
Firmware Upgrade KI-1747B

Telecenter[®] V System Firmware Upgrade Kit (9553)



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General Information

The 9553 firmware is contained on a single chip, labeled “U3.” It contains the most recent software for Telecenter® V systems, version 502.1; use it to replace a damaged chip or to upgrade from earlier software versions.

The version 500 series firmware supports integration with the MRC7600, Vodavi STARPLUS®, and Telecenter® DSI products. **The 500 series firmware does not, however, support integration with the TC4400 Call Control Console.**

Scope of this Manual



KI-1747, the Telecenter® V Systems 9553 Upgrade Firmware Kit manual, provides information regarding firmware upgrade procedures, feature enhancement descriptions, and “bug fix” descriptions.

For maximum benefit, read it in conjunction with KI-1692B, the *Telecenter® V Programming* manual.

Revision History



This version 502.1 firmware manual documents all firmware changes instituted since version 404.1. In addition, the manual itself has been reformatted.

Alerts, Precautions, and Limitations



- ✓ Be sure to turn off all power to the system before removing or installing firmware.
- ✓ Leave the chip in its protective foam until installation.
- ✓ Use an approved static-control wrist strap when handling the chip or the CPU board. For best results, attach the strap to a known ground—CMOS devices are easily damaged by static electricity.
- ✓ Verify that a PC, running TD5 (version 17.0), is available.

Tools and Supplies



Installing the firmware chip requires the following hand tools:

- ✓ Approved chip-pulling tool or thin flatblade screwdriver
- ✓ Approved grounding strap

Packing List



The upgrade kit is shipped in a single box that contains:

Quantity	Part	Part Number
1	Telecenter® V EPROM version 502.1 firmware (chip labeled “U3”)	ED0545
1	TD5 version 17.0 software	TD5
1	TD5 Manual	KI-1730
1	9553 Firmware Upgrade Manual	KI-1747

Related Documents



You may wish to consult the following related manuals:

- ✓ KI-1692 Telecenter® V Programming
- ✓ KI-1981 MRC7600 Media Retrieval Controller
- ✓ KI-2000 TCKS1401 Telecenter® / STARPLUS Integration

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Upgrade Procedure

To ensure a quick and smooth upgrade process, please complete all of the steps listed immediately below:

Mechanical Installation



Use the following instructions to install series 500 firmware. Note: you must reset the system after installation:

With your Telecenter® powered on:

1. Verify your PC is connected to the Telecenter®.
2. Load and start TD5 (version 17.0).
3. Capture and save your current system programming to disk.
 - *If forwarding has been established for any phones, print the forwarding data for later use (applicable only for version 401 or earlier).*
4. Power down the system.

With your Telecenter® turned off:

1. Locate and remove the CPU3 board from the central chassis.
2. Remove the existing chip labeled “U3,” using either an approved chip-pulling tool or a thin flat blade screwdriver. (If using a screwdriver, make sure to loosen the chip at both its top and bottom, taking care **not to** twist, bend, or break the attached pins.)
3. Once removed, carefully place the chip on the conductive foam for safekeeping.
4. Remove the programming jumper from the CPU3 board or place it in the “EN” (enabled) position.

5. Reinstall the CPU3 board and power up the system. (The notched corner should match the system-board screening—no pins should protrude from the socket.)

System Configuration (TD5)



Follow the procedures best suited to your particular application:

With your Telecenter® powered on again:

If upgrading from software version V307x3 or earlier, follow the steps set forth immediately below (designed to make space for “Pre sequence data” in the *Dialing Intercept Table*):

1. Enter the Dialing Intercept Table in TD5.
2. Press the F9 key to download.
 - *The Dialing Intercept Table will be reformatted.*



If upgrading from software version V401 or earlier and phones were set to “forward,” follow the steps set forth immediately below (if in doubt, follow steps):

1. Enter the Location Code Editor in TD5.
2. Press the ALT-F3 keys (simultaneously) to enter the “absolute addressing” mode.
3. Examine locations 24 and 26.
 - *If they are both set to zero, no Forward data exists. Skip to “**Replace Echo Intercept Action**” immediately below.*
4. Press the ALT-F3 keys (simultaneously) again to reenter the “absolute addressing” mode.
5. Press the F9 key to begin the downloading process.
6. Enter the Forwarding Editor in TD5, and reenter any forwarding data you may have recorded. (Consult your print-out, if necessary.)
 - *Be sure to enter “architectural” numbers, not “physical” numbers in the editor table.*
7. Press the F9 key to download the forwarding information.

