



**Minutes
Committee No. 4
Recycling/Computerization/Buildings/Intergovernmental Services
March 31, 2014
City Hall, Council Chambers**

Committee #4 – Recycling/Computerization/Building/Intergovernmental Services met on **Monday, March 31, 2012 at 9:00AM** in the City Hall Council Chambers, City Hall, 30 West Central Street, Chippewa Falls, WI.

Committee/Council Members Present: Mike Hanke, Chuck Hull, Rob Kiefer, Jane Lardahl, George Adrian
Other Attendees: Mayor Greg Hoffman; Per Forsberg - Audio Architects; Chris Schlicher, Jon Yule, Jordan Yule - NetTel Communications

The meeting was called to order at 9:00 AM.

1. Item #1: Review proposals for update to the Council Chambers sound system and data wiring. Possible recommendations to Council.

The recent addition of the Polycom conferencing system has created a need to provide a suitable permanent installation of audio and data cables to the system. The present method of running data cables from existing outlets in the front of the room is both unsafe and unreliable. Also, audio gathered only from the microphone on the unit is not sufficient to provide the level and clarity needed. Requests were solicited for providing the installation of the needed cabling. In addition, as the existing sound system dates to 1995, it was requested to provide solutions to upgrade the equipment to meet existing standards and provide better audio to both the council and the public.

Audio Architects of Chippewa Falls presented a plan to complete the wiring and upgrade the existing sound system. Their solution for audio upgrade would keep the existing high quality microphones and install a digitally controlled audio system. It would have the capability to be greatly expanded in the future. Included would be a more sufficient speaker system for the public, additional speakers to assist the council in hearing clearly as the only amplification presently is facing towards the public. The automatic control of the council mics would be kept. New wireless microphones for the public and presenters are included. Complete bid was \$14,971.08.

NetTel then presented their plan to complete the wiring and upgrade the existing sound system. Their solution would provide new microphones for the council. Each would have a small speaker and a user activated switch for ON/OFF. The sound to the public would also be upgraded. Complete bid was \$11,830.48.

There also was a quote to upgrade the existing projector to HDMI standards.

Significant discussion was held regarding the details of each proposal. The committee eventually decided that the automated system for the council microphones was the more desirable, as was the ability to expand, change the system easily in the future. It was felt that the quality of the components from Audio Architects was worth the extra amount. It was also decided that the immediate need is to get the Polycom system installation completed first, and address the audio upgrade after completion. It was also decided that there was no compelling reason to upgrade the existing projector to HDMI at the moment. Since the present system has been adequate so far, and technology changes so quickly, it was decided to wait until there was a need to replace/upgrade.

Motion by Hanke/Kiefer to recommend Council authorize Audio Architects to do the installation of the needed audio and data cables for the Polycom System. All conduit used should be of sufficient size to accommodate both the present needs of the Polycom as well as the anticipated upgrade to the

audio system. The bid will be submitted to Committee #1 for approval. It is assumed that the cost of the installation will be funded through existing cable TV franchise collections that have been historically used to provide video of the Council Meetings.

Motion passed unanimously.

Item #2: Adjournment

*Motion by Kiefer/Hanke to adjourn.
Motion passed unanimously.*

Meeting adjourned at 10:21AM.

Minutes submitted by: *Chuck Hull* Chair

Committee 4 Meeting
3/31/14

Audio Architect

Replace sound system – wiring \$14,971.08

Net Tel

Wiring \$2,098.00

Replace sound system \$9,732.48 \$11,830.48

Replace projector \$1,912.08



Audio Architects, Inc.

1776 Olson Dr
Chippewa Falls, WI 54729
715-723-4900 Fx 715-723-4584

**** Proposal ****

3/12/2014

Project Number: 2413

For :
Connie City Council Chamber AV

Project Site:
Connie

** Proposal ** to:
Chippewa Falls, City of Connie Water Dept 30 W. Central St. Chippewa Falls, WI 54729 Tel: 715-726-2741

