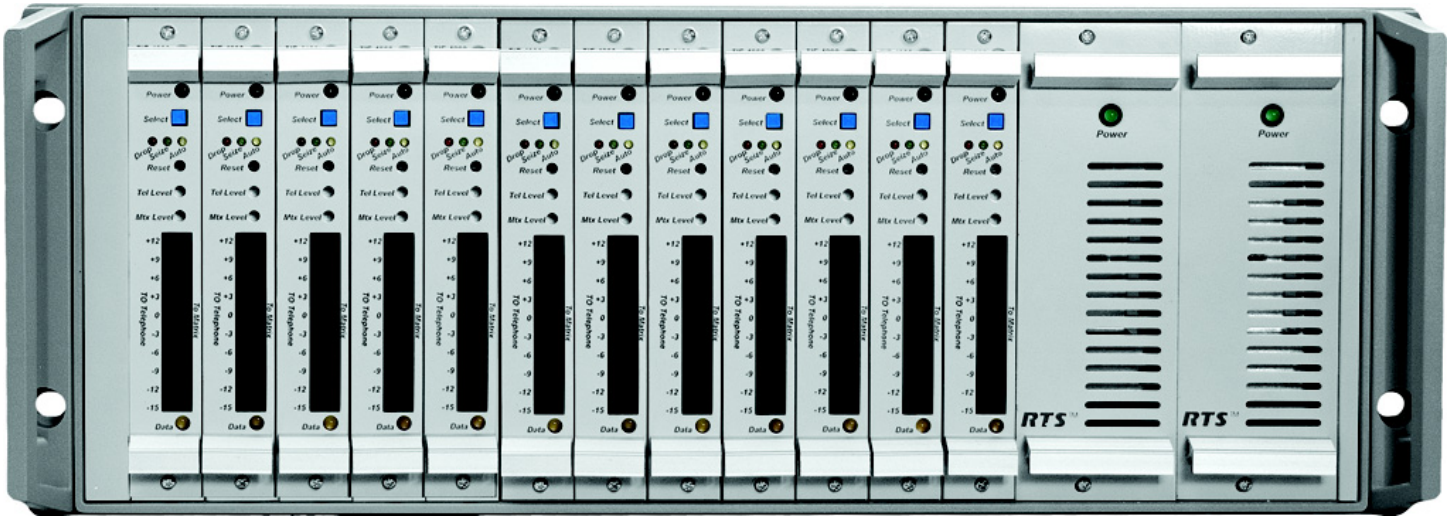
RTS

Innovating the Future of Global Communications

TIF-4000 Frame
&
TIF-4000
Digital Hybrid Telephone Line



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For warranty and service information, refer to the appropriate web site below:

RTS Intercoms ..... www.rtsintercoms.com/warranty
RTS Digital
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AudioCom
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Intercom Headsets.....www.telex.com

CUSTOMER SUPPORT

Technical questions should be directed to:

Customer Service Department
Bosch Security Systems, Inc.
www.telex.com

TECHNICAL QUESTIONS EMEA

Bosch Security Systems Technical Support EMEA
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 THE LIGHTNING FLASH AND ARROWHEAD WITHIN THE TRIANGLE IS A WARNING SIGN ALERTING YOU OF "DANGEROUS VOLTAGE" INSIDE THE PRODUCT.	 CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER-SERVICABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.	 THE EXCLAMATION POINT WITHIN THE TRIANGLE IS A WARNING SIGN ALERTING YOU OF IMPORTANT INSTRUCTIONS ACCOMPANYING THE PRODUCT.
SEE MARKING ON BOTTOM/BACK OF PRODUCT.		

WARNING: APPARATUS SHALL NOT BE EXPOSED TO DRIPPING OR SPLASHING AND NO OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHALL BE PLACED ON THE APPARATUS.

WARNING: THE MAIN POWER PLUG MUST REMAIN READILY OPERABLE.

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, GROUNDING OF THE CENTER PIN OF THIS PLUG MUST BE MAINTAINED.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPRATUS TO RAIN OR MOISTURE.

WARNING: TO PREVENT INJURY, THIS APPARATUS MUST BE SECURELY ATTACHED TO THE FLOOR/WALL/RACK IN ACCORDANCE WITH THE INSTALLATION INSTRUCTIONS.

~	This product is AC only.
CE	

Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

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CHAPTER 1

Introduction

Introduction

This manual describes the installation, programming, and operating procedures for the RTS Model TIF-4000 Digital Hybrid Telephone Line Interface Frame. Since the TIF-4000 functions as a keypanel, the user may also need to refer to the manuals and/or online help file for AZedit, for information on configuring certain features.

IMPORTANT: Be sure to review any recently added supplemental information before proceeding. Supplements are placed at the back of the manual.

Description

The TIF-4000 is a frame of up to 12 digital telephone interface cards (TIF-4000 front card), with a redundant power supply designed to be compatible with ADAM and Zeus Series Intercoms and Cronus Intercom system. It provides bi-directional communication between the intercom matrix and a standard DTMF capable telephone line. It allows the phone to access all crosspoints of the matrix, as well as dynamic party lines, IFB circuits, and other forms of communications. The 4RU high rack-mountable TIF-4000 provides a transparent link to the telephone system enabling full dial-out capability from any designated keypanel with keypad. The TIF-4000 has full dial-in capability giving the caller a keypanel on the system via commands from the DTMF pad on their telephone. Since the TIF-4000 appears to the matrix as any other keypanel would, the only limitation on the number of units in the system is the same as for other keypanels.

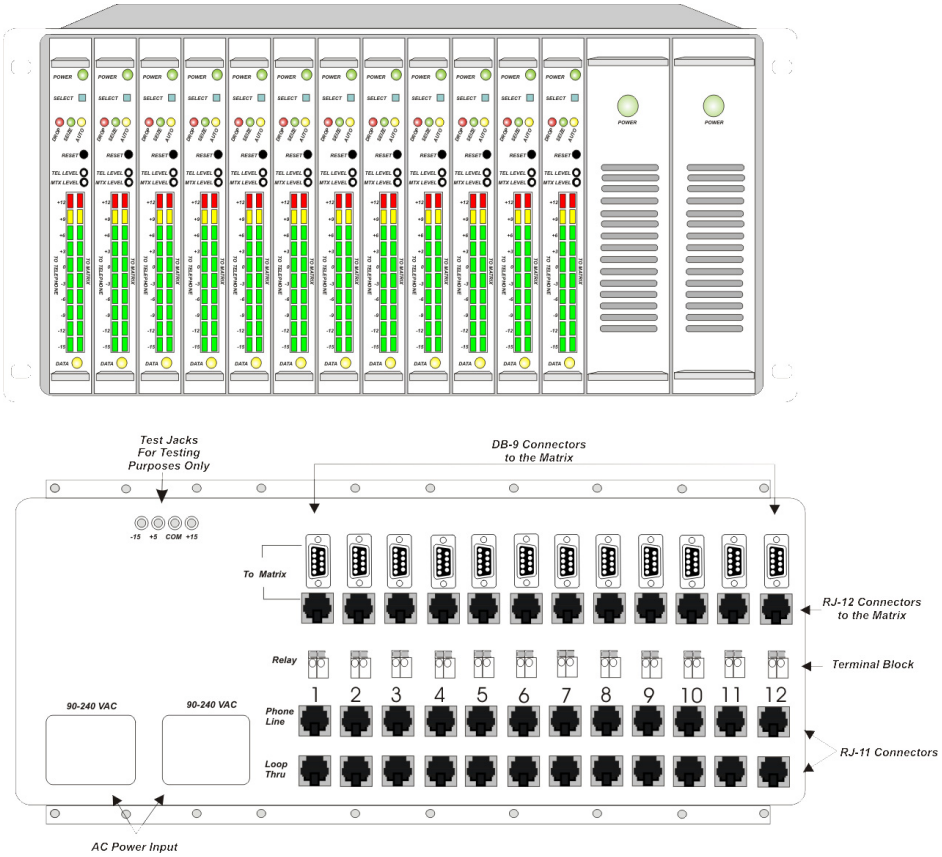

FIGURE 1. TIF-4000 Front and Rear. For a more detailed drawing, see Figure 3.

