

IP NETWORK INTERCOM SYSTEM

IP Network Intercom Exchange



N-8000EX/N-8010EX

Multi Interface Unit



N-8000MI

Master Stations



N-8000MS

N-8010MS

N-8011MS

N-8020MS

N-8031MS

RS-191

IP Master Station



N-8500MS

Board Unit



N-8031SB

N-8050SB

Door Station



N-8050DS

IP Door Station



N-8540DS

DESCRIPTION

The N-8000 Series is a packet intercom system (IP network compatible intercom) employing packet audio technology^{*1}. By connecting IP intercom exchanges (which can connect up to 16 stations per exchange), Multi interface units and IP Stations to a network (LAN or WAN), an optimal system can be constructed for in-house or wide area information communications such as duplex conversations between stations, periodical broadcasts, and BGM broadcasts.

A basic N-8000 Series system is comprised of an intercom exchange unit such as the N-8000EX IP Intercom Exchange. Stations are available in different configurations with different features:

Master Stations: N-8000MS Multifunctional Master Station, N-8010MS Standard Master Station, N-8011MS Hands-Free Master Station, N-8020MS Industrial Use Master Station, N-8031MS Wall Mount Master Station and for network applications, N-8500MS IP Master Station.

Door Stations: N-8050DS Door Station, N-8540DS IP Door Station

Up to 80 exchanges, multi interface units and IP stations can be combined. When 80 exchanges are used, systems of up to 1,280 stations can be realized. The system's "echo cancellation"^{*2} feature makes hands-free duplex conversation possible (conversations made without using a handset at both parties) between stations. In addition, the multi interface unit features a contact bridge function to be performed by way of contact input and output control.

^{*1} Technology related to audio transmission over a network.

^{*2} A circuit that prevents acoustic feedback or echo generated when the voice output from the station's internal speaker enters the microphone.

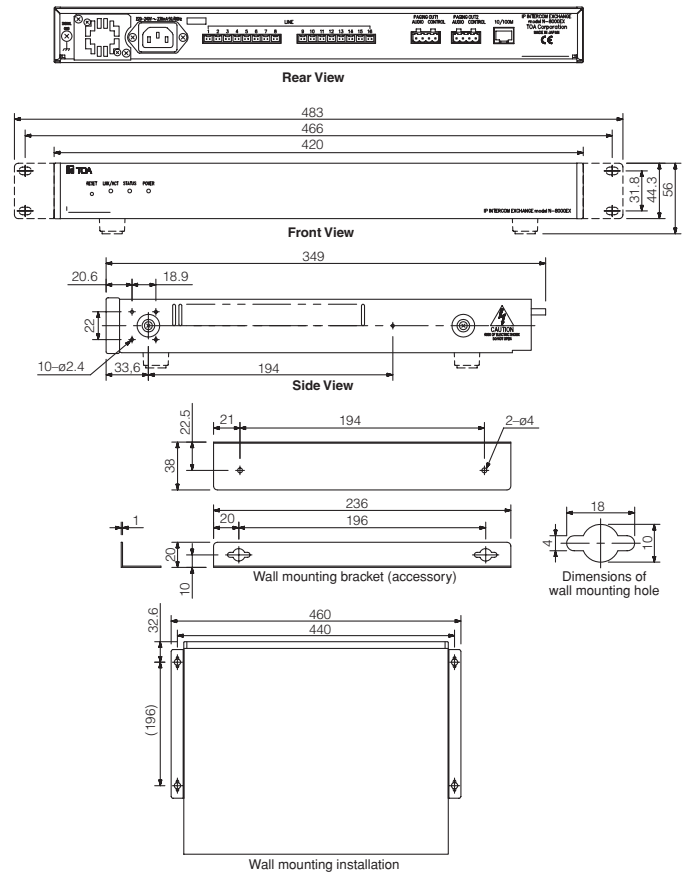
FEATURES

- Exchanges, Multi Interface units and IP Stations can be distributed over a data communications network.
- Can be connected to an existing local area network (LAN) or wide-area network (WAN). The system can also be easily connected to fiber-optic networks without restrictions on operating distance.
- Two types of exchanges are available:
 - N-8000EX; 4 internal and 8 external speech links with PA paging output.
 - N-8010EX; 1 internal and 2 external speech links without PA paging output.
- System configured employing IP stations make communications possible without having to use an exchange unit. (IP Door Stations alone cannot be configured into systems without incorporating a IP Master Station.)
- The dedicated software program enables centralized control with a personal computer.
- System maintenance (verifying operation log and Line supervision) can also be performed with a personal computer and Internet browser.
- Can be connected to the Exchange of the EXES-2000 or EXES-6000 Intercom System by a tie-line, or the PBX exchange via the E&M lead signaling interface.
- The Multi Interface unit can interlock with an electronic lock system or CCTV surveillance system by way of contact input/output control function.

N-8000EX (Internal: 4 links) IP Network Intercom Exchange



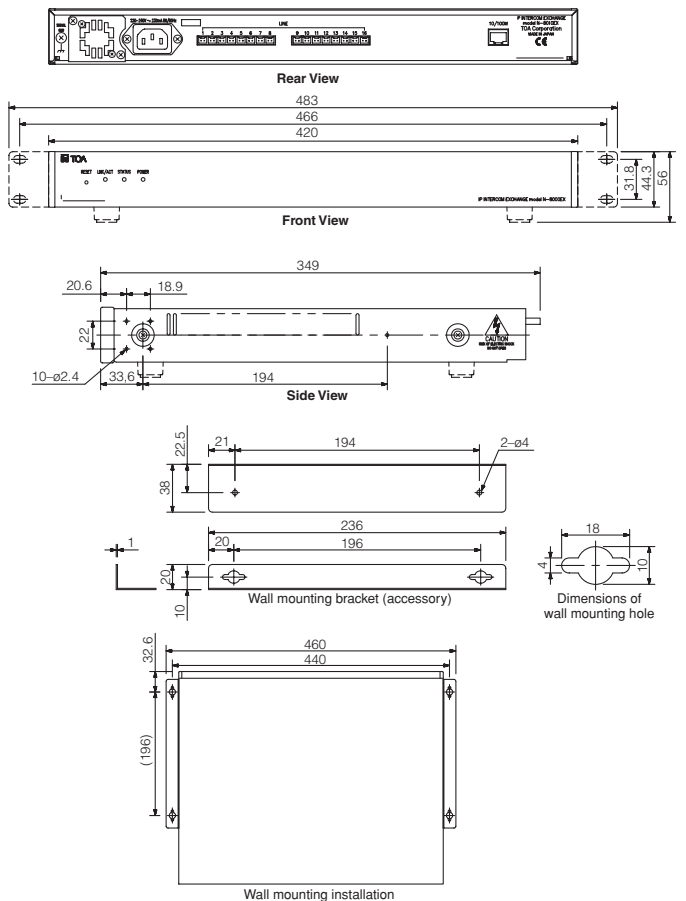
The IP Network Intercom Exchange uses packet audio technology to permit connection of up to sixteen N-8000 Series stations, and features two outputs for public address paging. Simultaneous hand-free conversation is possible between stations. Moreover, the exchange is equipped with a networking interface, allowing up to 80 exchanges to be connected over a network using additional network intercom exchanges. The Exchange can be mounted in an EIA standard rack (1-unit size) or to a wall using the supplied bracket.



N-8010EX (Internal: 1 link) IP Network Intercom Exchange



The IP Network Intercom Exchange uses packet audio technology to permit connection of up to sixteen N-8000 Series stations. Simultaneous hand-free conversation is possible between stations. Moreover, the exchange is equipped with a networking interface, allowing up to 80 exchanges to be connected over a network using additional network intercom exchanges. The Exchange can be mounted in an EIA standard rack (1-unit size) or to a wall using the supplied bracket.



