IMPORTANT!

For better performance, install the SAT-9 within a closed metal box PIMA offers such a complete set, TD-900, as described on page 15. The metal box is also used as an antenna surface. Alternatively, the SAT-9 can be installed with a PIMA antenna reflector.

6 When SAT-9 is used as PSTN backup, connect the SAT-9 LINE input to the PSTN line (marked E in Figure 1)

7 When SAT-9 is controlled by alarm's PGM, connect the PGM output to the SAT-9 PGM input: connect the alarm system's (-) to SAT-9's (-)

8 Program the SAT-9 parameters with COMAX as described below

9 Program the transmitter with the appropriate frequencies

NOTE:

When the SAT-9 is to be used as primary communicator (i.e., the control panel has no access to a telephone line), connect the PGM input to GND and in COMAX do the following (see next section for programming with COMAX):

1. Check the 'Check Line' parameter OR program the alarm system not to check for dial tone
2. Check the 'Check PGM' parameter
3. Set the 'PGM Input' to N.O.

Programming Transmitter with COMAX

The SAT-9 contains the transmitter unit and the control PCB. The transmitter frequencies and the SAT-9 parameters are programmed separately:

To program the SAT-9 you will need the following:

- A PC (or laptop) with Windows operating system[1]
- PIMA's COMAX application (version 1.3.15 and up)[2]
- PIMA's DPR-44 programming adapter

NOTE:

The alarm system and the SAT-9 need to share the same (-)

[1] The supported Operating systems are: Windows 98 SE, ME, NT4 (SP4), 2000, and Windows XP

2 The COMAX application can be download freely from PIMA's web site at: http://www.pima-alarms.com support pages

1 Disconnect the power cords from the SAT-9 (marked C1 in Figure 1)

2 Remove screws fastening the SAT-9 cover (marked A1 to A4 in Figure 1); and then remove the SAT-9 cover

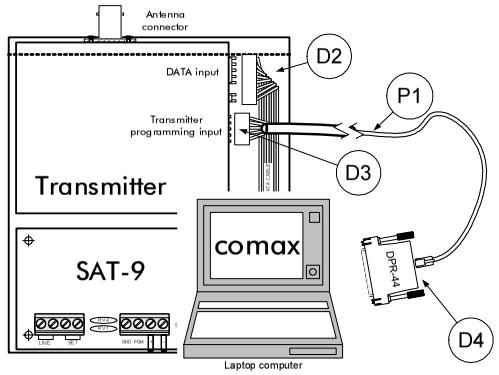


Figure 2 - SAT-9 with Cover Open

3 Connect the DPR-44 to the transmitter programming input as follows: Connect the molex end of the cable marked as P1 in figure 3 to the transmitter's programming input (marked D3 in Figure 2). Connect the other end of the P1 cable the DPR-44 connector (marked D4 in Figure 2)

IMPORTANT!

Ensure you connect the Molex connector to the transmitter as marked on stickers next to the transmitter's inputs.

4 Connect the DPR-44 to the PC parallel port (usually LPT1)

5 Start the PC and run the COMAX application

6 Log in and create/open a transmitter file[3]

7 Enter the designated frequency(s) and download them to the transmitter

8 Ensure programming procedure by reading the transmitter data

NOTE:

If verify fails, check that the Molex connector is connected as drawn on the transmitter label.

