

# Interactive Audio Recording and Webcasting System



**Interactive Audio Recording and Webcasting System**

<b>Interactive Audio Recording and Webcasting System</b> .....	<b>2</b>
<b>TES-560x Series Digital Infrared Wireless Microphone</b> .....	<b>4</b>
TES-5604N_W Digital Infrared Wireless Microphone (white, built-in rechargeable lithium battery, excl. adapter, used with TES-5600NS series neck lanyard).....	4
TES-5606 Digital Infrared Wireless Microphone (built-in rechargeable lithium battery, excl. adapter, used with TES-5600NS series neck lanyard).....	5
TES-1021 Clip Microphone.....	6
TES-1022 Single-ear Microphone.....	6
TES-1023 Head-worn Microphone.....	6
<b>TES-5600 Series Wired Desktop Microphone</b> .....	<b>7</b>
TES-5600MIC Wired Desktop Microphone (standard stem microphone: 60cm, optional: 50/70cm).....	7
TES-5600CSMN Wired Desktop Microphone (standard stem microphone: 60cm, optional: 50/70cm; with a lockable charging station for one TES-5604 series microphone, can be unlocked via central control system or via network management system; support network management when used with TES-5604NSW Wireless Microphones Management Platform; with TES- ADP5V power adapter).....	7
TES-5600CSML Wired Desktop Microphone (standard stem microphone: 60cm, optional: 50/70cm; with a lockable charging station for one TES-5604 series microphone, can be unlocked by scanning QR code or via central control system; with TES- ADP5V power adapter).....	8
TES-5600CSM Wired Desktop Microphone (standard stem microphone: 60cm, optional: 50/70cm; with a charging station for two TES-5604 series microphones, with TES- ADP5V power adapter).....	8
MS50EGD2B Stem Microphone (50cm, built-in windshield, flexible gooseneck tube, for TES-5600 series Wired Desktop Microphone, black).....	9
MS60EGD2B Stem Microphone (60cm, built-in windshield, flexible gooseneck tube, for TES-5600 series Wired Desktop Microphone, black).....	9
MS70EGD2B Stem Microphone (70cm, built-in windshield, flexible gooseneck tube, for TES-5600 series Wired Desktop Microphone, black).....	9
<b>TES-568x Series Classroom Audio System</b> .....	<b>10</b>
TES-5680M/30 Interactive Audio Recording System Receiver (with built-in array microphone, high performance DSP with ANC, AEC and AGC algorithm, with digital infrared receiver).....	10
TES-5680BX/30 Interactive Audio Recording System Control Box (supports 2 wireless microphones, 1 line in, 1 line out + 1 output for recording, digital audio input/output (micro USB), built-in audio power amplifier for connection to 4 loudspeakers, with TES-ADP24V adapter).....	10
TES-5685MA-F/30 Interactive Audio Recording System Main Unit (with built-in array microphone, high performance DSP with ANC, AEC and AGC algorithm, audio localization, with digital infrared receiver, supports 2 wireless microphones, with analog audio input/output, output for recording, built-in audio power amplifier and integrated loudspeakers, RJ45 interface for extending receiver, Type F plug).....	12
TES-5685MA-B/30 Interactive Audio Recording System Main Unit (with built-in array microphone, high performance DSP with ANC, AEC and AGC algorithm, audio localization, with digital infrared receiver, supports 2 wireless microphones, with analog audio input/output, output for recording, built-in audio power amplifier and integrated loudspeakers. RJ45 interface for extending receiver. Type B plug)	14
TES-5685BX/30 Function Extension Box (for TES-5685M, analog audio input/output, can connect to TES-5604CS series charging station, with 1 line in and 1 line out).....	16
TES-5685BXP/30 Function Extension Box (for TES-5685M series, analog audio input/output, 1 line out+1 line in, 1 input for public address system, 1 PA trigger, can connect to TES-5604CS series charging station).....	16

## Interactive Audio Recording and Webcasting System

### System overview

TAIDEN, the world's leading supplier of conference system equipment, has successfully equipped many international conference projects such as the United Nations Headquarters, the Council of Europe, G20 summit, APEC summit and ASEM summit. As early as in 2008, TAIDEN developed the digital infrared processing chip, based on which it built the digi and invented the digital infrared conference system, making itself stand out from other rivals.