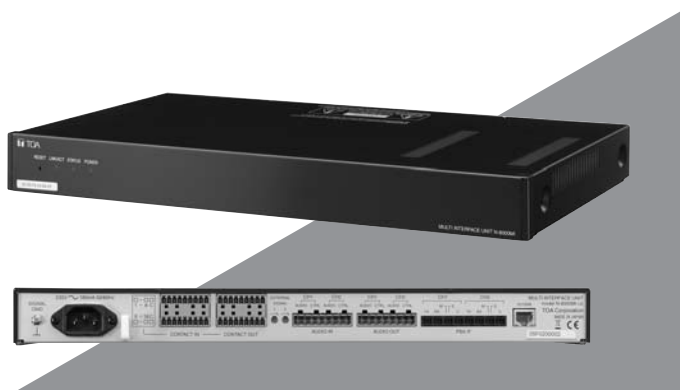
SPECIFICATIONS

*0dB = 1V

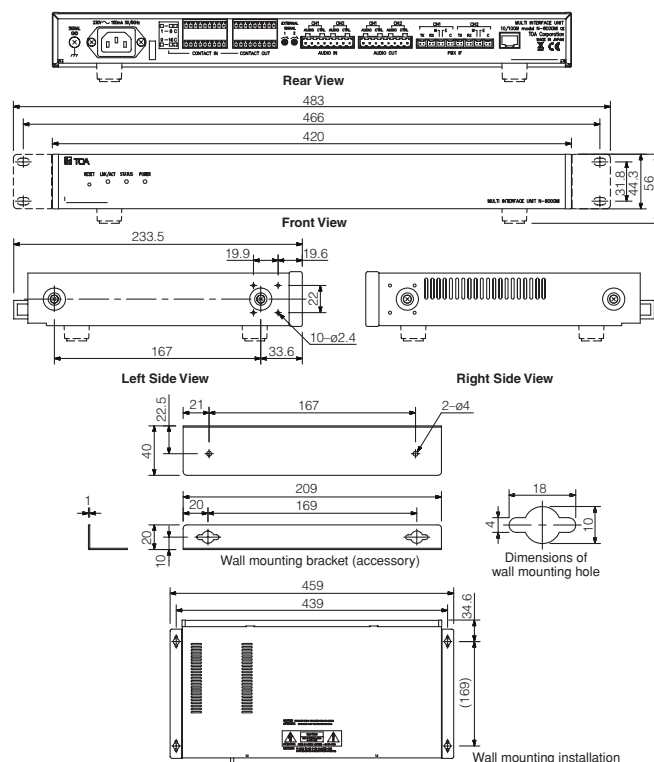
Model No.	N-8000EX		N-8010EX	
Power Source	N-8000EX/N-8010EX (CE): 230V AC, 50/60Hz/ N-8000EX/N-8010EX (CU): 120V AC, 50/60Hz			
Power Consumption	50W (at rated), 75W (max.)			
Type of Speech Path	Space sharing/Time Space sharing			
Speech Link	Internal: 4/External: 8 (Both Half duplex/Full duplex use)		Internal: 1/External: 2 (Both Half duplex/Full duplex use)	
Hands-free Speech Method	Simultaneous conversation by way of echo canceller or Half-duplex conversation by way of voice switch			
Line Capacity	Up to 16 stations			
Wiring Method	Non-polar one pair stranded wire system			
Transmission System	2 wire 160kbps echo canceller transmission system			
Signal Level	Under 0dB*			
Transmission Range	Max. 1500m (ø0.65mm. Loop resistance 170 ohms)			
Power Supply to Station	48V DC, Max. 70mA			
Paging Output	Audio: 2 channels Max. 0dB*, 600Ω, balanced, detachable terminal block Control: 2 channels, no-voltage make contact output (24V DC/0.5A), detachable terminal block		Station paging only	
Connecting Terminal	RJ-11 modular jack			
Others	Firmware update function, System registration data entry hold facility, Time of day hold facility, Forced air-cooling, Reset switch (front panel)			
Network Section				
Network I/F	10BASE-T/100BASE-TX (Automatic change)			
Network Protocol	TCP/IP, UDP, ARP, ICMP, HTTP, RTP, IGMP			
Audio Packet Transmission System	Unicast (Simultaneous paging to up to 16 zones) Multicast (Simultaneous paging to up to 79 zones)			
Connector	RJ45 connector			
Voice Sampling Frequency	16kHz, 8kHz (Controllable on the software)			
Quantifying Bit Number	16-bit			
Voice Encoding Method	Sub-band ADPCM, Cryptosystem			
Audio Packet Omission Compensation System	Silence insertion			
Audio Delay Time	80ms, 320ms (Controllable on the software)			
Indication	Network LINK/ACT indication, Status Lamp, Power-on indication lamp			
Installation Method	Rack, Desk, Surface mount			
Operating Temperature	0°C to +40°C			
Operating Humidity	Under 90% RH (no condensation)			
Finish	Pre-coated steel plate, black, 30% gloss			
Dimensions	420 (W) × 44.3 (H) × 349 (D)mm			
Weight	4.2kg			
Accessory	AC power cord (2m) × 1, CD (for PC setting, maintenance use) × 1, Detachable terminal plug (4P) × 2, Detachable terminal plug (2P) × 20, Plastic foot × 4, Screw for fitting plastic foot × 4, Rack mounting bracket × 2, Screw for rack mounting × 4, Wall mounting bracket × 2, Screw for mounting bracket × 8, Screw for wall mounting × 4		AC power cord (2m) × 1, CD (for PC setting, maintenance use) × 1, Detachable terminal plug (2P) × 20, Plastic foot × 4, Screw for fitting plastic foot × 4, Rack mounting bracket × 2, Screw for rack mounting × 4, Wall mounting bracket × 2, Screw for mounting bracket × 8, Screw for wall mounting × 4	

N-8000MI

Multi Interface Unit



The N-8000MI is a multi-interface unit designed for use with TOA's packet intercom system (IP network-compatible intercom system) that employs the packet audio technology. Connecting the multi-interface to a local area network permits the ideal system for in-house or wide-area information transmission applications, such as paging, periodical broadcasts, and background music broadcasts, to be built between the multi-interface and IP intercom exchange or other multi-interface unit. The contact bridge function can be realized through contact input and output control. The N-8000MI also features the tie-line function to be connected the the EXES-2000 intercom system or the EXES-6000 system. A total of up to 80 multi-interface units and IP intercom exchanges can be connected to a network. The unit can be mounted in an EIA standard rack (1-unit size) or to a wall using the supplied bracket.



SPECIFICATIONS

*10dB = 1V, *20dB = 0.775V

Model No.	N-8000MI
Power Source	N-8000MI (CE): 230V AC, 50/60Hz/ N-8000MI (CU): 120V AC, 50/60Hz
Power Consumption	N-8000MI (CE): 19W (180mA) (at rated), 24W (230mA) (max.)/ N-8000MI (CU): 16W (250mA) (at rated), 21W (330mA) (max.)
Audio Input*3	Input: 2 inputs (2P/input), Max. 0dB*1, under 600Ω, balanced, with a semi-fixed volume for adjustment (0 to -25dB) Control: 2 inputs (2P/input), no-voltage make contact input, open voltage: 12V DC, short-circuit current: 10mA Removable terminal block (8 pins)
Audio Output*3	Output: 2 outputs (2P/output), Max. 0dB*1, under 600Ω, balanced Control: 2 outputs (2P/output), relay contact output, contact capacity: 24V DC/0.5A Removable terminal block (8 pins)
Control Input*3	16 inputs, no-voltage make contact input, open voltage; 12V DC, short-circuit current: 10mA, removable terminal block (9 pins)
Control Output*3	16 outputs, relay contact output, contact capacity: 24V DC/0.5A, removable terminal block (9 pins)
PBX I/F*3	PBX input and output: 2 channels, Max.: Under 0dB*2, Average: Under -15dB*2, 600Ω, balanced, mini-clamp connector (2 pins), with adjustment functions for both input and output (Input: 0 to +15dB, Output: -15 to 0dB), Analog E & M interface
Tie-line I/F*3	Tie-line input and output: 2 channels, Max.: Under 0dB*2, Average: Under -15dB*2, 600Ω, balanced, mini-clamp connector (2 pins) Signal method: EXES-2000/EXES-6000 tie-line method Selective signal: DTMF signal
Others	Firmware update function, System registration data entry hold facility, Time of day hold facility, Reset switch (front panel)
Network Section	
Network I/F	10BASE-T/100BASE-TX (Automatic change)
Network Protocol	TCP/IP, UDP, ARP, ICMP, HTTP, RTP, IGMP
Audio Packet Transmission System	Unicast (Simultaneous paging to up to 16 zones) Multicast (Simultaneous paging to up to 79 zones)
Connector	RJ45 connector
Voice Sampling Frequency	16kHz, 8kHz (Controllable on the software)
Quantifying Bit Number	16-bit
Voice Encoding Method	Sub-band ADPCM, Cryptosystem
Voice Packet Loss Recovery	Silence insertion
Audio Delay Time	80ms, 320ms (Controllable on the software)
Indication	Network LINK/ACT indication, Status Lamp, Power-on indication lamp
Installation Method	Rack, Desk, Surface mount
Operating Temperature	0°C to +40°C
Operating Humidity	Under 90% RH (no condensation)
Finish	Pre-coated steel plate, black, 30% gloss
Dimensions	420 (W) × 44.3 (H) × 233.5 (D)mm
Weight	2.8kg
Accessory	AC power cord (2m) × 1, CD (for PC setting, maintenance use) × 1, Mini-clamp plug (2 pins) × 10, Remote terminal plug (8 pins) × 2, Removable terminal plug (9 pins) × 4, Plastic foot × 4, Screw for fitting plastic foot × 4, Rack mounting bracket × 2, Screw for rack mounting × 4, Wall mounting bracket × 2, Screw for mounting bracket × 8, Screw for wall mounting × 4