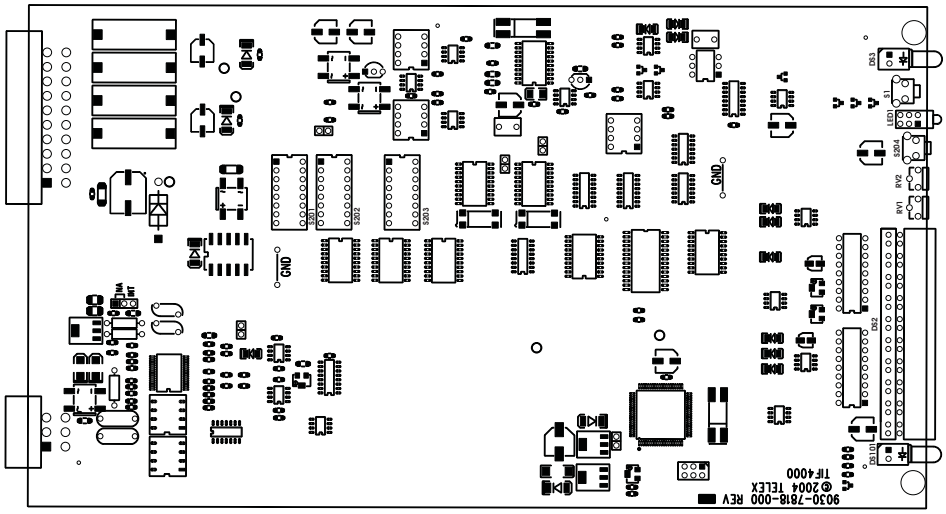

FIGURE 2. TIF-4000 Front Card.

Specifications

Matrix Input/Output ..... 0dBu to +20dBu

Telephone Input/Output ..... -30dBu to +6dBu

Noise (200Hz to 3.8kHz) ..... -40dBu or less

Harmonic Distortion

- Intercom Side ..... -30dBu or less
- Telephone Side ..... -25dBu or less

Frequency Response ..... 300Hz to 3.8kHz +0dB, -6dB

Matrix Connectors

- DE-9S Female
- RJ12 Female

Telephone Line Connector ..... RJ11 Female

Telephone Loop-Thru Connector ..... RJ11 Female

Power Requirements

- Universal Power Supply: ..... 100-240 VAC, 50/60Hz
- Card: ..... Every card uses 1Amp of power

Power Dissipation

- TIF-4000 Full Frame (12 TIF Cards)
- 750mA @ -15V
- 1A @ +15V
- 9A @ +5V
- TIF-4000 Individual Card
- 60mA @ -15V
- 70mA @ +15V
- 750mA @ +5V

Environmental

- Operating Temperature: ..... 32°F to 122°F (0°C to 50°C)
- Storage Temperature: ..... -22°F to 158°F (-30°C to 70°C)

Dimensions: ..... 19”Wx6.97”Hx12.8”D (25.4mm W x177.038mm H x 325.12mm D)

Weight: 28.45lbs (12.9047kg)

Regulatory Compliance: ..... FCC Part 68, EN 55022/FCC15B

Specifications subject to change without notice.

