output wavelength 1310nm/1550nm  Output power -7dBm/-7dBm  Input sensitivity -30dBm/-30dBm  System link budget 23dB/23dB  Fiber length (range)** 57km  Connector type ST (others optional)  **System link budget 23dB/23dB  Fiber length (range)** 57km  Connector type ST (others optional)  **For 50/125m fiber, subtract 4dB.  *** Range may be limited by fiber bandwidth.  | Optical 9241DT/DR-MMH TX/RX |  |
| Output power -7dBm/-7dBm Input sensitivity -29dBm/-30dBm System link budget 22dB*/23dB* Fiber length (range)** 19km Connector type ST (others optional) 9241DT/DR-SM TX/RX Fiber type SM (09) Output wavelength 1310nm/1550nm Output power -7dBm/-7dBm Input sensitivity -30dBm/-30dBm System link budget 23dB/23dB Fiber length (range)** 57km Connector type ST (others optional) **For 50/125m fiber, subtract 4dB. *** Range may be limited by fiber bandwidth.  Ordering information  | Fiber type                  | MM (62.5)  |
| Input sensitivity -29dBm/-30dBm  System link budget 22dB*/23dB*  Fiber length (range)** 19km  Connector type ST (others optional)  9241DT/DR-SM TX/RX  Fiber type SM (09)  Output wavelength 1310nm/1550nm  Output power -7dBm/-7dBm  Input sensitivity -30dBm/-30dBm  System link budget 23dB/23dB  Fiber length (range)** 57km  Connector type ST (others optional)  *For 50/125m fiber, subtract 4dB.  *** Range may be limited by fiber bandwidth.   | Output wavelength           | 1310nm/1550nm  |
| System link budget 22dB*/23dB* Fiber length (range)** 19km  Connector type ST (others optional)  9241DT/DR-SM TX/RX Fiber type SM (09)  Output wavelength 1310nm/1550nm  Output power -7dBm/-7dBm  Input sensitivity -30dBm/-30dBm  System link budget 23dB/23dB  Fiber length (range)** 57km  Connector type ST (others optional)  *For 50/125m fiber, subtract 4dB.  ** Range may be limited by fiber bandwidth.   | Output power                | -7dBm/-7dBm  |
| Fiber length (range)**  Connector type  ST (others optional)  9241DT/DR-SM TX/RX  Fiber type  SM (09)  Output wavelength  1310nm/1550nm  Output power  -7dBm/-7dBm  Input sensitivity  -30dBm/-30dBm  System link budget  23dB/23dB  Fiber length (range)**  57km  Connector type  ST (others optional)  *For 50/125m fiber, subtract 4dB.  ** Range may be limited by fiber bandwidth.  Ordering information  | Input sensitivity           | -29dBm/-30dBm  |
| Connector type ST (others optional)  9241DT/DR-SM TX/RX  Fiber type SM (09)  Output wavelength 1310nm/1550nm  Output power -7dBm/-7dBm  Input sensitivity -30dBm/-30dBm  System link budget 23dB/23dB  Fiber length (range)** 57km  Connector type ST (others optional)  *For 50/125m fiber, subtract 4dB.  ** Range may be limited by fiber bandwidth.  Ordering information  | System link budget          | 22dB*/23dB*  |
| 9241DT/DR-SM TX/RX  Fiber type SM (09)  Output wavelength 1310nm/1550nm  Output power -7dBm/-7dBm  Input sensitivity -30dBm/-30dBm  System link budget 23dB/23dB  Fiber length (range)** 57km  Connector type ST (others optional)  *For 50/125m fiber, subtract 4dB.  ** Range may be limited by fiber bandwidth.  Ordering information   | Fiber length (range)**      | 19km   |
| Fiber type  SM (09)  Output wavelength  1310nm/1550nm  Output power  -7dBm/-7dBm  Input sensitivity -30dBm/-30dBm  System link budget 23dB/23dB  Fiber length (range)**  57km  Connector type  ST (others optional)  *For 50/125m fiber, subtract 4dB.  ** Range may be limited by fiber bandwidth.  Ordering information  | Connector type              | ST (others optional)   |
| Output wavelength  1310nm/1550nm  Output power  -7dBm/-7dBm  Input sensitivity  -30dBm/-30dBm  System link budget  23dB/23dB  Fiber length (range)**  57km  Connector type  ST (others optional)  *For 50/125m fiber, subtract 4dB.  ** Range may be limited by fiber bandwidth.  Ordering information   | 9241DT/DR-SM TX/RX          |  |
| Output power -7dBm/-7dBm Input sensitivity -30dBm/-30dBm System link budget 23dB/23dB Fiber length (range)** 57km Connector type ST (others optional) *For 50/125m fiber, subtract 4dB. ** Range may be limited by fiber bandwidth.  Ordering information  | Fiber type                  | SM (09)  |
| Input sensitivity -30dBm/-30dBm  System link budget 23dB/23dB  Fiber length (range)** 57km  Connector type ST (others optional)  *For 50/125m fiber, subtract 4dB.  ** Range may be limited by fiber bandwidth.  Ordering information  | Output wavelength           | 1310nm/1550nm  |
| System link budget 23dB/23dB  Fiber length (range)** 57km  Connector type ST (others optional)  *For 50/125m fiber, subtract 4dB.  ** Range may be limited by fiber bandwidth.  Ordering information   | Output power                | -7dBm/-7dBm  |
| Fiber length (range)**  Connector type  ST (others optional)  *For 50/125m fiber, subtract 4dB.  ** Range may be limited by fiber bandwidth.  Ordering information   | Input sensitivity           | -30dBm/-30dBm  |
| Connector type ST (others optional)  *For 50/125m fiber, subtract 4dB.  ** Range may be limited by fiber bandwidth.  Ordering information  | System link budget          | 23dB/23dB  |
| *For 50/125m fiber, subtract 4dB.  ** Range may be limited by fiber bandwidth.  Ordering information   | Fiber length (range)**      | 57km   |
| ** Range may be limited by fiber bandwidth.  Ordering information  | Connector type              | ST (others optional)   |
| Ordering information   |                             | *For 50/125m fiber, subtract 4dB.                                      |
|  |                             | ** Range may be limited by fiber bandwidth.                            |
|  | Ordering information        |  |
|  | 9241DT(XX)/MMH-ST           | 1-channel video with 3 duplex data/option channels   Fiber type : 1xMM |





| 1-channel video with 3 duplex data/option channels   Fiber type : 1xMM |
|--|
| 1-channel video with 3 duplex data/option channels   Fiber type : 1xSM |
| 1-channel video with 3 duplex data/option channels   Fiber type : 1xSM |
| Standalone version of the 9421D transmitter model                      |
| Standalone version of the 9421D receiver model                         |
| le Option Modules  |
| t or contact TKH Security Solutions                                    |
|  |