Replace Echo Intercept Action:



If upgrading from software version V401 where the “Echo Intercept” action was used, you must also replace all appearances of “Echo” with “Normal” (**the Echo Intercept action is no longer supported**) and set the corresponding “Pre-sequence” intercept digits. Once done, press the F9 key to begin the downloading process.

An Example:

If intercepting on the number “9,” then you must set the pre-sequence to “9” plus a comma (“9,”)—adding this comma allows the extra time necessary for the PBX to grab a trunk.



Important:

If you plan on using any of the new system features, you must use the appropriate TD5 editors to modify and download the new system configuration. Once downloaded, verify changes in the following manner:

Verifying Changes

After downloading, you may verify changes in the following manner:

With your Telecenter® still powered on:

8. Exit and then restart TD5.
9. Check that entries in the *Forward* and *Dialing Intercept* tables are accurate.
10. Reset the system and confirm proper operations.



Feature Enhancements

STARPLUS Integration Features

Refer to the KI-2000 Telecenter® / STARPLUS Integration manual for complete discussion of these features and applications.

STARPLUS Class of Service (COS)

The STARPLUS tie line is COS A:1 and C:6, where:

B:3 enables Zone Page from STARPLUS extensions.

B:4 enables All Page from STARPLUS extensions.

C:4 controls acknowledgment of speaker connection. When set, the Telecenter® system gives speaker-acknowledge (answer supervision) signal to the STARPLUS. When clear (**recommended**), no acknowledgment is given, and the call is recalled to the attendant when the STARPLUS transfer-recall timer expires.

Location Codes for STARPLUS application

The following location codes were enhanced:

552: DSI/Vodavi Answer Supervision Signal Time

This code determines the length of the answer supervision wink the Telecenter® V system sends to the KSU. Recommended value: 17. Units: 1/60 sec.

620: STARPLUS Display Group

Call-in and display information from this Telecenter® V system display group will be transmitted (and displayed) on STARPLUS key phones.

622: STARPLUS Leading Digit

This code is required for all STARPLUS extensions and feature codes. The leading digit is required for the Telecenter® V system to automatically dial certain STARPLUS feature codes (such as “Set Time and Date”).

624: STARPLUS Busy Wink Duration

This code determines the length of the wink the Telecenter® V system sends to the STARPLUS when the target line is busy. Recommended setting: 42 Units: 1/60 sec.

626: STARPLUS Hookflash Duration

This code determines the length of the wink the Telecenter® V system sends to the STARPLUS to indicate a hookflash. Recommended setting: 30, Units: 1/60 sec.

628: STARPLUS Time Sync

This code allows the Telecenter® V system to send time and date synchronization signals to the STARPLUS after any of the following events:

- ✓ SET to 0 to disable Time Sync
- ✓ ADD 1 to send a time sync after #55
- ✓ ADD 10 to send a time sync a master clock time sync occurs.
- ✓ ADD 100 to send a time sync when time & date is set from the TD5 program

Recommended setting: 111.

630: STARPLUS Display Integration

This code can be set in the following manner:

- ✓ SET to 0 to disable display integration. This value is strongly recommended for stand-alone Telecenter® V (i.e. non-STARPLUS) installations.
- ✓ ADD 1 to enable Call-in and Administrative Display integration.
- ✓ ADD 10 to enable Busy Lamp Field feature.

632: STARPLUS Outbound CO Trunk Group

This code sets the STARPLUS CO trunk group number for outside dialing. It is necessary for trunk queuing.

MRC7600 with Tip/Ring interface

A new line type has been created to support the MRC7600. In applications where the MRC7600 is connected to a standard Tip/Ring LLM port (either 12 or 48V), use the line type A:4 with B:3. Do *not* program any initialization or ending tones because they are provided internally on the MRC7600.