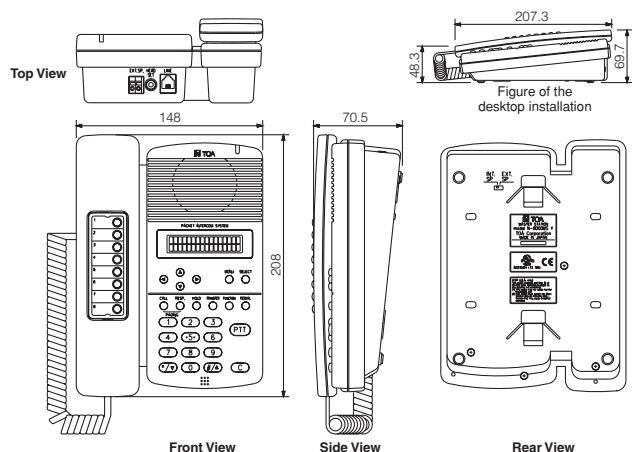
*3 Each input and output can be combined in 9 patterns (refer to last page).

N-8000MS

Multifunctional Master Station



This Master Station is designed to connect to the Network intercom Exchange, and provides hands-free or handset conversation of high sound quality. In addition to the functions of the standard Master Station, the Multifunctional Master Station provides LCD display. Auto-dialer function enabling one-touch dialing, headset terminal and external speaker terminal. This station can be mounted to the wall using and optional YC-280 wall mounting bracket.



unit: mm

SPECIFICATIONS

*0dB = 1V

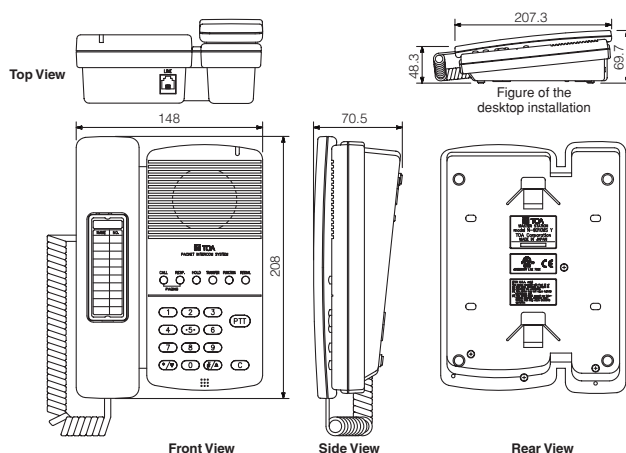
Model No.	N-8000MS
Power Source	48V DC (supplied from the IP network intercom exchange)
Power Consumption	2.4W
Wiring Method	Non-polar one pair stranded wire system
Transmission System	2 wire 160kpbs echo canceller transmission system
Signal Level	Under 0dB*
Speech Method	Hands-free or handset conversation
Audio Frequency Range	300 – 7,000Hz
Transmission Range	Max. 1500m (ø0.65mm. Loop resistance 170 ohms)
Hands-free	Speaker: 0.6W, 8 ohms, 5.7cm cone-type, Mic.: Omni-directional electret condenser microphone
Handset	Receive path: Cone-type, Send path: Electret condenser microphone
Display	Alphanumeric characters (16 characters × 2 lines LCD)
Line Connecting Terminal	RJ-11 modular jack
Headset Terminal	Speaker: 3mW, 32 ohms, Microphone: -49dB*, ø3.5mm mini jack
External Speaker Terminal	0.6W, 8 ohms, screwless connector (2P)
Installation Method	Desk/Surface mounted master station (When mounting to the wall, use the optional bracket*1.)
Operating Temperature	0°C to +40°C
Operating Humidity	Under 90% RH (no condensation)
Finish	Body, Handset: ABS resin, gray
Dimensions	148 (W) × 208 (H) × 70.5 (D)mm (excluding a curl cord section)
Weight	800g
Accessory	Connection cord (3m) × 1
Option*1	Wall mounting bracket: YC-280

N-8010MS

Standard Master Station



This Master Station is designed to connect to the Network intercom Exchange, and provides hands-free or handset conversation of high sound quality. This station can be mounted to the wall using and optional YC-280 wall mounting bracket.



unit: mm

SPECIFICATIONS

*0dB = 1V

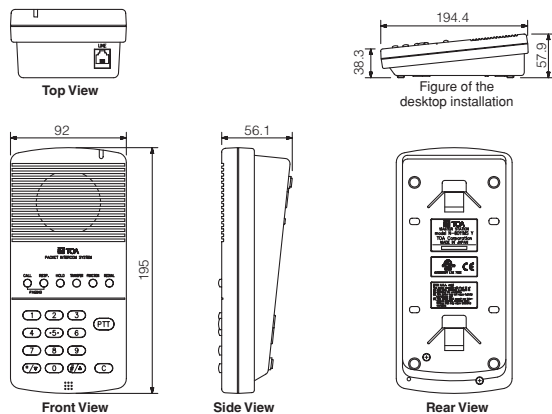
Model No.	N-8010MS
Power Source	48V DC (supplied from the IP network intercom exchange)
Power Consumption	2.4W
Wiring Method	Non-polar one pair stranded wire system
Transmission System	2 wire 160kpbs echo canceller transmission system
Signal Level	Under 0dB*
Speech Method	Hands-free or handset conversation
Audio Frequency Range	300 – 7,000Hz
Transmission Range	Max. 1500m (ø0.65mm. Loop resistance 170 ohms)
Hands-free	Speaker: 0.6W, 8 ohms, 5.7cm cone-type, Mic.: Omni-directional electret condenser microphone
Handset	Receive path: Cone-type, Send path: Electret condenser microphone
Line Connecting Terminal	RJ-11 modular jack
Installation Method	Desk/Surface mounted master station (When mounting to the wall, use the optional bracket*1.)
Operating Temperature	0°C to +40°C
Operating Humidity	Under 90% RH (no condensation)
Finish	Body, Handset: ABS resin, gray
Dimensions	148 (W) × 208 (H) × 70.5 (D)mm (excluding a curl cord section)
Weight	700g
Accessory	Connection cord (3m) × 1
Option*1	Wall mounting bracket: YC-280

N-8011MS

Standard Hands-Free Master Station



This Master Station is designed to connect to the Network intercom Exchange, and provides hands-free or handset conversation of high sound quality. With its space-saving design, this Master Station features the same functions as the Standard Master Station. This station can be mounted to the wall using an optional YC-290 wall mounting bracket.



SPECIFICATIONS

*0dB = 1V

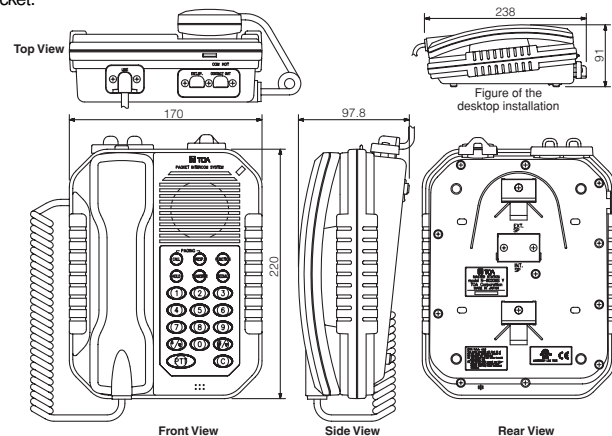
Model No.	N-8011MS
Power Source	48V DC (supplied from the IP network intercom exchange)
Power Consumption	2.4W
Wiring Method	Non-polar one pair stranded wire system
Transmission System	2 wire 160kbps echo canceller transmission system
Signal Level	Under 0dB*
Speech Method	Hands-free conversation
Audio Frequency Range	300 – 7,000Hz
Transmission Range	Max. 1500m (ø0.65mm. Loop resistance 170 ohms)
Hands-free	Speaker: 0.6W, 8 ohms, 5.7cm cone-type, Mic.: Omni-directional electret condenser microphone
Line Connecting Terminal	RJ-11 modular jack
Installation Method	Desk/Surface mounted master station (When mounting to the wall, use the optional bracket*.)
Operating Temperature	0°C to +40°C
Operating Humidity	Under 90% RH (no condensation)
Finish	Body: ABS resin, gray
Dimensions	92 (W) × 195 (H) × 56.1 (D)mm
Weight	400g
Accessory	Connection cord (3m) × 1
Option*1	Wall mounting bracket: YC-290

N-8020MS

Industrial-Use Master Station



This Master Station is designed to connect to the Network intercom Exchange, and provides hands-free or handset conversation of high sound quality. It features dustproof and waterproof construction, and can be used in locations exposed to ambient temperatures ranging from -10°C to +50°C. In addition to the functions of the standard Master Station, the Industrial-Use Station permits connection of external speaker and can take out control signal for dial-in indicator from its contact output. This station can be mounted to the wall using an optional YC-280 wall mounting bracket.



