

# T ELOS DIRECT INTERFACE MODULE

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The Telos Direct Interface Module is a flexible, electronic telephone system for broadcast, teleconferencing, distance learning, and other professional applications. A wide range of configurations are possible when it serves as the heart of a complete system incorporating Telos digital hybrid telephone interfaces and companion control and screening equipment.

The Direct Interface Module provides clean, quiet, and reliable switching of multiple telephone lines. Phone lines may be easily connected without intervening phone equipment. The Direct Interface Module boasts low noise and distortion and flat frequency response.

Telos' wide range of companion equipment contributes to convenient, intuitive operation. Line selection can be accomplished with the desktop Switch Console or with one of numerous modular panels designed to fit into popular models of broadcast audio consoles. A full-featured electronic phone is available for call screening. Screening and line control can also be accomplished with Telos' Call Screen Manager software.


- Specifically designed for professional applications.
- Controls up to ten telephone lines.
- Conferences two callers via two connected, external hybrids.
- Multiple controllers can be connected for operation from several locations.
- Call screening options enhance flexibility.
- Serial communications port permits computer control and screening.
- A complete telephone system including caller conferencing, program-on-hold, and auto-answer.
- Capable of interfacing with other electronic phone systems.
- Features accessible through controllers include tone/pulse dialing, automatic next-caller indication, external page, and control of external devices, such as audio recorders.



## MULTILINE BROADCAST TELEPHONE SYSTEM

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# OVERVIEW



The Telos Direct Interface Module, when configured with appropriate hybrids and accessories, offers a complete solution to the screening, control, and selection of multiple telephone lines and callers. Communication between the Direct Interface Module and its peripherals is via serial data over "skinny wire" using modular, six-conductor cables. Multiple control points are easily accommodated, and one or two telephone sets can be used for call screening.

The Direct Interface Module connects directly to ordinary phone lines. Up to ten lines may be switched into one or two Telos hybrids. Up to two screener phones may be connected. Standard configurations support one or two controllers, but an unlimited number of controllers can be accommodated.

## System configuration

Telephone lines connect via standard RJ-11 jacks. Telephone line activity is indicated on front panel LEDs. Various Direct Interface Module operational options are set through the use of internal switches.

System configuration starts with the telephone hybrids. If only one caller is to be placed on-air, a single Telos digital hybrid telephone interface may be used. Two hybrids are strongly recommended when two callers are to be conferenced to provide adequate caller-to-caller gain. While two callers can be placed on a single hybrid, they may not hear each other adequately. When two hybrids are used, an individual mix-minus must be created for each as the Direct Interface Module does not have that facility.

The desktop Switch Console is used for system control and line selection. Plugs are provided for two Switch Consoles. If additional controller surfaces are required, or if the distance between the controllers and the Direct Interface Module is great, our Local Power Supply is needed. The Local Power Supply can power two controllers and has a data-through port, so additional Local Power Supplies can be connected in series.

Alternatives to the Switch Console are the controller panels available for the consoles of several broadcast equipment manufacturers. These retain most of the features of the desktop Switch Console. Kits are also available for those who want to build the required switches and electronics into their own chassis. Switch Consoles and console mounted panels may be used in any combination with a single Direct Interface Module.

The primary device used for call screening is the Mitel Superset 4. The Direct Interface Module was designed to work specifically with this full-featured electronic phone. One or two Mitel phones may be used. The second phone may alternately be a standard single-line telephone set. As line selection to the standard set is performed by a Switch Console or other controller, use of the standard set is limited to installations where one caller will not be screened while another is on-air.

The serial connection is RS-232, IBM AT format. It provides full control and status monitoring for integration with an external computer. Telos' Call Screen Manager software is designed for both call screening and system control. It is recommended that, when using Call Screen Manager, at least one Mitel phone and one Switch Console be connected to the system for access to all system features.

XLR connectors are provided for the program-on-hold and page signals. Program-on-hold is controlled by an AGC and its peak level is indicated by a front panel LED.

