

# Hearty Welcome



# Matrix GSM Family

- GSM FCTs for Data ,Voice and FAX Services
- Multi-Port GSM-FXO-FXS Gateways
- Multi-Port GSM-ISDN BRI Gateways

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# Pre-eminent Features

- Reliable, Compact and Sturdy Design
- ETSI GSM Phase2/2+ Compliance
- Superior Call Routing Techniques
- Quad-band 2G and Tri-band 3G Network Support
- Compatible With Any Make of PBX

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# MATRIX SIMADO GFX11 FCT for Voice Applications



# INTRODUCTION

- Fixed Cellular Terminal for Voice Applications
- Incoming Calls on GSM are Routed to the FXS Port
- Outgoing Calls From FXS Port are Routed Through GSM Network
- Can be Used as a Stand-alone System
- Can be Connected With Any Existing PBX
- Adds GSM Mobility and Cost Benefit to the Existing Infrastructure

# System Interfaces



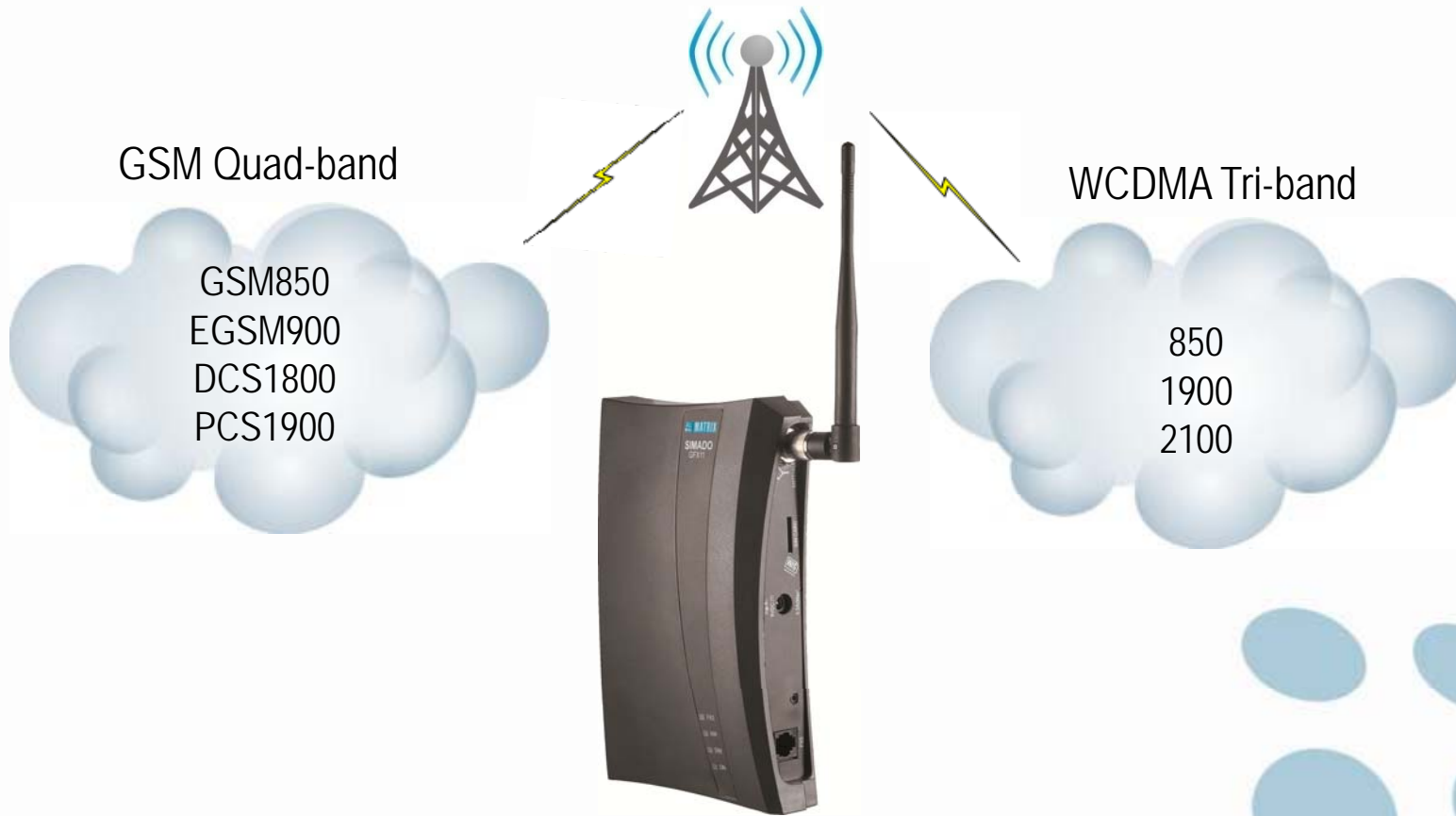


# System Models

SIMADO GFX11	FCT for Voice Applications With 1 GSM Port and 1 FXS Port
SIMADO GFX11 3G	FCT for Voice Applications With 1 GSM Port , 1 FXS Port, With 3G Network Support

