

VOICE SECURITY INTERCOM SYSTEM



VS-900 SERIES

DESCRIPTION

TOA's VS-900 is a security communications system specially designed for applications in such facilities as office buildings, factories, schools, hospitals, and prisons. Installed separately from conventional general-purpose internal communications systems, the VS-900 can be used to access control or make urgent calls in emergency situations.

The system is comprised of a central exchange and remote stations, and permits calls to master stations located in the central control room or in facility guard rooms from substations installed in such varied locations as entrance gates, parking lots or building entrances.

The exchange itself features modular construction that permits easy customization to fit the desired scale and application, and later meet changing customer needs by simply plugging in the corresponding cards. Up to 4 master stations and 64 substations can be connected per exchange, and the system can be expanded to up to 64 master stations and 1,024 substations through the tie-line connection of up to 16 exchanges.

A standard personal computer can also be connected to the exchange to provide convenient adjustment of system setting functions and automatic logging of communication operations. A full range of exchange functions other than basic conversation are also featured, including call forwarding, scan monitoring, emergency conference, conversation recording by way of external equipment, and paging by way of an external amplifier.

There are five different types of substations, including those of indoor-use, outdoor-use, and vandal-resistant types.

The VS-900 can also be used in combination with CCTV, access control, emergency broadcast systems or other security equipment to create a more effective security system and ensure a higher level of safety and security in each facility.

SYSTEM FEATURES

- System Capacity
 - Single Exchange
 - 4 Master stations (enlargement unit: 2)
 - 64 Substations (enlargement unit: 16)
 - Up to 16 Exchanges
 - 64 Master stations
 - 1,024 Substations
- Remote system management via RS-232C port
 - PC programming and monitoring software
 - Program and maintain multiple exchanges offsite from one PC (via modem)
- Audio and Data Logging
 - PC archive of all system activity (RS-232C port)
 - Record individual Master station and telephone audio
- Master Station Flexibility
 - TOA master with alphanumeric display and clock
 - Supports single-line telephone equipment with Caller-ID*
- Outside Line Communication
 - Supports two C/O trunks
 - Substation to outside telephone line communication
- Paging Interface
 - 16 control outputs
 - 1 voice output
- External Audio Input
 - 4 activation inputs and 1 audio input for external source distribution

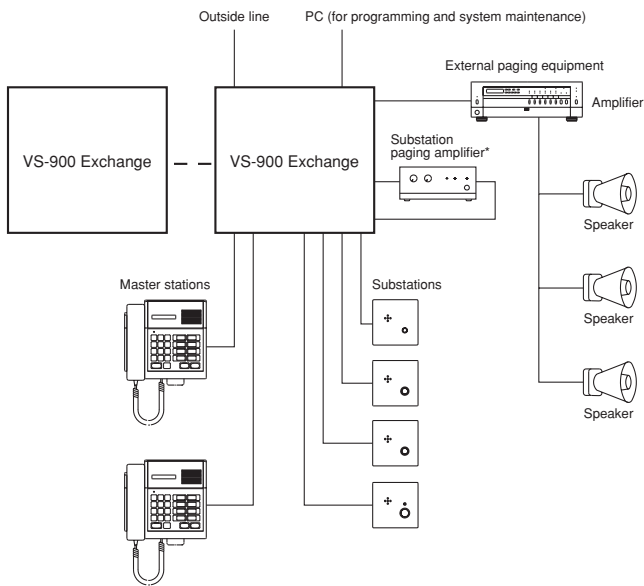
*in compliance with FCC regulation Part 68.



VS-900

SYSTEM CONFIGURATION EXAMPLE

SYSTEM EXAMPLE



* Substation paging needs an external amplifier.
 ex:
 TOA A-1031 or similar amplifier. Matching transformer such as the TOA MT-502U needed (Part Number 514-04-013-20).

SYSTEM SPECIFICATIONS

- Exchange Method: PCM and space division
- Control Method: Common stored program control
- Maximum Cable Length
 - Exchange to Master station: 1.5km (22AWG)
 - Exchange to Substation: 800m (22AWG) (RS-190: 1.5km)
 - Exchange to telephone: less than 500Ω (loop impedance)
 - Exchange to Exchange: 1.0km (22AWG) (total extension length)
- Wiring
 - Master station: 2 twisted pairs
 - Substation: 2-core shielded (RS-190: 2 twisted pairs)
 - Telephone: 1 twisted pair
 - Exchange to Exchange: 2-core shielded for Data,
2 twisted pairs for Audio (per link)
- Frequency Response: 300 – 3,400Hz
- Conversation Method
 - Substation to Master station: Voice Switch or PTT-activated talk-back
 - Master station to Master station: Full-duplex handset communication
- Power Requirements
 - Exchange: AC mains (PU-200) or 24V DC
 - VS-900DI/VS-910DI: 24V DC
- Operating Temperature
 - Exchange and Master station: 0 to 40°C
 - Substation: -10 to 50°C

SYSTEM CONFIGURATION

Master Stations*¹	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64
Sub-stations*²	64	128	192	256	320	384	448	512	576	640	704	768	832	896	960	1024
VS-900MF	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PU-200	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32
VS-900MS/AL	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32
VS-900RS/VS-910RS	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64
VS-900CO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
VS-900AF	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
VS-900TI	0	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

*¹ TOA MS-900 Master Station or analog (DTMF) telephone which complies with the FCC regulation Part 68 (supplied by others).

*² RS-150, RS-160, RS-170, RS-180, RS-190

CALL-RELATED FUNCTION

GROUP CALL

A designated group of up to 16 master stations or telephones can be called from any substation, which is answered from any called master station (telephone).

[System pre-programming]

First, one of master stations (telephones) in a group must be programmed as a representative station, and the rest as member stations. Then, a calling substation must be programmed to call the representative station.

TRANSFER-RELATED FUNCTION

CALL TRANSFER

(1) Call transfer

A master station (or telephone) can transfer the conversation partner to another master station (or telephone).

(2) Call Hold and Call Back

These functions enable the master station (or telephone) to temporarily put the current conversation on hold (Call Hold), and return to the original conversation (Call Back) after talking with a third party.

Note: Master station and telephone operation differs.

CALL FORWARDING-RELATED FUNCTIONS

CALL FORWARDING

When away from one's desk, incoming calls can be automatically forwarded to another receiving station. The receiving station*1 number can be registered at the original station (forwarding station). It is also possible to activate this feature from the destination receiving station.

[System pre-programming]

To use this function, enable the Call Forwarding function in system programming.

TIME-BASED CALL FORWARDING

All incoming calls to the original station*1 (forwarding station) can be automatically rerouted to the designated master station*1 (receiving station) during a specific period of the day.

[System pre-programming]

(1) To use this function, the Time-Based Call Forwarding function must be enabled in system programming.

(2) The forwarding interval (start and end times) can be registered in the system programming. (Registration can only be performed for an entire exchange. Different times cannot be set for different stations on the same exchange.)