Mfr-Part No.	Qty	Description	Unit Price	Extended
BIAMP-TESTIRAFORTE AI	1	DSP Fixed I/O Server 12 In / 8 Out		
BIAMP-TESTIRA EX-LOGIC	1	Tesira Logic Expander w/16 GPIO		
RDL-PS-24A	1	North America 24 Vdc @ 400 mA Power Supply (UL,		
Biamp-TESTIRA TEC-1S	1	Tesira PoE Ethernet Control surface mount		
RDL-TX-J2	1	Unbalanced Input Transformer (Stereo phono jack		
	2	LabGruppen E4:2 Power Amp 200/ch 2/4/8ohm/70V		
Tannoy-DVS 6T	7	DVS Series Speaker		
Belden-5300UE	400	Wire 18ga 2cond unshld		
General-5133200E	1000	General Cable CAT5e, Grey		
AAI-WIREMOLD	2	Wiremold Boxes and Conduit		
		Reinstall Existing Rack		
Sennheise-EW345G3-A	2	Handheld transmitter with e845 capsule and rack		
Sennheise-AM2	2	BNC connecting cables for front-mounting antennas		
	1	AA Rechargeable Batteries (4) with Charger		
Furman-CN-1800S	1	Power Conditioner/Sequencer w/8 Outlet, 15 Amp		
Bosch-FMR-500WT-A	1	Bodypack system same as above with no mic		
Bosch-PC SATELLITE-18	1	Freestanding wireless gooseneck multi-pattern		
		Equipment Subtotal		9,793.98
		Installation Subtotal		5,177.10

Purchase Order to Accompany Signed Paperwork, Balance Due Net 30
This ** Proposal ** is Valid for 30 Days.
This pricing assumes normal installation hours of Monday - Friday, 7am - 5pm

Project Total: _____
\$14,971.08

Signature: _____ Date: _____

14,000 -

Connie Freagon

From: Per Forsberg <per@audio-architects.com>
Sent: Wednesday, March 12, 2014 5:20 PM
To: Connie Freagon
Subject: Council Chamber Sound Upgrade
Attachments: councilchamberupgrade.pdf; TesiraFORTE_Data_Sheet_Feb14.pdf; DVS6 Datasheet LR_201238.pdf

Connie,

Before we accept a signed proposal I will prepare an official "scope of work" so we are confidently all on the same page.

The unofficial scope of work is as follows:

- 1) All components will be upgraded except for the existing Beyer gooseneck microphones. Unless these microphones physically break they are hard to beat at any price. I added a Logic Box to the DSP processor (Forte AI) so the LED rings will continue to work and indicate when any microphone is ON.
- 2) We will have two new handheld wireless microphones (staff and ?)
- 3) We will have a wireless podium microphone for the lectern.
- 4) We will have a line level input so audio from video sources can be amplified.
- 5) We will have a dedicated audio send to the Polycom Real Presence 500 codec.
- 6) We will have two speakers on each side of the room and one above the head table so council persons can hear audio. There will be a "mix-minus" matrix created in the Forte processor which will allow individual microphones to be amplified to all speakers except the ones aimed at that specific microphone.
- 7) There will be new higher quality speakers for the gallery.
- 8) We will deliver three CAT5e runs from the second floor data room to the wall behind the present location of the Polycom.

It is possible that Chippewa County has extra wireless podium mics that the city could acquire inexpensively.

If expandability beyond 12 inputs is required there is an AVB model of the Forte AI at a slightly higher price point.

Until I can inspect the Polycom software I cannot be certain that the 3.5mm input is available when using the camera. The conventional way of using this input is with "content" like a PC. Older models all can be customized, but I haven't worked with this newer model yet.

I did not include the optional HDMI hardware and cable in this quote, but if we sub-mix aux sources we can easily handle the audio portion.

I think this addresses all the needs you've shared with me and it includes the very latest and most powerful DSP mixer/processor, which will allow us to achieve excellent sound with perfect repeatability.

I'll be honored to explain this upgrade to the council at their convenience. My practice is to limit my presentation to 20 minutes and then Q&A can be as long or short as the council wants.

Thanks,
Per



3610 Mall Dr
 Eau Claire, WI 54701
 Phone: (715) 835-8939
 Fax: (715) 835-1844

Estimate

No.: **13050**
 Date: 3/13/2014

Prepared for:

Connie Freagon
 City of Chippewa Falls
 30 West Central Street
 Chippewa Falls, WI 54729 USA

Phone: (715) 726-2741

Ship To Address:

