

RT-3600 KEY TELEPHONE UNIT  
TONE AND ROTARY DIAL INTERCOM  
TECHNICAL INSTRUCTION  
Document #13-100444 REV. E  
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### 1. GENERAL INFORMATION

#### Description of Product

1.01 The RT-3600 is a thirty-six code selective signaling unit. It provides common talk path intercom service for most Key Telephone Systems that use rotary, tone or mixed dialing.

#### Manual Changes

1.02 This document is reissued to change the warranty date from 18 months to 36 months.

#### Federal Communications Commission (FCC) Regulations

1.03 To comply with FCC regulations, the following requirements must be met:

- Upon installation, the FCC registration number of this unit must be reported to the telephone company.

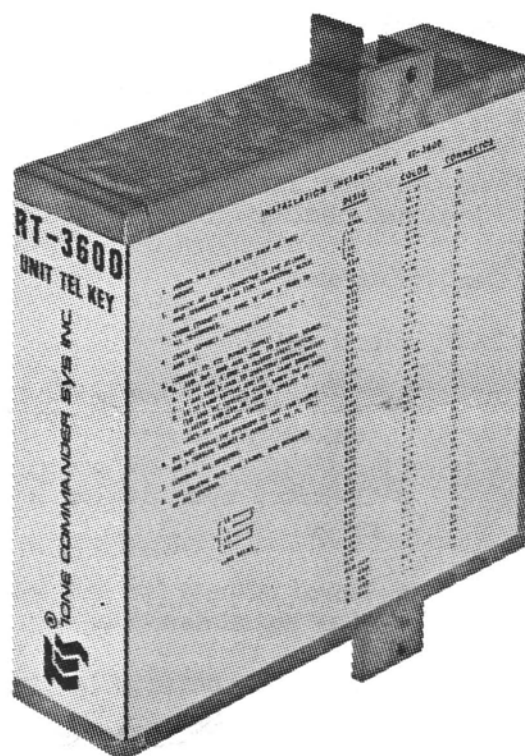


Fig. 1 — RT-3600 Key Telephone Unit

- This unit must be installed by telephone company personnel or agents authorized under Part 68 of FCC Rules and Regulations.
- This unit must not be installed on coin-operated or party line telephones.
- If this unit malfunctions, the telephone company may disconnect service temporarily. If disconnection is necessary, the telephone company must attempt to notify the user in advance, if possible. If not, they must notify the user as soon as they are able.
- Repair work on this unit must be done by TCS.

**RT-3600 KEY TELEPHONE UNIT****2. PRODUCT IDENTIFICATION****Application**

**2.01** The RT-3600 can be installed into most Key Telephone Systems that use both rotary dial and tone telephones. It is a self-contained intercom unit that requires no additional transfer circuitry.

**Design Features****2.02 Electrical --**

- Solid state design provides high reliability and low current demand.
- Operates over a wide input voltage range.
- Timed outputs for one second ringing after signal detection.
- Separate contacts for lamps and a spare function.

**2.03 Physical --**

- Mounting is standard KTU rack or wall mount.
- All connections are made through A25B or equivalent connector cable.
- Requires no field adjustments.
- Housing is built of durable plastic and includes installation instructions on its label.
- Requires only 2.8 cm (1 1/8") of KTU rack space.

**2.04 Rotary Dial Decoder Features --**

- Repeated signaling is possible without hookswitch operation if only one telephone is off-hook.
- Transfer is reset after ring-out.

**2.05 Tone Decoder Features --**

- Digital decoding process offers superior tone decoding.
- Repeated signaling is possible without hookswitch operation.
- Conference calls can be established while the system is in use.
- Transfer is reset after ring-out.