NO-ANSWER CALL FORWARDING

Calls to the original station*1 (forwarding station) are automatically rerouted to the designated receiving station*1 if the called party does not respond within a preset period of time.

[System pre-programming]

(1) To use this function, the No-Answer Call Forwarding function must be enabled in system programming.

(2) Register a variable "no-response" time of 1 - 99 seconds (in 1 second units) in the system programming. (Registration can only be performed for an entire exchange. Different times cannot be set for different stations on the same exchange.)

BUSY CALL FORWARDING

Calls to a busy station*2 are automatically forwarded to a designated station*2.

[System pre-programming]

To use this function, the Busy Call Forwarding function must be enabled in system programming.

*1 Both the forwarding and receiving stations must be either master stations or telephones. Calls cannot be transferred to a substation.

*2 The station which forwards calls (forwarded station) and the station to which calls are forwarded (receiving station) must be either a master station or a telephone. Calls cannot be forwarded to a substation.

MONITOR-RELATED FUNCTION

SCAN MONITOR

Any master station can scan a designated group of substations for audio monitoring of each substation.

[System pre-programming]

(1) Substations to be monitored (up to 16) can be registered for each master station in system programming.

(2) Monitor interval times of 1 - 99 seconds (in 1 second units) for each master station can be registered in the system programming.

PAGING-RELATED FUNCTIONS

ZONE PAGING

Permits paging to up to 19 individual zones (01 - 19) established by combining multiple substations with external public address system equipment. Two or more individual zones can simultaneously be selected.

[System pre-programming]

(1) The number of zone number digits (1 or 2 digits) can be registered in system programming.

Single digit: Zone Nos. 1 - 9

Double digit: Zone Nos. 01 - 19

(2) Substation numbers and selective external public address equipment outputs to be included in each zone can be registered in the system programming. Up to 1,024 substations and up to 16 selective outputs can be registered per zone.

Note: Only 1 voice output is made available for paging to external equipment. It is impossible for 2 or more persons to simultaneously initiate paging.

ALL-ZONE PAGING

Paging calls can be simultaneously made to substations and external public address equipment in the all programmed zones. (Paging calls are not made to substations and external public address equipment not assigned to zones.)

[System pre-programming]

(1) The number of digits (1 or 2) of an all-zone paging access number ([0] or [0][0]) can be registered in system programming.

(2) Substation numbers and selective external public address equipment outputs to be included in each zone can be registered in the system programming. Up to 1,024 substations and up to 16 selective outputs can be registered per zone.

EMERGENCY PAGING

Paging calls can be made to all connected master stations, substations, and external public address equipment simultaneously.

[System pre-programming]

Master stations that can place Emergency Paging calls must be registered in the system programming.

EXTERNAL SOURCE DISTRIBUTION

By activating the input, external sound sources can be distributed to pre-programmed paging zones.

Permits source distribution to up to 19 individual zones (01 - 19) established by combining multiple substations with external public address system equipment. Two or more individual zones can simultaneously be selected.

[System pre-programming]

Up to 9 (19) paging zones can be registered for each activation input (up to 4 inputs) in system programming.

(Up to 1,024 substations and up to 16 selective external public address equipment outputs to be included in each zone are registered in the Zone Paging system programming.)

PAGING TIME-OUT

Paging calls that exceed a set time limit are automatically terminated. (This function is used mainly to prevent the line from being occupied because the user forgot to turn off the function.) The Time-Out function is disabled when an emergency paging call is placed.

[System pre-programming]

- Program whether to [Enable] or [Disable] the Paging Time-Out function.
- Paging time-out (10 - 990 seconds in 10 second units) common to both Individual Zone and All-Zone Paging functions can be registered in the system programming.

PAGING REDIAL

This function permits redialing the last-paged zone by simple key operations.

TELEPHONE-RELATED FUNCTIONS

OUTGOING TELEPHONE CALLS

Outside telephone lines can be connected to the VS-900 system, permitting the system's master stations to make or receive outside line telephone calls.

[System pre-programming]

A single-digit outside line access number ([0]-[9]) must first be programmed.

INCOMING OUTSIDE LINE CALLS (DIRECT-IN LINE)

When an outside telephone call is received, a call tone sounds at the registered representative station* and up to 3 member stations*.

[System pre-programming]

One representative station* and up to 3 member stations* must be registered in the system programming to receive outside line calls.

* Both the representative and member stations must be master stations or telephones.

Note: Both the representative and member stations must be connected to the same exchange connected to the outside telephone line.

INCOMING OUTSIDE LINE CALLS (DIRECT-IN DIALING)

Outside line calling parties can be connected to a desired master station (telephone) or substation by directly dialing the station number.

OUTSIDE LINE CONNECTION TIME-OUT

- The duration of connection with the outside line telephone can be limited to automatically terminate conversations.
- When the limited time is reached, a warning signal tone is transmitted to both the calling and called parties to terminate the conversation.

[System pre-programming]

- (1) Program whether to [Enable] or [Disable] the Connection Time-Out function.
- (2) Set a connection time limit of 1 – 99 minutes in 1 minute unit.

OUTSIDE LINE CONVERSATION RECORDING

- Connecting an external recording device permits recording of outside line telephone conversations.
- The external control output is made when the outside line telephone is connected, and is broken when the telephone is disconnected.

OUTSIDE LINE CALL FORWARDING

All calls can be automatically rerouted to the designated receiving telephone by registering the outside line access number at the original master station or telephone.

[System pre-programming]

- (1) To use this function, the Call Forwarding function must be enabled in system programming.
- (2) The receiving telephone number can individually be registered for each master station (or telephone) in the system programming.

TIME-BASED OUTSIDE LINE CALL FORWARDING

All incoming calls to the original master station or telephone can be automatically rerouted to the designated outside line telephone during a specific period of the day.

[System pre-programming]

- (1) To use this function, the Call Forwarding function must be enabled in system programming.
- (2) Register the receiving outside line telephone number individually for each master station (or telephone) in the system programming.
- (3) The forwarding interval (start and end times) can be registered in the system programming. (Registration can only be performed for an entire exchange. Different times cannot be set for different stations on the same exchange.)

CONFERENCE-RELATED FUNCTIONS

THREE-PARTY CONFERENCE (INDIVIDUAL CALL CONFERENCE)

Any master station (or telephone) can individually call other master stations (telephones) to hold a 3-party conference.