Quantity	Item ID	Description	UOM	Price	Total
1,000	GCC-5133299E	General Cable, Cat5E Cable, Genspeed 5000, Riser Rated, Blue	EA	\$0.21	\$210.00
120	HTN-TSR3I-8A	Tyton 1 3/4" 1-Piece Vinyl Surface Raceway - Ivory	EA	\$2.75	\$330.00
2	HTN-TSR3I-50	Tyton 1 3/4" Ceiling Drop - Ivory	EA	\$3.50	\$7.00
10	HTN-TSR3I-14	Tyton 1 3/4" Raceway Joint Cover	EA	\$2.25	\$22.50
4	HTN-TSR3I-36	Tyton 1 3/4" Vinyl Raceway End-Ivory	EA	\$2.25	\$9.00
4	HTN-TSR3I-33	Tyton 1 3/4" Internal Cover - Ivory	EA	\$2.25	\$9.00
4	HTN-TSR3I-29	Tyton 1 3/4" Raceway Outside Corner - Ivory	EA	\$2.25	\$9.00
4	HTN-TSR3I-25	Tyton 1 3/4" Elbow Cover - Ivory	EA	\$2.25	\$9.00
120	HTN-TSR2I-8A	Tyton 1 1/4" Vinyl Raceway - Ivory	EA	\$2.50	\$300.00
2	HTN-TSR2I-50	Tyton 1 1/4" Ceiling Drop - Ivory	EA	\$3.50	\$7.00
10	HTN-TSR2I-14	Tyton 1 1/4" Splice Cover - Ivory	EA	\$1.50	\$15.00
4	HTN-TSR2I-25	Tyton 1 1/4" Elbow Cover - Ivory	EA	\$1.50	\$6.00
4	HTN-TSR2I-29	Tyton 1 1/4" External Cover - Ivory	EA	\$1.50	\$6.00
4	HTN-TSR2I-33	Tyton 1 1/4" Internal Cover - Ivory	EA	\$1.50	\$6.00
4	HTN-TSR2I-36	Tyton 1 1/4" End CAP - Ivory	EA	\$1.50	\$6.00
5	HTN-TSRI-JB2	Tyton Single Gang 2" Depth Junction Box - Ivory	EA	\$6.50	\$32.50
3	NET-TP13-I	Single Gang Blank Face Plate Ivory	EA	\$1.00	\$3.00
1	NET-SVGA-MM-50	Cable, Video, Svga, Male/Male,, 50'	EA	\$58.00	\$58.00
1	NET-HDMI-MM-50	Cable, Video, Hdmi, Male/Male, 50'	EA	\$68.00	\$68.00
1	PDT-JB1DEI-A	Panduit, Outlet Box, Deep, Sg, Electrical Ivory	EA	\$8.50	\$8.50
1	LVT-41290-SMI	Leviton, Wallplate, Single-Gang, Ivory	EA	\$2.75	\$2.75
1	LVT-41291-2QI	Leviton, 2-Port Module Adapter, 1 U, Ivory	EA	\$2.50	\$2.50
1	NET-HDMICOUPLERKS	Hdmi Coupler - Keystone insert - White	EA	\$13.50	\$13.50
5	LVT-41084-BIB	Leviton, Blank insert, Small, Ivory	EA	\$0.35	\$1.75
2	LVT-41291-1BI	Leviton, Blank Module, 1U, Ivory	EA	\$1.50	\$3.00

As required by the Wisconsin Lien Law; Invisible Inc., DBA NetTel Communications hereby notifies the owner that by furnishing labor or materials for installation on the owner's property, it may have lien rights on the owner's land and buildings if not paid.



3610 Mall Dr
 Eau Claire, WI 54701
 Phone: (715) 835-8939
 Fax: (715) 835-1844

Estimate

No.: **13049**

Date: **3/13/2014**

Prepared for:

Connie Freagon

Phone: (715) 726-2741

Ship To Address:

City of Chippewa Falls
 30 West Central Street
 Chippewa Falls, WI 54729 USA

Quantity	Item ID	Description	UOM	Price	Total
1	IFX-IN3128HD	In Focus 3128HD Projector - Up To 4000 Lumens - 1080P - HDMI and SVGA	EA	\$1,467.99	\$1,467.99
1	IFX-PRJ-MNT-UNIV	Universal Ceiling Mount F/Use w/All Projectors up to 25 lbs	EA	\$155.42	\$155.42
1	IFX-PRJ-CEIL-ADPT	Infocus Ceiling Install Plate Prj-Mont Univ Prj Inst 50 lbs load Capacity	EA	\$15.12	\$15.12
1	IFX-HW-PRESENTER-2	Infocus Presenter 2 RF Remote with USB	EA	\$48.97	\$48.97
1.00	NT Misc Mounting Hardware	NetTel Miscellaneous Mounting Hardware, Drop Pipe, Safety Chains and Cable Clips	EA	\$23.60	\$23.60
1.00	NT Labor	NetTel Labor	HR	\$240.00	\$240.00

Assumes that you have a dedicated PC or Laptop to drive the projector. Cabling for it is on Estimate 13050. Also assumes this work can be done during normal business hours and that plenum cabling is not required for this installation. If there is and Asbestos in the area, drilling through the Asbestos area would have to be done by a specialist at the City's expense. (Not NetTel Communications.)