Reference Views

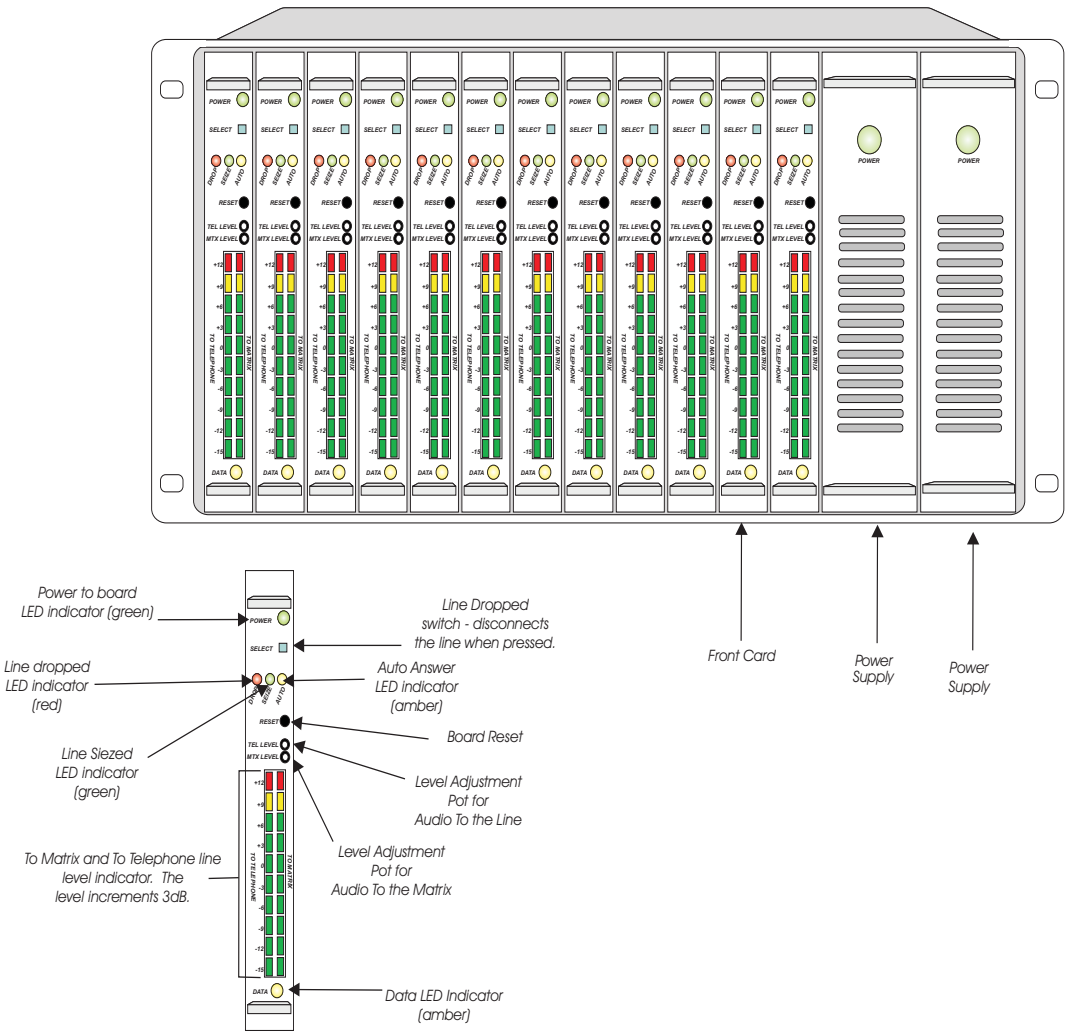

FIGURE 3. Front of TIF-4000 frame reference view

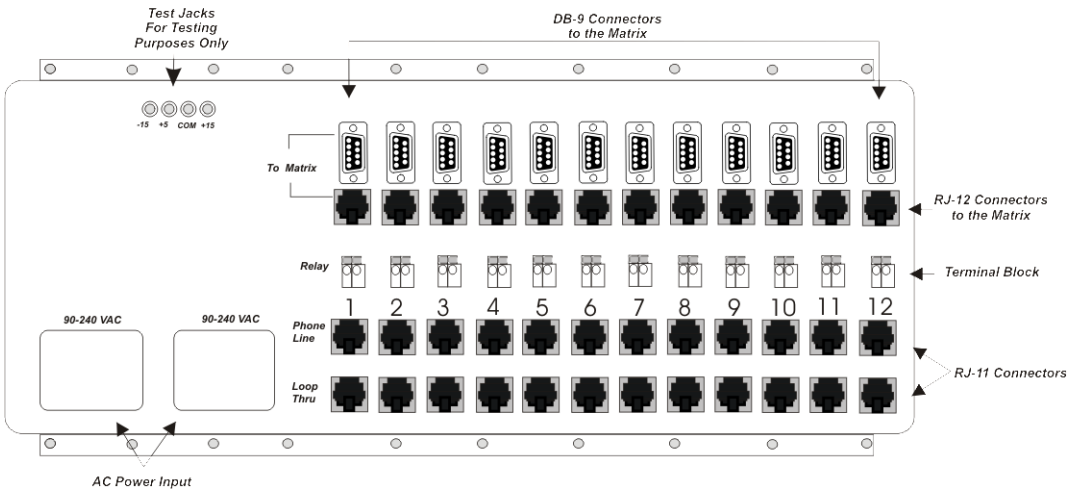

FIGURE 4. TIF-4000 Reference View - Rear

CHAPTER 2

Installation

DIP Switch Settings

DIP Switch (S201) Settings

The TIF-4000 front card DIP switch contains switches to configure the most often changed options. These include: auto-answer on/off, ring signal on/off, password on/off, intercom port address, and full-duplex mode.

Auto-answer (Switch 1)

Turning on the auto-answer option sets the unit to answer the phone automatically when it rings. The number of rings required before it answers is determined by the setting of internal DIP switch (S202). If auto-answer is turned off, the line rings until someone at a keypanel answers the call or until the Select button on the TIF-4000's front card is pressed.

To **turn on auto-answer**, do the following:

> Place **switch 1** in the down position.

To **turn off auto-answer**, do the following:

> Place **switch 1** in the up position.

Generate Ring Signal (Switch 2)

Turning on the generate ring signal option sets the unit so that when the phone line is ringing, keypanels that are configured to receive ring signals produce an audible ring.

To **turn on the ring signal**, do the following:

> Place **switch 2** in the down position.

To **turn off the ring signal**, do the following:

> Place **switch 2** in the up position.

Password Required (Switch 3)

Turning on the password required option sets the unit so that when a call is automatically answered, the caller must enter a password via DTMF before the unit allows communications. The password numeric sequence and length are determined by the settings of the internal DIP switch (S203).

To **turn on the password required option**, do the following:

> Place **switch 3** (on S201) in the down position.

To **turn off the password required option**, do the following:

> Place **switch 3** (on S201) in the up position.

Intercom Port Address (Switches 4-7)

Switches 4 through 7 determine the address of the unit. The port address is expressed in binary with switch 4 being the least significant bit (LSB and switch 7 being the most significant bit (MSB). ADAM and Zeus series systems use a 1-8 address scheme for their ports (e.g. port 1-8 have address 1-8, ports 9-16 have addresses 1-8, etc....).

To **turn on (set bit to 1)**, do the following:

> Place the **desired switch** in the down position.

To **turn off (set bit to 0)**, do the following:

> Place the **desired switch** in the up position.

IMPORTANT: You must set the card address before you put the card into the frame.

TABLE 1. Correspondence between address numbers and intercom port numbers for ADAM, ADAM CS, and Zeus systems

Address	Card Numbers (bold headings) and Port Numbers																								
Cards 1 - 25																									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
1	1	9	17	25	33	41	49	57	65	73	81	89	97	105	113	121	129	137	145	153	161	169	177	185	193
2	2	10	18	26	34	42	50	58	66	74	82	90	98	106	114	122	130	138	146	154	162	170	178	186	194
3	3	11	19	27	35	43	51	59	67	75	83	91	99	107	115	123	131	139	147	155	163	171	179	187	195
4	4	12	20	28	36	44	52	60	68	76	84	92	100	108	116	124	132	140	148	156	164	172	180	188	196
5	5	13	21	29	37	45	53	61	69	77	85	93	101	109	117	125	133	141	149	157	165	173	181	189	197
6	6	14	22	30	38	46	54	62	70	78	86	94	102	110	118	126	134	142	150	158	166	174	182	190	198
7	7	15	23	31	39	47	55	63	71	79	87	95	103	111	119	127	135	143	151	159	167	175	183	191	199
8	8	16	24	32	40	48	56	64	72	80	88	96	104	112	120	128	136	144	152	160	168	176	184	192	200
Cards 26 - 50																									
	26	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
1	201	209	217	225	233	241	249	257	265	273	281	289	297	305	313	321	329	337	345	353	361	369	377	385	393
2	202	210	218	226	234	242	250	258	266	274	282	290	298	306	314	322	330	338	346	354	362	370	378	386	394
3	203	211	219	227	235	243	251	259	267	275	283	291	299	307	315	323	331	339	347	355	363	371	379	387	395
4	204	212	220	228	236	244	252	260	268	276	284	292	300	308	316	324	332	340	348	356	364	372	380	388	396
5	205	213	221	229	237	245	253	261	269	277	285	293	301	309	317	325	333	341	349	357	365	373	381	389	397
6	206	214	222	230	238	246	254	262	270	278	286	294	302	310	318	326	334	342	350	358	366	374	382	390	398
7	207	215	223	231	239	247	255	263	271	279	287	295	303	311	319	327	335	343	351	359	367	375	383	391	399
8	208	216	224	232	240	248	256	264	272	280	288	296	304	312	320	328	336	344	352	360	368	376	384	392	400
Cards 51 - 75																									
	51	**52**	**53**	**54**	**55**	**56**	**57**	**58**	**59**	**60**	**61**	**62**	**63**	**64**	**65**	**66**	**67**	**68**	**69**	**70**	**71**	**72**	**73**	**74**	**75**
1	401	409	417	425	433	441	449	457	465	473	481	489	497	505	513	521	529	537	545	553	561	569	577	585	593
2	402	410	418	426	434	442	450	458	466	474	482	490	498	506	514	522	530	538	546	554	562	570	578	586	594
3	403	411	419	427	435	443	451	459	467	475	483	491	499	507	515	523	531	539	547	555	563	571	579	587	595
4	404	412	420	428	436	444	452	460	468	476	484	492	500	508	516	524	532	540	548	556	564	572	580	588	596
5	405	413	421	429	437	445	453	461	469	477	485	493	501	509	517	525	533	541	549	557	565	573	581	589	597
6	406	414	422	430	438	446	454	462	470	478	486	494	502	510	518	526	534	542	550	558	566	574	582	590	598
7	407	415	423	431	439	447	455	463	471	479	487	495	503	511	519	527	535	543	551	559	567	575	583	591	599
8	408	416	424	432	440	448	456	464	472	480	488	496	504	512	520	528	536	544	552	560	568	576	584	592	600
Cards 76 - 100																									
	76	**77**	**78**	**79**	**80**	**81**	**82**	**83**	**84**	**85**	**86**	**87**	**88**	**89**	**90**	**91**	**92**	**93**	**94**	**95**	**96**	**97**	**98**	**99**	**100**
1	601	609	617	625	633	641	649	657	665	673	681	689	697	705	713	721	729	737	745	753	761	769	777	785	793
2	602	610	618	626	634	642	650	658	666	674	682	690	698	706	714	722	730	738	746	754	762	770	778	786	794
3	603	611	619	627	635	643	651	659	667	675	683	691	699	707	715	723	731	739	747	755	763	771	779	787	795
4	604	612	620	628	636	644	652	660	668	676	684	692	700	708	716	724	732	740	748	756	764	772	780	788	796
5	605	613	621	629	637	645	653	661	669	677	685	693	701	709	717	725	733	741	749	757	765	773	781	789	797
6	606	614	622	630	638	646	654	662	670	678	686	694	702	710	718	726	734	742	750	758	766	774	782	790	798
7	607	615	623	631	639	647	655	663	671	679	687	695	703	711	719	727	735	743	751	759	767	775	783	791	799
8	608	616	624	632	640	648	656	664	672	680	688	696	704	712	720	728	736	744	752	760	768	776	784	792	800