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# Network Support





# 3G Network Support



- Matrix SIMADO GFX11 3G Model Supports:
  - ✓ 2G Network: Quad-band Support for GSM Network
  - ✓ 3G Network: Tri-band Support for WCDMA Network
- Call Established over 3G Network offer:
  - ✓ Noise-free, Stanch Voice Quality
  - ✓ Enhanced Security
- Fallback Compatibility
  - ✓ In Case Preferred (3G) Network is Not Available
  - ✓ Flexibility to Switchover to Alternate Network (2G)
  - ✓ Assures Round-the-Clock Network Connectivity
  - ✓ Users Can Traverse between Regions Uninterruptedly

	2001	
	Japan Used WCDMA as a Commercial Service, Bypassing Earlier GSM Generations	
	<b>Source: Mobile Communications Systems and Security/Man Young Rhee</b>	

# LED Indications



- 1 – FXS (Phone On/Off Hook)
- 2 – NW (Network Availability)
- 3 – SIM (SIM Card)
- 4 – Power On



# System Features

- Allowed and Denied List
- Answer Signaling on FXS Port
- Automatic Number Translation
- Call Divert
- Call Duration Display
- Call Progress Tones
- Calling Line Identification and Presentation (CLIP)
- Calling Line Identification Restriction (CLIR)
- Disconnect Signaling on FXS Port

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# System Features

- Emergency Number Dialing
- Hotline
- International Mobile Equipment Identity (IMEI)
- Location Information Indication
- Multi-stage Dialing
- Network Selection
- Reinstate Default Setting
- Security Code

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# System Features

- Service Provider Lock
- Short Message Services (Receive and Delete)
- Signal Strength Indication
- SIM PIN
- Software Version and Revision Display
- System Programming
- System Restart
- System Security

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# Allowed and Denied Lists

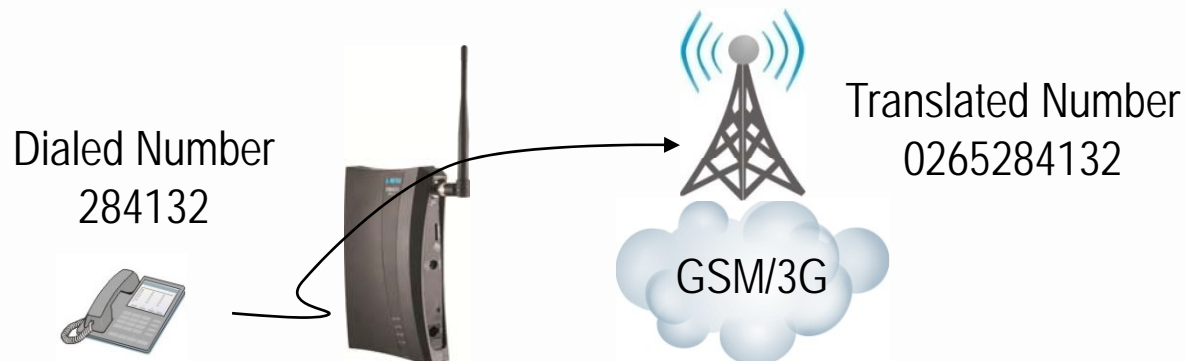
- Program Allowed and Denied Number Lists
- Allow/Restrict Dialing of the Programmed Numbers
- 5 Numbers, Each of 16 Digits Can be Programmed in Allowed and Denied Number List Individually
- Based on “Best Match Found” Logic, Calls are Allowed/Denied
- Programmed Emergency Numbers are Excluded From Such Verification
- Useful to Control Telephone Call Cost
- Trim the Use of System’s National/International Dialing Facility as per Requirement