Item Total:	\$1,951.10
Your Price:	\$1,912.08
Total:	\$1,912.08

Prices are firm until 4/12/2014

Terms: Net 10

Prepared by: Jon Yule, JYule@invisibleinc.com

Date: 3/13/2014

Accepted by: _____

Date: _____

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3610 Mall Dr, Eau Claire, WI 54701
 Phone: (715) 838-1315 Fax: (715) 552-2611

Quote
 No.: **12992**
 Date: 3/31/2014

Prepared for:

 City of Chippewa Falls
 30 West Central Street
 Chippewa Falls, WI 54729 USA

Prepared by: Christopher Schlicher
 Account No.: 985
 Phone: (715) 726-2741

Quantity	Item ID	Description	UOM
1	TOA-TS-770	Ts Series Conference System - Master Controller	
1	TOA-TS-771	Ts Series Conference System - Chairperson Station	
9	TOA-TS-772	Ts Series Conference System - Delegate Station	
10	TOA-TS-774	Ts Series Conference System - Long Gooseneck Mic	
10	TOA-YR-770-2M	Ts Series Conference System - 2 Meter Extension Cable	
1	TOA-YR-770-10M	Ts Series Conference System - 10 Meter Extension Cable	
	NA Other Sales/Service	Sure SLX Beta58 Wireless Microphone	
	NA Labor	Professional Services	

Your Price:
\$9,732.48

Total:
\$9,732.48

Prices are firm until 4/6/2014 Terms: Net 10

Prepared by: Christopher Schlicher, cschlicher@invisibleinc.com

Date: 3/7/2014

Accepted by: _____ Date: _____ PO#: _____



3610 Mall Dr
 Eau Claire, WI 54701
 Phone: (715) 835-8939
 Fax: (715) 835-1844

Estimate

No.: **13050**
 Date: **3/13/2014**

Quantity	Item ID	Description	UOM	Price	Total
4	LVT-5G108-RO5	Leviton, Cat5E Connector, SnAP-In Jack, Orange	EA	\$6.75	\$27.00
1	NET-HDMI-MM-6	Cable, Video, Hdmi, Male/Male, 6'	EA	\$10.00	\$10.00
1	NET-SVGA-MM-6	Cable, Video, Svga, Male/Male, 6'	EA	\$12.00	\$12.00
1.00	NT Misc Mounting Hardware	NetTel Miscellaneous Mounting Hardware	EA	\$148.20	\$148.20
1.00	NT Labor	NetTel Labor to install two locations of two Cat5e cables each, a SVGA and HDMI cable to the Chambers	HR	\$720.00	\$720.00
4	NET-UTP5e-3-BL	Cable, Patch, RJ45, C5E, 3', Blue	EA	\$4.00	\$16.00
4	NET-UTP5e-5-BL	Cable, Patch, RJ45, C5E, 5', Blue	EA	\$4.95	\$19.80

(Cable quoted is riser rated.) (Assumes this work can be done during normal business hours. If there is and Asbestos in the area, drilling through the Asbestos area would have to be done by a specialist at the City's expense. (Not NetTel Communications.) (This is for the City of Chippewa Falls City Hall Building.)

Your Price: \$2,098.00
Total: \$2,098.00

Prices are firm until 4/12/2014

Terms: Net 10

Prepared by: Jon Yule, JYule@invisibleinc.com

Date: 3/13/2014

Accepted by: _____

Date: _____

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TS-770 SERIES CONFERENCE SYSTEM



***TOA Conference System with
easy installation, use and expansion, plus
remote participation capability***



Compact, high-performance conference system with clear sound and remote conferencing capability.

The TOA TS-770 Conference System brings a multiple-mode remote conferencing to the meeting room, via a standard telephone line, a mobile phone, or PC-based IP telephony. It provides a full range of features for ensuring clear sound for efficient and effective conferences, and at a remarkably high cost/performance ratio.

The TS-770 does away with the need for a conference hall with professionally and permanently installed equipment for small-to-medium-sized meetings. Setting up the TS-770 is quick and easy. The basic requirements are simply to attach the Chairman and Delegate Units to the system's Central Unit, and connect each Delegate Unit, accordingly. Depending on an application, a unit may be farther apart from each other so an optional Extension Cord (2m/10m) can be attached. Up to 70 units, including multiple Chairman Units, may be attached to a single Central Unit (35 per