9 Remove the programming cable from the transmitter (marked P1 in Figure 2)

10 Install the SAT-9 cover and secure it with four screws

11 Reconnect the power cord to the SAT-9

[3] Please refer to the COMAX Manual for more information on programming,

Programming SAT-9 with COMAX

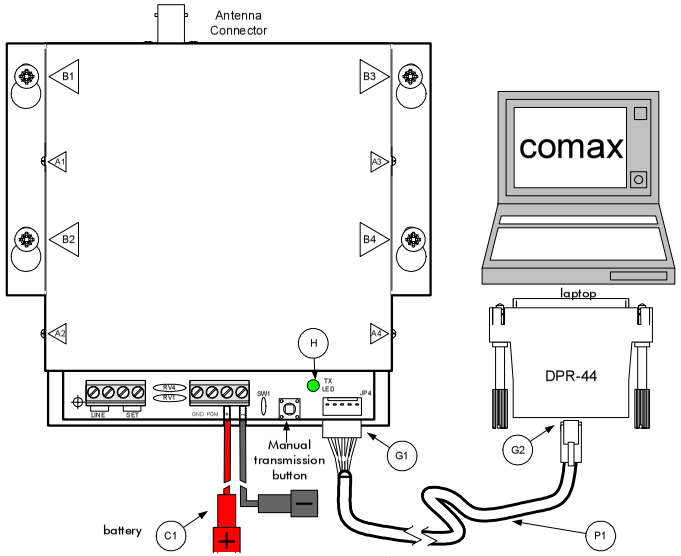


Figure 3 - Connecting SAT-9 to COMAX

1 Make sure the power cords are disconnect from the SAT-9 (marked C1 in Figure 3)

2 Connect the DPR-44 to the programming connector on SAT-9 panel as follows: The Molex end of the P1 cable to JP4 (marked G1 in Figure 3) and the RJ11 end of the P1 cable to the DPR-44 connector (marked G2 in Figure 3).

IMPORTANT!

Ensure you connect the Molex connector to the transmitter as drawn on the label.

3 Connect the DPR-44 to the PC parallel port (usually LPT1)

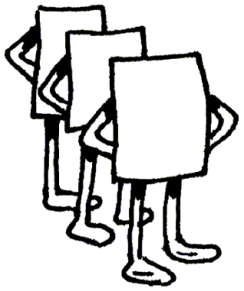
4 Start the PC and run the COMAX application

5 Log in and create/open a SAT-9 file[4]

NOTE:

Creating a new file for SAT-9 loads all the default parameters.

[4] Please refer to the COMAX Manual for more information on programming.



Installing and Programming SAT-9

Installation

1 Mount SAT-9 to the designated surface (not further than 10 meters from the Alarm System) using four supplied screws (marked W1-4 in Figure 1)