# Answer Signaling on FXS Port

- SIMADO GFX11, When Connected With a Payphone or FXO Port of the PBX
- It is Obligatory to Generate Call Maturity Information on the FXS Port
- When Called Party Answers a Call (i.e. on Call Maturity)
- The Signal (In form of Polarity Reversal) is Generated on FXS Port
- This Assists the Connected Payphone/PBX in Accurate Billing
- Ensures, All Matured Calls are Billed
- Evades Billing of Unanswered/Unsuccessful Call Attempts

# Automatic Number Translation

- Translates Dialed Number String to a Format Understood by the GSM/3G Network, Example:
  - ✓ While Placing Calls to Landline Numbers
  - ✓ User may Dial Only the Number
  - ✓ SIMADO GFX11 Prefixes the Area Code
  - ✓ The Number String Can then be Understood by the GSM Network
- No Need to Change Habituated Dialing Practices
- Aids in Speed Dialing and Multi-stage Dialing Set-ups





# Call Divert

- Option to Divert Incoming Calls on System Mobile Port to a Programmed Alternate Destination:
  - ✓ Unconditionally
  - ✓ When the System FXS Port is Found Busy With Another Call
  - ✓ When the System FXS Port Does Not Answers a Call
  - ✓ When the System is Off or In No Coverage Zone
- This Feature Requires Activation by SIM Service Provider



# Call Duration Display

- Duration of Calls Made/Received on FXS Port Can be Viewed in LCD Display of End User Equipment
- Display Options:
  - ✓ Duration of Last Dialed/Received Call
  - ✓ Total Duration of Calls Made Through the System

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# Call Progress Tones

- Different Tones to Indicate the Progress of a Call Activity
- Example: Dial Tone, Ring Back Tone, Busy Tone, Error Tone
- CPT Tones and Ring Cadence Differ for Regions
- SIMADO GFX11 Offers Support for Varied CPT and Ring Cadences

## Calling Line Identification and Presentation(CLIP)

- Detection and Presentation of Calling Party Number on FXS Port
- SIMADO GFX11 Can Sense Following Three Signaling Types:
  - ✓ DTMF
  - ✓ ITU-T V.23 FSK
  - ✓ Bellcore FSK



# Calling Line Identification Restriction(CLIR)

- Option to Restrict the Display of Ones Identity While Placing Calls
- This Feature Requires Activation From the Service Provider

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# Disconnect Signaling on FXS Port

- When SIMADO GFX11 is Connected With a Payphone or FXO Port of the PBX
- The Signal (In form of Polarity Reversal or Open Loop Disconnect Pulse) is Generated on FXS Port
- The Signal is an Indicator of Call Disconnection From the Called Party End
- Else, Call Will be Disconnected Only When Caller Goes On-hook
- Prevents a Port Getting Stuck in Absence of the Signal
- Be Assured for Most Accurate Billing

# Emergency Number Dialing

- Program Up to 4 Emergency (Ambulance, Police, Fire Brigade and Others) Numbers
  - ✓ Place Call Even if a SIM is Not Inserted/Registered
- Placing an Emergency Call is Not Subject to Verification With the Allowed/Denied Number List
- In Case, No Emergency Number is Programmed
  - ✓ Emergency Number Stored in SIM Will be Dialed
  - ✓ Else Default Emergency Number Stored in the Firmware Will be Dialed

# Hotline(Fixed Dialing)

- In Cases When a Number is to be Dialed Frequently
- Just by Lifting the Handset, the Number Can be Dialed-out
- Delay After Which the Fixed Number Will be Dialed is Also Programmable
- Before Programmed Delay Elapses, Any Other Number Can be Dialed
- Beneficial In Point-to-Point Connectivity Set-ups




# International Mobile Equipment Identity(IMEI)

- 15/17 Digit Code Used to Identify a GSM Module on GSM Network
- When SIMADO GFX11 is Switched-On
- IMEI Number is Verified With the Service Providers List of Authorized Users
- In Case of Lost/Stolen Equipment
  - ✓ Get IMEI Number Blocked
  - ✓ Prevents Misuse of Information Stored in the Gateway