TABLE 2. Address DIP Switch Settings

Logical Keypanel Number	DIP Switch Settings			
	SW4	SW5	SW6	SW7
1	Closed	Open	Open	Open
2	Open	Closed	Open	Open
3	Closed	Closed	Open	Open
4	Open	Open	Closed	Open
5	Closed	Open	Closed	Open
6	Open	Closed	Closed	Open
7	Closed	Closed	Closed	Open
8	Open	Open	Open	Closed
9	Closed	Open	Open	Closed
10	Open	Closed	Open	Closed
NOTE:	Shaded areas is for CS9xxx system addresses only.			

To **set the address for ADAM or Zeus systems**, do the following:

1. Determine the **port number** used for the TIF-4000.
2. Locate the **port number** and its corresponding address in Table 1 on page 11.
3. Determine the **DIP switch settings** by looking up the address determined in the previous step in Table 2 on page 12.
4. Set the **DIP switches** on the back of the unit.

Full Duplex Method Switch 8 (S201)

Switch 8 (S201) controls the method by which full-duplex operation is implemented in the unit. This switch only works if full-duplex mode is set via internal DIP switch (S202), switch 7 (factory default setting for Switch 7 is off, full-duplex mode). If switch 8 is in the OPEN position, then the unit is forced into full-duplex mode all the time. If switch 8 (S201) is in the closed position, then the unit is forced into full-duplex mode only when audio is present.

When using full-duplex mode, users may hear an increased amount of echo on the line. This may be more pronounced when the TIF-4000 is forced into full-duplex mode all of the time (switch 8 is open) rather only when audio is present (switch 8 closed).

Internal DIP Switch (S202)

Internal DIP switch, see Figure 5, is accessed by removing the card from the frame.

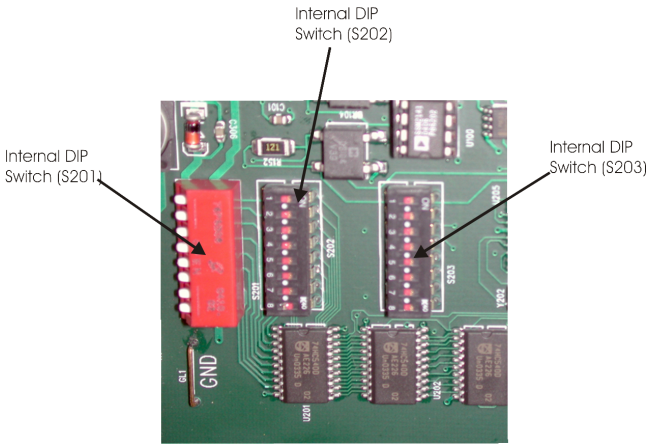

FIGURE 5. TIF-4000 Internal DIP Switch Locations

TABLE 3. Ring Count Settings

# of Rings	SW1	SW2
1	off	off
2	on	off
4	off	on
8	on	on

Ring Count

Switches 1 and 2 determine the number of rings before the unit auto-answers. The ring count is approximate. The switches have no effect unless switch 1 on the rear panel DIP switch bank is in the down position. To set the ring count, see Table 3.

DTMF Or Pulse Dial Selection

Switch 3 sets the dialing mode to either DTMF (Dual Tone Multi-Frequency, also known as touch tone) or Pulse. When the switch is in the off position, the DTMF dialing is selected. When the switch is in the on position, pulse dialing is selected.

Point-to-point Seize

Switch 4 turns on and off the point-to-point seize feature. When the switch is in the off position, the normal line seize operation (via the keypanel) is selected. When the switch is in the on position a line is seized immediately upon the designated TIF-4000's talk key being pressed via the keypanel.

One Touch Dial

Switch 5 enables/disables the one touch dialing feature. When the switch is in the off position, one touch dialing is disabled. When the switch is in the on position, one-touch dial is enabled.

One touch dialing works as follows:

If a number is stored in Auto-Dial memory 1 on the TIF-4000, and the line is on-hook, then the TIF-4000 autodials the number stored in Autodial memory 1 whenever any keypanel closes a point-to-point talk key to the TIF-4000.

Fast Seize

Switch 6 enables/disables the fast seize feature. If the switch is in the off position, fast seize is disabled. If the switch is in the on position, fast seize is enabled. If fast seize is enabled and the unit is set to auto-answer, then the TIF-4000 answers or seize the line at the start of the first ring.

NOTE: A ring is not heard on any of the keypanels when fast seize is enabled.

DSP Full Or Half-Duplex Selection

Switch 7 determines either full-duplex or half-duplex operation. If the switch is set to the off position, the DSP is forced into full-duplex mode as determined by the setting of switch 8 on the DIP switch bank located on the rear panel of the TIF-4000. For more information, see “Full Duplex Method Switch 8 (S201)” on page 12. If the switch is set to the on position, the DSP is never forced into full duplex.

Audio Ducking

Switch 8 enables/disables the audio ducking feature. If the switch is set to the off position, audio ducking is disabled. If the switch is set to the on position, audio ducking is enabled. The audio ducking feature helps eliminate feedback between the intercom system and the telephone line.