SPECIFICATIONS

*0dB = 1V

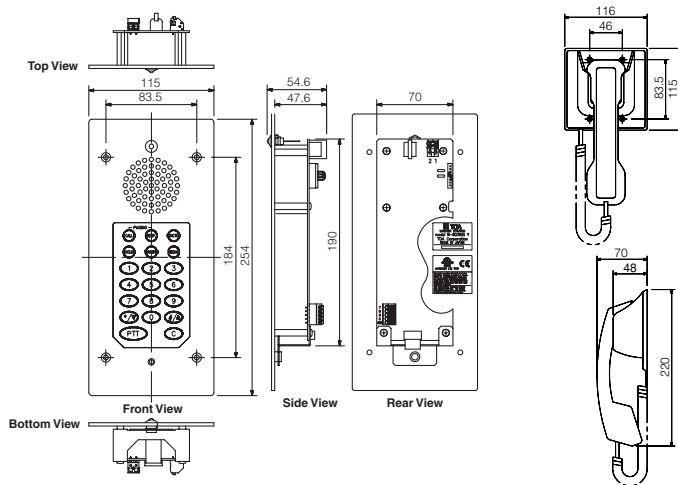
Model No.	N-8020MS
Power Source	48V DC (supplied from the IP network intercom exchange)
Power Consumption	2.4W
Wiring Method	Non-polar one pair stranded wire system
Transmission System	2 wire 160kbps echo canceller transmission system
Signal Level	Under 0dB*
Speech Method	Hands-free or handset conversation
Audio Frequency Range	300 – 7,000Hz
Transmission Range	Max. 1500m (ø0.65mm. Loop resistance 170 ohms)
Hands-free	Speaker: 0.6W, 8 ohms, 5.7cm cone-type, Mic.: Omni-directional electret condenser microphone
Handset	Receive path: Cone-type, Send path: Electret condenser microphone
Dial-in Contact Output	Open collector output (The contacts have polarity.)/ Withstand voltage: Max. 30V DC, Control current: Max. 50mA, screwless connector (2P)
Line Connecting Terminal	RJ-11 modular jack
External Speaker Terminal	0.6W, 8 ohms, screwless connector (2P)
Installation Method	Desk/Surface mounted master station (When mounting to the wall, use the optional bracket*.)
Operating Temperature	-10°C to +50°C
Operating Humidity	Under 90% RH (no condensation)
Dust/Water Protection	IP54
Finish	Body, Handset: ABS resin, gray
Dimensions	170 (W) × 220 (H) × 97.8 (D)mm (excluding a curl cord and projection sections)
Weight	1kg
Accessory	Rubber cap × 2
Option*1	Wall mounting bracket: YC-280

N-8031MS

Flush-Mount Hands-Free Master Station



The N-8031MS is a flush- or surface-mount master station designed to operate in conjunction with TOA IP Intercom Exchange and features high quality hands-free conversation. Connecting a foot switch or other external switch to the external dial input terminal permits one-touch dialing operation by way of such switches. Handset conversation can be established in conjunction with the optional RS-191.



SPECIFICATIONS

*0dB = 1V

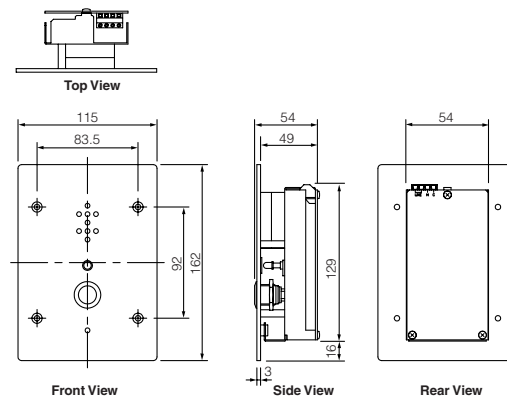
Model No.	N-8031MS
Power Source	48V DC (supplied from the IP network intercom exchange)
Power Consumption	1.8W (rated), 2.4W (max.)
Wiring Method	Non-polar one pair stranded wire system
Transmission System	2 wire 160kbps echo canceller transmission system
Signal Level	Under 0dB*
Speech Method	Hands-free conversation (Handset conversation can be established in conjunction with the RS-191(option))
Audio Frequency Range	300 – 7,000Hz
Transmission Range	Max. 1500m (ø0.65mm. Loop resistance 170 ohms)
Hands-free	Speaker: 0.6W, 8 ohms, 5.7cm cone-type, Mic.: Omni-directional electret condenser microphone
Line Connecting Terminal	Pin header (2 pins)
External Dial Input	No-voltage make contact input, screwless connector (5 pins)
Installation Method	Flush-mount/Surface-mount
Operating Temperature	0°C to +40°C
Operating Humidity	Under 90% RH (no condensation)
Finish	Panel: Stainless steel (SUS304), hairline
Dimensions	115 (W) × 254 (H) × 54.6 (D)mm
Weight	850g
Accessory	Box mounting screw (No.6-32UNC × 18) × 4, Box mounting screw (M4 × 25) × 4, Removable terminal plug (2 pins, preinstalled on the unit) × 1, Handset jumper (8 pins, preinstalled on the unit) × 1, Ferrite clamp × 1
Option	For flush-mount: Back Box YC-241, Wall surface-mount: Wall mount Box YC-251

N-8050DS

Door Station



Designed to connect to the IP Intercom Exchange, the N-8050DS is a door station featuring high quality hands-free conversation. It has a contact output (momentarily closed) to remotely control an electric door lock. It is in full conformity with IP54 water-proof and dust-proof standards. The operating temperature range is –10°C to 50°C. As provided with guard nets inside to cover over the openings of microphone and speaker, the N-8050DS can be installed free from care in public space.



SPECIFICATIONS

*0dB = 1V

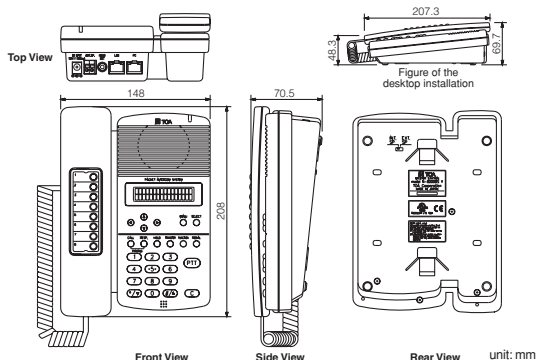
Model No.	N-8050DS
Power Source	48V DC (supplied from the IP network intercom exchange (option))
Power Consumption	1.8W (rated), 2.4W (max.)
Wiring Method	Non-polar one pair stranded wire system
Transmission System	2 wire 160kbps echo canceller transmission system
Signal Level	Under 0dB*
Speech Method	Hands-free conversation
Audio Frequency Range	300 – 7,000Hz
Transmission Range	Max. 1500m (ø0.65mm. Loop resistance 170 ohms)
Hands-free	Speaker: 3.5cm cone-type, 1W, 8 ohms Mic.: Omni-directional electret condenser microphone
Contact Output	Open collector output, withstand voltage: Max. 30V DC, control current: Max. 50mA, one shot: can be set from 1 to 9 sec, screw terminal (polarized)
Line Connecting Terminal	2 wire, screw terminal (non-polar)
Installation Method	Flush-mount/Surface-mount
Operating Temperature	–10°C to +50°C
Operating Humidity	Under 90% RH (no condensation)
Housing Protection	BS EN62262: 2002: IK02 equivalent
Dust/Water Protection	IP54 (Note that panel edges must be sealed at installation.)
Finish	Panel: Stainless steel (SUS304), hairline Call button: Metal
Dimensions	115 (W) × 162 (H) × 54 (D)mm
Weight	680g
Accessory	Box mounting screw (No.6-32UNC × 18) × 4, Box mounting screw (M4 × 25) × 4
Applicable Box (option)	For flush-mount: 3-gang electrical box or Back Box YC-150, For wall mount: Wall mount Box YC-13A

N-8500MS

IP Multifunctional Master Station



The N-8500MS is an IP multifunctional master station employing packet audio technology. Connecting the N-8500MS to a network (LAN or WAN) permits hands-free or handset conversation of high sound quality to be made between the N-8500MS and intercom stations connected to the IP Intercom Exchange, or between the N-8500MS units. Besides, the N-8500MS can be used in conjunction with the Multi Interface units through a network. In addition to the functions of the standard Master Station, The Multifunctional Master Station provides LCD display, Auto-dialer function enabling one-touch dialing, headset terminal and external speaker terminal. Power can be supplied from the PoE (Power over Ethernet) switching hub. (In this case, an AC adapter is not required) This station can be mounted to the wall using an optional YC-280 wall mounting bracket.