In 2015, TAIDEN introduced its worldwide pioneering digital infrared technology into the field of multimedia teaching and released the world's first digital infrared wireless classroom audio system. The system provides an ideal solution for teaching environment owing to its various advanced features such as great immunity to interferences, reliable privacy assurance, convenient management and excellent audio clarity.

Not stopping there, TAIDEN developed Interactive Recording and Webcasting Audio System dedicated to recording teacher's instruction and students' interaction in class by integrating digital infrared technology, DSP technology with array microphone. The system ensures broadcast level audio quality by picking up teachers' sound with IR microphone, and the sound can be separately routed to the classroom reinforcement system. A 360-degree array microphone is used to pick up students' interactive activities; the sound will be further processed by the "3A" algorithm (ANC, AEC, AGC) and then mixed with the teacher's audio to be fed into a third-party recording system. The Interactive Recording and Webcasting Audio System makes a perfect audio solution for class recording and reinforcement by offering crystal-clear reproduction class activities.

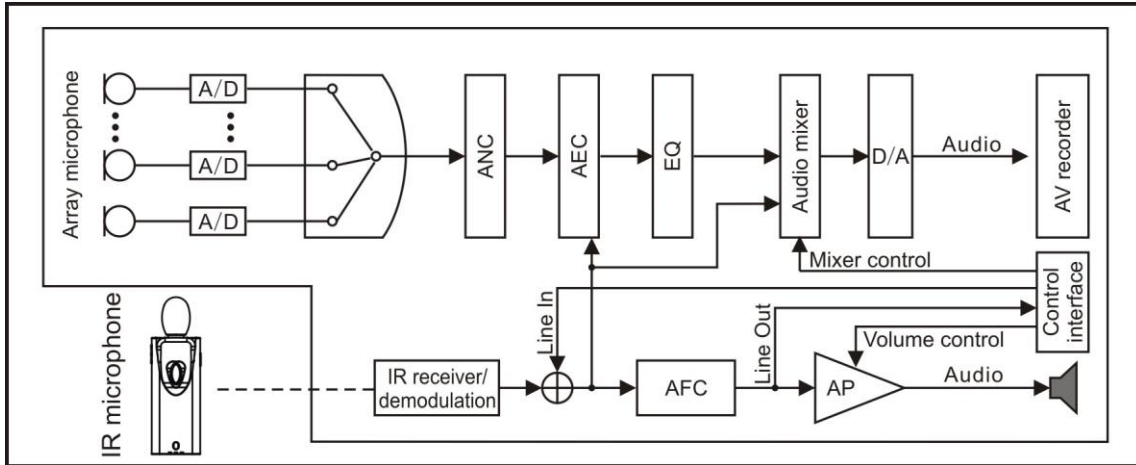
### System features

- High quality sound pickup for both the teacher and students, to make every classroom a professional studio
- Original dirATC - digital infrared wireless transmission and control technology
- Digital infrared microphone for the teacher:
  - ◆ Full channel frequency response: 50 Hz ~ 20 kHz
  - ◆ SNR:  $\geq 90$  dBA
  - ◆ Total harmonic distortion:  $\leq 0.05\%$
- Built-in array microphone for students:
  - ◆ Directivity:  $\pm 15^\circ$  Beam forming
  - ◆ Frequency response: 100 Hz ~ 10 kHz
  - ◆ SNR:  $\geq 65.5$  dBA
  - ◆ Total harmonic distortion:  $\leq 0.1\%$
  - ◆ Pickup range: 5 m radius with medium ambient noise  
8 m radius in a quiet environment
- High performance digital signal processor (DSP): automatic noise canceller (ANC), acoustic echo canceller (AEC) and automatic gain control (AGC)
- Advanced artificial intelligence (AI) technology to realize automatic sound direction detection
- The voice of the teacher and the students will be mixed before being fed into a recorder, the mixing ratio is adjustable to get the optimal sound balance between the teacher and students

- Student microphone can be muted or its transmission gain can be decreased to improve the teacher's audio clarity
- Selectable infrared carrier frequency for simultaneous use of two wireless microphones
- Optional charging station for wireless microphone
- Wired microphone with charging station for wireless microphone, which built-in electronic lock to safeguard the wireless microphone, scan the QR code with mobile phone to unlock, or through central control or network management system to unlock
- Built-in digital audio power amplifier for easy sound reinforcement
- 1 Line in (PC IN), 1 Line out (LINE), 1 audio recording output (REC)
- USB Link function:
  - ◆ Digital audio input/output:
    - Lossless recording of digital audio signals via USB
    - Lossless import of streaming audio into the system
  - ◆ Power point slide navigation on the teacher microphone (TES-560x series)
- Can be connected to a central control system for centralized management
- Highly integrated, and easy to install