Internal DIP Switch (S203)

Internal DIP switch (S203) selects the password and call progress IC type. Switch 6 must be set to match the type of call progress IC is installed in the unit at location U204. The switch is preset at the factory in the Open position if the IC installed at location U204 is a M-985-0 or in the closed position, if an M-982-02 is installed at location U204. Switch 6 is also part of the password if a password is required. When password required is enabled, the password must be entered via DTMF by the caller before they may communicate. This is to prevent unauthorized use of the intercom by callers.

Switches 7 and 8 select the length of the password, from 1 digit to 4 digits. If set for 1 digit only, the first digit of the password is used., if set for 2 digits, then the first digits are used, etc. See Table 4.

TABLE 4. Password Lengths Configuration

PW Length	SW7	SW8
4	off	off
3	on	off
2	off	on
1	on	on

Connections

Intercom

Use either of the *To Matrix* connectors (but not both) to connect to an intercom port. The intercom port that you connect to will determine the address of the unit (see Setting Address). Cable wiring diagrams are shown in Figure 6 and Figure 7. An LED labeled DATA is located on the front card and serves as a basic indicator of data being present.

Telephone and Telephone Line

There are two (2) telephone connections provided on each card in the TIF-4000. Plug the telephone line into the jack labeled Phone Line. You may also plug a standard telephone into the jack labeled Loop Thru.

CAUTION: To reduce the risk of fire, use only No. 26 AWG or larger (e.g., 24 AWG) UL Listed or CSA Certified Telecommunication Line Cord.

NOTE: The standard telephone plugged into the Loop Thru jack is disconnect when the TIF-4000 seizes the telephone line. For cabling information, see “TIF to Phone Cables” on page 16.

Relay

A relay is a switch that is open or closed. In the case of the TIF-4000, when it is off-hook (a call is active), the switch is closed and an indicator, such as an external lamp, can be activated.

Setting Audio Levels

Audio levels to the intercom matrix and to the telephone line can be adjusted via the trim pots located on the front card.

Setting Audio Levels to Intercom Matrix

Adjustments may be made via the front card pots (see Figure 1).

To **adjust the pot**, do the following:

1. Using a small flat blade screwdriver, set the **front card level control** for mid-range.
2. Have the **caller talk at their normal level**.
3. Adjust the **control for the best audio quality** while avoiding going into the red section of the audio meter (to Matrix) located on the front panel.

Cable Drawings

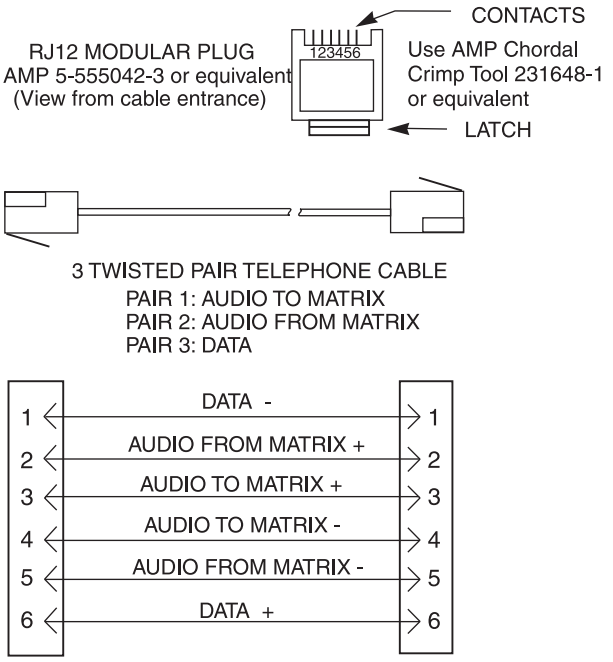

FIGURE 6. RJ12 Intercom Cable

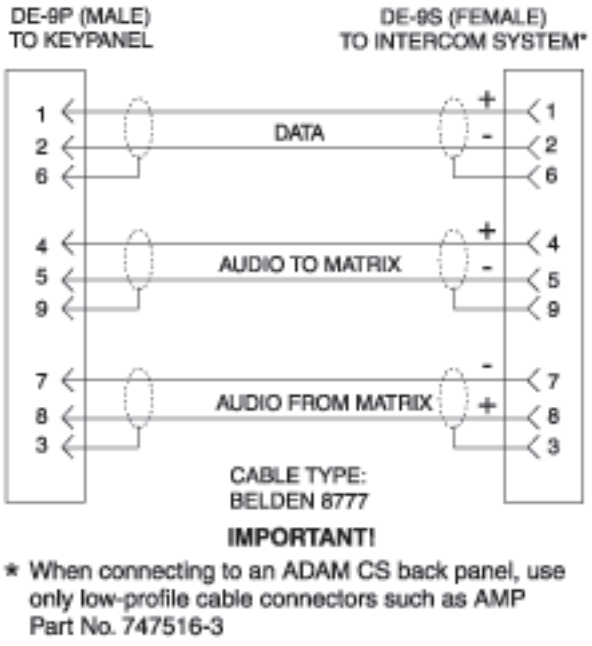

FIGURE 7. DE9 Intercom Cable

TIF to Phone Cables

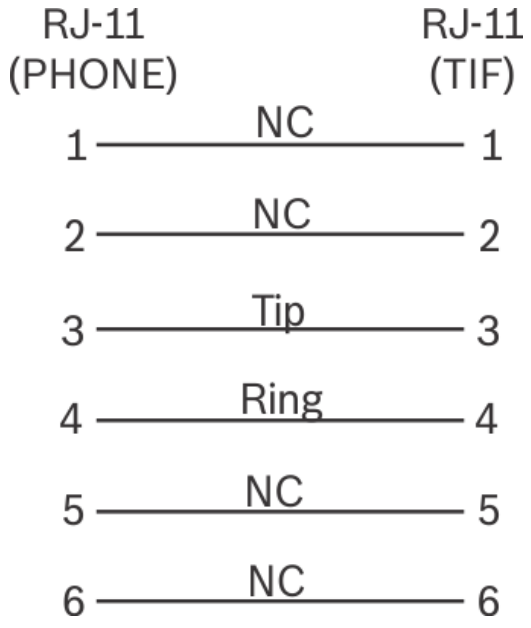

FIGURE 8. Phone to TIF (US)

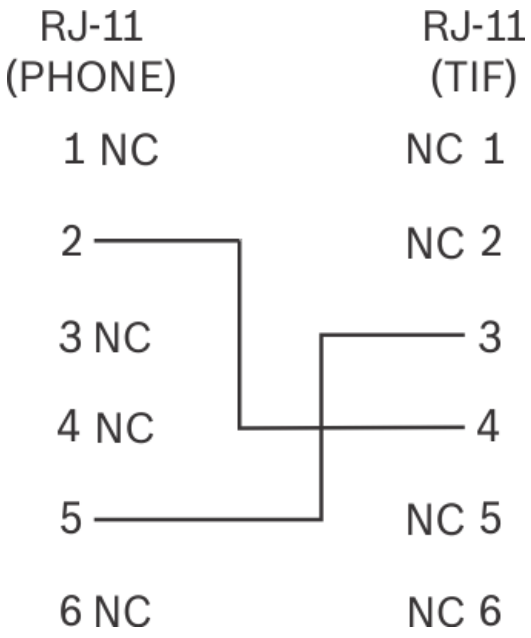

FIGURE 9. Phone to TIF (UK)