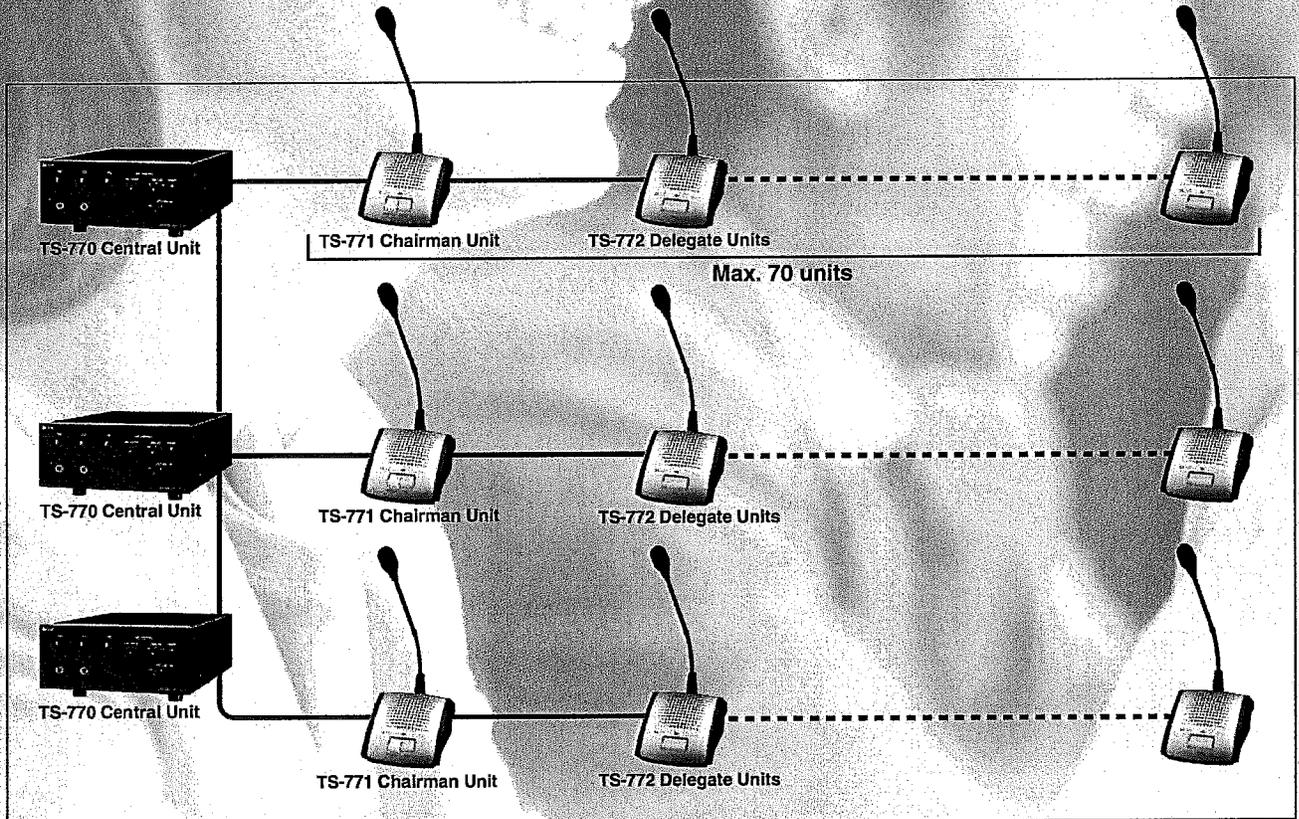
line), and system expansion to 140 or 210 units is possible by adding a 2nd or 3rd extension Central Unit. Operating the TS-770 goes smoothly and efficiently. An optimized unidirectional gooseneck microphone and wide frequency response speaker are included in every participant's unit, to ensure optimally clear voice transmission, with everyone clearly heard. Simply pushing the Talk button activates the microphone, while also deactivating the speaker in the unit, to prevent howling. The Chairman Unit can select one, three or six Delegate Units for simultaneous operation, and if several Chairman Units are included, they may speak simultaneously. Smooth operation of the conference is assured by a Chairman Unit's priority function. Long-term archival recording is made possible by connecting an optional alternating recording device to the center amplifier, and each unit also has its own recording output jack.