Schematic diagram of classroom audio system



Products and functions list:

Function \ Type	TES-5680M + TES-5680BX	TES-5685MA
IR Mic	2	2
Array Mic.	•	•
Audio amplifier	•	•
Built-in speakers		•
ANC	•	•
AEC	•	•
AGC	•	•
PC IN/ LINE Out	•	• (with TES-5685BX)
MIC IN (TES-5600CSM Series)	•	• (with TES-5685BX)
REC.	•	•
Analog audio input/output		•
Digital audio input/output	•	
Power point slide	•	
Interface	RJ45	RJ45

**Note:**

ANC: Automatic Noise Canceller; AEC: Acoustic Echo Canceller; AGC: Automatic Gain Control



# TES-5606 Digital Infrared Wireless Microphone



### Functions

- Original dirATC—digital infrared audio transmission and control technology
- Infrared transmitting carrier frequency conforms to IEC 61603-7, DQPSK digital modulation/demodulation technology
- Insusceptible to interferences from HF-driven lighting and works perfectly in sunlight
- Supports audio input from external microphones (USB)
- Volume adjustment of the microphone
- Remote control of PPT slides
- Supports PTT (push to talk)
- Transmitter powers off automatically when no voice is detected for a preset period of time
- Microphone channel adjustable
- Ergonomically compact and elegant design, can be held in hand or hung around the neck via a nice strap or fit on the necktie
- Emission angle: vertical: 0°~ 90°, horizontal: 120°
- Emission range: linear transmitting distance: over 25 m
- Supports Lithium battery, battery life: 5 hours
- Charge via USB port (compatible with mobile phone charger)

### Controls and Indicators

- Microphone on/off button
- Microphone volume up/down button
- Microphone on (MIC) indicator
- PPT mode indicator
- Charging indicator
- “F” button: select MIC/PPT mode

### Interconnections

- USB port for charging

### Technical Specifications

#### Electrical

IR transmission wavelength_____	870 nm
Modulation method_____	DQPSK
Power_____	DC 5 V, 2 A
Carrier frequency_____	Audio channel 1: 1.00 MHz
	Audio channel 2: 1.67 MHz
	Audio channel 3: 2.33 MHz
	Audio channel 4: 3.0 0MHz
	Audio channel 5: 3.67 MHz
Capacity of battery_____	1000 mAh
When mic. is continuously on_____	Approx. 5 hours

#### Mechanical

Dimensions (h x w x d)_____	76 x 25 x 20 mm
Weight_____	40 g

### Ordering Information

TES-5606_____	Digital Infrared Wireless Microphone (built-in rechargeable lithium battery, excl. adapter, used with TES-5600NS_W neck lanyard or TES-5600CLP clip)
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## TES-1021 Clip Microphone



### Features

- Stylish and ergonomic design
- Used for TES-5604 series microphones
- Excellent immunity to RF interferences from mobile phones
- Ø 3.5 mm stereo plug with a 0.3-meter cable
- Color: black (PANTONE 419 C)
- Weight: 10 g

### Ordering Information

TES-1021.....Clip Microphone

## TES-1023 Head-worn Microphone



### Features

- Stylish and ergonomic design
- Used for TES-5604 series microphones
- Excellent immunity to RF interferences from mobile phones
- Ø 3.5 mm stereo plug with a 1-meter cable
- Weight: 18 g

### Ordering Information

TES-1023.....Head-worn Microphone

## TES-1022 Single-ear Microphone



### Features

- Stylish and ergonomic design
- Used for TES-5604 series microphones
- Excellent immunity to RF interferences from mobile phones
- Ø 3.5 mm stereo plug with a 0.55-meter cable
- Weight: 11 g

### Ordering Information

TES-1022.....Single-ear Microphone

**TES-5600MIC  
Wired Desktop Microphone**



**Features**

- Standard stem microphone
- 1 audio cable with USB port for connecting to main unit/ control box to transmit audio
- 1 microphone on/off button
- Dimensions (h x w x d, without stem): 43x135x132 mm
- Color: black (PANTONE 419 C)
- Weight: 0.5 kg