TABLE 5. Password length DIP switch settings

Password	SW1	SW2	SW3	SW4	SW5	SW6
4,7,8,8	off	off	off	off	off	off
7,7,7,7	on	off	off	off	off	off
4,6,8,7	off	on	off	off	off	off
1,0,5,8	on	on	off	off	off	off
1,4,8,4	off	off	on	off	off	off
7,0,3,3	on	off	on	off	off	off
5,9,0,7	off	on	on	off	off	off
0,9,3,5	on	on	on	off	off	off
3,7,8,0	off	off	off	on	off	off
1,4,5,0	on	off	off	on	off	off
6,9,2,7	off	on	off	on	off	off
8,3,0,3	on	on	off	on	off	off
8,3,3,6	off	off	on	on	off	off
6,0,8,0	on	off	on	on	off	off
2,9,5,7	off	on	on	on	off	off
5,8,5,1	on	on	on	on	off	off
9,5,9,9	off	off	off	off	on	off
8,2,0,6	on	off	off	off	on	off
4,7,4,0	off	on	off	off	on	off
4,5,7,3	on	on	off	off	on	off
8,8,3,0	off	off	on	off	on	off
0,6,2,0	on	off	on	off	on	off
3,3,3,9	off	on	on	off	on	off
9,8,5,0	on	on	on	off	on	off
7,3,5,6	off	off	off	on	on	off
9,1,4,6	on	off	off	on	on	off
9,9,9,1	off	on	off	on	on	off
3,8,8,1	on	on	off	on	on	off
4,2,4,0	off	off	on	on	on	off
1,0,6,3	on	off	on	on	on	off
8,6,3,2	off	on	on	on	on	off
4,2,3,4	on	on	on	on	on	off
0,8,5,1	off	off	off	off	off	on
0,6,7,4	on	off	off	off	off	on
0,0,1,5	off	on	off	off	off	on
6,2,9,4	on	on	off	off	off	on
9,9,5,4	off	off	on	off	off	on
1,0,7,9	on	off	on	off	off	on
9,0,3,0	off	on	on	off	off	on
0,1,6,6	on	on	on	off	off	on
9,5,5,6	off	off	off	on	off	on
8,0,5,4	on	off	off	on	off	on
6,2,9,3	off	on	off	on	off	on
6,6,1,1	on	on	off	on	off	on
6,3,6,7	off	off	on	on	off	on
1,5,2,9	on	off	on	on	off	on
2,7,5,6	off	on	on	on	off	on
8,3,1,3	on	on	on	on	off	on

TABLE 5. Password length DIP switch settings

Password	SW1	SW2	SW3	SW4	SW5	SW6
1,6,5,6	off	off	off	off	on	on
7,6,4,2	on	off	off	off	on	on
1,6,5,3	off	on	off	off	on	on
1,6,0,3	on	on	off	off	on	on
4,3,7,3	off	off	on	off	on	on
3,5,7,4	on	off	on	off	on	on
4,7,6,4	off	on	on	off	on	on
3,8,6,8	on	on	on	off	on	on
5,7,1,9	off	off	off	on	on	on
3,9,2,7	on	off	off	on	on	on
6,8,5,7	off	on	off	on	on	on
5,4,8,7	on	on	off	on	on	on
3,2,5,2	off	off	on	on	on	on
0,4,0,1	on	off	on	on	on	on
6,4,0,9	off	on	on	on	on	on
4,3,4,3	on	on	on	on	on	on

Setting Audio Level to Telephone Line

Adjustment may be made via the front card control (see Figure 1). To adjust the control use a small flat blade screwdriver or trim pot adjust tool. Initially, set the front card level control for mid-range. Have the caller talk at their normal level and adjust the control for the best audio quality, while avoiding going into the red section of the audio meter (to Telephone) located on the front card.

Configuring for Country's Telephone System

The TIF-4000 should be configured to work with the telephone system to which it is connected. Each country or area of the world has unique signalling differences that could cause erratic operation of the TIF-4000 if it is not properly configured. If the system you intend to connect to is not currently supported, you may request a configuration, using the form located in the back of this manual.

To **configure the unit for use with a specific country's telephone system**, do the following:

NOTE: AZedit must be configured to allow firmware downloads.

1. Connect the **TIF-4000** to the intercom system.
2. Run **AZedit** and go to the Keypanel Software Versions window (*Status*|*Software Versions*|*Keypanels*).
3. Click the **entry** for the TIF-4000 you wish to configure.

   NOTE: Configurations are in a self-extracting archive on the included on the AZedit cd.
4. Extract and copy these **files** to a known location on the computer connected to the intercom matrix.
5. Press **Ctrl+Shift+D** to start the software download process.
   A download screen appears.
6. Select the **location** you copied the files to in step 4 and select the file corresponding to the country needed.
7. Click **OK**.
   Once the software versions window appears, the process is complete.

The status reported for the TIF-4000 contains a number corresponding to the country configuration. This is reported as LOCALE=XX, where XX is a specific number for each country. The possible configurations are:

TABLE 6. Country Codes

LOCALE #	Country or Countries
0	North America, Korea, Taiwan
1	Belgium
2	France
3	Germany
4	United Kingdom (UK)
5	Italy
6	Japan
7	Netherlands
8	Norway
9	Not Used
10	Singapore
11	Brazil, Sweden
12	Ireland
CUST	Custom Configuration

CHAPTER 3

Operation

Operation From a Keypanel

The TIF-4000 is operated from the intercom keypanels, and from the dial pad on the telephone at the remote end of the line. Any keypanel with a keypad may use a TIF-4000. All that is necessary is to program a key to talk to the TIF-4000, as if it were a keypanel. The alpha numeric display or tally LED for that key then provides information about the phone line. A solid display or non-illuminated LED indicates a line which is not in use. A slow flash indicates a line which is in use (off-hook). A rapidly flashing display or LED indicates a line which is ringing. In addition, the alpha numeric display shows digits as they are dialed, and the LED flashes for each digit.

NOTE: Displayed tallies are different if the *Don't Generate Tallies for TIF or Trunk Use* option has been selected in **Options|Intercom Configurations|Options**.

Programming a Key to Use the TIF-4000

To use the TIF-4000, either to answer a call, or to call out, you first need to program a key to talk to the TIF-4000. This is accomplished in the same manner as programming a key to talk to a keypanel. To program a key by port number, enter NUM-nnn_PGM-t, where NUM is the number 1 key, nnn is the port number of the TIF-4000 you want to use, and t is any talk key. You also need to use the listen key, so it should be assigned as either AF (auto-follow) or AL (auto-listen).

NOTE: The TIF-4000 only responds to commands which are sent via a point-to-point key assignment. If you wish to use the TIF-4000 primarily on a PL, you must add a point-to-point assignment as the L2 talk assignment on the talk key for any panels which are going to either answer the line, or dial out on the line.

Dialing a Call

To **dial a call on the TIF-4000 using a or KP-32**, do the following:

1. Turn **on the listen key** for the line you wish to dial on.
   This allows you to hear dial tone, and your DTMF dialing tones.
2. Enter dial mode by entering **PHONE-PGM-T**.
   PHONE is the 4 button on the keypad. PGM is on the keypad, and T is the talk key which is programmed to talk to the TIF-4000 you are dialing on. Leave the talk key in the latched position as you dial the number.
3. Dial the **number**.
   As you enter each digit, it appears in the alpha display above the key you are dialing on. If the listen key is latched, you hear each DTMF tone as it is generated.
4. When you have completed dialing, momentarily turn **off** the talk key to exit dial mode.
   The alpha numeric display reverts to normal, and you may use the key and keypad in the normal manner.