# FEATURES AND BENEFITS

■ Designed to provide the audio performance demanded by broadcast and other professional applications. Telephone audio arrives at the connected hybrid(s) without degradation and without the quality problems caused by standard “business” phone systems.

■ Simple and intuitive conferencing. Connections for up to two hybrids permit high-quality conferencing, with caller-to-caller gain so that callers hear each other clearly.

■ Desktop Switch Console provides all control functions, including line selection, dialing, and special features. Connection to the Direct Interface Module is by skinny-wire, serial cable.

■ Control panels available for popular models of broadcast consoles. Kits are also available for those who wish to construct their own control surfaces.

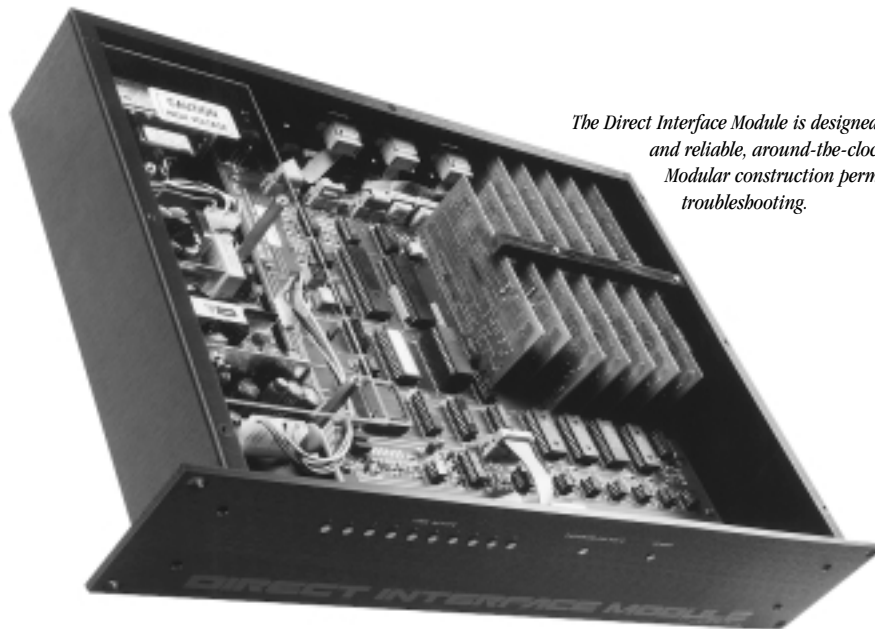
■ Program-on-hold function incorporates automatic gain control (AGC) and has an XLR balanced input. Callers on hold hear audio you select while waiting to be placed on-air.

■ A page/cueing feed, with an XLR balanced output, can be activated from Mitel phones. The feed can be used to provide a traditional paging function by connection to an external speaker system. Or it may be sent to talent or participant headphones for voice cueing.

■ Serial communications (RS-232) port allows integration with computerized screening and control systems, such as Call Screen Manager. The Direct Interface Module manual fully describes the data protocol for those who want to write their own software.

■ Auto-answer feature connects incoming lines and places them on hold without operator intervention.

■ Loop-through allows integration with other phone systems and PBXs.



*The Direct Interface Module is designed for clean audio and reliable, around-the-clock operation. Modular construction permits fast “swap-out” troubleshooting.*

There are many ways to configure a Direct Interface Module system. Below are the systems selected most frequently by our users.

### Single-Hybrid System A

This basic system uses the popular Telos ONE digital hybrid with the Direct Interface Module. The Telos ONE can be purchased in the rack mounting version shown or in a compact modem-style case. A Switch Console is used for control and a Mitel phone for screening.



### Single-Hybrid System B

Our Telos 100 Delta advanced digital hybrid (with digital dynamic equalization) provides superior telephone audio as part of this system. A Switch Console is used to control the Direct Interface Module, and a Mitel phone is used for screening.



### Dual-Hybrid System A

This two-hybrid system uses two Telos ONE digital hybrids with the Direct Interface Module. The Telos ONEs can be purchased in the rack mounting version shown or in a compact modem-style case. A Switch Console is used for control and a Mitel phone for screening. The individual mix-minus signals for each hybrid must be created by the user.



