

MITEL SX10 & SX10E



Telephones
Switchboards
How to Convert Old Telephones and conversion kits
Reproduction telephone cords
All Other

PXML No. 75 (SX10) and 79 (SX10E)

APPROVAL No. NS/1412/23/E/022682 (SX10) and NS/1412/23/E/022919 (SX10E)

[Click here to see information on BT's withdrawal of Subscribers Private Metering \(SPM\)](#)

The [Mitel](#) SX10 (shown below with console) and SX10E (shown right with superset 4) is a LD/MF analogue switch with a maximum configuration of 8+24 (SX10) and 8+32 or 8+24 (SX10E). The SX10 was introduced around 1982, used a Remote Display Unit instead of a console (introduced late 1983) and had a metal cover surrounding the PSU and card mounting. The SX10E superseded the SX10 in 1985, and was fitted with a plastic, ribbed cover and used software variant 143, which supported supersets (up to 24), call logging and 60 memory abbreviated dialling. Both variants have 8 speech paths and system architecture is Stored Programme Control (SPC).

Made by Mitel, the equipment was sold by a number of companies under different names. The SX10 and SX10E were wall mounted and used the SX20 console or a small LCD display for indication purposes.

The main cabinet contains:-

A Mastercard II which carries SLICs for 8 extensions, tone generators and receivers and the Firmware Module.

It may also include 1 or 2 Trunk Modules (2 trunks each) and a Communicator Module which allows SS4 Feature phones to be connected to this card.

A System Expander Card which carries SLICs for either 8, 16 or 24 further extensions, tone receivers and optionally, 2 more Trunk Modules can also be installed in the system.

Trunk Module's may be standard loop disconnect modules (switchable for Loop or Earth calling) or SSAC15a modules or SSDC5 (E & M) modules.

The system may also include a Remote Call Status Display. The SX10E can handle a maximum of eight simultaneous calls.

The maximum capacity of the system is:-

8 Trunks and 32 Extensions of which up to 8 may be SS4 Feature phones (143 variant only).

The British Telecom version of the SX10/SX10E had a wall mounted PSU and MDF. The equipment cards were housed in a black console (similar design to a Monarch console). This system was called the [Viceroy/Super 10](#) and had a restricted capacity of 8+16.

The PSU and card frame are separate, but are both mounted on the same wall plate. An integral battery may be fitted within the PSU and this will maintain the system power for up to 45 minutes. The card frame accepts two cards and each card will support 4 trunks (2 x 2 cct) each.

240V 50Hz mains voltage is converted in the power supply unit to the voltages required by the system. In the event of a mains failure the SX10E has a 90 minute back-up battery. System configuration is maintained, in the event of a complete power failure by the use of battery supported RAM. The PSU is rated at 60 watts and weighs 20 lbs.

After a mains failure and exhaustion of the battery back-up power the first two extension equipment numbers are connected to the public network.

A 27V dc feed is supplied to extension telephone instruments.

CONFIGURATION



The system cabinet fixes to the wall and uses a separate console that can be positioned away from the cabinet. This console is also used by the Mitel SX20. The Master Card (CPU board) has 8 extension ports and provision for 2 trunk cards. Additional ports are added by installing a 8, 16 or 24 port extension cards. These cards have provision for 2 trunk or 2 private circuit cards. A Remote Display Unit must be fitted for programming purposes, if no console is provided. Featurephones can only be used on 143 variants with Mastercard 2.



REMOTE DISPLAY UNIT

The Remote Display Unit is supplied as a kit that comprises of two American style jacks and two connection cords. A two pair cable is run between the two jack sockets. One cord plugs into the Remote Display Unit and the other end plugs into the CCU motherboard. The Display Unit is shown to the right and the table below advises on how to wire the unit.

Socket for Cord to CCU	2 Pair cable	Socket for Cord to Display Unit
Yellow	White/Blue	Black
Black	Blue/White	Yellow
Red	White/Orange	Green
Green	Orange/White	Red

INSTALLATION

Before use, the SX10 system must be loaded with default data. This operation clears out the RAM and loads default data, ensuring that the database is free from corruption.

Loading Default data

- 1. Open cover
- 2. Set both switches in front of Nicad batteries to ON
- 3. Turn power on
- 4. Set system status switch 1 to closed (behind slices)
- 5. press RESET button (to right of PROM card)
- 6. Console display shows 88888888
- 7. Console display shows ????????
- 8. Within 6 seconds set switch 1 to open
- 9. Console display shows -----
- 10. Set switch 1 to closed
- 11. Console display shows 00-00
- 12. Default Data has been loaded

DIP switch settings

ON	Always On	2 digit extn range	Port 1 normal extn	Data access protected
	4	3	2	1
OFF		3 digit extn range	Port 1 test extn	Data access unprotected

Programming Mode

To enter programming:

- 1. Check that system DIP switch 1 is set to CLOSED
- 2. Press the STATUS button until 142 or 143 appears and hold button down
- 3. Dial 7772
- 4. Release STATUS button
- 5. Dial 58 or #

Printer Lead Wiring

RS232 socket		Printer plug
2	-----	2
3	-----	3
7	-----	7
		6 wired to 20

Voltage Test Points

There is a strip of pins located near the DIP switches. System voltages can be tested at this point with a high impedance multimeter.

Pin 1 is the top pin and pin 6 is the bottom pin.