2 Connect the antenna to the transmitter (marked B in Figure 1)

3 Connect the SAT-9 to GND

4 Connect the panel to a constant power source: 4A minimum (marked C1 in Figure 1)

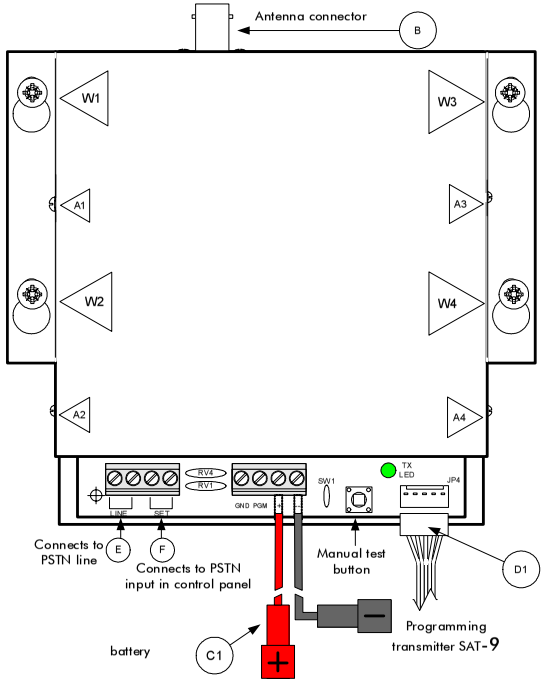


Figure 1 – Mounting SAT-9

5 Connect the Alarm System dialer output to the SAT-9 SET input (marked F in Figure 1)

Technical Specifications

- **Environment:**
  - Temperature: -10° to +50° C
  - Humidity: 75% non-condensing
- **Operating Voltage:** 9 to14 Vdc (12Vdc nominal)
- **Current Consumption:**
  - standby: 15mA
  - transmit: 1.5A
- **PGM Input:**
  - Voltage (Open): 12V
  - Current (Closed): 1mA
  - Signal Sensitivity: 500mSec
- **Telephone Set Outputs:**
  - Voltage (Open): 12V
  - Resistance: 600 Ohm
- **Frequency Range:**
  - VHF Low: 136 - 156MHz
  - VHF High: 154 - 174MHz
  - UHF Low: 400 - 435MHz
  - UHF Mid: 435 - 470MHz
  - UHF High: 470 - 500MHz
- **Bandwidth:** 12.5kHz
- **Output Power:**
  - VHF: Up to 5W±1dB at 50Ω load
  - UHF: Up to 2.5W±1dB at 50Ω load
- **Frequency Stability:** 2 PPM MAX at -10° to +50°C
- **Carrier Modulation:** FM
- **Enclosure Dimensions:**
  - SAT-9: cm 11 W x 11 H x 6 D ; Weight : 460 gr.
  - Transmitter Unit: cm 14 W x 14.5 H x 6 D; Weight: 129 gr.
  - Metal Box (TD-900): cm 23 W x 30 H x 10 D; Weight: 2.64 Kg.

6 Program the SAT-9 parameters in the COMAX application and download them to the SAT-9 (refer to the next section "Programming SAT-9 Parameters" for further information).

7 Ensure programming procedure by reading the transmitter data

8 Remove the Programming Cable from the SAT-9

9 Reconnect the power cord to the SAT-9

10 Reconnect the Antenna

IMPORTANT!

Manual Transmission Test can be performed ONLY if the Transmitter frequencies and account-ID are programmed and the antenna is connected.

11 Perform a Manual Transmission Test by pressing the test button (marked H in Figure 3)

Programming SAT-9 Parameters

General Tab

This tab includes the SAT-9 parameters and its operation mode.

Radio Format Table

In this table you program formats for the two SAT-9.frequencies:

- **Account No.:** Set the account-ID to be used with each one of the two frequencies.

	First Frequency	Second Frequency
Account No	0	0
Radio Format	0	0

NOTE:

If an account-ID is not programmed, the SAT-9 uses the alarm's account-ID, however, in such a case it is not possible to perform test.

- **Radio Format:** Set the radio formats for each of the frequencies.

NOTES:

- At least one frequency MUST be programmed both for SAT-9 and the transmitter.
- Use standard PIMA Radio Format (radio formats table can be obtained from the Central Monitoring Station).

Events in PSTN

SAT-9 supports up to three different ACKs, which enables it to simultaneously support up to three different formats.

- **ACK Frequency:** Select frequency from list.
- **Format:** Select ACK's format from list.

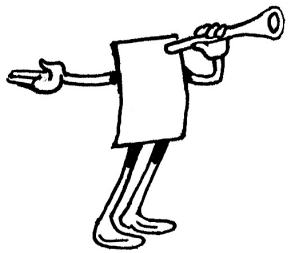
	Ack - 1	Ack - 2	Ack - 3
Ack Frequency	LoHi	Inactive	Inactive
Format	CID	4x2 CS	4x2 DR
Signal	DTMF	PULSE	PULSE
Radio Frequency	First	Second	Second

- **Signal:** Select ACK's signal type.
- **Radio Frequency:** Select which frequency (first or second) will be used with the assigned format.

- **Supports variety of protocols:**
  - Input Protocols (from dialer): Contact ID, Pulse, and DTMF
  - Output Protocols (RF to CMS): PAF™ / NPAF™, Intrac 2000 and Milcol-D
- **Accounts from panel or internal programmed accounts:** If an account number is not programmed, the SAT-9 uses the account number received from the control panel
- **Supports two frequencies:** Each frequency can use a different format
- **Control:**
  - PGM input: Selects if SAT-9 functions as backup or main communication channel
  - PSTN monitoring: Performs line check and line interception (with pre-programmed phone number)
- **Transmission LED:** Turned ON when SAT-9 is transmitting data
- **Auto Test Mode**: Periodic transmission test as programmed
- **Manual Test Mode:** Manual transmission test with a TEST button

Benefits

- **Easy installation and maintenance:** SAT-9 is fully programmable in the field by a laptop PC with COMAX software and a DPR-44 adapter.
  Parameters that can be programmed:
  - Which transmitter frequency for which PSTN format
  - Radio Formats
  - Account Numbers
  - Frames Per Transmission
  - Transmission Intervals
  - Auto Test Interval
  - Three ACKs protocols and frequencies select
  - Report Code for all telephone events
- **Frequency load balance:** The two working frequencies of the installed VHF/UHF transmitter can be fully utilized by the SAT-9.
- **Watchdog**
- **Surge and ESD protection**



Introduction

General

The SAT-9 is a phone line to radio adapter that connects any non-PIMA control panel to a Central Monitoring Station (CMS) using a long-range radio that supports two frequencies and a variety of protocols.