**Ordering Information**

TES-5600MIC.....Wired Desktop Microphone (standard stem microphone: 60cm, optional: 50/70cm)

**TES-5600CSMN  
Wired Desktop Microphone**



**Features**

- Standard stem microphone
- 1 audio cable with USB port for connecting to main unit/ control box to transmit audio
- 1 microphone on/off button
- 1 lockable charging station for one TES-5604 microphone
- Support connecting to central control system via RS232 for unlocking microphone
- Support network management for unlock microphone, microphone status display, setting classroom information
- 1 USB port for connecting to TES-ADP5V adapter
- Dimensions (h x w x d, without stem): 53x135x132 mm
- Color: black (PANTONE 419 C)
- Weight: 0.6 kg

**Ordering Information**

TES-5600CSMN.....Wired Desktop Microphone (standard stem microphone: 60cm, optional: 50/70cm; with a lockable charging station for one TES-5604 series microphone, can be unlocked via central control system or via network management system; support network management when used with TES-5604NSW Wireless Microphones Management Platform; with TES- ADP5V power adapter)



**TES-5600CSML  
Wired Desktop Microphone**



**Features**

- Standard stem microphone
- 1 audio cable with USB port for connecting to main unit/ control box to transmit audio
- 1 microphone on/off button
- 1 lockable charging station for one TES-5604 microphone
- Support connecting to central control system via RS232 for unlocking microphone
- Support unlocking via scanning QR code
- 1 USB port for connecting to TES-ADP5V adapter
- Dimensions (h x w x d, without stem): 53x135x132 mm
- Color: black (PANTONE 419 C)
- Weight: 0.6 kg

**Ordering Information**

TES-5600CSML.....Wired Desktop Microphone (standard stem microphone: 60cm, optional: 50/70cm; with a lockable charging station for one TES-5604 series microphone, can be unlocked by scanning QR code or via central control system; with TES- ADP5V power adapter)

**TES-5600CSM  
Wired Desktop Microphone**



**Features**

- Standard stem microphone
- 1 audio cable with USB port for connecting to main unit/ control box to transmit audio
- 1 microphone on/off button
- 2 charging stations for TES-5604 microphones
- 1 USB port for connecting to TES-ADP5V adapter
- Dimensions (h x w x d, without stem): 53x135x132 mm
- Color: black (PANTONE 419 C)
- Weight: 0.6 kg

**Ordering Information**

TES-5600CSM.....Wired Desktop Microphone (standard stem microphone: 60cm, optional: 50/70cm; with a charging station for two TES-5604 series microphones, with TES- ADP5V power adapter)

## MS50/60/70EGD2B Stem Microphone




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### Features

- Built-in windshield
- With 2 flexible parts
- Used for TES-5600 series Wired Desktop Microphone
- Stem length: 50/60/70 cm
- Microphone
  - ◆ Type: Uni-directional electret condenser microphone
  - ◆ Sensitivity: -46 dBV/Pa
  - ◆ Frequency response: 75 Hz ~ 20 kHz
  - ◆ input resistance: 680 kΩ
  - ◆ Directivity 0°/180°: > 20 dB (1 kHz)
  - ◆ Equivalent noise: 20 dBA (SPL)
  - ◆ Maximum sound pressure level: 115 dB (THD < 3%)
- Color: black (PANTONE 419 C)
- Weight: MS50EGD2B (102 g)
  - MS60EGD2B (105 g)
  - MS70EGD2B (107 g)

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### Ordering Information

MS50EGD2B.....	Stem Microphone (50 cm, built-in windshield, flexible gooseneck tube, for TES-5600 series Wired Desktop Microphone, black)
MS60EGD2B.....	Stem Microphone (60 cm, built-in windshield, flexible gooseneck tube, for TES-5600 series Wired Desktop Microphone, black)
MS70EGD2B.....	Stem Microphone (70 cm, built-in windshield, flexible gooseneck tube, for TES-5600 series Wired Desktop Microphone, black)