SPECIFICATIONS

*0dB = 1V

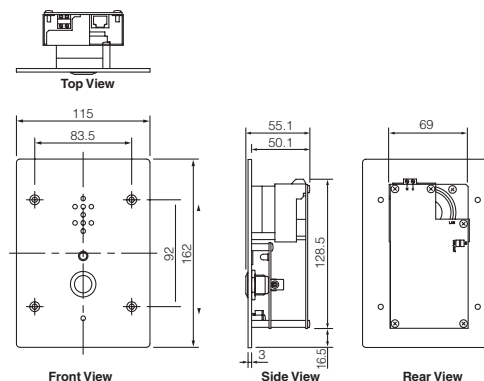
Model No.	N-8500MS
Power Source	Power supply device that complies with IEEE802.3af standard or 12V DC (supplied from the AC adapter (option))
Power Consumption	4.2W (at rated), 6W (max.)
Speech Method	Hands-free or handset conversation
Audio Frequency Range	300 – 7,000Hz
Hands-free	Speaker: 0.6W, 8 ohms, 5.7cm cone-type, Mic.: Omni-directional electret condenser microphone
Handset	Receive path: Cone-type, Send path: Electret condenser microphone
Handset Terminal	Speaker: 3mW, 32Ω, Microphone: -49dB*, ø3.5mm mini jack
External Speaker Terminal	0.6W, 8 ohms, screwless connector (2P)
Network Section	
Network I/F	10BASE-T/100BASE-TX (Automatic-Negotiation)
Network Protocol	TCP/IP, UDP, ARP, ICMP, HTTP, RTP, IGMP
Audio Packet	Unicast (1 speech link, simultaneous paging to up to 16 zones)
Transmission System	Multicast (simultaneous paging to up to 79 zones)
Connector	LAN: RJ45 connector (compatible with PoE) PC: RJ45 connector (not-compatible with PoE)
Voice Sampling Frequency	16kHz, 8kHz (controllable on the software)
Quantifying Bit Number	16-bit
Voice Encoding Method	Sub-band ADPCM, Cryptosystem
Voice Packet Loss Recovery	Silence insertion
Audio Delay Time	80ms, 320ms (controllable on the software)
Display	LCD alphanumeric characters (16 characters × 2 lines)
Installation Method	Desk/Surface mounted master station (When mounting to the wall, use the optional bracket YC-280.)
Operating Temperature	0°C to +40°C
Operating Humidity	Under 90% RH (no condensation)
Finish	Body, Handset: ABS resin, gray
Dimensions	148 (W) × 208 (H) × 70.5 (D)mm (excluding a curl cord section)
Weight	810g
Accessory	CD (for PC setting, maintenance use) × 1
Option	Wall mounting bracket: YC-280, AC adapter: AD-1210P

N-8540DS

IP Door Station



The N-8540DS is an IP door station employing packet audio technology. Connecting the N-8540DS to an IP network (LAN or WAN) permits hands-free conversation of high sound quality to be made between the N-8540DS and intercom station connected to the IP Intercom Exchange, or between the N-8540DS and IP multifunctional master station. Besides, the N-8540DS can be used in conjunction with the Multi Interface units through a network. It is in full conformity with IP54 water-proof and dust-proof standards. The operating temperature range is -10°C to 50°C. As provided with guard nets inside to cover over the openings of microphone and speaker, the N-8540DS can be installed free from care in public space.



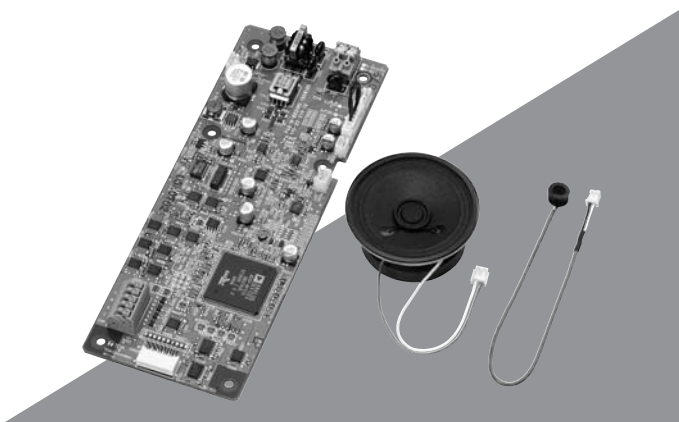
SPECIFICATIONS

Model No.	N-8540DS
Power Source	Power supply device that complies with IEEE802.3af standard or 12V DC (supplied from the AC adapter (option))
Power Consumption	4.2W (at rated), 6W (max.)
Speech Method	Hands-free conversation
Audio Frequency Range	300 – 7,000Hz
Hands-free	Speaker: 3.5cm cone-type, 1W, 8 ohms Mic.: Omni-directional electret condenser microphone
Contact Output	Open collector output, withstand voltage: Max. 30V DC, control current: 50mA, one shot: can be set from 1 to 9 sec, screw terminal (polarized)
Network Section	
Network I/F	10BASE-T/100BASE-TX (Automatic-Negotiation)
Network Protocol	TCP/IP, UDP, ARP, ICMP, HTTP, RTP, IGMP
Audio Packet	Unicast, Multicast
Connector	RJ45 connector (PoE compatible)
Voice Sampling Frequency	16kHz, 8kHz (controllable on the software)
Quantifying Bit Number	16-bit
Voice Encoding Method	Sub-band ADPCM, Cryptosystem
Vice Packet Loss Recovery	Silence insertion
Audio Delay Time	80ms, 320ms (controllable on the software)
Installation Method	Flush-mount/Surface-mount
Operating Temperature	-10°C to +50°C
Operating Humidity	Under 90% RH (no condensation)
Housing Protection	BS EN62262: 2002: IK02 equivalent
Dust/Water Protection	IP54 (Note that panel edges must be sealed at installation.)
Finish	Panel: Stainless steel (SUS304), hairline Call button: Metal
Dimensions	115 (W) × 162 (H) × 55.1 (D)mm
Weight	700g
Accessory	Box mounting screw (No.6-32UNC × 18) × 4, Box mounting screw (M4 × 25) × 4, Ferrite clamp × 1
Option	AC adapter: AD-1210P
Applicable Box (option)	For flush-mount: 3-gang electrical box or Back Box YC-150

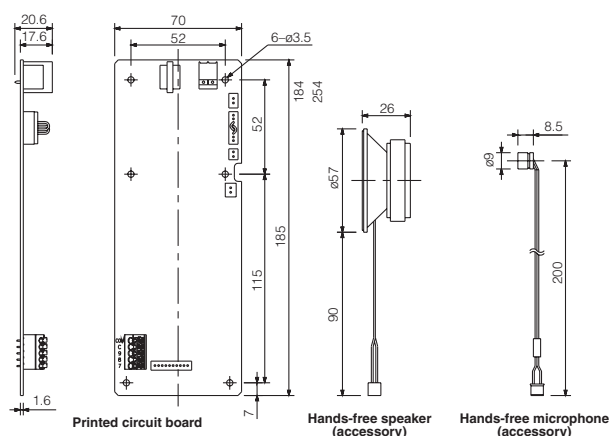
* An AC adapter, when used as power source, cannot be put in the YS-13A, YC-150, or a 3-gang electrical box together with the N-8540DS because such boxes do not have enough room to accommodate both.

