Mitel SUPERSET™ 610

OEM Digital Speakerphone

Features

- Digital 2B+D telephone Set, 1Km range.
- Programmable µ-law/A-law.
- Programmable Transmit and Receive Gains.
- Can comply with European or North American Handset requirements.
- Digital Handset volume control.
- Speakerphone with digital receive volume control.
- DTMF tone generation complies with both North American and European Standards.
- Two Tone warbler with Digital Frequency and Level adjustment.
- Hearing aid compatible handset

Ordering Information

9118-000-610-NA   SS610 (Arctic Grey)
9118-502-610-NA   SS610 (Charcoal Grey)

SS610 Functionality

The SS610 digital telephone operates in a stimulus fashion, which means that it must be instructed by the host system to invoke most of its functionality. To control the telephone, the system must establish link (MiLAP™) and network layer (MiNET™) communication via the D-channel. Once this communication is established, the system has control of the audio paths, tone generation and display functions in the telephone. The telephone in turn reports key depressions and certain other messages related to volume control and display states.   The MiLAP and MiNET specifications, MTS21 and MTS22, describe this functionality in detail.

Certain functions are handled directly in the SS610, once communication has been established. These are DTMF tone generation; when dial pad keys are used, and volume control operation. The volume control keys affect the display contrast when no audio paths are enabled, (7 levels), affect the handset receive level when the handset audio is enabled (+/-9dB in 3dB steps),affect the speakerphone receive level when the speakerphone is enabled (+18/-12dB in 3dB steps) and affect ringer level when the ringer is enabled (+/-18dB in 3dB steps). In the case of the handset volume control the level normally returns to nominal after the handset audio path is disabled, however this function can be disabled via a MiNET command. For the other control functions the resulting setting is maintained and reported to the system via MiNET commands.

Note: The SS610 incorporates OEM command codes and will not function with Mitel PBX's. This product, its specifications, and the information appearing in this document are subject to change without notice.

The SS610 meets the Electromagnetic Compatibility (Emissions) requirements of FCC Part 15 for Class B devices. It also meets the emissions and Immunity requirements of the European Community Directive 89/336/ EEC for class B and Severity level 2. The SS610 is designed only for use with on-premise wiring.

Detailed Operation Description

The detailed functionality of the SS610 is described in the Mitel Technical Note TN.13 and in the MTS21 and MTS22 protocol specifications. These documents are available only to licensees of the MiLAP and MiNET protocols

Notes: MiLAP and MiNET are registered trademarks of Mitel Corporation

Mitel SUPERSET™ 610

Environmental Specifications

Specification	Min	Max	Units
Storage Temperature Range	-25	+70	C
Operating Temperature	0	+50	C
Storage/Operating Humidity (non-condensing)	0	90	%

Power

	Specification	Min	Typ	Max	Units	Notes
1	Input Voltage range (power up)	24		56.5	Vdc	1
2	Input Voltage Range (operational)	17		56.5	Vdc	2
3	Idle Set Power		260	320	mW	3
4	Maximum Set Power		550	660	mW	4

Notes:
1. Open circuit voltage required to start up the set's power supply, 150µf of capacitance must be charged to the minimum voltage.
2. Voltage required at the telephone set to maintain operation
3. Telephone set operational, but no call active
4. Call Ringing with Ringer Volume control adjusted to Maximum

AC Line Transmission

	Specification	Min	Typ	Max	Units	Notes
1	Input Voltage	0.3		1.25	Vpp	5, 6
2	Output Voltage	0.8	1.1	1.2	Vpp	5
3	Transmission Loop Length	0		1	Km	6, 7

Notes:
5. Measured at the telephone set using termination circuit from MTS23 (Mitel DNIC Interface Spec.)
6. 26 AWG twisted pair wire, Attenuation = -11.5dB/Km
7. Loop length can also be limited by the power feed arrangement, see Power Feed information in MTS23

Handset Transmission (Acoustic to Digital, Digital to Acoustic)