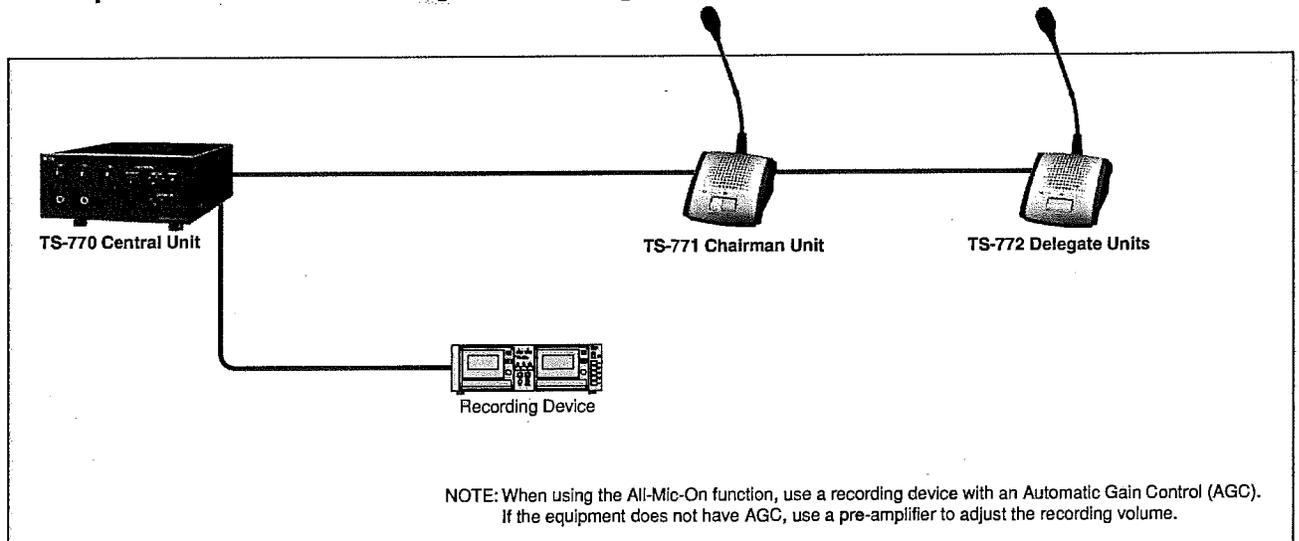
**A new series has joined the lineup of
TOA's Conference System.
The new TS-770 Series boasts high quality
at affordable prices.
Never make a compromise when it comes to
offering users worry-free use—
that's a TOA philosophy.**

FEATURES AND CONNECTION EXAMPLES

- **Maximum 70 Chairman and Delegate Units (up to 35 units* per line) are connectable to one Central Unit.**
*If the TS-775 Remote Delegate Interface Unit is used, up to 35 TS-775 Remote Delegate Interface Units can be connected per line also.
- **Expandable to maximum 210 units by connecting 2 additional Central Units.**

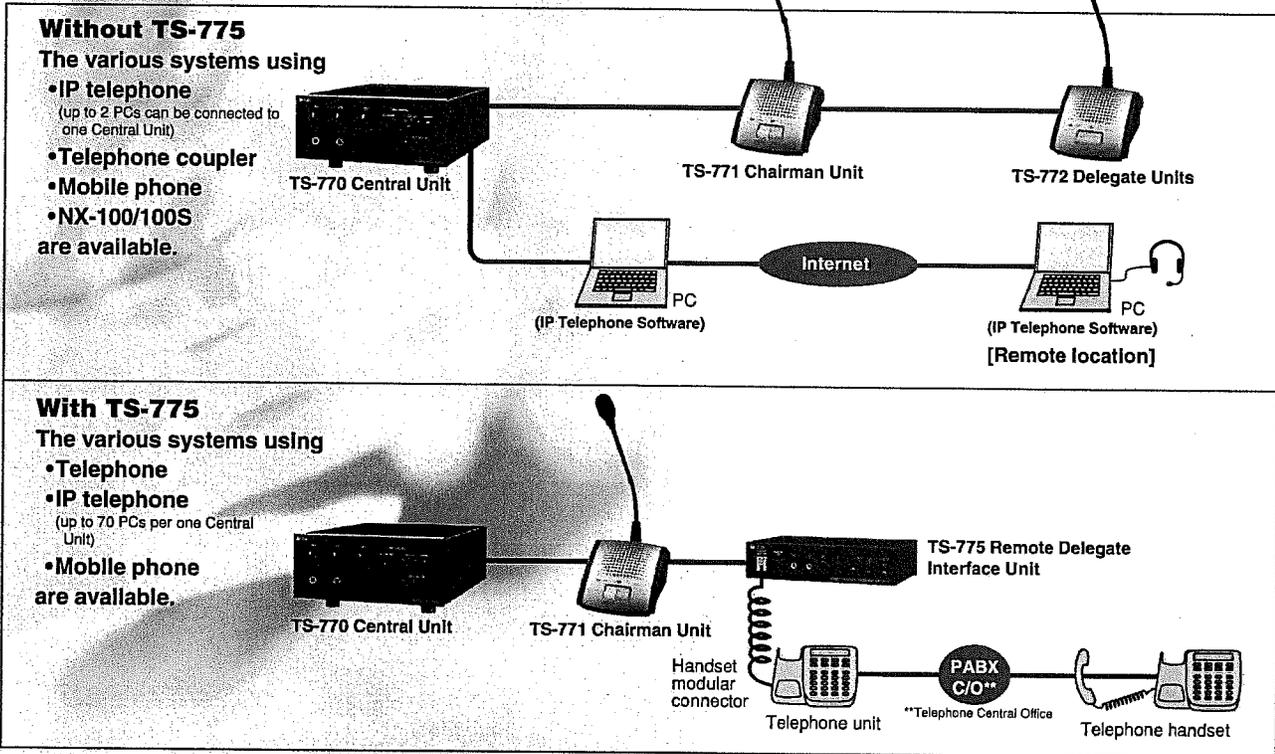


- **Equipped with an All-Mic-On function that simultaneously turns on all microphones for sound collecting and recording of all units.**