N-8031SB

Hands-Free Master Station Board Unit



The N-8031SB is a printed circuit board unit for the N-8031MS Flush-mount Hands-Free Master Station. You can make the master station suitable for applications using the N-8031SB in combination with the operation panel section to be prepared separately.



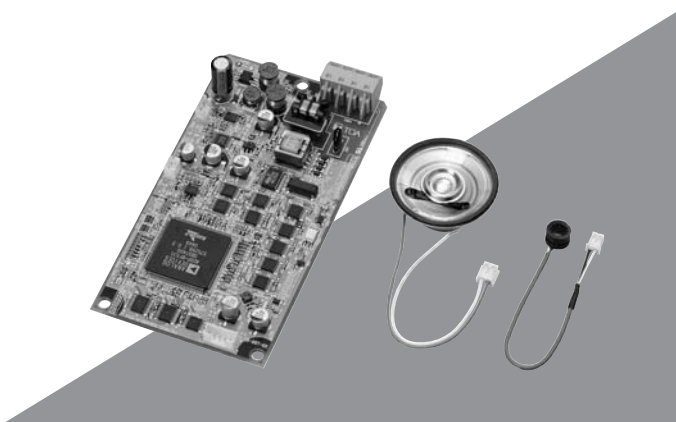
SPECIFICATIONS

*0dB = 1V

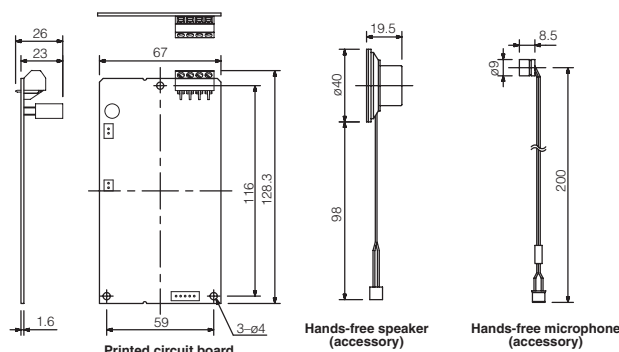
Model No.	N-8031SB
Power Source	48V DC (supplied from the IP network intercom exchange (option))
Power Consumption	1.8W (rated), 2.4W (max.)
Wiring Method	Non-polar one pair stranded wire system
Transmission System	2 wire 160kbps echo canceller transmission system
Signal Level	Under 0dB*
Speech Method	Hands-free conversation (Handset conversation can be established in conjunction with the RS-191(option))
Audio Frequency Range	300 – 7,000Hz
Transmission Range	Max. 1500m (ø0.65mm. Loop resistance 170 ohms)
Hands-free	Speaker: 0.6W, 8 ohms, 5.7cm cone-type, Mic.: Omni-directional electret condenser microphone
Line Connecting Terminal	Pin header (2 pins)
Status Indicator LED	Solderless connector (2 pins, male), voltage: 5V, maximum load current: 5mA
Dial Input	Solderless connector (10 pins, male), open voltage: 3.3V DC, short-circuit current: 1mA
External Dial Input	No-voltage make contact input, open voltage: 5V DC, short-circuit current: 1mA, screwless connector (5 pins)
Operating Temperature	0°C to +40°C
Operating Humidity	Under 90% RH (no condensation)
Dimensions	70 (W) × 185 (H) × 20.6 (D)mm
Weight	205g (including accessories)
Accessory	Removable terminal plug (2 pins, preinstalled on the unit) × 1, Handset jumper (8 pins, preinstalled on the unit) × 1, Ferrite clamp × 1, Hands-free speaker (with connection cord) × 1, Hands-free microphone (with connection cord) × 1
Option	Handset: RS-191

N-8050SB

Hands-Free Substation Board Unit



The N-8050SB is a printed circuit board unit for the N-8050DS Door Station. You can make the sub station suitable for applications using the N-8050SB in combination with the operation panel section to be prepared separately.



SPECIFICATIONS

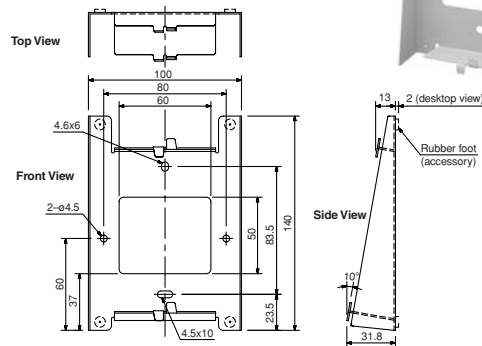
*0dB = 1V

Model No.	N-8050SB
Power Source	48V DC (supplied from the IP network intercom exchange (option))
Power Consumption	1.8W (rated), 2.4W (max.)
Wiring Method	Non-polar one pair stranded wire system
Transmission System	2 wire 160kbps echo canceller transmission system
Signal Level	Under 0dB*
Speech Method	Hands-free conversation
Audio Frequency Range	300 – 7,000Hz
Transmission Range	Max. 1500m (ø0.65mm. Loop resistance 170 ohms)
Hands-free	Speaker: 1W, 8 ohms, 3.5cm cone-type, Mic.: Omni-directional electret condenser microphone
Contact Output	Open collector output, withstand voltage: Max. 30V DC, control current: Max. 50mA, one shot: can be set from 1 to 9 sec, screw terminal (polarized)
Line Connecting Terminal	2 wire, screw terminal (non-polar)
Status Indicator LED	Solderless connector (5 pins, male), voltage: 5V, maximum load current: 4.1mA
Call Button Connecting Terminal	Solderless connector (5 pins, male), open voltage: 3.3V DC, short-circuit current: 1.5mA
Operating Temperature	-10°C to +50°C
Operating Humidity	Under 90% RH (no condensation)
Dimensions	67 (W) × 128.3 (H) × 26 (D)mm
Weight	100g (including accessories)
Accessory	Hands-free speaker (with connection cord) × 1, Hands-free microphone (with connection cord) × 1

TERMINAL BOARD/BRACKETS/AC ADAPTER

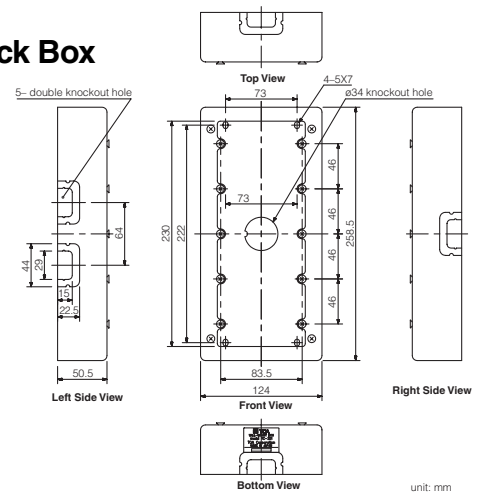
YC-280 Wall Mounting Bracket

for N-8000MS, N-8010MS, N-8020MS
and N-8500MS.



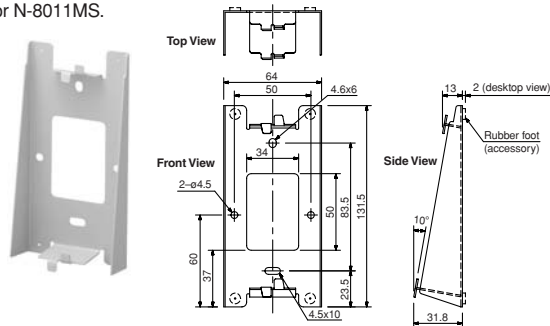
YC-251 Surface Mount Back Box

for N-8031MS.



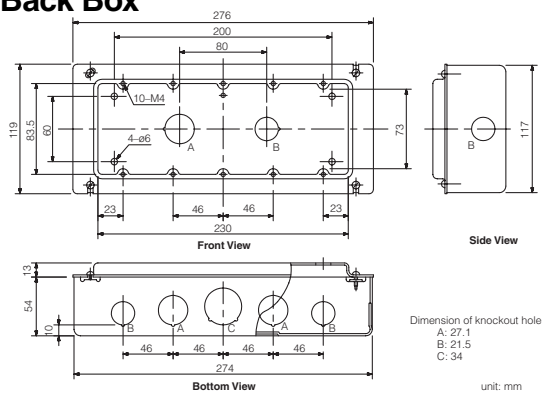
YC-290 Wall Mounting Bracket

for N-8011MS.



YC-241 Flush Mount Back Box

for N-8031MS.