	Specification	Min	Typ	Max	Units	Notes
1	Transmit Loudness, TOLR (μ–law)	-38	-41	-44	dB	8, 10
2	Transmit Sensitivity (μ–law) @1kHz	-31	-26	-21	dBv	8, 10
3	Transmit Loudness, SLR (A-law)	9	6	3	dB	9, 10
4	Transmit Sensitivity (A-law) @1kHz	-22	-17	-12	dBv	9, 10
5	Receive Loudness, ROLR (μ–law)	50	47	44	dB	8, 11
6	Receive Efficiency (μ–law) @1kHz	-8	-3	2	dBPa	8, 11
7	Receive Loudness, RLR (A-law)	1	-2	-5	dB	9, 11
8	Receive Efficiency (A-law) @1kHz	-9	-4	1	dBPa	9, 11
9	Local Sidetone Loudness, SOLR (μ–law)	18	14	8	dB	8, 10
10	Local Sidetone Loudness, STMR (A-law)	23.5	17.5	11.5	dB	9, 10

Notes:
8. μ–law half-channel parameters are measured and calculated according to the methods in IEEE Std.269 and 661, receive electrical input is -10dBv.
9. A-law half-channel parameters are measured and calculated according to the methods in ITU rec. P.64, P.79, receive electrical input is -12dBv.
10. The Transmit levels can be made louder in 1dB increments up to 7dB, via the MiNET command Set Codec Gain, see MTS22. This gain pad also effects the local side tone.
11. The Receive loudness can be made quieter in 1dB increments up to 7dB, via the MiNET command Set Codec Gain, see MTS22. The receive loudness can also be adjusted +/- 9dB, in 3dB steps via the volume control keybuttons.

The SS610 handset is designed to meet the Peak acoustic pressure requirements of EIA/TIA-470-A and the Hearing Aid compatibility requirements of EIA/TIA-504

DTMF Transmission

	Specification	Min	Typ	Max	Units	Notes
1	Total Output Level (μ-law)	-4.5	-4	-3.5	dBm0	12
2	Total Output Level (A-law)	-10.5	-10	-9.5	dBm0	12
3	Pre-twist	1.5	2	2.5	dB	12
4	Frequencies	-1.5	standard	+1.5	%	12

Notes:
12. Measured on a B-channel, applicable to all 12 of the standard tone pairs.

Speakerphone Transmission (Acoustic to Digital, Digital to Acoustic)

	Specification	Min	Typ	Max	Units	Notes
	Transmit Sensitivity (μ-law) @ 1kHz	-21	-16	-11	dBv	13, 15
	Transmit Sensitivity (A-law) @ 1kHz	-12	-7	-2	dBv	14, 15
	Receive Efficiency (μ-law) @ 1kHz	-19	-14	-9	dBPa	13, 16
	Receive Efficiency (A-law) @ 1kHz	-20	-15	-10	dBPa	14, 16

Notes:
13. m-law sensitivity and efficiency are measured according to the methods in IEEE Std. 269 and ITU rec. P. 34
14. A-law sensitivity and efficiency are measured according to the methods in ITU rec. P.34, P. 64.
15. The transmit sensitivity can be increased in 1dB increments up to 7dB, via the MiNET command Set Codec Gain, see MTS22.
16. The Receive efficiency is measured at maximum volume. It can be reduced in 1dB increments up to 7dB, via the MiNET command Set Codec Gain, see MTS22. The receive level can also be adjusted down at least 30dB, in 3dB steps via the volume control key buttons.
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Ringer Level

	Specification	Min	Typ	Units	Notes
1	Maximum Ringer Sound Power	80	86	dBA	17, 18

Notes:
17. Measured according to the methods described in EIA/TIA-470-A, at all frequency combinations.
18. The ringer level can be adjusted down 36dB, in 3dB steps via the volume control keybuttons.

The ringer frequencies can be adjusted via the volume control keys when the set has been put into the ringer demo mode via the MiNET command Define Audio Mode, see MTS 22. In the SS610 the following ringer frequency combinations are available.

Ringer Frequency Pairs

High Tone	Low Tone	Warble Rate	Units
364	444	5 or 10	Hz
400	615	5 or 10	Hz
444	666	5 or 10	Hz
471	727	5 or 10	Hz