## TES-5680/30 Interactive Audio Recording System



TES-5680M



TES-5680BX

### System features

- Original dirATC-digital infrared Audio Transmitting and Control technologies
- Infrared transmitting carrier frequency conforms to IEC 61603-7, DQPSK digital modulation/demodulation technology
- World pioneering infrared technology enables excellent audio quality
- High quality sound pickup for both the teacher and students, to make every classroom a professional studio
- Digital infrared microphone for the teacher
- Built-in array microphone for students:
  - ◆ Directivity:  $\pm 15^\circ$  Beam forming
  - ◆ Frequency response: 100 Hz ~ 10 kHz
  - ◆ SNR:  $\geq 65.5$  dBA
  - ◆ Total harmonic distortion:  $\leq 0.1\%$
  - ◆ Pickup range: 5 m radius with medium ambient noise  
8 m radius in a quiet environment
- High performance digital signal processor (DSP): automatic noise canceller (ANC), acoustic echo canceller (AEC) and automatic gain control (AGC)
- The voice of the teacher and the students will be mixed before being fed into a recorder, the mixing ratio is adjustable to get the optimal sound balance between the teacher and students
- Student microphone can be muted or its transmission gain can be decreased to improve the teacher's audio clarity
- Selectable infrared carrier frequency for simultaneous use of two wireless microphones
- Built-in digital audio power amplifier for easy sound reinforcement
- 1 Line in (PC IN), 1 Line out (LINE), 1 audio recording output (REC)
- USB Link function:
  - ◆ Digital audio input/output:
    - Lossless recording of digital audio signals via USB
    - Lossless import of streaming audio into the system

- ◆ Remote PPT slide navigation with the TES-560x series microphone
- Can be connected to a central control system for centralized management
- Highly integrated, and easy to install

### Controls and Indicators

- 12-segment light indicator for accurate sound direction indication (TES-5680M)
- Switch:
  - ◆ AFC on: turn on AFC function
  - ◆ FREQ.: select IR frequency
  - ◆ AEC on: select communication mode, PC or Recorder
  - ◆ AUTO FADE: student microphone can be muted or its transmission gain can be decreased
- Power on/off switch
- Sound mixing ratio adjustment fader
- Microphone sensitivity adjustment knob
- Bass and Treble adjustment knob
- Volume control knob

### Interconnections

- Multiple audio in/out interfaces:
  - ◆  $\varnothing 6.4$  mm jack for balance line output
  - ◆  $\varnothing 3.5$  mm jack for recording output
  - ◆ 2 speaker ports
  - ◆  $\varnothing 3.5$  mm jack for PC IN
- RJ45 interface for connecting TES-5600RN/30 receiver
- RJ45 socket (RECEIVER) for connection to TES-5680M
- A type USB interface for connection to TES-5600MIC or TES-5600CSM series wired microphone
- DC 24 V power supply for TES-5680BX/30
- Micro USB interface for digital audio input/output
- RJ45 socket (ETHERNET) for connection to central control system

### Technical Specifications

#### Electrical

#### Infrared microphone (sound pickup for teacher)

Carrier frequency.....Audio channel 1: 2.33 MHz  
 Audio channel 2: 3.67 MHz

Modulation method.....DQPSK

Frequency response.....Main unit to main unit: 50 Hz~20 kHz  
 Mic. to main unit: 100 Hz~20 kHz

SNR.....Mic. to main unit:  $\geq 90$  dBA

THD.....Mic. to main unit:  $\leq 0.05\%$

Dynamic range.....Mic. to main unit:  $\geq 85$  dB

Emission angle.....vertical:  $150^\circ (\pm 75^\circ)$ , horizontal:  $360^\circ$

IR radiation range:

Line-of-sight distance.....25 m

Covered range.....80 to 100 m<sup>2</sup>



## TES-5685MA-F/30 Interactive Audio Recording System



### System features

- Original dirATC-digital infrared Audio Transmitting and Control technologies
- Infrared transmitting carrier frequency conforms to IEC 61603-7, DQPSK digital modulation/demodulation technology
- World pioneering infrared technology enables excellent audio quality
- High quality sound pickup for both the teacher and students, to make every classroom a professional studio
- Digital infrared microphone for the teacher
- Built-in array microphone for students:
  - ◆ Directivity:  $\pm 15^\circ$  Beam forming
  - ◆ Frequency response: 100 Hz ~ 10 kHz
  - ◆ SNR:  $\geq 65.5$  dBA
  - ◆ Total harmonic distortion:  $\leq 0.1\%$
  - ◆ Pickup range: 5 m radius with medium ambient noise  
8 m radius in a quiet environment
- High performance digital signal processor (DSP): automatic noise canceller (ANC), acoustic echo canceller (AEC) and automatic gain control (AGC)
- The voice of the teacher and the students will be mixed before being fed into a recorder, the mixing ratio is adjustable to get the optimal sound balance between the teacher and students
- Student microphone can be muted or its transmission gain can be decreased to improve the teacher's audio clarity
- Selectable infrared carrier frequency for simultaneous use of two wireless microphones
- Built-in digital audio power amplifier for easy sound reinforcement
- Power point slide navigation on the teacher microphone (TES-560x series)
- Support analog audio input/output and recording output
- Can be connected to a central control system for centralized management
- Highly integrated, and easy to install