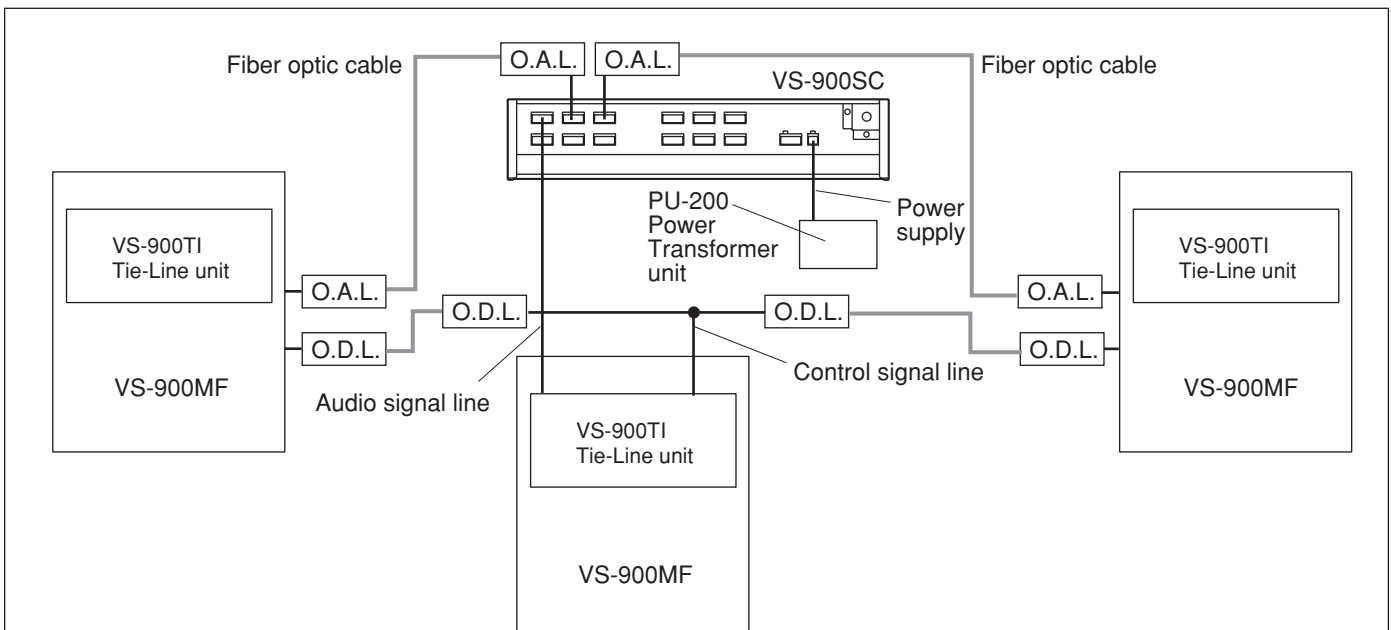
EMERGENCY CONFERENCE

To enable conferences among up to 4 parties in emergency situations, master stations or telephones can call other registered master stations or telephones with a simple operation.

[System pre-programming]

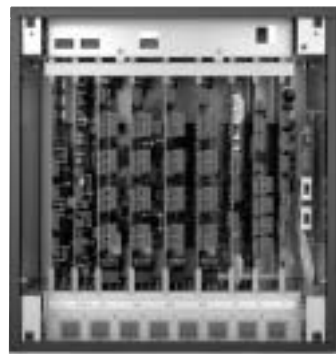
To use this function, up to 3 master stations or telephones must be individually assigned to each master station in the system programming.

VS-900 OPTICAL LINK CONNECTION EXAMPLE (using VS-900SC)

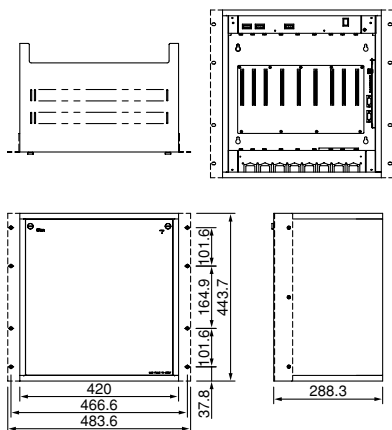


* O.A.L. (Optical Analog Link): Optical/audio signal converter
O.D.L. (Optical Data Link): Optical/digital signal converter

VS-900MF Main Frame



Note:
Photo shows Main Frame with card modules installed.

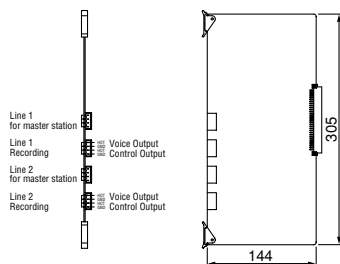
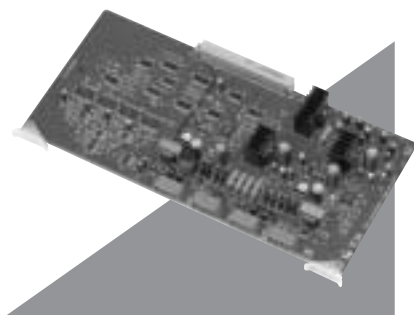


Card modules installed here. Includes 2 RS-232C ports.

SPECIFICATIONS

Power Source	20V AC, 24V DC
Current Consumption	5.5A
Speech Path Configuration	Time sharing switch (T1 stage)
Serial Port	Serial Port complies with the RS-232C Standard, D-sub connector (9-pin, female), 2 ports
Installation Method	Rack- and wall-mountable
Other	Real time clock for time control, Unit's presence/non-presence detection, System programming data maintenance, Power switch
Connection Terminals	Bus connector: DIN connector (64-pin, female) × 9 PU-200 connection terminal: 4-pin × 2 (2 PU-200s are connectable) 24V DC input terminal: 4-pin (with grounding terminal)
Operating Temperatures	0°C to +40°C
Finish	Pre-coated steel plate, black, 30% gloss
Dimensions	483.6 (W) × 443.7 (H) × 288.3 (D)mm
Weight	12.7kg
Accessories	Rack mounting bracket × 2, Rack mounting screw × 8, Fiber washer × 8, Mounting screw × 6, Cable clip × 20, Floppy disk (PC setting software) × 1, CR2032 battery × 1, Connector (4-pin) × 3

VS-900MS Master Station Interface Card



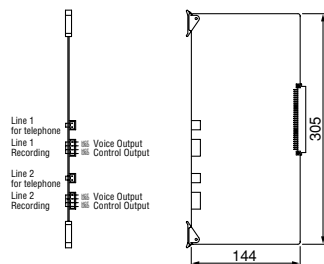
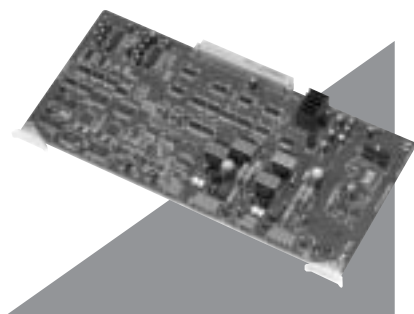
For connecting up to two master stations per card.
An external recording device can be connected to each line.