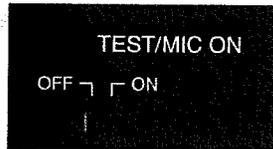


NOTE: When using the All-Mic-On function, use a recording device with an Automatic Gain Control (AGC).
 If the equipment does not have AGC, use a pre-amplifier to adjust the recording volume.

- Remote conferencing is possible, enabling people at a remote location to participate in the conference.



- The Test Function feature enables easy checking of the connection status of all connected units.



- Number of simultaneously usable delegate units can be selected.

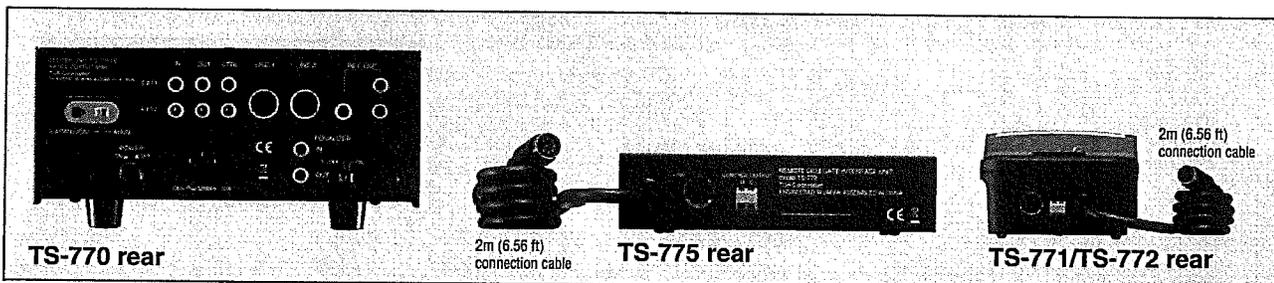
Note: [0] position means speech is possible by the Chairman unit only.



- Quick and easy setting up
TS-771/772/775 are equipped with a 2m (6.56 ft) connection cable.

- Automatic Mic-Off function (TIME OUT)

Even if the speaker forgets to turn off his or her microphone after speech completion, the Automatic Mic-Off function automatically switches off the microphone after a preset interval elapses. (Can be set to OFF, 20 or 40 seconds.)





Model No.	TS-770 Central Unit
Power Req.	AC mains, 50/60 Hz
Power Consumption	Max. 60 W
Rated Output	50W DC, 600mA x 2
Input	AFS: -60 dB*, 100 ohms, unbalanced, phone jack A/D: -20 dB*, 100 ohms, unbalanced, phone jack
Output	Recording: -60 dB*, 10 k ohms, unbalanced, phone jack, pin jack x 2
External Insertion/Event Terminals	Input: -60 dB*, 10 k ohms, pin jack Output: -20 dB*, 10 k ohms, pin jack
Expansion Input/Output Terminals	Input: -20 dB*, 10 k ohms, pin jack x 2 Output: -20 dB*, 10 k ohms, pin jack x 2 Control: 10 k ohms or more, voltage output, pin jack x 2
Control	Priority Speech Editing Operation of TS-771's priority button activates a single tone chime. Speaker restriction: Number of simultaneously usable TS-772s and TS-773s can be set to 1, 3, or 6. Automatic Mute-off function OFF/ON x 1 (optional)
Number of Connectable Conference Units	70 (Max. 35 units per line) Max. 210 (with 3 Central Units)
Operating Temperature	0°C to 40°C (32°F to 104°F)
Operating Humidity	Under 91% RH (no condensation)
Finish	Panel: Aluminum, hard-coat black Case: Pre-coated steel plate, black, 30% glass
Dimensions	210 (W) x 107.1 (D) x 316 (H) mm (8.27" x 4.22" x 12.44")
Weight	4 kg (8.82 lb)
Accessory	Power cord (2m (6.56 ft)) x 1
Option	Extender cord: YR-770-2M, YR-770-10M