### Controls and Indicators

- 12-segment light indicator for accurate sound direction indication
- Switch:
  - ◆ F1: select IR frequency
  - ◆ F2: broadcast mode
  - ◆ AFC: set AFC function
  - ◆ AUTO FADE on: reduce line in volume automatically when the IR microphone is on
- Microphone sensitivity adjustment knob for USB interface
- Bass and Treble adjustment knob
- Sound mixing ratio adjustment fader
- Volume control knob

### Interconnections

- Multiple audio in/out interfaces:
  - ◆  $\varnothing 3.5$  mm jack for recording output
  - ◆  $\varnothing 3.5$  mm jack for PC IN
- RJ45 socket (RECEIVER) for connection to TES-5685BX series
- BNC interface for connecting to TES-5600R receiver

### Technical Specifications

#### Electrical

##### Infrared microphone (sound pickup for teacher)

Carrier frequency	Audio channel 1: 1.67 MHz
	Audio channel 2: 2.33 MHz
	Audio channel 3: 3.0 MHz
Frequency response	Main unit to main unit: 50 Hz - 20 kHz
	Mic. to main unit: 100 Hz - 20 kHz
SNR	Mic. to main unit: $\geq 90$ dBA
THD	Mic. to main unit: $\leq 0.05\%$
Dynamic range	Mic. to main unit: $\geq 85$ dB
Wavelength	870 nm
Modulation method	DQPSK
Emission angle	vertical: $150^\circ (\pm 75^\circ)$ , horizontal: $360^\circ$
IR radiation range:	
Line-of-sight distance	25 m
Covered range	80 to 100 m <sup>2</sup>

##### Array microphone (sound pickup for students)

Directivity	$\pm 15^\circ$ Beam forming
Frequency response	100 Hz ~ 10 kHz
SNR	$\geq 65.5$ dBA
Total harmonic distortion	$\leq 0.1\%$
Pickup range	5 m radius with medium ambient noise 8 m radius in a quiet environment

#### Other

Mixed output level	-20 dBV
Built-in speakers	4 $\Omega$ , 15 W
Control box power supply	AC 100-240 V, 1.5 A
LAN	connection to central control system network

**Mechanical**

Dimension (h x w x d mm).....206x332x319  
Weight.....3.5 kg  
Color.....White

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**Ordering Information**

TES-5685MA-F/30.....Interactive Audio Recording System  
Main Unit (with built-in array  
microphone, high performance DSP  
with ANC, AEC and AGC algorithm,  
audio localization, with digital infrared  
receiver, supports 2 wireless  
microphones, with analog audio  
input/output, output for recording,  
built-in audio power amplifier and  
integrated loudspeakers, RJ45  
interface for extending receiver, Type  
F plug)

# TES-5685MA-B/30 Interactive Audio Recording System



## System features

- Original dirATC-digital infrared Audio Transmitting and Control technologies
- Infrared transmitting carrier frequency conforms to IEC 61603-7, DQPSK digital modulation/demodulation technology
- World pioneering infrared technology enables excellent audio quality
- High quality sound pickup for both the teacher and students, to make every classroom a professional studio
- Digital infrared microphone for the teacher
- Built-in array microphone for students:
  - ◆ Directivity:  $\pm 15^\circ$  Beam forming
  - ◆ Frequency response: 100 Hz ~ 10 kHz
  - ◆ SNR:  $\geq 65.5$  dBA
  - ◆ Total harmonic distortion:  $\leq 0.1\%$
  - ◆ Pickup range: 5 m radius with medium ambient noise  
8 m radius in a quiet environment
- High performance digital signal processor (DSP): automatic noise canceller (ANC), acoustic echo canceller (AEC) and automatic gain control (AGC)
- The voice of the teacher and the students will be mixed before being fed into a recorder, the mixing ratio is adjustable to get the optimal sound balance between the teacher and students
- Student microphone can be muted or its transmission gain can be decreased to improve the teacher's audio clarity
- Selectable infrared carrier frequency for simultaneous use of two wireless microphones
- Built-in digital audio power amplifier for easy sound reinforcement
- Power point slide navigation on the teacher microphone (TES-560x series)
- Support analog audio input/output and recording output
- Can be connected to a central control system for centralized management
- Highly integrated, and easy to install