SPECIFICATIONS

Power Source	5V DC, 24V DC (supplied from the main frame)
Current Consumption	50mA (5V DC), 200mA (24V DC)
Supply Power	24V DC, 80mA
Number of Lines	2 lines
Conversation Recording Output	Voice output: 0dB*, unbalanced Control output: Open collector output, withstand voltage: 24V DC, control current: 20mA
Option	Master station connection monitoring function
Connection Terminals	Main frame connection side: DIN connector (64-pin, male) Line output: 4-pin × 2 Recording voice/control output: 4-pin × 2
Operating Temperatures	0°C to +40°C
Weight	350g
Accessories	Connector (4-pin) × 4, Ferrite clamp × 2

* 0 dB = 1V

VS-900AL Telephone Interface Card



For connecting up to two telephones per card.
An external recording device can be connected to each line. Use the telephone which complies with the FCC regulation Part 68.

SPECIFICATIONS

Power Source	5V DC, 15V DC, 24V DC (supplied from the main frame)
Current Consumption	150mA (5V DC), 30mA (15V DC), 200mA (24V DC)
Supply Power	24V DC, 80mA
Number of Lines	2 lines
Conversation Recording Output	Voice output: 0dB*, unbalanced Control output: Open collector output, withstand voltage: 24V DC, control current: 20mA
Selective Signal Type	DTMF signal
Monitoring Function	Line loop detection function
Applicable Terminal	Telephone sets to comply with FCC Part 68
Control Function	Call signal transmission, Audible signal transmission, Caller identification signal transmission (Caller ID Function)
Connection Terminals	Main frame connection side: DIN connector (64-pin, male) Line output: 2-pin × 2 Recording voice/control output: 4-pin × 2
Operating Temperatures	0°C to +40°C
Weight	400g
Accessories	Connector (2-pin) × 2, Connector (4-pin) × 2, Ferrite clamp × 2

Unit: mm

* 0 dB = 1V

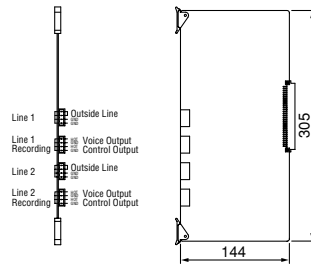
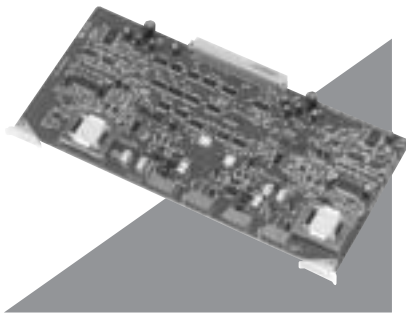
VS-900CO Outside Line Interface Card

Connects up to two outside lines per card.
An external recording device can be connected to each line.

SPECIFICATIONS

Power Source	5V DC, 15V DC, 24V DC (supplied from the main frame)
Current Consumption	300mA (5V DC), 50mA (15V DC), 50mA (24V DC)
Number of Lines	2 lines
Conversation Recording Output	Voice output: 0dB*, unbalanced Control output: Open collector output, withstand voltage: 24V DC, control current: 20mA
Selective Signal Type	DTMF signal
Signal Format	Loop start and Ground start compatible
Main Functions	DTMF dial signal transmission function, DTMF signal detection function, call signal (receiving) detection
Connection Terminals	Main frame connection side: DIN connector (64-pin, male) C/O line connection side: 4-pin × 2 Recording voice/Control output: 4-pin × 2
Operating Temperatures	0°C to +40°C
Weight	380g
Accessories	Connector (4-pin) × 4

* 0 dB = 1V



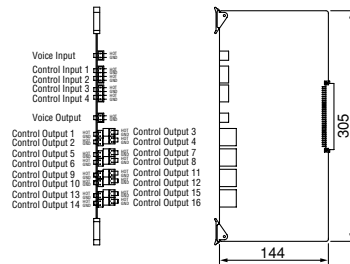
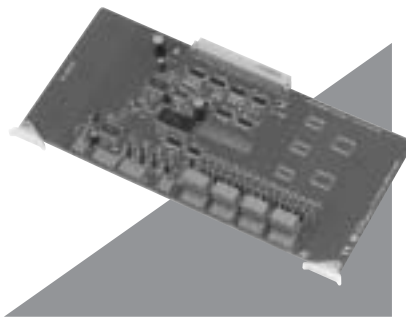
VS-900AF Audio Function Card

Enables conference, external amplifier paging and external source distribution functions.

SPECIFICATIONS

Power Source	5V DC, 15V DC, 24V DC (supplied from the main frame)
Current Consumption	100mA (5V DC), 50mA (15V DC), 30mA (24V DC)
Paging Output	Voice output: 1 output, 0dB*, unbalanced Control output: 16 outputs, open collector output, withstand voltage: 24V DC, control current: 20mA
External Source Distribution	Voice input: 1 input, 0dB*, unbalanced Control input: 4 inputs, no-voltage make contact, open voltage: 24V DC, short circuit current: 20mA
Conference Link	1 link (up to 4-party conference)
Connection Terminals	Main frame connection side: DIN connector (64-pin, male) External interface side: Voice output 2-pin Control output 2-pin × 16 Voice input 2-pin Control input 2-pin × 4
Operating Temperatures	0°C to +40°C
Weight	230g
Accessories	Connector (2-pin) × 2, Connector (4-pin) × 10

* 0 dB = 1V



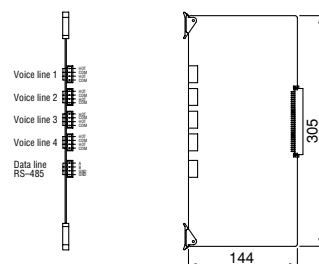
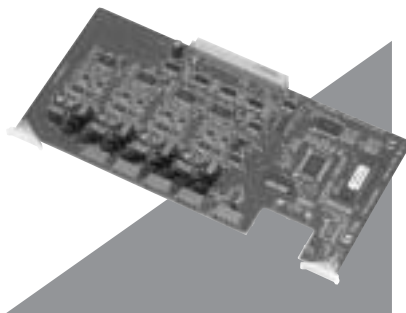
VS-900TI Tie-Line Interface Card

Interconnects multiple exchanges. Connects up to 4 links using one pair of data lines and two pairs of voice lines.

SPECIFICATIONS

Power Source	5V DC, 15V DC (supplied from the main frame)
Current Consumption	100mA (5V DC), 50mA (15V DC)
Number of Audio Links	4 links
Connection Format	Multidrop system
Transmitting System	Data: RS-485 Voice: Base band
Input/Output Level	Voice: 0dB*, balanced Data: In compliance with RS-485 Standard
Other	Exchange number setting function
Connection Terminals	Main frame connection side: DIN connector (64-pin, male) Tie-line interface side: 4-pin × 4 (Voice line) 4-pin × 1 (Data line)
Operating Temperatures	0°C to +40°C
Weight	320g
Accessories	Connector (4-pin) × 5

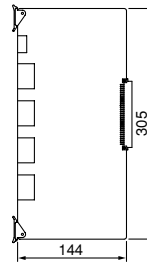
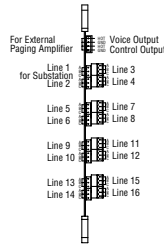
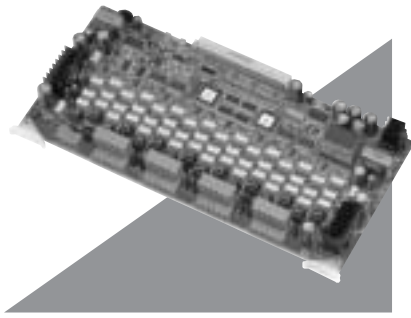
* 0 dB = 0.775V



VS-900RS Substation Interface Card

* for RS-150/RS-160/RS-170/RS-180

Connects up to 16 substations per card. Equipped with two speech links, one link able to be used as a paging link with the paging input/output connected to an external amplifier.