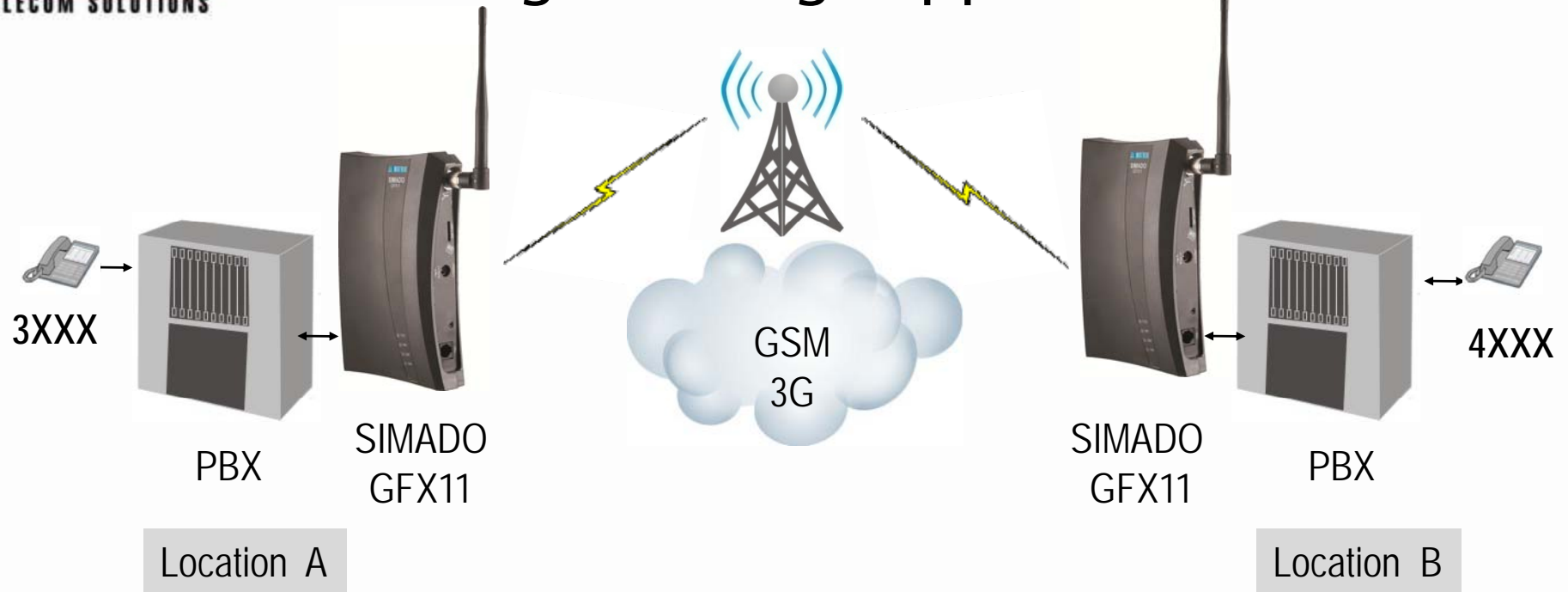
# Location Information Indication

- Displays Location Information Where SIMADO GFX11 is Installed  
Currently
- Information Can be Viewed on LCD of a Phone
- Feature Requires Activation by the Service Provider
- A Feature for the People on Move
  - ✓ Logistics and Transportation Vehicles

# Multi-Stage Dialing

- At Times Series of Number have to be Dialed before Dialing the Actual Number
- Example: When Using a Virtual Calling Cards (ITC Card) 
  - ✓ User is Required to Dial Long Number Strings
    - **A Toll-free Number Provided by the Service Provider+ ITC Card Number +Destination Number to be Called**
  - ✓ With Multi-stage Dialing Feature, Eliminate Dialing the Long Number Strings
  - ✓ Program the ANT Table, Calling Card Password Table and the Calling Card Service Provider Table
  - ✓ User Will then be Required to Dial Only the Destination Number