* 0 dB = 1V



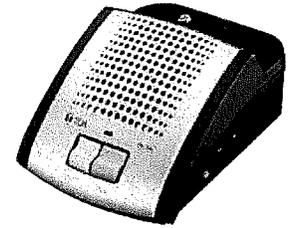
Model No.	TS-775 Remote Delegate Interface Unit
Power Req.	35 V DC, under 30 mA (supplied from Central Unit TS-770)
Input	-60dB*, 300 ohms, balanced, mini phone jack with VR control
Output	-60dB*, 22 ohms, balanced, mini phone jack with VR control
Speech Mode	AUTO: voice-activated automatic switching MANUAL: Tap key on/off switching
Connection Cable	2m (6.56 ft)
Operating Temperature	0°C to 40°C (32°F to 104°F)
Operating Humidity	Under 91% RH (no condensation)
Finish	Pre-coated steel plate, black
Dimensions	100 (W) x 41.6 (H) x 100 (D) mm (3.9" x 1.63" x 3.94") (including projection)
Weight	200g (1.54 lb)

* 0 dB = 1V

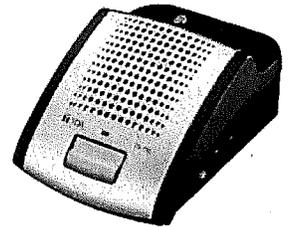


Model No.	YR-770-2M and YR-770-10M Extension Cord
Connector	8 pins DIN socket (going to the unit's base) x 1 8 pins DIN plug (going to the cord) x 1
Length	YR-770-2M: 2m (6.56 ft) / YR-770-10M: 10m (32.81 ft)

*For extending the cord on the Chairman and Delegate Unit. Each unit comes with a 2m cord.



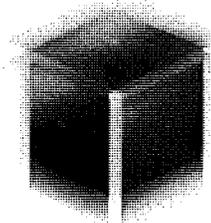
Model No.	TS-771 Chairman Unit
Power Req.	35 V DC, under 30 mA (supplied from Central Unit TS-770)
Output	Headphones: Recording: 32 ohms (headphones) 10 k ohms, -20 dB* (recording), unbalanced, mini jack (with VR) Internal speaker: 130 ohms 200 mW Control output: 24 V DC, max. 50 mA (open collector output)
Control	Speech button: Microphone, speaker on/off control by speech switch. Priority button: Microphone, speaker on/off, other microphone control, and single-tone chime activation
Connection Cable	2m (6.56 ft)
Operating Temperature	0°C to 40°C (32°F to 104°F)
Operating Humidity	Under 91% RH (no condensation)
Finish	Case: ABS resin, black Panel: ABS resin, gray metallic, semi-gloss, paint
Dimensions	114.5 (W) x 70.4 (H) x 152.9 (D) mm (4.51" x 3.09" x 6.02")
Weight	780g (1.72 lb)
Option	Microphone: TS-773 (standard), TS-774 (aux) (used either one)



Model No.	TS-772 Delegate Unit
Power Req.	35 V DC, under 30 mA (supplied from Central Unit TS-770)
Output	Headphones: Recording: 32 ohms (headphones) 10 k ohms, -20 dB* (recording), unbalanced, mini jack with VR Internal speaker: 130 ohms 200 mW Control output: 24 V DC, max. 50 mA (open collector output)
Control	Microphone, speaker on/off control by speech switch
Connection Cable	2m (6.56 ft)
Operating Temperature	0°C to 40°C (32°F to 104°F)
Operating Humidity	Under 91% RH (no condensation)
Finish	Case: ABS resin, black Panel: ABS resin, gray metallic, semi-gloss, paint
Dimensions	114.5 (W) x 70.4 (H) x 152.9 (D) mm (4.51" x 3.09" x 6.02")
Weight	780g (1.72 lb)
Option	Microphone: TS-773 (standard), TS-774 (aux) (used either one)



Model No.	TS-773 and TS-774 Microphones
Type	Electret condenser microphone
Directivity	Omnidirectional
Rated Impedance	1.8 k ohms
Rated Sensitivity	-30dB (1 kHz, 0dB = 1V/Pa)
LED Speech Indicator (ring type)	RED
Frequency Response	100 - 13,000 Hz
Output Connector	Combined type of 2LR-4-32
Finish	Case: ABS resin, black Cable: ABS resin, black
Length	TS-773: 393mm (14.49") / TS-774: 513mm (20.19")
Weight	TS-773: 93g (0.33 lb) / TS-774: 106g (0.38 lb)
Applicable Unit	TS-771 Chairman unit, TS-772 Delegate unit



Human Society with
Sound & Communication

TOA Corporation
www.toa.jp

Specifications are subject to change without notice.
Printed in Japan (0803) 833-61-845-6B u