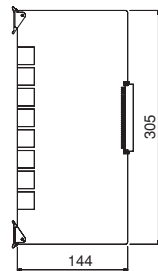
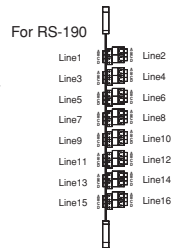
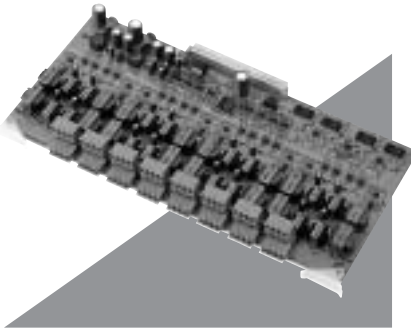
SPECIFICATIONS

Power Source	5V DC, 24V DC (supplied from the main frame)
Current Consumption	5V DC: 200mA, 24V DC: 600mA
Number of Lines	Substation 16 lines
Number of Links	2 links (one of 2 links is also used as a Paging Link.)
Paging Output	Unbalanced, -20dB signals to be sent to a paging amplifier.
Paging Input	Balanced, acceptable signal on the 25V line output from a paging amplifier.
Conversation Method	Half-duplex conversation by voice-operated switch or simplex conversation by PTT switch
Supply Power	Maximum 1W per substation
Other	Call button detection function and speech link control function
Connection Terminals	Main frame connection side: DIN connector (64-pin, male) Substation connection side: Two-core shielded cable (3-pin) × 16 Paging output/paging input: 4-pin
Operating Temperatures	0°C to +40°C
Weight	550g
Accessories	Connector (3-pin) × 16, Connector (4-pin) × 1

VS-910RS Substation Interface Card

* for RS-190 (Full-Duplex Substation)

The VS-910RS Substation Interface Card is used to connect the Full-Duplex Substation by way of 2 sets of twisted pair cables. Up to 16 Full-Duplex Substations can be connected per card. The VS-910RS has 2 speech paths, either of which can be used for substation paging.

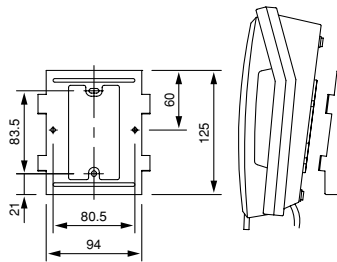


SPECIFICATIONS

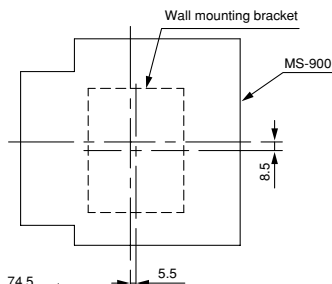
Power Source	5V DC, 24V DC (supplied from the main frame)
Current Consumption	5V DC: 200mA 24V DC: 600mA (maximum during normal use), 1.5A (maximum when 16 lines are simultaneously shorted)
Number of Lines	Substation 16 lines
Number of Links	2 links (one of 2 links is also used as a Paging Link.)
Conversation Method	Full-duplex conversation or Half-duplex conversation by voice-operated switch
Audio Output	Maximum 1W per substation
Supply Power	Maximum 20V/30mA per substation
Control System	Two-way dial pulse width system (call, restoration, external control, etc.) by current loop
Connection Terminals	Main frame connection side: DIN connector (64-pin, male) Substation connection side: 4-pin × 16
Connection Monitoring Function	Line connection detection, line short circuit/open circuit/failure detection and communication irregularity detection
Operating Temperatures	0°C to +40°C
Weight	700g
Accessory	Connector (4-pin) × 1
Maximum cable distance	
Cable Type	AWG24 (ø0.52mm) AWG22 (ø0.65mm) AWG20 (ø0.82mm)
Distance	1km 1.5km 2km

* 0 dB = 1V

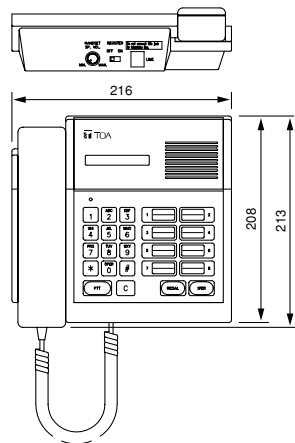
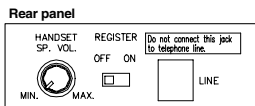
MS-900 Master Station



Wall mounting bracket



Dimensional diagram for mounting the attached wall mounting bracket

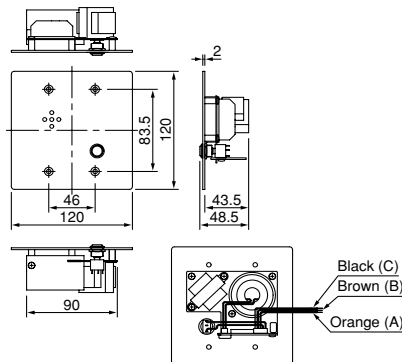


MS-900 can make calls to or receive calls from the substation or the master station (telephone).

SPECIFICATIONS

Power Source	24V DC (supplied from the main frame)
Current Consumption	60mA
Talk System	Duplex or semi-duplex conversation
Talk Frequency	300 to 3.400Hz
Handset Microphone/Speaker	Dynamic type, 150Ω
Handsfree Microphone	Electret condenser microphone
Station Speaker	Dynamic type, 8Ω, ø57mm, 0.6W
Key Pad	Membrane switch
Display	12 digits LCD
Auto Dialing Key	8 keys
Station Speaker Volume Control	2-step selection slide switch
Handset Speaker Volume Control	Volume, 0 to +12dB
Installation Method	Desk-/wall-mountable
Wiring	Twisted pair cables/2-pair
Connection Terminals	Line output: 6-position 4-contact modular jack External speaker output: 2-pin screw terminal (8Ω/0.6W)
Operating Temperatures	0°C to +40°C
Finish	ABS resin, pale white
Dimensions	216 (W) × 74.5 (H) × 213 (D)mm
Weight	940g
Accessories	Wall mounting bracket × 1, Connection cord (3m) × 1, Wood screw × 2