SS410 Functional Parameters

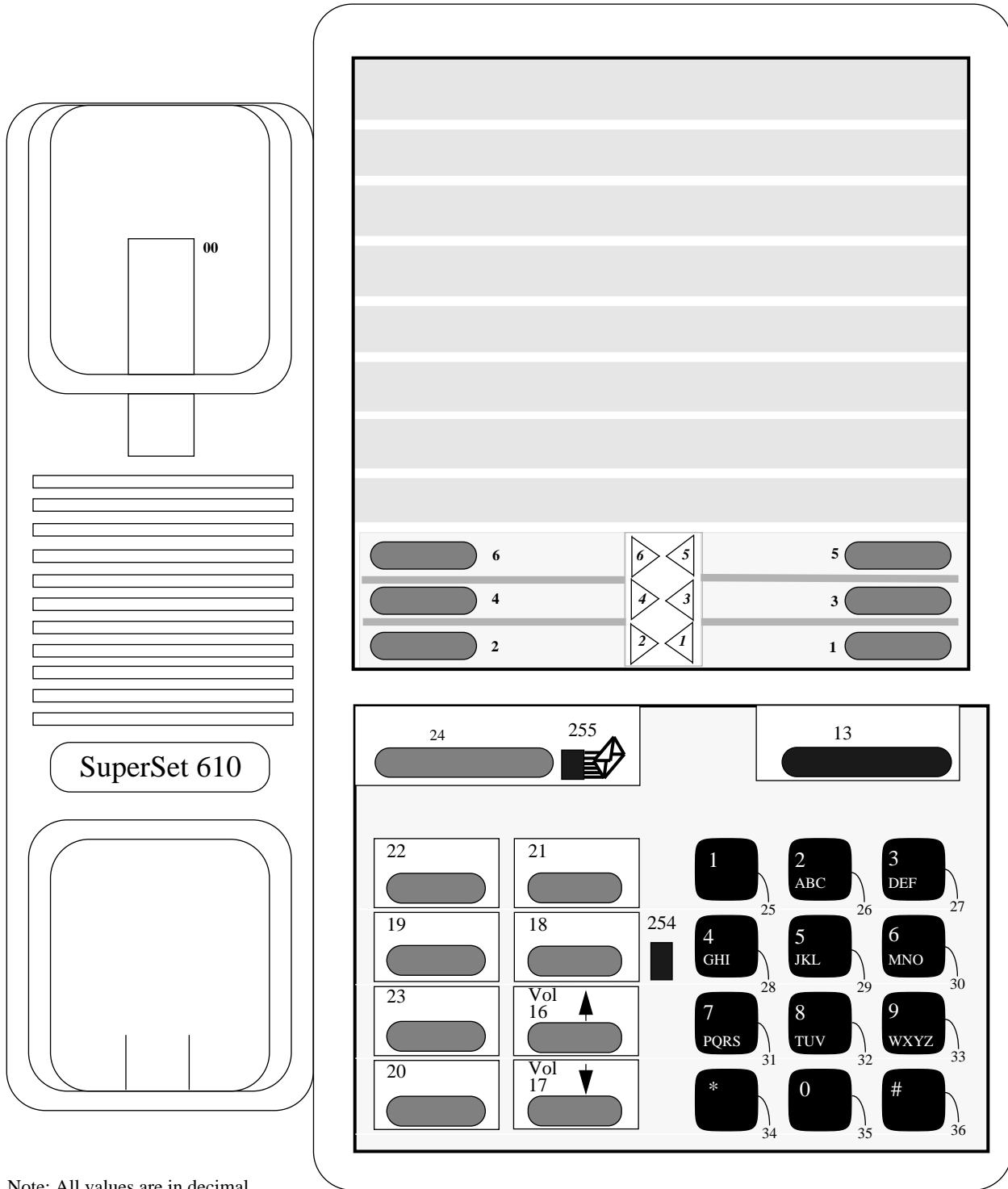|	Parameter	Value	Remarks
Physical Layer	Sync Debounce time	136 ms	Time to detect or lose sync once DNIC programmed.
	GoAhead Protocol Support	YES	GoAhead and NonGoAhead modes supported - see MTS20.
Link Layer	Link Address Used	$00	As specified in MTS21.
	T200	600 ms	Re-transmission time - refer to MTS21
	N200	8	Number of re-transmissions before link reset - refer to MTS21
	Transmit Window Size	1	Maximum number of outstanding I frames (k) at any time for each particular direction - refer to MTS21.
	Receive Window Size	1	
Network Layer	Set ID Used	93*	The octet reported in the Report SetID MT - refer to MTS22.
	Max. Transmit Iframe Size	4	Report SetID is the largest transmitted packet -see MTS22.
	Max. Receive Iframe Size	43	Total octets in any information frame, whether bundled or not.
	Bundling Support	YES	Minet frames can be bundled together to the SS610.

*Note: Hexadecimal

Note: All values are in decimal.

Figure 1: Superset 610 Illustration