NOTE: Digits 0-9 generate the DTMF digits 0-9. PGM generates the #, and CLR generate * (# and * are displayed for these keys).

It is necessary to press CLR twice if you wish to generate an *, as a single CLR is used to trigger the speed dial and redial features.

To **dial a call on the TIF-4000 using a KP-12 or KP-32**, do the following:

1. Tap the **phone key** to begin your call.
   This places the keypanel in dial mode: the CALL indicator turns on, and the MAN DIAL (manual dial) displays in the call waiting window. You should also hear the dial tone.

   NOTE: You can hang up the phone line at this time by simply tapping the phone key again.
2. Tap **SEL** (select) to select MAN DIAL.
   The twelve intercom keys can now be used to dial a telephone number. Each key corresponds to the number printed next to it on the front of the panel. If the keypanel has alphanumeric displays, the key numbers are displayed above each key.
3. Begin **dialing** the number by tapping the appropriate keys.
   After you dial the first digit, END DIAL appears in the call waiting window.
4. When you have completed the dialing, tap **SEL** to select END DIAL.
   This returns the keypanel to normal operating mode. If the called party answers, proceed with your conversation.

Hanging Up

The TIF-4000 detects the call at the far end has hung up under most circumstances. It detects the hang up by either loop interrupt, battery reversal, or the presence of a dial tone or busy signal. Some telephone systems do not provide any of the above, so it is necessary to force a hang up. In addition, if the call was placed to an auto-answer device, it is necessary to force a hang up when the call is complete.

> Enter **PHONE-CLR-t**, where PHONE is the 4 on the keypad, CLR is the CLR button, and t is the talk key which is programmed to talk to the TIF-4000which you want to hang up. This disconnects the line for which you struck the talk key.

NOTE: If talk is in the on position, you must turn off the key, then momentarily turn it on again to indicate which line you wish to disconnect. If the line is in dialing mode, then you must first exit dialing mode by turning off the key, then use PHONE-CLR-t to hang up.

Re-dialing the Last Number

The TIF-4000 remembers the last number which it has dialed.

To **redial the last number**, do the following:

1. Enter **dialing mode** by following instructions for dialing a call.
2. Enter **CLR-0-0**.
   The TIF-4000 automatically redials the last number it dialed.
3. Momentarily release the **talk key** to exit dialing mode.

EXAMPLE: If you have a call to 818.556.6700 and you are disconnected, issuing the redial command reestablishes the call. The redial command may be issued from any keypanel in the intercom, not just the keypanel that originally dialed the call.

Dialing a Speed Dial Number

The TIF-4000 has 24 internal memories for storing frequently used phone numbers.

To **dial one of these numbers**, do the following:

1. Enter **Dial** mode.
2. Enter **CLR-nn**, where CLR is the clear button on the keypad, and nn is two digits, which are the speed dial code.
3. Momentarily **release** the talk key to exit the dialing mode.

Storing a Speed Dial Number

1. After making a call manually, but before exiting dial mode, enter the **CLR-PGM-nn** before you release the talk key to exit dialing mode.
2. Momentarily **release the talk key** to exit dialing mode.

NOTE: To generate a pause during auto dial, enter *99. This is used, for example, if you need to enter a digit to get an outside line, and you r phone system requires a pause before continuing to dial.

Each number may contain up to 25 digits.

A TIF-4000 can have different numbers stored in it. The TIF-4000 stores the numbers in non-volatile memory and therefore does not require a UPS to maintain stored speed dial numbers.

Answering a Call

When a line is ringing, the alpha-numeric display or LED above the talk key which is programmed for that line flashes rapidly.

To **answer a call**, do the following:

1. Turn the listen key **on**.
2. Press the **talk key** and speak into the microphone or headset.

NOTE: If the keypanel is programmed as a default station, you panel rings whenever one of the lines rings. If you do not have a key already programmed, the ringing line appears in the CWW window. To answer, press the incoming call key and answer.You should copy the key to a main key position, either just before or just after you answer, so you can turn on the listen key to hear the caller audio.

TIF-4000 System Setup To Receive Calls

To the intercom system, the TIF-4000 is similar to a keypanel, If the phone lines are to be used for outgoing calls only, then no programming in AZedit is necessary. If users are going to phone into the intercom system from the outside, then the TIF4000 needs to be configured to allow them to use the phone line in mush the same way a local user uses the keypanel.

Programing the information for the phone line is entered into AZedit just as if the TIF-4000 where an ordinary keypanel, by selecting Keys from the main menu, then selecting TIF-4000 from the drop down menu of keypanels. The TIF-4000 operates much the same way as a keypanel, except the keys are really the DTMF buttons on the user's telephone.

Auto-Answer Mode

To use the TIF-4000 in auto-answer mode, you must first enable auto-answer mode on the front card DIP switch bank, switch 1. You may also wish to enable Password Required, switch 3. In addition, you may select the number of rings before the unit answers (internal DIP switch bank #2), and the actual password (internal DIP switch bank #3).

When the caller dials into the TIF-4000, they hear the line ring, then the unit answers and beep to request the password (if password required is enabled). The user must enter the password. The unit beeps once to confirm a proper password. If the password is not correct, the unit beeps twice to allow another try. The user is allowed three (3) attempts to enter the correct password, after which the TIF-4000 disconnects.

Once the password has been entered, the TIF-4000 establishes communications on key #1 automatically. From AZedit, this is talk and listen key #1. If, for example, the user is a camera operator, it may be desirable to program the camera PL as talk and listen on talk and listen keys #1. If the caller were a reporter, you might want to program an IFB on listen key #1but no talk key #1.

Keys 2 and 7 may also be programmed. To use the other keys from the phone, just press the DTMF button for the key you wish to use. For example, if key #1 was the camera PL, and you have finished with the shot, you may press #1, which toggles off key 1. If master control were programmed on key #2, you may then press 2 and call master control. Likewise, you might have an IFB programmed on listen 3, with no talk. If you press 3, you hear the IFB. #4 could have an IFB talk on it, to allow a caller to speak on an IFB circuit.

Each DTMF button acts as if it were on a push on/push off switch. When programming in AZedit, program the same key number as the number the user is going to press on the telephone to speak.

Talk keys 8 to 15 have a special purpose. If you are not using auto-answer mode, but have setup the TIF-4000 to be manually answered, talk keys 8 to 15 are programmed for the keypanels which are to receive the ring signal. They may also be toggled on and off from the phone by DTMF 8, so they may be used in auto-answer mode as well. You may program only key 8, in which case it behaves the same as keys 1-7. You may also program additional keypanels, PLs, IFBs, etc. on keys 9-15, and they are activated simultaneously by the 8 button on the phone.

Manual Answer Mode

In manual answer mode, the line rings until it is answered from a keypanel. In general, you must designate panels which are to receive the ring, so they can answer the line. When a line is manually answered, the caller does not have to enter a password, even if the password required switch is turned on. You may mix modes by enabling auto-answer, but setting the ring count for 8 rings. If no user has answered the call by 8 rings, the TIF-4000 automatically answers the call, and if the password required is enabled, the call is screened by requiring a password.