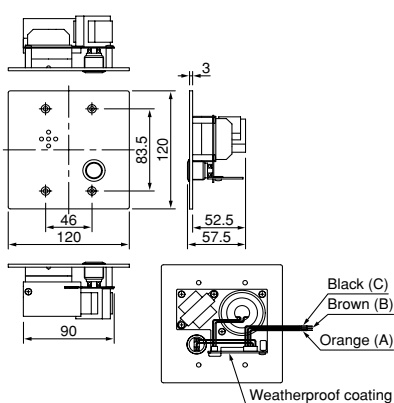
RS-150 Substation (Indoor Type)



SPECIFICATIONS

Rated Input	1W
Rated Impedance	625Ω (1W/25V)
Output Sound Pressure Level	82dB
Frequency Response	300 to 4,000Hz (minimum 72dB)
Internal Speaker	4cm dynamic
Call Switch Button	Resin-made push button
Operating Temperatures	-10°C to +50°C (Temperature range not to freeze the speaker and switch)
Finish	Stainless steel (SUS304), hairline
Dimensions	120 (W) × 120 (H) × 48.5 (D)mm
Weight	410g
Accessories	Oval head screw × 4

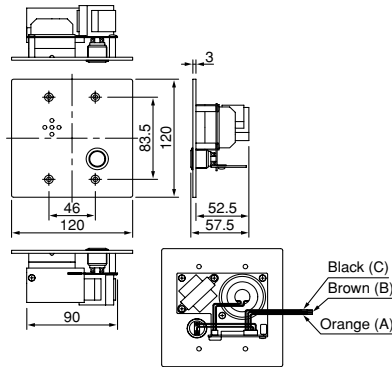
RS-160 Substation (Indoor Vandal-Resistant Type)



SPECIFICATIONS

Rated Input	1W
Rated Impedance	625Ω (1W/25V)
Output Sound Pressure Level	82dB
Frequency Response	300 to 4,000Hz (minimum 72dB)
Internal Speaker	4cm dynamic
Call Switch Button	Metal push button
Operating Temperatures	-10°C to +50°C (Temperature range not to freeze the speaker and switch)
Finish	Stainless steel (SUS304), hairline
Dimensions	120 (W) × 120 (H) × 57.5 (D)mm
Weight	540g
Accessories	Oval head screw × 4

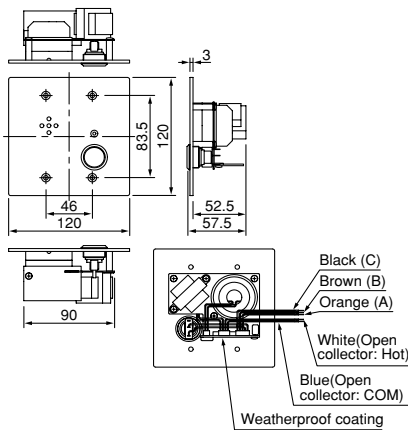
RS-170 Substation (Outdoor Vandal-Resistant Type)



SPECIFICATIONS

Rated Input	1W
Rated Impedance	625Ω (1W/25V)
Output Sound Pressure Level	82dB
Frequency Response	300 to 4,000Hz (minimum 72dB)
Internal Speaker	4cm dynamic
Call Switch Button	Metal push button
Weather-Resistant Coating	Printed circuit board
Operating Temperatures	-10°C to +50°C (Temperature range not to freeze the speaker and switch)
Finish	Stainless steel (SUS304), hairline
Dimensions	120 (W) × 120 (H) × 57.5 (D)mm
Weight	540g
Accessories	Oval head screw × 4

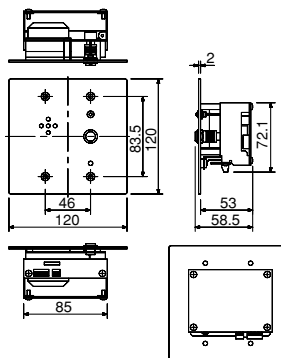
RS-180 Substation (Outdoor Vandal-Resistant Type with Control Output)



SPECIFICATIONS

Rated Input	1W
Rated Impedance	625Ω (1W/25V)
Output Sound Pressure Level	82dB
Frequency Response	300 to 4,000Hz (minimum 72dB)
Internal Speaker	4cm dynamic
Call Switch Button	Metal push button (red top: ø20)
Call LED	Red
Control Output	Open collector output: 24V DC, 5mA (The open collector output is kept turned on till the conversation is finished after the call button was pressed.)
Weather-Resistant Coating	Printed circuit board
Operating Temperatures	-10°C to +50°C (Temperature range not to freeze the speaker and switch)
Finish	Stainless steel (SUS304), hairline
Dimensions	120 (W) × 120 (H) × 58.5 (D)mm
Weight	570g
Accessories	Oval head screw × 4

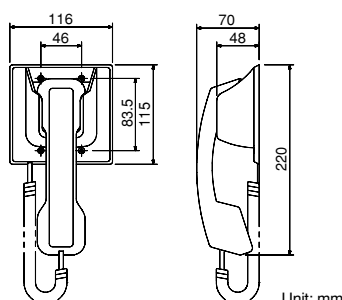
RS-190 Full-Duplex Substation (Indoor Type with Control Output)



SPECIFICATIONS

Rated Input	1W
Rated Impedance	500Ω
Internal Speaker	4cm cone-type
Control Output	Open collector output: 24V DC, 30mA (The open collector output is kept turned on till the conversation is finished after the call button was pressed.)
Operating Temperatures	-10°C to +50°C (Temperature range not to freeze the speaker and switch)
Finish	Panel: Stainless steel (SUS304), hairline Call button: Resin
Dimensions	120 (W) × 120 (H) × 58.5 (D)mm
Weight	465g
Accessories	Box mounting screw (No.6-32UNC × 8) × 4, Box mounting screw (M4 × 25) × 4
Maximum cable distance	
Cable Type	AWG24 (ø0.52mm) AWG22 (ø0.65mm) AWG20 (ø0.82mm)
Distance	1km 1.5km 2km

RS-191 Option Handset

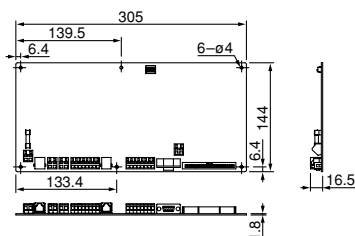
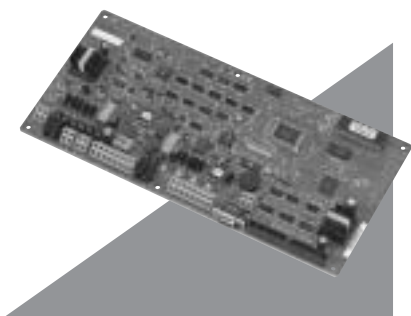


Unit: mm

SPECIFICATIONS

Handset Receiver	Dynamic type
Handset Transmitter	Electret condenser type
Internal Speaker	4cm cone-type
Operating Temperatures	0°C to +40°C (Temperature range not to freeze the speaker and switch)
Finish	ABS resin, pale white
Dimensions	116 (W) × 220 (H) × 70 (D)mm
Weight	330g
Accessories	Box mounting screw (No.6-32UNC × 8) × 4, Box mounting screw (M4 × 25) × 4