### Dual-Hybrid System B

This system uses the Telos ONE plus ONE dual digital hybrid. With two hybrids and a built-in mix-minus matrix, the ONE plus ONE saves space and requires only one mix-minus signal. A Switch Console is used to control the Direct Interface Module, and a Mitel phone is used for screening.



### Dual-Hybrid System C

The most natural sounding conferencing is possible with this system that uses two Telos 100 Delta digital hybrids. A Switch Console is used to control the Direct Interface Module, and a Mitel phone is used for screening. This system may also use one Telos 100 Delta and one Telos ONE for a more economical system with only occasional conferencing.



# C ONTROL PERIPHERALS

## Switch Console

This desktop controller has provisions for line selection, conferencing, dialing, and a number of special features. Up to ten telephone lines may be assigned to each of the two rows of line control buttons. The top row is designated as the "main" row, while the lower row is the "conference" row. Either row may be used to select lines, and each has its own buttons for dropping a line or placing it on hold. In systems with two hybrids, each bank connects to its own hybrid. Calls may be moved from row to row (effectively from hybrid to hybrid) without being dropped.

Each LINE button has two associated LEDs above it. A red, bar-shaped LED indicates telephone line status. A yellow, round LED above the LINE buttons shows which lines are being fed to active hybrids.

From the tone pad, outgoing calls may be placed. A switch inside the Direct Interface Module determines whether dialing is tone or pulse.

### Six special function buttons appear on the Switch Console:

#### NEXT

Selects the line that has been ringing in the longest. If no lines are ringing in, it selects the line on screened hold the longest.

#### BUSY ALL

With the first press of this button, all lines that are neither in use nor on hold are made busy. On the second press, busy lines are dropped. One or more lines may be programmed as "hot lines" and will not be affected by the BUSY ALL feature. This function is helpful in preventing callers from jamming your phone lines just prior to accepting calls for a contest.



#### FLASH/NEW or AUTO-ANSWER

A dip switch inside the Direct Interface Module selects which of these features is controlled by the button. The FLASH/NEW function is primarily for use with PBXs or Centrex telephone lines that require hook flash to access features. The FLASH/NEW button can also be used for dropping a line, that is, to hang up a line and get a dial tone back on the selected line without going through the usual OFF and LINE button press sequence. This button is useful for dropping a line when a wrong number is dialed or if many calls are to be made on the same line.

This button can alternately be used to toggle on and off the AUTO-ANSWER feature. The AUTO-ANSWER feature automatically answers lines that ring-in and places them on screened hold. Once on screened hold, the callers will hear the program-on-hold source. You have the option of keeping AUTO-ANSWER on or off at all times if you choose to have this button used for the FLASH/NEW function.

#### RECORD MODE

This button enables the operator to conveniently start a tape recorder. To ready the RECORD MODE, push the button once. The next time any LINE button is pressed, an output on the back of the Direct Interface Module will be activated to start a recording device.

#### RECORD STOP

When this button is pushed, a closure output on the back of the Direct Interface Module stops the recording device. You may choose to assign another function to this button and closure.

#### DELAY DUMP/USER BUTTON

This button activates an external profanity delay via a closure output on the back of the Interface Module. You may choose to assign another function to this button and closure.