## Controls and Indicators

- 12-segment light indicator for accurate sound direction indication
- Switch:
  - ◆ F1: select IR frequency
  - ◆ F2: broadcast mode
  - ◆ AFC: set AFC function
  - ◆ AUTO FADE on: reduce line in volume automatically when the IR microphone is on
- Microphone sensitivity adjustment knob for USB interface
- Bass and Treble adjustment knob
- Sound mixing ratio adjustment fader
- Volume control knob

## Interconnections

- Multiple audio in/out interfaces:
  - ◆  $\varnothing$  3.5 mm jack for recording output
  - ◆  $\varnothing$  3.5 mm jack for PC IN
- RJ45 socket (RECEIVER) for connection to TES-5685BX series
- BNC interface for connecting to TES-5600R receiver

## Technical Specifications

### Electrical

#### Infrared microphone (sound pickup for teacher)

Carrier frequency	Audio channel 1: 1.67 MHz
	Audio channel 2: 2.33 MHz
	Audio channel 3: 3.0 MHz
Frequency response	Main unit to main unit: 50 Hz - 20 kHz
	Mic. to main unit: 100 Hz - 20 kHz
SNR	Mic. to main unit: $\geq 90$ dBA
THD	Mic. to main unit: $\leq 0.05\%$
Dynamic range	Mic. to main unit: $\geq 85$ dB
Wavelength	870 nm
Modulation method	DQPSK
Emission angle	vertical: $150^\circ (\pm 75^\circ)$ , horizontal: $360^\circ$
IR radiation range:	
Line-of-sight distance	25 m
Covered range	80 to 100 m <sup>2</sup>

#### Array microphone (sound pickup for students)

Directivity	$\pm 15^\circ$ Beam forming
Frequency response	100 Hz ~ 10 kHz
SNR	$\geq 65.5$ dBA
Total harmonic distortion	$\leq 0.1\%$
Pickup range	5 m radius with medium ambient noise 8 m radius in a quiet environment

### Other

Mixed output level	-20 dBV
Built-in speakers	4 $\Omega$ , 15 W
Control box power supply	AC 100-240 V, 1.5 A
LAN	connection to central control system network

**Mechanical**

Dimension (h x w x d mm).....206x332x319  
Weight.....3.5 kg  
Color.....White

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**Ordering Information**

TES-5685MA-B/30.....Interactive Audio Recording System  
Main Unit (with built-in array  
microphone, high performance DSP  
with ANC, AEC and AGC algorithm,  
audio localization, with digital infrared  
receiver, supports 2 wireless  
microphones, with analog audio  
input/output, output for recording,  
built-in audio power amplifier and  
integrated loudspeakers, RJ45  
interface for extending receiver, Type  
B plug)



## TES-5685BX/30 Function Extension Box



### Functions

- Function extension box for TES-5685M series
- 1 PC in and 1 line out
- Volume of MIC. IN and LINE IN adjustable
- 1 RJ45 interface for connecting to TES-5685M series to transmit audio
- Power supply: 5 V, 2 A from Micro USB
- Dimensions (h x w x d): 30 x 105 x 82 mm
- Weight: 0.2 kg

### Ordering Information

TES-5685BX/30.....Function Extension Box (for TES-5685M series, analog audio input/output, can connect to TES-5600 series Wired Desktop Microphone for audio transmission, 1 line out+1 line in)