The SAT-9 parameters and transmitter frequencies can be programmed in the field. The transmitter frequencies as well as the different transmission parameters can be programmed directly by connecting a PC (with COMAX Download software and a DPR-44 adapter.) The SAT-9 and transmitter need be programmed separately.

For better performance, it is advised to install the SAT-9 within a closed metal box. PIMA offers such a complete set. The TD-900 includes a SAT-9 assembled in a closed metal box with TAMPER protection with a Power Supply (P/S) and backup battery connection (not included.)

The system can be used with either a UHF or VHF transmitter. Note that the UHF and VHF transmitters use different antenna connectors.

The SAT-9 has a built-in encoder, periodic auto-test, and telephone line check.

Features

- Two operating modes:
  - As main communicator: All events transmitted via RF
  - As PSTN backup: Events are transmitted in case of a PSTN problem

Control Modes Table

In this table you program the control panel's parameters when SAT-9 transmits events via RF:

Check Line	☑
Check PGM	☐
PGM Input	N.O
Dial Number	

- **Check Line:** SAT-9 will intercept the PSTN line if it detects a PSTN failure and generate a dial tone.
- **Check PGM:** SAT-9 will intercept the PSTN line when its PGM input is triggered. The line is released ONLY after the PGM input returns to normal.
- **PGM Input:** Set the normal state for PGM input (N.O. or N.C.)
- **Dial Number:** SAT-9 will intercept the PSTN line when this number is dialed by the alarm system.
- **Examples:**

Check Line	☑
Check PGM	☐
PGM Input	N.O
Dial Number	

CHECK LINE: SAT-9 will transmit events only when a PSTN line failure is detected

Check Line	☐
Check PGM	☐
PGM Input	N.O
Dial Number	8888

DIAL NUMBER: SAT-9 will intercept and transmit events only when "8888" is dialed by the control panel

Check Line	☐
Check PGM	☑
PGM Input	N.C
Dial Number	

CHECK PGM: SAT-9 will intercept and transmit events only when PGM input is open

Event Transmission Parameters

Frames per Transmission	10
Transmit No	5
Transmit Int(sec)	10
Auto Test Int(min)	0

- **Frames per Transmission:** The number of frames per each transmission.
- **Transmit No.:** The number of transmissions per single event.
- **Transmit Int. (sec):** The gap (in seconds) between transmissions.
- **Auto Test Int. (min):** The gap (in minutes) between two auto test transmissions.

NOTE:

0 (zero) means no Auto Test transmissions. To activate Auto Test, the Auto Test Int. value should be different than "0" (default).

Report Codes Tabs

CID Event	4(3)x2(1) Events	RF1 Report	RF2 Report	CID Event	4(3)x2(1) Events	RF1 Report	RF2 Report	CID Event	4(3)x2(1) Even
Test(ALL Formats)		SE	TH	Alarm Zone 27	1B	KO	BA	Alarm Zone 55	37
General Alarm	0	SV	TF	Alarm Zone 28	1C	KP	BB	Alarm Zone 56	38
Alarm Zone 1	1	JO	AA	Alarm Zone 29	1D	KQ	BC	Alarm Zone 57	39
Alarm Zone 2	2	JP	AB	Alarm Zone 30	1E	KR	BD	Alarm Zone 58	3A
Alarm Zone 3	3	JQ	AC	Alarm Zone 31	1F	KS	BE	Alarm Zone 59	3B
Alarm Zone 4	4	JR	AD	Alarm Zone 32	20	KT	BF	Alarm Zone 60	3C
Alarm Zone 5	5	JS	AE	Alarm Zone 33	21	KU	BG	Alarm Zone 61	3D
Alarm Zone 6	6	JT	AF	Alarm Zone 34	22	KV	BH	Alarm Zone 62	3E
Alarm Zone 7	7	JU	AG	Alarm Zone 35	23	KW	BI	Alarm Zone 63	3F
Alarm Zone 8	8	JV	AH	Alarm Zone 36	24	KX	BJ	Alarm Zone 64	40
Zone 9		JW	AI	Zone 37	25	KY	BK	Zone 65	41

This table, which spreads over four tabs, contains the conversion codes between the PSTN and radio formats (i.e. which telephone event code is associated with which radio event code).