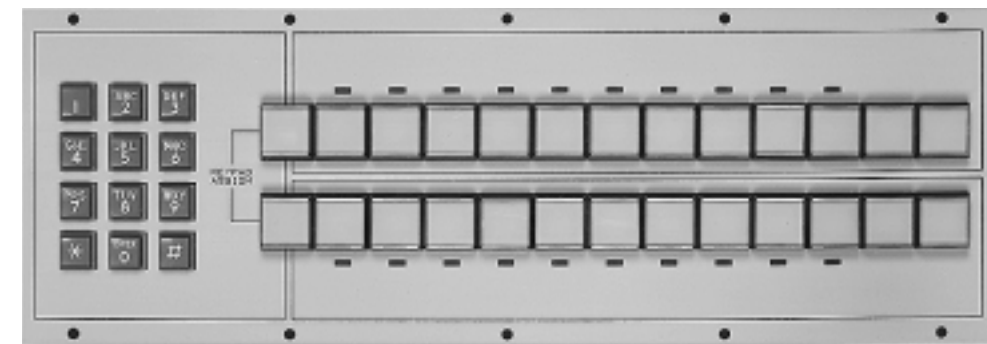
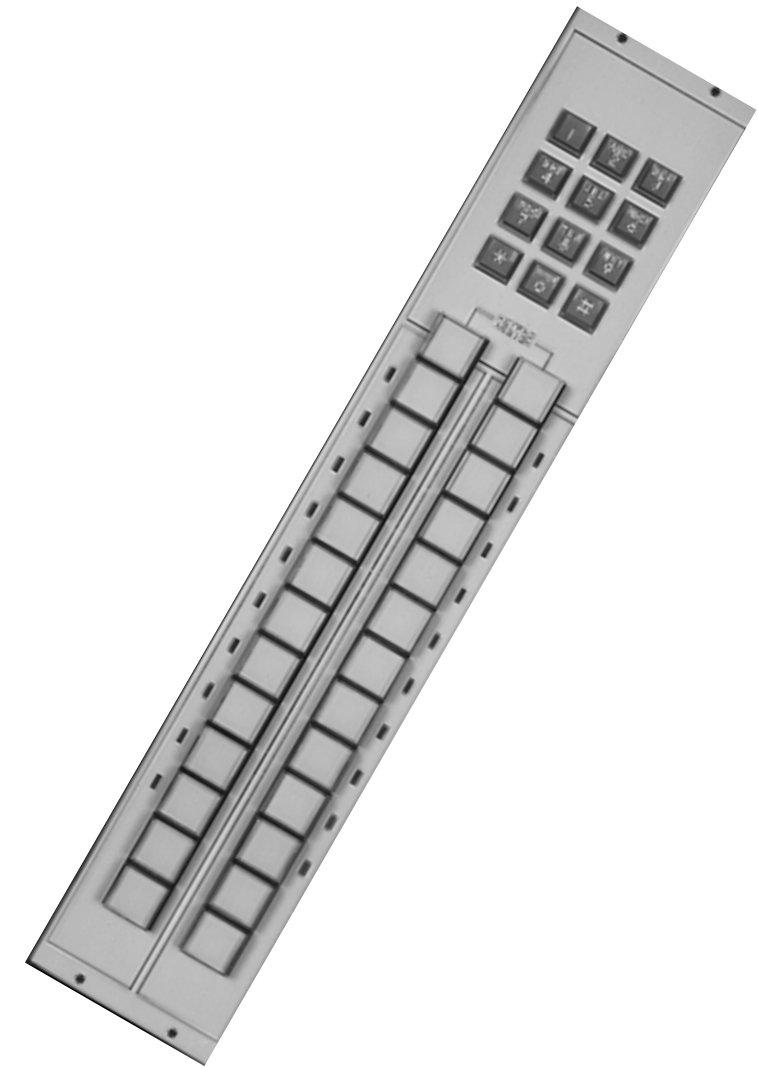
An assortment of LINE button legends are provided or you may easily create your own. Switch Consoles may be located up to 100' from the Direct Interface Module, from which it draws its power, without the use of a Local Power Supply. The Local Power Supply extends the operational distance to 250'.

## Console and Turret Mounted Controllers

These panels allow telephone line selection and dialing functions to be located at the operator's center of attention. They are manufactured, painted, and screened for an exact fit and finish match with the consoles for which they are intended. With the exception of the six special functions, all Switch Console operations are supported.

Panels are available for selected console models from Pacific Recorders & Engineering and other manufacturers. Contact your Telos dealer or representative for a list of currently available models.

The electronics and switch packages used in these controllers are also available as kits, without the metal front panel, for local mounting. Console panels and kits may be located up to 25' from the Direct Interface Module, from which it draws its power, without the use of a Local Power Supply.