# Multi-Stage Dialing: Application Scenario

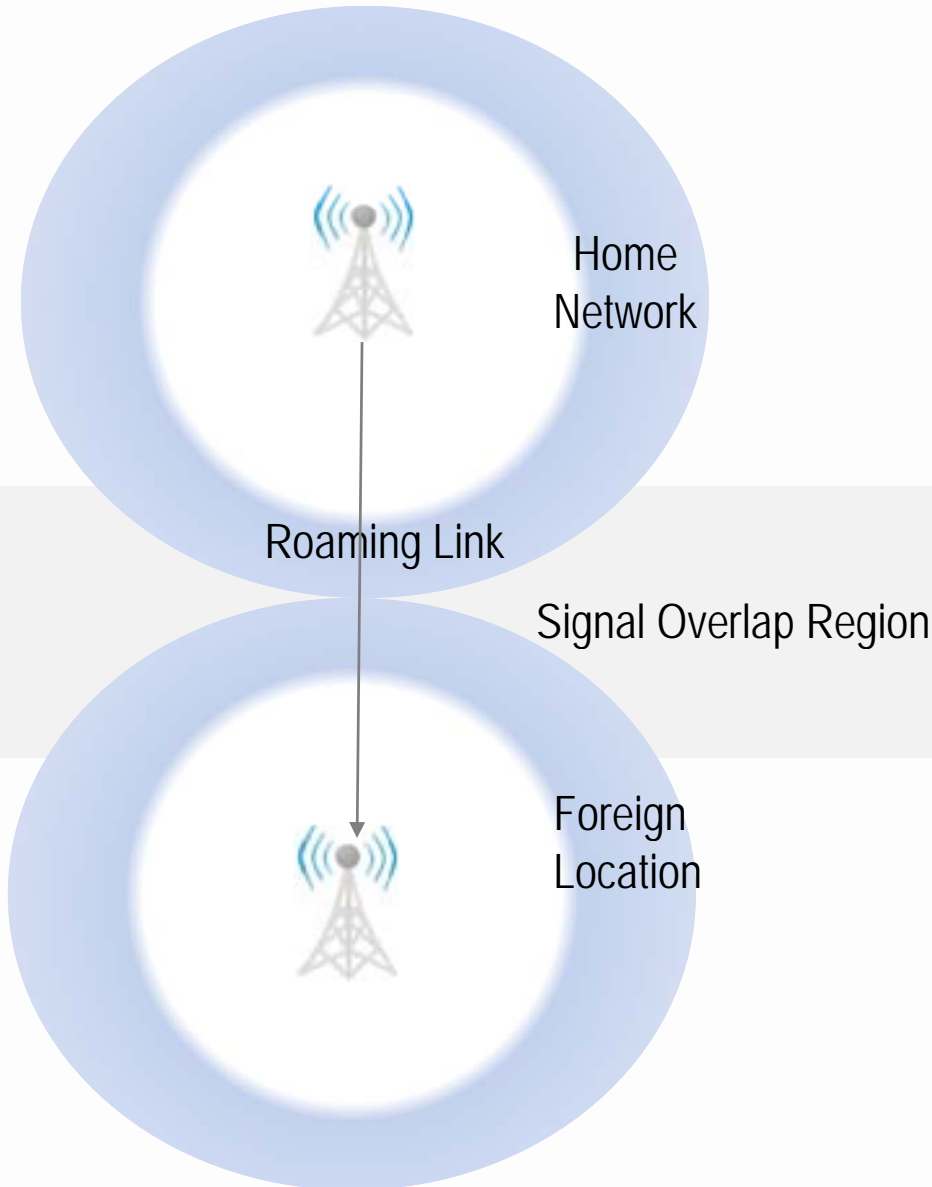


- For Organizations With Multiple Branch Offices
- Link Various Locations via GSM Network
- Connect SIMADO GFX11 in Front of the Pre-installed PBX System
- Avail CUG (Closed User Group) Services From the Service Provider for Free Dialing between the Offices
- Call Originated for 4XXX Destination, From Location A , Lands on 4XXX at Location B
- Call Originated for 3XXX Destination, From Location B , Lands on 3XXX at Location A
- System Supports Differentiated Tones to Indicate Various Dialing Stages

# Network Selection

- At Each Power-on, System Auto Searches and Registers With an Available Network(Automatic Network Selection Mode)
  - ✓ Network is Selected as per Network Signal Strength
  - ✓ Ensures Round-the-Clock Connectivity by Registering With an Available Network
- System Can be Programmed for Manual Network Selection Mode
  - ✓ Avoids Unnecessary Charges Due to Registration With Unwanted Networks
  - ✓ Network is Selected as per Assigned Priority in a Priority Table
- Single GSM Port Can be Programmed for Maximum of 4 Networks
- Multiple Attempts are Made to Register With an Available Network

# Network Selection



- Network Signals may Overlap in the Expanse of a National Border
- Set the System for Manual Network Selection Mode
- Avoid False Roaming Charges, due to Registration With a Foreign Network

# Reinstate Default Settings

- SIMADO GFX11 is Supplied With Default Settings for Various Parameters
- A Programming Error or an Operating Mistake May Necessitate Defaulting the System
- Default the System by Entering SE Mode From the Telephone Instrument
- Minimizes Programming Labor