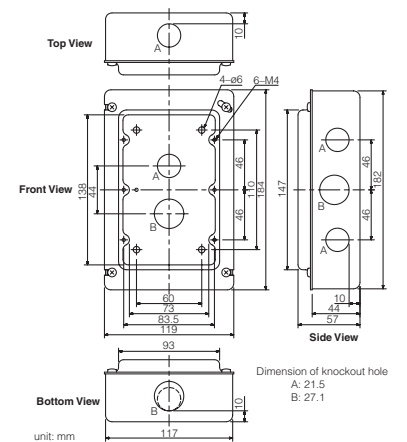
AD-1210P (CE)/(CU) AC Adapter

for N-8500MS
and N-8540DS.



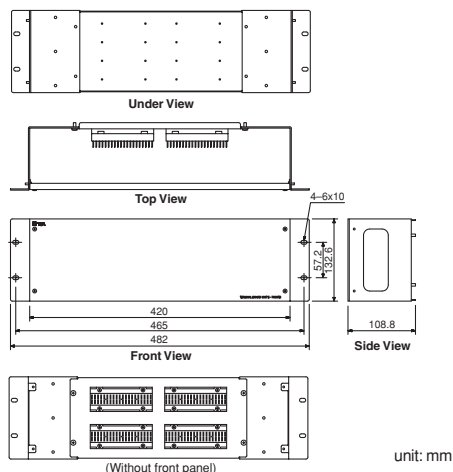
YC-150 Flush Mount Back Box

for N-8050DS and N-8540DS.



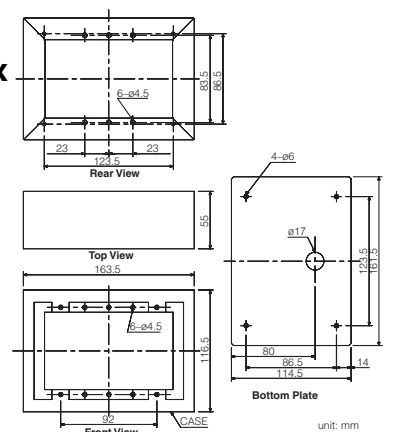
E-7000TB Terminal Board

The E-7000TB is Terminal Board for IP Network Intercom. It is used for a hookup between the exchange and the station, and allows connection of up to 40 lines.



YS-13A Surface Mount Back Box

for N-8050DS and N-8540DS.



SYSTEM FUNCTION TABLE

Basic Functions

Function		Description
Conversation	Hands-free conversation	Permits conversations to be made without lifting the handset when another party is called or when a call is received in automatic connection mode.
	Handset conversation	Calls can be made or received by lifting the handset.
	PTT conversation	Pressing the PTT key during a hands-free conversation enables one-way conversation from the party who pressed the PTT key. Conversation flow is reversed when the key is released. This function makes announcements and conversations possible to areas with a high ambient noise level.
Call	Individual call	The desired party can be called by dialing its station number.
	Redialing	Pressing the Redial key automatically redials the last number called. Only Multifunctional Master Station permits selection from the most recent 10 numbers.
	Recall	The last conversation partner can be recalled by pressing the [#▲] key regardless of whether the call was made or received. Only Multifunctional Master Station permits selection from the most recent 10 numbers.
	Voice calling	Holding down the PTT key while making a call by means of a continuous call tone permits a voice calling to be made to the called station. The voice calling reverts to the original continuous tone call when the PTT key is released.
	Group call	When a station is assigned to a call group, if the station is called, all stations within that group are simultaneously called by a continuous call tone regardless of their call connection mode settings. If any one of the stations within the group responds, calls to the other stations stop.
	Master call	The pre-programmed master station can be called by pressing the door station's call button.
Incoming Call Selection	Automatic connection	Incoming calls are automatically connected after a brief call tone (1 second) or without a call tone.
	Continuous call	Calls continue with a continuous call tone (or without a call tone) and a status indicator continuously flashes as long as no response is made.
Speed Dialing	Auto-dialing	The dial operation (up to 20-digit numbers) programmed into the station's auto dialer can be called by one-touch dialing. (Multifunctional Master station only)
	One-touch dialing	The dial operation (up to 20-digit numbers) programmed into the station's [7], [8], [9], [0] or off-hook keys can be called by one-touch dialing.
Hold	Mic Off	When it is desirable to hold the line during a conversation, if any dialing key ([0] - [9]) is pressed, the microphone is disabled as long as the key is pressed.
	Call hold	Pressing the Hold key during a conversation places the conversation on hold, transmitting a hold tone to both parties. If the Hold key is pressed again, the hold mode is cancelled, and the original conversation is restored.
Call transfer		Current conversations can be placed on hold to call a third party by pressing the Transfer key. The original conversation can be subsequently restored or transferred to the third party after conclusion of the second call.
Automatic Transfer	Group hunting	Calls to a busy station are automatically transferred to another designated station, if group hunting function is set to the called station.
	Absence transfer	When no response is made to a call for a set period of time, the call is automatically transferred to another designated station.
	Call forwarding	Calls to stations are automatically transferred to another designated station without sounding a call tone. Two different modes are available: one is call forwarding, in which calls are manually rerouted to the selected station, and the other is time-based call forwarding, which transfers calls only when the preset time is reached.
Remote Response		Calls to a station can be answered by pressing the PTT key of another station, provided both stations are assigned to the same group.
Executive Priority		If a called station is busy, as indicated by a busy tone, pressing the [9] key transmits a short priority call tone, then forcibly terminates the current conversation, allowing the call to go through. Access to priority call operation or refusal of priority calls can be set individually for each station.
Paging	Zone paging	Calls can be made to one of the pre-programmed zones.
	Paging	Calls can be made to up to 10 zones of the preprogrammed multiple zones.
	All-call paging	Calls can be made simultaneously to all of the preprogrammed zones.
Paging Response	Automatic response	Dialing the Paging Response key automatically initiates a response to the paging last received.
	Zone number response	Dialing the number assigned to paging response automatically initiates a response to a next-to-last paging.
Scan Monitor		The station can scan an arbitrary group of pre-programmed stations for auditory monitoring.
Door Remote Control (Door Station only)		Door station's contact output can be used to remotely control external equipment such as electronic lock. The contact output terminals can be shorted for a set period of time by the dial operation to perform this function from the master station engaged in conversation with the door station.
Time-out		The duration of calls, conversations and paging can be limited by pre-programming time intervals (10 - 990 seconds) for individual exchanges or multi interface units.
Group blocking		Arbitrary station groups (up to 31 groups) can be set to permit or disallow calls between groups.
Station Speaker Output Setting		Permits adjustment of the station speaker sound volume.
Ambient Noise Control		Automatically measures the ambient noise level of the station and sets the station for proper hands-free conversation.

Multi Interface Unit's Functions

Function		Description
External Input Paging		Activating the control input after connecting the Remote microphone or playback components to the Multi interface unit enables broadcasting to the preprogrammed zone(s).
PBX connection		If the Multi interface unit is connected to the PBX's E&M interface, call or conversations can be mutually made between the N-8000 system's stations and the PBX's extension telephones or paging calls can be initiated from the PBX extension telephone.
Tie-Line Connection		Using the Multi interface unit for tie-line connection between the N-8000 Series intercom system exchange and other series intercom system exchanges via 4-wire private lines permits calls, conversations, or paging to be mutually made between stations connected to the tie-lined exchanges.
BGM		Connecting playback components to the Multi interface unit permits Background music selectable from up to 8 programs to be heard from each station speaker while in standby mode.
External Equipment Control	One-shot make output	External equipment can be controlled by momentarily closing the Multi interface unit's corresponding contact through operation of the station.
	Make/break output	External equipment can be controlled by closing or opening the Multi interface unit's corresponding contact through operation of the station.
Calling Station Indication/CCTV Interlock		Closing the Multi interface unit's contact in synchronization with calls received enables calling station indication or CCTV system control.
Door Remote Control		Control of such external equipment as electronic locks can be performed by momentarily closing the Multi interface unit's corresponding contact through operation of the station. Operatin the door remote control function at the station in conversation mode closes the Multi interface unit's preset contact output terminal for a specified period of time.
Contact Bridge		Closes the Multi interface unit's output contact terminal when the input contact terminal is closed.
Paging Busy Input		Notifies the busy status of connected external PA paging equipment.