**Specifications (Typical)**

- 2.06** Operating Voltage: -20 to -28 VDC
- 2.07** Idle Current: < 55 mA @ 24 VDC
- 2.08** Operating Current: < 200 mA @ 24 VDC
- 2.09** Output Contacts: 50 VA
- 2.10** Pulse Speed: 8-11 PPS
- 2.11** Percent Break: 52 to 64%
- 2.12** Minimum Interdigital Time (rotary dial telephones): 200 ms
- 2.13** Signaling Time: 1 second
- 2.14** Maximum Loop: 600 ohms
- 2.15** Signal Level Input: -10 to +6 dBm
- 2.16** Bandwidth:  $\pm 1.75\%$  at 0 dBm
- 2.17** Twist:  $\pm 6$  dB
- 2.18** Detect Time:  $\leq 40$  ms
- 2.19** Minimum Interdigital Time: (tone telephones) 40 ms
- 2.20** Dimensions: 2.8 cm (1 1/8") W  
X 14.9 cm (5 7/8") H  
X 16.2 cm (6 3/8") D
- 2.21** Operating Temperature: 0° to 55° C
- 2.22** Operating Humidity Level: 0 to 95% noncondensive.
- 2.23** Connection: A25B connector or equivalent connector cable.

**RT-3600 KEY TELEPHONE UNIT****3. INSTALLATION****Mounting the RT-3600**

- 3.01** Plug the connector-ended A25B or equivalent type cable into the RT-3600 unit.
- 3.02** Secure the cable to the unit with the provided retaining bracket.
- 3.03** Using the built-in brackets, mount the unit on a standard KTU equipment rack with the provided #12-24 screws or on the wall with screws suitable for the wall material.

**Wiring the RT-3600**

- 3.04** Terminate the A25B cable (or equivalent) on a 66-type connector block.
- 3.05** Cross-connect Tip and Ring leads to all telephones, paging circuits, etc. Refer to the Connector Pin Out Index and the Installation Diagram at the end of this section.
- 3.06** Cross-connect 'R' and 'B' leads to the bell or buzzer of each telephone. Refer to Connector Pin Out Index for each station's designation.
- 3.07** Cross-connect 'L' and 'LG' leads to the lamp lines of each telephone.
- 3.08** Connect the following to the power supply:
  - A)** Aud. Sup. and Aud. Grd. to the ringing source.
  - B)** 'A' Bat. and 'A' Grd. to the talk (filtered) DC outputs.
  - C)** 'B' Bat. and 'B' Grd. to the signal (unfiltered) DC outputs.

- D)** 'LB' to lamp battery and 'LG' to lamp ground. **NOTE:** 'LG' and 'PC' contacts close when the RT-3600 is seized and can be used to operate or latch an auxiliary circuit.

**E) COMMON ALL GROUNDS AT THE POWER SUPPLY.**

- 3.09** Do not bridge the RT-3600 to any line supplying a foreign source of power (C.O., F.X., P.L., etc.)

**Testing the RT-3600**

- 3.10** Conduct the following tests on all telephones connected to this RT-3600:

- A)** Go off-hook with the telephone receiver. Verify that the line lamp lights.
- B)** Check the talk path for side tone.
- C)** Dial the designated code for the station being tested. Verify that the bell or buzzer operate correctly.
- D)** Replace the receiver on the hookswitch. Verify that the line lamp goes out.