In applications where the MRC7600 is connected to a E&M port, program as usual (i.e. A:4 with B:3 clear). Here, you *must* program initialization and/or ending tones, as they are *not* provided by the MRC7600.

Refer to KI-1981 MRC7600 manual for a more complete description of features and applications.

Ten Digit Dialing (Adjacent Area Codes)

In some large metropolitan areas, dialing an adjacent area code without the prefix of “1” is considered a local call.

The Telecenter V now permits dialing a long distance number without the prefix of “1” (e.g. <area code> + <7 digits>). This is handled as a local call by the Telecenter® V toll restriction algorithm. Up to 5 adjacent area codes may be defined for this purpose.

Lines with B:1 only (i.e. local C.O. access) are allowed to dial the following sequences:

Format	Restrictions Applied
<7 digit local number>	if in Toll Prefix Table
<adjacent area> + <7 digits>	if in Adjacent Areacode Table
1+<allowed area> + <7 digits>	if in Allowed Areacode Table

Lines with B:1 and B:2 (unrestricted) support 10 digits dialing only when area in the adjacent area table was dialed. If not, the system will assume the dialed digit string is 7 digits long.

Location codes 218-226 are reserved for 5 adjacent area codes.

New Message Waiting Lamp Control Codes

In addition to #56, the following alternate codes can be used to control message waiting lamps:

- ✓ #57 + <ext>: turn off message waiting lamp
- ✓ #58 + <ext>: turn on message waiting lamp
- ✓ #59 + <ext>: flash message waiting lamp

Answer Any Call-in Feature (Location 134)

When enabled (Enable = 1, Disable = 0), a STARPLUS key phone (or ADMIN phone) can answer a call-in from any display group. This was added to support multi-campus applications.

Hook Switch Priority

The hook switch now has a higher priority than the call-in switch. This allows lines with a stuck or malfunctioning call-in switch to go off-hook and receive a dial tone.

Logging Improvements

The following logging operations were improved:

Logging of Outbound DTMF Digits (Call Progress and Other Tones)

Setting the 10,000ths digit of location code 348 to 2 logs DTMF digits and other tones generated by the Telecenter® V system. Outbound tones are signified by a “>” following the DTMF register letter. Call Progress and Alarm Tones are now also recorded.

Range for DTMF logging

DTMF logging can now be restricted to lines within a specified range via a series of location codes. Two non-overlapping ranges of physical line numbers can be specified:

- ✓ Loc. 336: Start of range1
- ✓ Loc. 338: End of range1
- ✓ Loc. 340: Start of range2
- ✓ Loc. 342: End of range2

Time Zone logging

The logging output has been changed to print a bitmap of all selected zones. E.g. “<.TIM ZN 12345678.” If multiple time zones were selected simultaneously in previous versions, only the highest time zone appeared in the logging output.

External Alarms Tones logging

The system now prints a digit after "<.ALARM EXT" to indicate which input caused the External MTG tone:

1. B:38 grounded.
2. B:38 connected to B:20
3. B:38 connected to B:22

All Tie Lines Busy

The system now logs “all tie lines busy” when a remote forward can not be completed.

Active List Full

The system now logs “**active list full: al_count=X,al_top=X**” when the active list is full.

Additional Logging

Log when a Service Request/Call-in is generated from an unprogrammed line

Log when a Call-in is generated from an Admin, Media, or Trunk line type.

No Dial Tone Logging

The system will log “**+pX**” when a phone goes off-hook and “**-pX no dt**” when a phone hangs up without receiving dial tone.

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Bug Fixes

The following fixes are included with version 500 series firmware:

Time Zone/External Alarm Tone Inputs (Noise Susceptibility)

In select installations, noise was triggering tone inputs, causing the entire paging sub-system to be locked up until system reset. Location code 328 now controls the minimum valid input signal from Time Zone and External Alarm Tone (EAT).

The input debouncing was improved to ignore noise glitches. The recommended setting is 30, which corresponds to 500 milliseconds. The units are 1/60th second. Settings of 0 to 14 result in 250 milliseconds. (i.e. 250 milliseconds is the minimum setting for input debouncing).