The table has four columns: The first two to the left ["CID Event" and "4(3)x2(1) Events"] are the PSTN event codes (Contact-ID and 4x2) and the last two are the corresponding radio event codes (first and second frequencies).

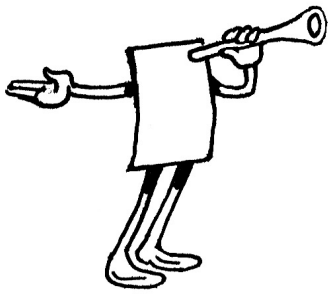
The Contact-ID format supports 444 events and the 4x2 format supports 256 (FF) events.

By default, the RF1 includes the PAF™ event codes and RF2 includes the NPAF™ codes. To use a different radio format, these values need to be re-programmed.

For example:

Alarm Zone 1 in Contact-ID will be converted to "JD" in PAF™ and to "AA" in NPAF™.

"1F" in 4x2 will be converted to "KS" in PAF™ and to "BE" in NPAF™.



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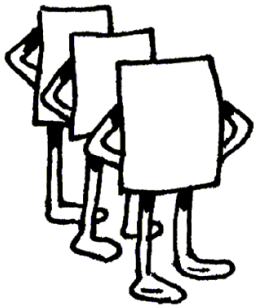

TD-900

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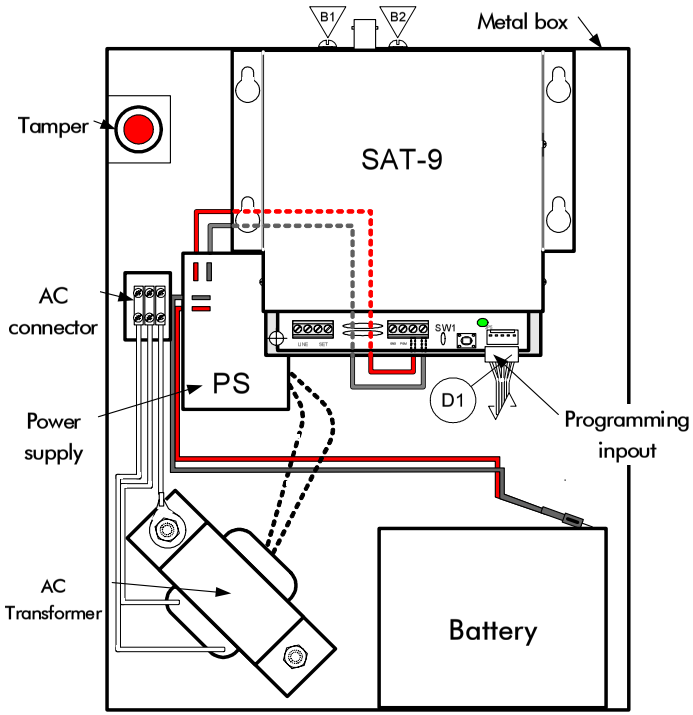

Figure 4 - TD-900

Follow these steps in order to remove the SAT-9 from TD-900 for maintenance operations and transmitter programming:

1,2,3...

1 Open the TD-900 box and locate the SAT-9 (see Figure 4)
2 Disconnect the power cords from the SAT-9
3 Remove the SAT-9 antenna
4 Remove the two screws (B1 & B2) holding the SAT-9 in the box and gently remove the SAT-9 (see Figure 4)

To reassemble the TD-900, simply follow the above steps in reverse order.

NOTE:

The SAT-9 does not need to be removed for programming its parameters. Simply locate the JP5 connector, connect DPR-44 to it and follow the steps on page 10.

P/N 4410141 Rev. A (Jan-2005)

SAT-9/TD-900

Phone Line to Radio Adapter Installation and Programming Guide

PIMA
FOR BETTER PROTECTION

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