VS-900DI* Direct Select Control Card

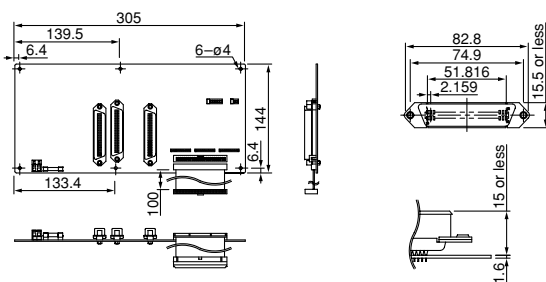
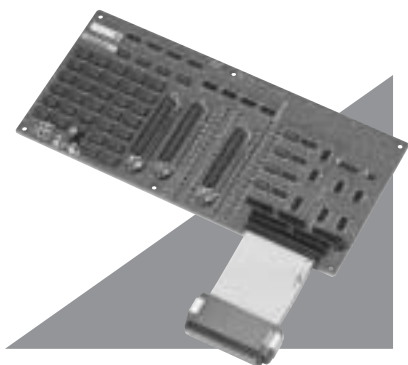


SPECIFICATIONS

Power Source	24V DC, 1A
Maximum Cable Length to Exchange	1.5km (including the additional master station line from the VS-900DI) when the cable gauge is AWG22
Maximum Number of Connectable VS-900DI Cards	4 cards per exchange, 64 cards per system (16 tie-lined exchanges)
Function Key Input	One each of (C), (PTT), (XFER) and (TEST), keys, Dry contact, 8-pole screwless terminal Dry contact, 5V DC/0.5mA Contact resistance: 50Ω or less
Communication Line	1 line for VS-900 exchange (VS-900MS card) and 1 line for MS-900 master station, 16-position 4-contact modular jack for each line
In-use Indication Output	Open collector output, 24V DC/ approx. 100mA, 2-pole screwless terminal
Electret Microphone Input	Microphone sensitivity: -75 to -65dB*, phantom power supply (power supply can be cut off), 2-pole screwless terminal
Speaker Output	Speaker impedance: 8Ω Output terminal: 2-pole screwless terminal
Headset Connection	Microphone sensitivity: -75 to -65dB* Speaker impedance: 200 to 400Ω Detection jack contact input (Det.): 5V DC, 10mA Contact resistance: 10Ω or less, 8-pole screwless terminal (Headset can also be turned on/off using the manual switch instead of the jack contact input.)
PC Interface	RS-232C D-sub connector (9 poles, female type)
Usable Cable	Bared-core length: 5 to 6mm Cross section area: 0.14 to 2.5mm ²
Operating Temperatures	0°C to +40°C
Weight	350g
Accessories	Ferrite clamp × 2, Modular cord (3m) × 1

* 0 dB = 1V

VS-910DI* Direct Select I/O Card

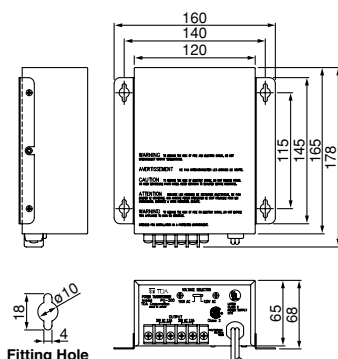


SPECIFICATIONS

Power Source	24V DC, 1A
Maximum Number of VS-910DIs per VS-900DI	32
Maximum Number of Ports per VS-910DI	32 switch inputs (for calling and response switch operation) 32 open collector outputs (for LED indication of incoming and outgoing calls) 32 relay outputs (call-or response-activated relay output)
Maximum Number of Ports per Full VS-910DI-Mounted System	1024 switch inputs (for calling and response switch operation) 1024 open collector outputs (for LED indication of incoming and outgoing calls) 1024 relay outputs (call-or response-activated relay output)
Switch Input	32 inputs (for custom-made direct select key operation for calling or response) dry contact, 5V DC, 0.5mA Contact resistance: 50Ω or less, 50-pole "CHAMP®" IDC connector (Amphenol connector)
Open Collector Output	32 outputs (for LED indication of incoming and outgoing calls) 24V DC, approx. 100mA, 50-pole "CHAMP®" IDC connector (Amphenol connector)
Relay Output	32 relay outputs, call-or response-activated relay output, normal open, 24V DC, 1A, 50-pole "CHAMP®" IDC connector (Amphenol connector)
Operating Temperatures	0°C to +40°C
Weight	460g

* The VS-900DI Direct Select Control Card and VS-910DI Direct Select I/O Card are interface cards that connect to the VS-900 Exchange to enable calling-station indication output, direct select input, and external equipment control output functions.

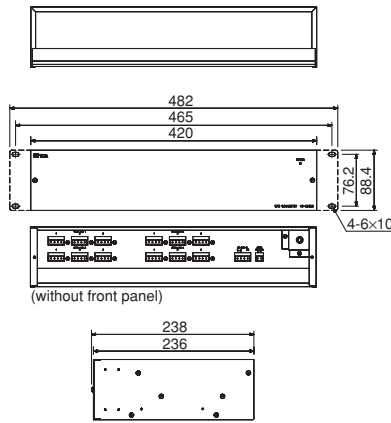
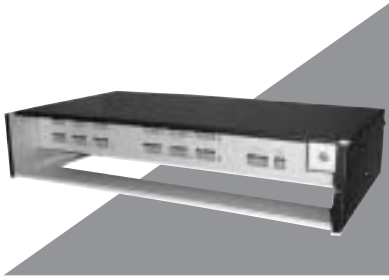
PU-200 Power Transformer Unit



SPECIFICATIONS

Power Source	NCU Type: 110V/120V AC, 50/60Hz SEM Type: 220V/230V AC, 50/60Hz
Output Voltage	20V AC
Output Current	2.5A
Finish	Color steel plate, ivory
Dimensions	160 (W) × 68 (H) × 178 (D)mm
Weight	2.8kg
Accessories	Mounting brackets × 2 Fuse (250V, 2A) × 1 Fuse (125V, 4A) × 2 Round head wood screw (3.5 × 25) × 4

VS-900SC Site Connector



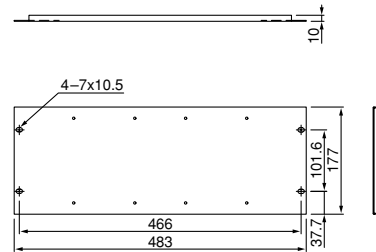
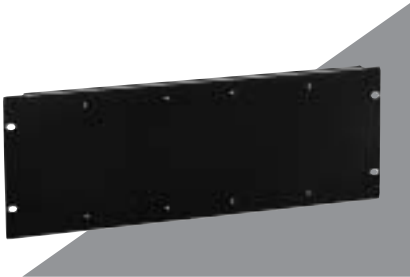
TOA's VS-900SC Site Connector is used to connect the VS-900 system exchanges to the fiber optical interface.