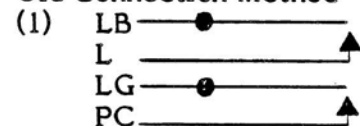


**RT-3600 KEY TELEPHONE UNIT****3. INSTALLATION (cont'd.)****3.11 Connector Pin Out Index for the RT-3600 KTU**

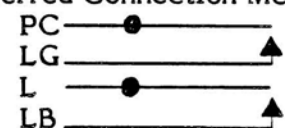
<u>DESIGNATION</u>	<u>CONNECTOR PIN #</u>	<u>CABLE COLOR</u>
TIP	26	WHT-BLU
RING	1	BLU-WHT
PC (1)	27	WHT-ORN
LG (1)	2	ORN-WHT
L (1)	28	WHT-GRN
LB (1)	3	GRN-WHT
R20	29	WHT-BRN
R0	4	BRN-WHT
R21	30	WHT-SLT
No Connection	5	SLT-WHT
R22	31	RED-BLU
R23	6	BLU-RED
R24	32	RED-ORN
No Connection	7	ORN-RED
R25	33	RED-GRN
R5	8	GRN-RED
R26	34	RED-BRN
R6	9	BRN-RED
R27	35	RED-SLT
R7	10	SLT-RED
R28	36	BLK-BLU
R8	11	BLU-BLK
R29	37	BLK-ORN
R9	12	ORN-BLK
R40	38	BLK-GRN
R30	13	GRN-BLK
R41	39	BLK-BRN
R31	14	BRN-BLK
R42	40	BLK-SLT
R32	15	SLT-BLK
R43	41	YEL-BLU
R33	16	BLU-YEL
R44	42	YEL-ORN
R34	17	ORN-YEL
R45	43	YEL-GRN
R35	18	GRN-YEL
R46	44	YEL-BRN
R36	19	BRN-YEL
R47	45	YEL-SLT
R37	20	SLT-YEL
R48	46	VIO-BLU
R38	21	BLU-VIO
R49	47	VIO-ORN
R39	22	ORN-VIO
No Connection	48	VIO-GRN
AUD. SUP. (4)	23	GRN-VIO
'A' GRD.	49	VIO-BRN
'A' BAT. (2)	24	BRN-VIO
'B' GRD	50	VIO-SLT
'B' BAT. (3)	25	SLT-VIO

**NOTES:**

Old Connection Method



Preferred Connection Method



Contacts close in off-hook condition.

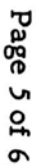
Contact rating: 2 amps.

(2) Talk Battery: -20 to -28 VDC, filtered.

(3) Signal Battery: -20 to -28 VDC, unfiltered.

(4) Signal Power Source (Aud.Sup.):  
Buzzer battery or  
±105 VAC Ringer Supply.

### 3.12 Installation Diagram



## **RT-3600 KEY TELEPHONE UNIT**

### **4. OPERATING INSTRUCTIONS**

#### **To place a call:**

- 4.01 NOTE:** Before attempting to place a call, verify that the intercom light on the key set is OFF. If it is ON, the intercom talk path is accessed and no new calls can be initiated.
- 4.02** Go off-hook with the station's receiver.
- 4.03** Depress the intercom key. Verify that it lights.
- 4.04** Dial the code of the station to be called.
- 4.05** When the called party answers, verify conversation path.

#### **To repeat signaling:**

- 4.06** If your party does not answer immediately after you place the call, you can signal again WITHOUT putting the telephone on-hook. To signal again, simply redial the station number with the telephone off-hook.

#### **To receive a call:**

- 4.07** When you receive a call through RT-3600, pick up your handset, depress the intercom key, and begin the conversation.

#### **Conference Calls**

- 4.08** To place a conference call (on tone-dial telephones only), establish a call to one party. Then either party already on line can dial the station code of the third party.
- 4.09** To establish a conference call that includes telephones with rotary dial, place a call to one party. Alert that party to a conference call. Then one of you must hang up your telephone. The remaining party calls the next party to be conferenced. After allowing time to establish the second call, the waiting party can simply go off-hook and join the call.

### **5. SERVICE INFORMATION**

#### **Warranty**

- 5.01** Tone Commander Systems, Inc. warrants this product to be free from defects in materials and workmanship for 36 months from date of shipment. Damage to products resulting from physical abuse or electrical misuse voids this warranty. All units will be stamped on the day they are shipped with the warranty expiration date.

- 5.02** Out-of-Warranty units will be returned to full working order for a nominal handling charge plus parts, labor and transportation. A 90-day warranty covers repairs made on out-of-warranty units. A \$15.00 handling charge will be assessed on all units, in- or out-of-warranty, that are returned and found to be free of defects.

#### **Maintenance**

- 5.03** No provision is made for field adjustment. As stated in the FCC regulations in 1.03, TCS does all repair work on the RT-3600. Therefore, if the RT-3600 is defective, do not attempt to repair it. Instead, disconnect it and return it to the factory for replacement.

#### **Reordering And Returning Units**

- 5.04** Write or call the factory to reorder or return units.

**TONE COMMANDER SYSTEMS, INC.**  
4320 150th Avenue N.E.  
Redmond, Washington 98052  
Telephone: (206) 883-3600

#### **Refer to RT-3600 Key Telephone Unit**

#### **Consumer Comment**

- 5.05** Tone Commander Systems, Inc. is interested in your comments regarding our literature and equipment. Please address your remarks to the **Systems Engineering Department**.