Voltage to be measured	Measurement point	Reference point	Voltage range
+5v dc	Pin 1	Pin 5 or 6	+4.8v to +5.2v
+5v dc	Pin 2	Pin 5 or 6	+4.8v to +5.2v
-8v dc	Pin 3	Pin 5 or 6	-7.6v to -8.2v
-28v dc	Pin 4	Pin 5 or 6	27v to 29v
0v dc	Pin 5	Reference	
Ground	Pin 6	Reference	

PARTS

Description	Manu No	BT Part No
HANDSET AND CORD (HANDSET 16B BLACK)	9102-046-001-NA	374480
EXPANDER CARD 16 CCT	9100-021-021-NA	
PROM GEN 142 - SX10	9100-026-142-NA	
PROM GEN 143 - SX10E	9100-026-143-NA	
BATT PACK (FITS IN PSU)	9100-003-000-NA	374488
EXPANDER CARD 24CCT	9100-021-031-NA	
POWER SUPPLY UNIT - SX10		
POWER SUPPLY UNIT - SX10E	9100-002-013-NA	
cabinet SX10		
CABINET SX10E (RIBBED PLASTIC COVER)	9100-023-000-NA	
EXPANDER CARD 8 CCT	9100-021-005-NA	
EXPANDER CARD 24 CCT	9100-021-031-NA	
REMOTE DISPLAY UNIT	9100-022-010-NA	
CABLE SET	9100-025-005-NA	
MASTER CARD II - SX10E	9100-001-013-NA	
REMOTE DISPLAY KIT (WIRING SET)	9102-041-000-NA	
TRUNK MODULE EXCH LINE 2 CCT	9102-011-044-NA	374481
TRUNK MODULE E+M 2 CCT (DC5)	9102-011-011-NA	374491
TRUNK MODULE AC15 2 CCT	9102-011-021-NA	374492
CONSOLE fww SX20 AND SX10	9102-018-005-BA	374600
Operators console cable		
Superset 4	9174-000-012-BA	
Featurephone TX14 (BT VERSION OF SUPERSET 4)	9174-000-039-BT	
MPD Unit for 4 cards		
MPD card (12 trunk)	8170-000-000-BA	
RAM batteries	Description & source	

142 ALARMS

01	Power up diagnostics test.
02	Power up or auto diagnostics test.
04	Automatic diagnostics test.
05	Automatic diagnostics test.
10	TK condition. (No loop curr. detected on TKxx)
11	TK condition. (No seize ACK. when TKxx seized).
12	TK condition. (No Release ACK. when TKxx Rlsd).
20	Sp/path stuck at 0 and busied out
21	Sp/path stuck at high and busied out.
22	Sp/path xx 5/cct. to Sp/path yy both busied
23	Sp/path xx failure due to DT detector test.
30	Unable to connect Sp/path to Extension xx.
31	Unable to connect Sp/path to TK xx.
40	DT detector x failure and busied out.
41	MF4 gen. x failure and busied out.
42	MF4 rec. x failure and busied.
50	P/fail & reset caused by internal working.
60-69	Software alarms.
63	Defective battery ram.
64	Corrupted non-volatile ram.
80	Trunk held up busy.

TO LOAD DEFAULT FROM CONSOLE

- Access programming mode. Press and release status button until software variant shows, then hold button down
- Type in password, release status button and then type 58 or # (depends if lastno redial set, 143 or 243 only)
- ?601 shows on display (This is programming mode)
- Key #998* Default data is loaded when display flashes

TO LOAD DEFAULT ON INITIAL POWER-UP

- Turn power on
- Set system status switch 1 to closed
- Press reset button, Console display shows 8888888, then flashes ???????
- Within 6 seconds set SW1 to OPEN Console shows -----
- Set SW1 to CLOSED Console shows 00-00

6. Default data is now loaded

EXTENSION DIAL-UP CODES (default)

```

68      Paging access
67      Hold
690     Hold Retrieve-Local
691     Hold Retrieve-Remote
66      Group Pick-up
61      Diversion of all calls
8       Night Service dial answer
62      Diversion on no reply
63      Diversion on Busy
65      Extension reset
9       Trunk access

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SX10 142 OPERATORS DIAL-UP FUNCTIONS

```

11      Night service ON
12      Night service OFF
13      Identifying & resetting alarms
14      Set 12hr clock
15      Set 24hr clock
16      Lamp test (cabinet and remote display only)
19      +xx access TK by equipment number
21      +TK No. +Extension Night service
22      Temp TK barring +Extension. No
23      Barring Extension to Extension. ON
24      Barring Extension to Extension. OFF
27      +xx Access Sp/path by number
31      Alarm clear
32      Cancel all alarms
4I      +xx Busy out trunk
42      +x Busy out MF4 Generator
43      +x Busy out MF4 Receiver
44      +x Busy out DT detector No x
45      +x Busy out Sp/path
51      +xx Free Trunk
52      +x Free MF4 Generator
53      +x Free MF4 Receiver
54      +x Free DT detector
55      +xx Free Sp/path

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SX10E 143 OPERATORS DIAL UP CODES (142 plus those below)

```

17      Background music ON
18      Background music OFF
28      Display message waiting
29      Clear messages waiting
60      Review ABB dial
65      Set ABB dial
71      Set Auto-wake up
72      Display auto-wake up
73      Extension metering audit
75      * Printer suspend
75      0 Printer purge
75      # Printer resume
80      Set date
97      Data dump
98      Data load

```

KNOWN PROBLEMS

1. Flat RAM battery. Causes strange problems - usually after a power cut. Corrupts system memory, causes near stoppage - but not quite! Can be confusing and may look like a CPU failure. Check battery voltages and replace - it is recommended that [batteries](#) be changed every 4 years. Ensure that database is fully documented.
2. Console handset cuts off calls. Old style consoles were prone to the handset sockets breaking - test by wriggling plug. Also handset cord fails where it meets the handset.
3. Console goes into night service automatically. Usually caused by console handset cord failure.
4. Console goes dead. Switchboard cable is not fixed with a cable strap. There is a fixing point available and if this is not used then the cable Connector tends to disconnect at one end.

[PARTS LIST](#)

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