Time Tones (Two Links Used)

When performing a time tone, the system would allocate 2 links (DTMF) receivers, possibly using up these resources for the duration of the time tone. A single link is now used. (This bug was first noticed in V302.)

Dial-up Zone programming—#97 (Limited to Memory Block 1)

In systems configured for multiple systems memory blocks, #97 would only affect memory block 1, even if the system was active in some other memory block. #97 now affects whichever memory block happens to be active. (This bug was first noticed in V302.)

External Alarm Tones (Wrong Page Priority)

Under earlier software versions, the priority of the EAT was higher than any other type of page. The EAT now is assigned the second lowest priority. EAT can only preempt intercom. (This bug was first noticed in V302.)

Always-an-Answer (AAA)

The following problems were corrected:

1. The AAA feature was restricted to ADMIN phones with a display. Now, any dialing phone (except Student phone) may use this feature.
2. A second attempt to use AAA to the same busy station was denied (busy) until the entire conversation was torn down. Second attempts are now possible.
3. When the speaker-to-phone connection dropped out, the phone-to-phone connection would receive dial-tone over the conversation. The dial tone has been removed.
4. (These bugs were first noticed in V402.)

Answering Forwarded Off-hook DSP Call-in (Faulty Speaker Routing)

When a forwarded Dialing Staff phone placed a call-in by dialing '*' or '**' and remained off hook, it connected to the speaker—when the call-in was answered. It now connects to the phone.

(This bug was unique to V402.)

Clear Call-Forward-Always Feature (Corrupts System Programming)

If Location 86 “Clear forward always at midnight” was enabled, then a few bytes of data immediately following the call forwarding table would be corrupted.

If the system was initially setup using the TC5-DEF.BAT TC5-DEF2.BAT defaults, the most likely table to be overwritten was the Toll Restriction table. The result was that a couple of prefixes were always being cleared automatically at midnight.

(This bug was first noticed in V302.)

Precision Ringback (Long First Ring Delay)

When ringing a target, the initial ring would sometimes get delayed by 4 seconds.

(This bug was first noticed in V404.)

Transfer to Invalid Extension (No Recall)

This bug only occurred if the “Precision Ring Back” feature was enabled. If you placed a call on hold (i.e. hook-flashed), dialed a non-existent extension, and then hung up, the call would not ring back. The party on hold would hear ring back, but no phones would really be ringing. The call now rings back to the originator.

(This bug was first noticed in V404.)

Overlap Dialing (Multiple Bugs)

The following bugs were associated with “Overlap Dialing” were corrected:

1. When sending a multi-digit pre-sequence followed by a pause, the DTMF tone generator would get shut off before all of the pre-sequence digits had been sent. For example, if the pre-sequence in the intercept table was “98,” only the 9 would be sent. The tone generator now processes the complete pre-sequence.
2. The DIL privacy bit (B:3) was ignored if overlap was enabled. The privacy bit is now recognized.
3. The system would not process calls to a DSI tie line if the PBX bit (B:6) was set and there was no pre-sequence string. The system now processes these calls.

(This bug was first noticed in V402.)

Attribute B:6 on DSI COS (Possible Toll Restriction Defeat)

If B:6 was set on a DSI tie line, the toll restriction algorithm was incorrect. The system interpreted B:6 as “Behind PBX,” but this was already implied by the DSI line type. This could result in restricted calls going out to the CO.

Now—for DSI (and STARPLUS) line types—B:6 is interpreted only as “Executive Override.” The B:6 bit retains its original definition (as ‘PBX bit’) for AAI, DIL, and DISA line types.

(This bug was first noticed in V400.)

Trunk-Queuing/Call-Back-Busy (Multiple Queue Requests)

The wrong number of digits was sent when multiple trunk queuing requests were pending from the same station. The problem occurred under the following circumstances:

If all trunks are busy:

- ✓ and the user places a CO call...
- ✓ and requests to have the call queued...
- ✓ and the user places a second CO call...
- ✓ and requests to have the second call queued...

then when the Telecenter® V processes the call-back, the total number of digits out-dialed was the sum of the number of digits in each request. Now, only the most recent trunk queuing request is processed.

(This bug was first noticed in V302.)