# Security Code



- Consider SIMADO GFX11 Interfaced With a Payphone
- Route Calls Made to GSM/3G Numbers Via GSM/3G Network
- Bypasses Toll Charges Borne While Placing Inter-network Calls
- Program Security Code in SIMADO GFX11 to Restrict its Use to a Particular Payphone Only
- Restricts Independent System Use or Use With a Different Machine



# Service Provider Lock

- Locks SIMADO GFX11 to Work With Specific Service Provider
- The Password is Different From SE and SA Password
- An Immense Utility Feature for the Service Provider
- Lock/Unlock System the System, even When a SIM Card is Not Inserted
- Avoids Churning



# Signal Strength

- Gauge Available Signal Strength
- 15 Step Signal Strength Indication on Telephone Instrument 's LCD Screen
- Telephone Instrument Should be FSK Compatible

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# SIM PIN

- SIM is a Smart Card With Subscriber Specific Data Stored in it
- SIM PIN is a Security Feature Used by the GSM Network
- A PIN (Personal Identification Number) Check Can be Enabled in the SIM
- At Each Power-on, System is Authenticated for PIN
- This PIN Should Match With the One Stored in SIM as SIM PIN
- System Will Attempt Registration to a GSM Network After Correct SIM PIN is Issued
- A Wrong PIN Attempt Thrice Would Block the SIM
- A Blocked SIM Can be Opened by Entering the SIM PUK Provided by the GSM Operator
- Prevents Misuse of SIM Card

# Short Message Service(SMS)

- Receive SMS on SIMADO GFX11
- This Feature Notifies Receipt of a New Message
- Notification is in Form of Signal or Alert on Phone
- Received Messages are Stored at Various Locations (Indexes) in the SIM/RUIM
- Option to Read/Delete Received Messages With User Terminal Supporting FSK CLI

# Software Version and Revision Display

- Regular Adherence to Customer Feedbacks Directs Software Upgradation
- Current Software Version Should be Known before Upgrading to the Higher One
- No Need to Open the System
- View the Software Revision on LCD Display of the Telephone Instrument (FXS Port)

# System Programming

- Program the System From Telephone Instrument (FXS Port)
- Two Differentiated Programming Levels:
  - ✓ System Engineer(SE) Level:
    - Granted Full System Access
    - Password Authentication is Required to Enter SE Programming Mode
  - ✓ System Administrator(SA) Level:
    - Authorized to Program Only Administrative System Features
    - Password Authentication is Required to Enter SA Programming Mode



# System Restart

- When Physical Reach to System is Difficult
- Restart the System From Telephone Instrument Connected to System FXS Port

# System Security

- SIMADO GFX11 is Secured With Passwords at Two Levels:
  - 1) System Engineer (SE) Level
  - 2) System Administrator (SA) Level
- System Engineer Can Alter SA Password if Required
- Technique to Default SE Password in Case of Forgotten Password
- Prevents Unauthorized Alterations and Misuse of System Features and Facilities





# Applications

- Stand-alone Application
- With PBX Application
- Payphone Application

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# Stand-Alone Application



- Works Independently
- Place Calls on GSM Network From the Analog Telephone (FXS Port)

# With PBX Application



- PBX Can be Interfaced With System's FXS Ports
- PBX Users Can Make/Receive Calls to/from Mobile Terminals
- Works With All PBX, No Need of Changing Existing PBX

# Payphone Application



- A Payphones Can be Interfaced With the System's FXS Port
- Adds GSM Mobility to the Otherwise Fixed Payphones
- Supports Polarity Reversal, Ensuring Accurate Billing
- Security Code: Limits System Usage to a Payphone
- Works With Most Payphone, No Need of Changing Existing Payphone



# Target Customers

- Call Centers
- Corporate Offices and Factories
- Emergency Applications
- GSM Service Providers
- Hotels
- Organizations With Field Staff
- Point-to-Point Communication Points
- Public Call Offices (Payphones)
- Remote Project Sites
- Residences

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# Technical Specifications

Power Supply	External Adaptor 12V DC/1.25A (Universal Input Range 90-265VAC, 47- 65Hz)
Power Consumption (Typical)	5 Watt
RF Sensitivity	Better than -102dBm at GSM850/EGSM900/DCS1800/PCS1900 Better than -106dBm at WCDMA 850 Better than -108dBm at WCDMA 1900/2100
Dimensions (W X H X D)	5.26"X7.80"X1.76"
Unit Weight	450 Grams
Mounting Options	Wall Mount and Table Top
Antenna Connector	TNC (Male)



Thank You