SYSTEM SETTING ITEMS

General System

Item	Setting from software	Setting from browser	Setting from station
Contents	●	—	—
Equipment number	●	—	—
Equipment name	●	●	—
Station number digit	●	—	—
Station number	●	—	● ^{*1}
Station name	●	—	—
Network communications ON or OFF between exchanges	●	—	—
Multicast communications ON or OFF between exchanges	●	—	—

Network setting

Item	Setting from software	Setting from browser	Setting from station
IP address ^{*2}	●	●	● ^{*1}
Subnet Mask ^{*2}	●	●	● ^{*1}
Default Gateway ^{*2}	●	●	● ^{*1}
Web server port number	●	●	—
TCP start port number	●	—	—
UDP start port number	●	—	—
Multicast port number	●	—	—
NAPT compatible	●	—	—
Network ID	●	—	—
WAN IP address	●	—	—
WAN Web server port number	●	—	—
WAN TCP start port number	●	—	—
WAN UDP start port number	●	—	—
Broadcast specification	●	—	—
Communication capacity	●	—	—

^{*1} Settings can only be performed from Multifunctional Master station.

^{*2} Be sure to set this since settings and conversations are performed via a network.

Sampling frequency correction

Item	Setting from software	Setting from browser	Setting from station
Sampling frequency correction	●	—	—
Transmitted party IP address	●	—	—
Transmitted party port number	●	—	—
Recipient party IP address	●	—	—
Reception multicast ON/OFF	●	—	—
Reception multicast address	●	—	—

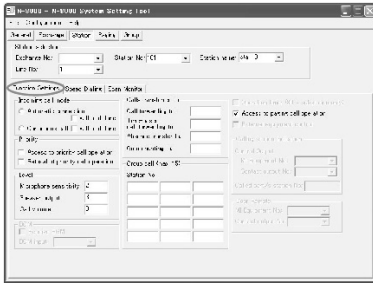
Function settings

Item	Setting from software	Setting from browser	Setting from station
Call forwarding function	●	—	—
Time-based call fwdrrding function	●	—	—
Time-based call forwarding start time	●	—	—
Time-based call forwarding end time	●	—	—
Group hunting function	●	—	—
Absence transfer function	●	—	—
Absence transfer call duration	●	—	—
Oneshot make time	●	—	—
Call time-out	●	—	—
Convansation time-out	●	—	—
Paging time-out	●	—	—
Paging response mode	●	—	—
Paging priority mode	●	—	—
Calling party indication	●	—	—
BGM input	●	—	—

N-8000MI COMBINATION PATTERN

I/F type	Combination pattern								
	1	2	3	4	5	6	7	8	9
PBX-1	●	●	●	—	—	—	—	—	—
PBX-2	●	—	—	●	●	—	—	—	—
Tie-line-1	—	—	—	●	—	●	●	—	—
Tie-line-2	—	●	—	—	—	●	—	●	—
Audio output-1	—	—	—	—	●	—	—	●	●
Audio output-2	—	—	●	—	—	—	●	—	●
Audio input-1	—	—	—	—	●	—	—	●	●
Audio input-2	—	—	●	—	—	—	●	—	●
Contact output	●	●	●	●	●	●	●	●	●
Contact input	●	●	●	●	●	●	●	●	●

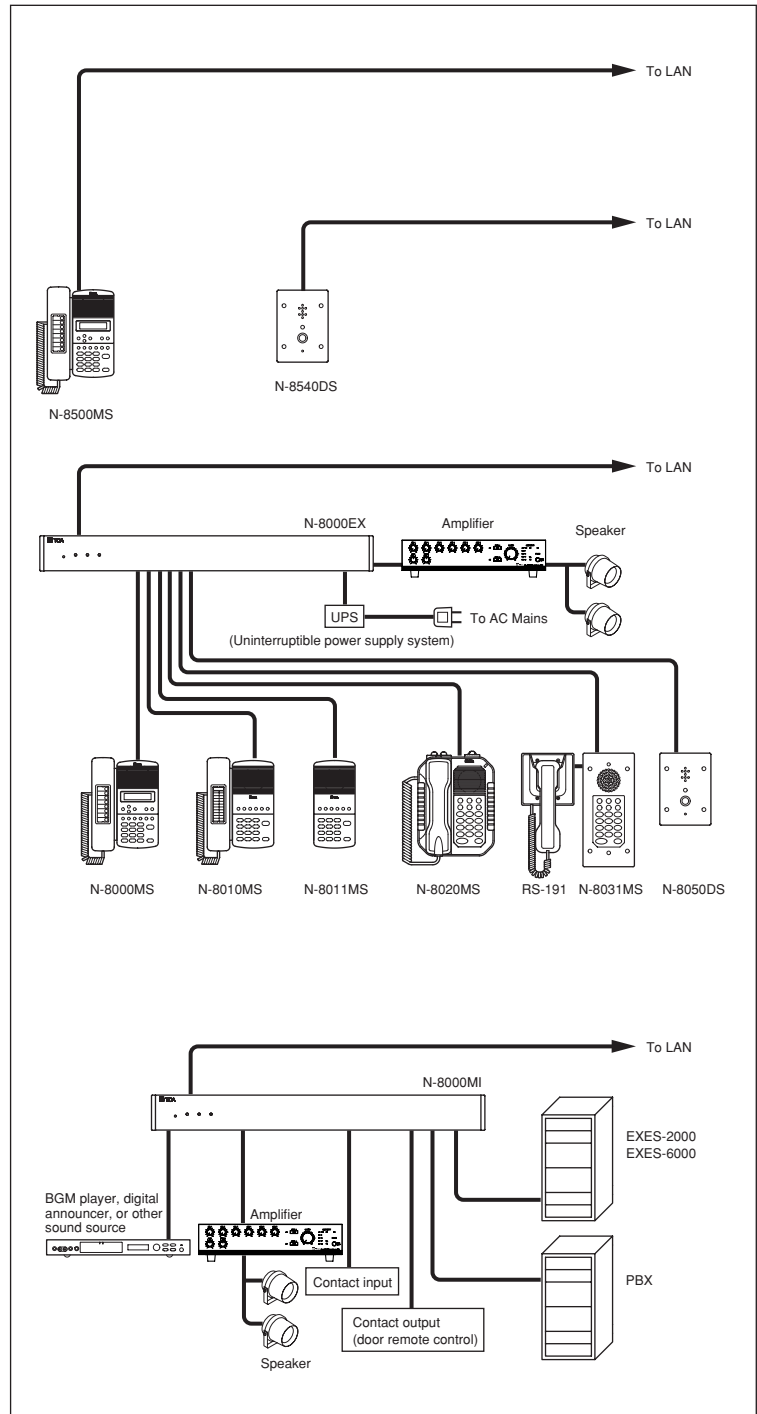
PC WINDOW EXAMPLE



SYSTEM SPECIFICATIONS

Number of Units	
Connectable to LAN	Max. 80 (a total of Exchanges, Multi interface units and IP stations)
Line Capacity	Max. 1,280 (80 Exchanges x 16 stations per exchange)
Speech Link Capacity	Max. 320 (when 80 N-8000EX Exchanges connected)
In a Exchange (Internal)	N-8000EX: 4 links N-8010EX: 1 link
Exchange to Exchange (External)	N-8000EX: 8 links N-8010EX: 2 links N-8000MI: 2 links Speech: Max. 2 Audio input: Max. 2 Audio output: Max. 2 N-8500MS: 1 link N-8540DS: 1 link
Paging	
Number of Zones	Max. 160
PA Paging Output	Max. 160 (when 80 Exchanges or Multi interface units connected) N-8000EX: 2 outputs N-8000MI: 2 outputs
Simultaneous Operation Capacity	N-8000EX: Multicast paging: Max. 4 links Unicast paging: 1 link N-8010EX: Multicast paging: Max. 2 links Unicast paging: 1 link N-8000MI: Multicast paging: Max. 2 links Unicast paging: 1 link N-8500MS: Multicast paging: Max. 1 links Unicast paging: 1 link
Paging Destinations Via Network	Max. 79 (multicast paging) Max. 16 (unicast paging)
BGM Input	Max. 8 channels (number of inputs per exchange)
PBX Interface	Max. 160 (when 80 Multi interface units are connected)
Tie-line Interface	Max. 160 (when 80 Multi interface units are connected)
External Contact Output	Max. 1,280 (when 80 Multi interface units are connected)
External Contact Input	Max. 1,280 (when 80 Multi interface units are connected)
System Settings	Personal computer setting using a dedicated software program (over LAN)
Network Related	
Voice Delay Time	80 or 320 ms, selectable
Connection Delay Time	Max. 1 second (when multicast paging is made to 79 destinations)
Usage Bandwidth	Max. 2.08 Mbps (one way)/when unicast paging is made to 16 destinations Max. 130 kbps (two-way)/one call

SYSTEM CONFIGURATION EXAMPLE



TOA Corporation

URL : <http://www.toa.jp/>

Specifications are subject to change without notice.
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