To use manual answer mode, you may choose to program keys 1 to 7 as above, if you want. When the phone is manually answered, key 1 is not automatically activated, but the caller may activate any of the keys if he wishes.

You must also designate the panels which are going to ring when the line rings. Program these panels on keys 8 to 15, using both L1 and L2 if you have more than 8. It is generally not necessary to program the listen keys on these positions. When the line rings, the TIF-4000 calls these panels when the line is ringing. The TIF-4000 generates a ringing noise which is then transmitted to these panels. The panels display the TIF-4000's alphanumeric in the incoming call window (CWW), and if a talk key has already been programmed on the panel, its alphanumeric flashes rapidly.

Using the TIF-4000 From the Telephone

The TIF-4000 behaves differently depending on how it is programmed. It is up to the operator who programs the TIF-4000 to convey to the user what to expect. If the user is not familiar with the operation of the TIF-4000, it is best to keep the operation as simple as possible. For this reason, it is suggested that you not use password required unless you have had problems with nu8isance calls in the past. If the TIF-4000 field user only requires one service, it is best to program that service on key 1, enable auto-answer, and disable password required. The telephone user only has to dial the proper phone number to use the interface. As they become more familiar with its operation, you can then being to offer more options to the users, or begin to require a password.

When calling in, if the unit is in auto-answer mode, it answers the call after the number of rings which have been selected. If password required is not enabled, the unit indicates it is ready with a single beep. If password required is enable, the TIF-4000 prompts for a password with 2 beeps. The user enters the password, and the unit either beeps once if the password is correct, or twice if it is wrong. The user is allowed three (3) attempts to enter the password, after which the TIF-4000 disconnects. In the event a user calls the TIF-4000 when the intercom system is either turned off or absent, the TIF-4000 answers and prompt with three (3) beeps.

Once the password is entered, the TIF-4000 enable talk and listen on key 1. This should be programmed ahead of time to whatever communications the caller generally needs first. If it is not desirable for the caller to be able to talk at this point, then only the listen key for key 1 should be programmed.

The caller may then either continue to use key 1 or select other keys with their DTMF pad. They may turn off key 1 by pressing DTMF 1, or may continue to add other keys. At any time, the caller may turn off all keys without hanging up by press 0. When the call is complete, the caller should enter *#, which causes the TIF-4000 to disconnect. This is more reliable than waiting for the phone system to pass the disconnect information to the TIF-4000.

DTMF Codes

Once programmed, the TIF-4000 may be operated via the DTMF keypad on the telephone. The DTMF keys have the following functions:

Normal Mode

1 thru 7 Toggle on and off talk and listen #1 to #7.

NOTE: Initially #1 is enabled if the unit auto-answered the line.

8 Toggle on and off talk and listen to the panels which ring when the line is ringing. This allows the caller to recall the panels without having to hang up and redial. Toggling this on allows the callers voice to be hear from all the panels which normally ring.

9 Enters programming mode, to reassign keys.

0 Turn off all talk and listen keys. Since 1-8 are toggles, it is possible to forget which keys are on and which are off. In this case, just press 0 to turn them all off and start over.

****1 thru *7*** Toggle on and off listen 1-7. By pressing * before the key, you only effect the listen. This allows you to listen to a circuit without talking to it, or to talk to a circuit without listening to it.

NOTE: You automatically listen and talk to #1 if the TIF-4000 auto-answered the line.

****8*** Toggle on and off listen for 8-15.

****#*** Disconnect. This causes the TIF-4000 to hang up. It is a good idea to do this before you hang up, as many phone systems take a long time to signal that the far end has hung up.

Programming Mode

You may reprogram the talk and listen assignments on 1-7, just as you can on a keypanel (if they are not restricted via AZedit). Note, the sequences are the same as the sequence you would use from a keypanel, except that you must first enter programming mode by pressing 9.

NOTE: The use of programming mode is discouraged due to a lack of feedback to the user to verify a programming sequence.

1 nn # K	Program a talk key to a point-to-point.
2 nn # K	Program a talk key to a PL.
01 nn # K	Program a talk key to a special list.
02 nn # K	Program a talk key to an IFB
03 nn # K	Program a talk ISO.
04 nn # K	Program a talk key relay.
3 5 # K	Program a talk key to all call (turn on the lower numbered talk keys.
1 nnn # *K	Program a listen key to point-to-point key.
2 nn # *K	Program a listen key to a PL.
3 2 # *K	Program a listen key to auto follow.
3 3 # *K	Program a listen key to auto mute.
01 nn # *K	Program a listen key to a special list.
02 nn # *K	Program a listen key to an IFB.
03 nn # *K	Program a listen ISO.
04 nn # *K	Program a listen key to a relay.
****9***	Exit programming mode.
****0***	Exit programming mode and turn off all talk and listen keys.
****#***	Disconnect

NOTE:

- 0-9 are the number keys, * and # are the star and pound keys.
- nnn is the three digit panel number.
- nn is the two digit number for IFB, PL Relay, Special List, or ISO.
- K is a key which you are programming, just press the digit (1-7). This is used to represent the listen key.

Telephone Interface Requirements Form

The RTS TIF-4000 Digital Hybrid Telephone Line Interface has been designed to respond to ringing for auto-answer and to respond to a number of conditions to detect hang-up. These conditions are (in the standard product) based upon the telephone systems of the US and other select countries. **PBX** (Private Branch Exchange) systems in the US and other countries may have ringing and hang-up characteristics which differ from the design parameters used in the TIF-4000. Public telephone systems in countries other than those currently supported by Bosch Security Systems, Inc may have ringing and hang up characteristics which differ from the design parameters used in the TIF-4000. Additionally, some countries require governmental approval for connection of the TIF-4000 to the public telephone system. Bosch Security Systems, Inc handles these requirement on a case by case basis and may require a onetime engineering fee to adapt the TIF-4000 for a specific telephone system or to obtain governmental approval. Additionally, Bosch Security Systems, Inc may require the customer to initiate the government approval process of the TIF-4000 for their particular telephone system.

Here is a form which can be used to obtain the required specific technical information.

Termination impedance matching (off-hook):_____

Termination impedance matching (on-hook): _____

Protection devices required:

Return loss: _____**dBm**

Maximum allowable transmit level:_____**dBm**

Hi-pot Tests:

Tip to ring:

Tip to ground:

Ring to ground:

Ring Signal:

Frequency_____**Hz Cadence:**_____**sec. on sec. off**_____

Disconnect Signal:

Loop Drop: Y_____ **N**_____

Loop Reversal: Y_____ **N**_____

Audio Signal: Y_____ **N**_____

If Y, frequency of tone (s): _____

Cadence:_____**sec. on** **sec. off**_____

DTMF dialing: frequencies

duration:_____**msec. interdigit pause:**_____**msec.**

Pulse Dialing: pulse rate: _____**Hz break-to-make ratio:** _____**:**_____

Hook Flash Break Duration: _____**msec. min.**_____ **msec. max**

Bosch Security Systems, Inc.
12000 Portland Avenue South
Burnsville, MN 55337 U.S.A.
www.boschcommunications.com