Trunk Queuing/Call-Back-Busy (Inoperable with Overlap)

Trunk-queuing/call-back-busy would not work when overlap was enabled. These features now work.

(This bug was first noticed in V404.)

CUT Intercept Action

CUT Intercept Action would not work with DSI, STARPLUS and DISA line types. The current software version now supports these.

(This bug was first noticed in V308.)

Local Dialing Intercept (Cuts into Conversation)

If the intercept hunt was linear, and the trunk/line range was a single local phone extension, and if that extension were in use, and someone were to dial the intercept (e.g., 0), then the caller would cut into the existing conversation rather than getting busy signal. (Rotary hunt worked correctly.) Under these conditions, busy signal is now issued.

(This bug was first noticed in V402.)

B:8 Support for E&M Signaling (Removed)

On the Telecenter® IV and Telecenter® IV Plus systems, B:8 was used on all trunk line types to signify E&M signaling and remote service request. Even though it was unpublished, this functionality was retained on the Telecenter® V. The current software version no longer provides this support. C:1 should now be used to support the E&M interface.

(This bug was first noticed in V302.)

SMDR (Denied Numbers not Recorded)

A number dialed and denied (i.e. given reorder) was not recorded by SMDR. SMDR now records denied numbers.

(This bug was first noticed in V308.)

The following fixes are included with the version 502 firmware:

Double Ring During Night Answer Chime

No second ring is given because system is busy pulling in relays for 1.3 seconds, thus missing the ring slot for the second ring of a double ring. The system now

delays the double ring for 2.0-2.5 seconds until the system is done pulling in all the relays.

(This bug was first noticed in V302.)

Remote Forward for Calls Originating on a Tie line

The “ECHO_DIGITS” procedure may give re-order if it detects a momentary glitch (on-hook) on the originating tie line while forwarding a call to a remote IVR (Voice Mail System) or station. Additional de-bouncing has been added.

(This bug was first noticed in V402.)

Switching between External Alarm Tones with a RX1027 Panel

Could not switch between various External Alarm Tones without releasing the current tones first. The “off” button on the RX1027 panel had to be pressed before selecting another tone. Now you can switch from one tone button to another without pushing the ‘Off’ button.

This bug was unique to V500.)

Forwarding to a Local or Remote IVR (Voice Mail) System

Could corrupt system memory causing the Telecenter V to lockup, if the caller did not have a DTMF xcvr.

(This bug was first noticed in V402.)

Disabling External Alarm Tones

The system would still pull-in all the relays, even if no tones were programmed in location codes 288-292.

(This bug was first noticed in V302.)

Processor Fault Statistic

This statistic would only show 0 or 1, not the number of times this fault had occurred

(This bug was first noticed in V302.)

Trunk Queuing and UDP and CUT Intercept Actions

The system now will allow trunk queuing if all C.O. or tie lines are busy.
(This bug was first noticed in V308.)

CUT Intercept Action and Enabling Overlap Dialing

Using the CUT intercept action when overlap dialing was enabled (Loc. 584) would corrupt system memory causing the Telecenter V to lockup.
(This bug was first noticed in V402.)

Outgoing Calls Statistic

Statistic did not increment when a C.O. call is made via a DSI or StarPlus tie line.
(This bug was first noticed in V400.)

Vodavi StarPlus Integration

Proper disconnect pulse was not sent to the Vodavi StarPlus (when the DC on an LLM port is turned off, the voltage did not go low enough to be recognized by the StarPlus as a valid disconnect pulse, insure M lead control is off).
(This bug was unique to V502.)

Radio Shack Phones

Added additional de-bouncing when parsing DTMF digits, some models of Radio Shack phones cause a 100 millisecond dip in current immediately after a DTMF key is released.

(This bug was first noticed in V302.)

The following fixes are included with the version 502.1 firmware:

DISA Lines would Lockup

LLM ports configured as either E&M or COA DISA ports would get stuck in the active list proc PARSE0 or PARSE1, holding on to a DTMF xcvr. The system would appear locked up since no other lines could get dial tone. Other tie line (STAR & DSI) and trunk (DIL & AAI) line types were not affected.

(This bug was unique to V502.)