SPECIFICATIONS

Power Source	20V AC (supplied from the power transformer unit, under 250mA) 24V DC
Number of Links	4 links
Input	0dB*, 600Ω, balanced (transformer)
Output	0dB*, 600Ω, balanced (transformer)
Installation Method	Rack- and wall-mountable
Connection Terminal	Voice line side: 4-pin × 3 (voice line)/1 link PU-200 connection terminal: 2-pin 24V DC input terminal: 4-pin
Operating Temperatures	-10°C to +40°C
Finish	Panel, Case: Pre-coated steel plate, black
Dimensions	420 (W) × 88.4 (H) × 238 (D)mm
Weight	3.55kg
Accessories	Rack mounting bracket × 4, Rack mounting screw × 4, Fiber washer × 4, Wall mounting bracket × 2, Wall mounting screw (4.1 × 20) × 4, Link Plate*2 × 2, Link plate fixing screw × 2, Bracket mounting screw × 8, Connector (4-pin) × 13, Connector (2-pin) × 1

* 0 dB = 1V *2 Enables to link VS-900SC with VS-900MF

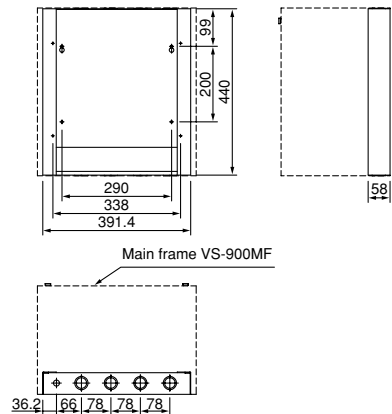
PN-100B Rack Mount Panel for PU-200



SPECIFICATIONS

Mounting Capacity	Up to 2 PU-200s
Finish	Color steel plate, Black
Dimensions	483 (W) × 177 (H) × 10 (D)mm
Weight	0.7kg

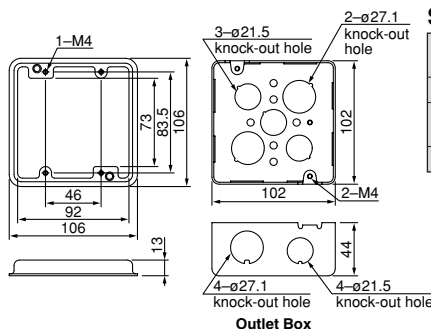
YC-303 Main Frame Wall Mounting Bracket



SPECIFICATIONS

Finish	Steel, Black, electrodeposition paint
Dimensions	391.4 (W) × 440 (H) × 58 (D)mm
Weight	2.1kg
Accessories	Main frame mounting screw × 4, Wall mounting screw × 4

YC-302 Back Box (2-gang) for RS-150/160/170/180/190



SPECIFICATIONS

Quantity packed per display carton	10 pieces
Finish	SPHT, MFZn4 (glazed chromate)
Dimensions	Outlet box: 102 (W) × 102 (H) × 44 (D)mm Cover: 106 (W) × 106 (H) × 13 (D)mm
Weight	370kg

Unit: mm

PC INTERFACE SOFTWARE

DESCRIPTION

Conversation and broadcasting functions can only be used by programming individual line assignments for each facility, station numbering schedules, function details and other data into the exchange before the system is actually used. To perform such settings, a personal computer loaded with dedicated software needs to be connected to the exchange. This dedicated software enables general control and maintenance settings as well as system programming functions.

Notes

Some functions to be registered at master stations cannot be enabled without prior system programming.

SYSTEM REQUIREMENTS

OS: Microsoft® Windows NT® Workstation 4.0 Service Pack 5/
Windows 2000®/Windows XP®

CPU: Pentium® 200MHz or more

Memory: 64MByte or more

Hard disk: Free space of 50MByte or more

Monitor: Larger than 14.1 inches

Resolution: 640 × 480 pixel, 256 colors or more

SYSTEM PROGRAMMING (SETTING ITEMS)

System Setting

- Number of Exchanges
- Station Number Digit
- Tie-Line Connections
- Exchange Station Number Assignment

Line Setting

(1) Master station/telephone setting

Registers the following contents designating the exchange number (1 - 16 or ALL).

- Station Number
- Station Name
- Access to Outgoing Calls
- Emergency Paging
- "Outside Line Call Forwarding" Receiving Telephone Number
- "Call Forwarding" Receiving Station*
- "Time-Based Call Forwarding" Receiving Station*
- "Busy Call Forwarding" Receiving Station*
- "No-Answer Call Forwarding" Receiving Station*

* This setting can be performed at the master station as well.

(2) Substation setting

Registers the following contents designating the exchange number (1 - 16 or ALL).

- Station Number
- Station Name
- Called Station Exchange Number
- Called Station Line Number
- Called Station Number
- Called Station Name
- Call Priority

(3) Outside line setting

Registers the following contents designating the exchange number (1 - 16).

- Outside Line Connection Time-Out
- Outside Line Name
- Outgoing Call Access Number
- Direct-In Dialing
- Direct-In Line
- Receiving Station

Function Setting

(1) Group call setting

Registers the following contents designating the representative master station/telephone.

- Member Station Exchange Number
- Member Station line Number

(2) Call forwarding & time-out settings

Registers the following contents designating the exchange number (1 - 16).

- Call Forwarding
- Time-Based Call Forwarding
- Time-Based Call Forwarding Start Time
- Time-Based Call Forwarding End Time
- Busy Call Forwarding
- No-Answer Call forwarding
- Call Time-Out
- Conversation Time-Out

(3) Scan monitor setting

Registers the following contents designating the master station.

- Monitoring Time
- Monitoring Substation Exchange Number
- Monitoring Substation Line Number
- Monitoring Substation Number
- Monitoring Substation Name

(4) Paging setting

Registers the substations assigned to the zone designating the exchange number (1 - 16).

- Zone Number Digit
- Paging Time-Out
- Zone

(5) Public address system setting

Registers the control outputs assigned to the zone designating the exchange number (1 - 16).

- Zone

(6) External source distribution setting

Registers zones to the control input designating the exchange number (1 - 16).

- Zone

(7) Emergency conference setting

Registers the following contents designating the master station.

- Member Station Exchange Number
- Member Station Line Number
- Member Station Number
- Member Station Name

(8) Direct select setting (Relay output from the VS-910DI card)

Registers the following contents designating the exchange number (1 - 16).

- Control Output Mode

MAINTENANCE/CONTROL FUNCTIONS

(1) Remote Dialing

Dialing operations can be remotely performed from a PC instead of the master Station by designating the exchange and master station number.

(2) Log Data

The operating log of each exchange can be read, printed out or stored on hard disk.

(3) Upload/Download

Data can be transmit or received.

(4) Print Out

The exchange setting contents are print out.

(5) PC Port Setting

Setting are made for the connection method and COM port between PC and exchange.