## TES-5685BXP/30 Function Extension Box

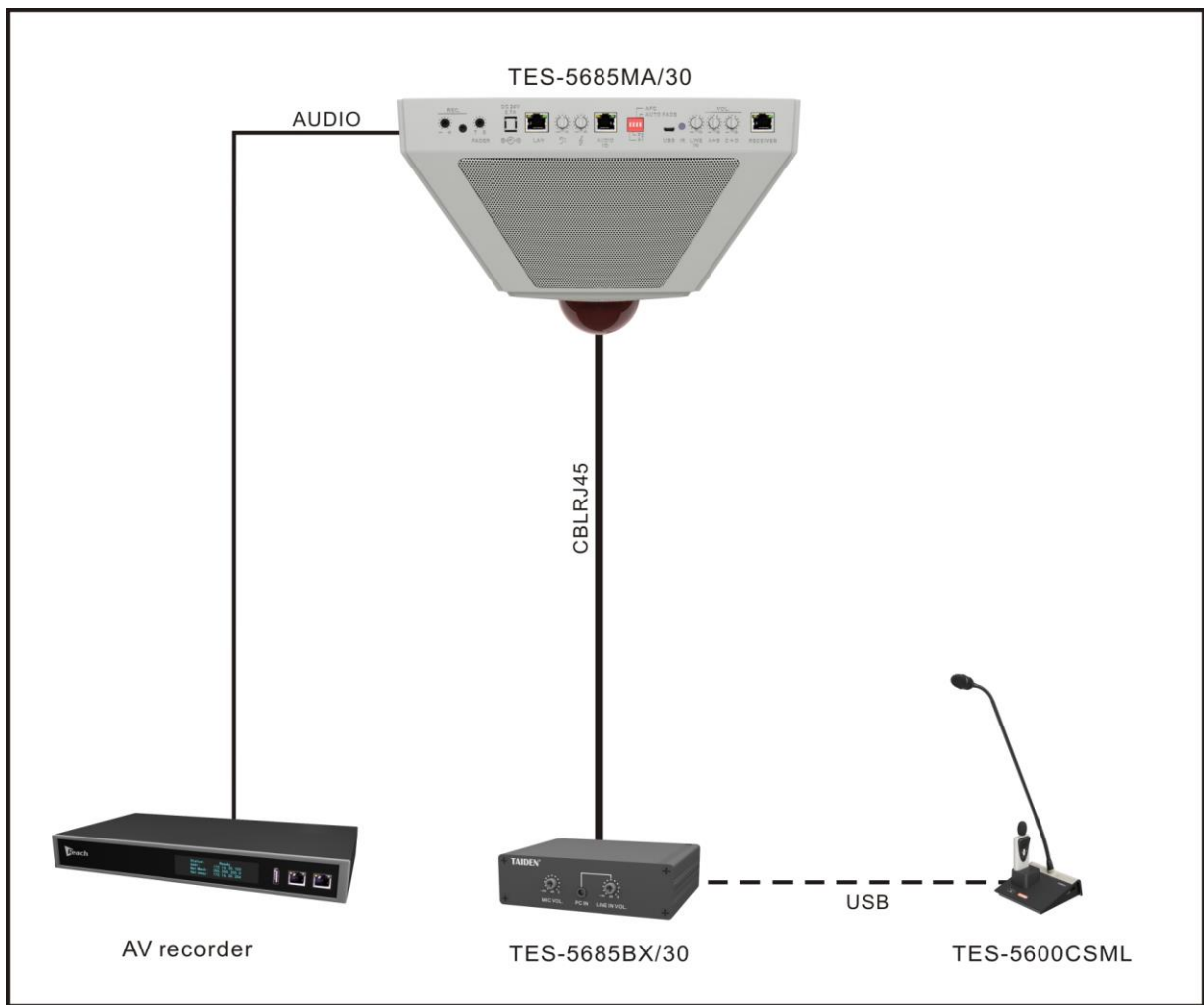


### Functions

- Function extension box for TES-5685M
- 1 PC in and 1 line out
- 1 input for public address system, when the PA trigger enabled, the audio of PA IN puts out to all outputs and all other inputs are muted
- Volume of MIC. IN and LINE IN adjustable
- 1 RJ45 interface for connecting to 5685M to transmit audio
- Power supply: 5 V, 2 A (Micro USB)
- Dimensions (h x w x d): 30 x 105 x 82 mm
- Weight: 0.2 kg

### Ordering Information

TES-5685BXP/30.....Function Extension Box (for TES-5685M series, analog audio input/output, can connect to TES-5600 series Wired Desktop Microphone for audio transmission, 1 line out+1 line in, 1 PA in + 1 PA trigger)



TES-5685MA Interactive Audio Recording System Solution