# S SCREENING PERIPHERALS

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## **Unique Mitel phone/Direct Interface Module features include:**

- A PAGE button that connects the phone audio to the page audio output of the Direct Interface Module. Normally used to feed a public address system, it may also be used for IFB or other applications where an audio feed from the Mitel handset is desired.
- A NEXT button that, when pressed, will seize the line that has been ringing in the longest.
- A SCREENED HOLD button that enables a special blink rate on the red-bar LED on the Switch Console. Pressing this button when any line is seized will put that line on hold and feed the caller program-on-hold. This button is used to differentiate between screened callers and others on hold.
- A speakerphone that allows hands-free operation.



# TECHNICAL DESCRIPTION



## Integration with other telephone systems

Ideally, phone lines used with the Direct Interface Module should not be connected to another telephone system. We do know that sometimes this cannot be avoided.

A special loop-through feature with line current detection permits integration with many PBXs and electronic telephone systems. Line supervision (the ability of one system to prevent a line in use from being accessed by the other system) varies among electronic phone systems.

Some electronic phone systems have ports designed to connect standard single-line telephone sets. Since these ports appear as standard phone lines, they can be readily connected to the Direct Interface Module. When the Direct Interface Module is installed after other PBX equipment, audio quality may be degraded by that electronic phone system.

## Using more than two hybrids

When conferencing callers, it is desirable to have one hybrid dedicated to each caller. The Direct Interface Module is limited, however, to two hybrids. This limit can be expanded by assigning one or more “hot” phone lines to dedicated hybrids outside of the Direct Interface Module system. Alternately, the hybrid can be looped through one of the Direct Interface Module’s phone line connections. In both of these cases, control of these “out-of-system” hybrids must be developed by the user.

Telos Systems offers several other multiline, multi-hybrid options. Contact us or your dealer or representative for details.





# TECHNICAL SPECIFICATIONS

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## **System**

Interface Module uses 80188 processor running software written in the "C" language.

## **Telephone Path Noise**

>80dB

## **Telephone Path Distortion**

<0.25%

## **Music On Hold Input**

XLR female connector. Active balanced. 10k $\Omega$  input impedance. -20 to +4dBu level. An AGC circuit maintains consistent levels to hold callers for any input level within this range.

## **Page Output**

XLR male connector. Transformer balanced. -10 to 0dBu level.

## **Communication Between Controller and Interface Module**

9600 Baud RS-232 using six-conductor modular cable.

## **RS-232 Port**

1200 Baud using "AT" style DB-9 connector. Simple ASCII commands are used for communication in both directions.

## **Included Accessories**

Manual with pull-out user instructions, ten 7', four-conductor modular cords, DB-style connector kit, and power cord.

## **Physical Dimensions**

Standard rack mount, two rack units high.  
12 $\frac{1}{2}$ " deep (30.8 cm)

## **Weight**

9 pounds (17 pounds shipping weight)  
3.6 kilograms (7.7 kilograms shipping weight)

## **Power Supply**

Universal, input switching operable from 85VAC to 25VAC, 50Hz or 60Hz. Power consumption 15 watts. Incorporates surge suppression and line voltage "dip" protection.

## **Switch Console**

### **Included Accessories**

25' modular cable and preprinted button designation sheets.

### **Installation to Direct Interface**

Via six-conductor modular cable. Can be located up to 100' from the Direct Interface Module; 250' with the Local Power Supply installed.

### **Physical Dimensions**

3 $\frac{3}{8}$ " x 2 $\frac{3}{4}$ " x 4 $\frac{1}{4}$ "  
8.1cm x 7.0cm x 10.8cm

### **Weight**

1 pound (6 pounds shipping weight)  
0.5 kilograms (2.7 kilograms shipping weight)

## **Mitel Superset 4**

### **Software Version**

Software version 025A is required for operation with the Direct Interface Module.


### **Physical Dimensions**

Can be operated horizontally or vertically.  
7 $\frac{15}{16}$ " x 6" x 10 $\frac{1}{2}$ "  
20.1cm x 15.2cm x 26.7cm

### **Weight**

3 pounds (4 pounds shipping weight)  
1.4 kilograms (1.8 kilograms shipping weight)

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