

Project: **Philippine Science High School Soccsargen Regional Campus**  
Location: Koronadal City, 9506 South Cotabato  
Owner: Philippine Science High School  
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# Electronics Technical Specifications

(Smart PBX, Optical Fiber Backbone)

## A. Smart PBX System:

### 1. IP PABX up to 50 users:

#### Interfaces

- 8 Fixed RJ11 FXS Ports
- 4 Customizable FXS RJ11 Ports
- 4 Customizable FXO/BRI RJ11 Ports
- 1 10/100Mbps LAN
- 1 10/100Mbps WAN
- Console Port

#### Telephony Features

- Attended Transfer
- Automated Attendant (IVR)
- Blind Transfer
- BLF
- Busy Camp-on
- Call Barge-in
- Call Detail Records
- Call Duration Restriction
- Call Forwarding (All, Busy, No Answer)
- Call Hold
- Caller ID
- Call Parking
- Call Pickup
- Call Recording
- Call Report
- Call Report Export
- Call Waiting
- Conferencing
- Do Not Disturb (DND)
- DNIS
- Follow Me
- Hotline
- Intercom
- Last Caller Routing
- Music on Hold
- Music on Transfer
- MWI (Message Waiting Indicator)

- One Touch Record
- Queues
- Ring Group
- Seize a Line
- Speed Dial
- Time Condition Routing
- Timed Reminder
- Voice Mail
- Voicemail to Email
- Voicemail Forwarding

#### Built-in Call Recording

- External TF Card Storage
- Network Disk Storage

#### Voice Processing

- Protocol: SIP (RFC3261)
- Transport: UDP, TCP, TLS, SRTP
- DTMF: RFC4733, SIP INFO, In-band
- Codec: G.711 (a-law, u-law), G.722, G.726, G.729 A/B, GSM, iLBC
- Echo Cancellation: ITU-T G.168 LEC
- QoS (Voice Quality)

#### FXS & FXO Connectivity

- Answer Detection: Polarity and Ring
- Busy Detection
- Caller ID: BELL202, ETSI (V23), NTT (V23-Japan), and DTMF-based CID
- Caller ID Detection
- Frequency Detection
- Hangup Detection
- Hangup Type: Busy Tone, Polarity Reversal
- Signaling: Kewl Start, Loop Start

#### System

- 8 Concurrent Calls
- 8 SIP Extensions
- 4 SIP Trunks
- Automatic Upgrade
- Backup and Restore
- Custom Prompts
- LED Indicators
- Packet Capture Tool
- PIN Settings
- System Logs

#### Faxes

- T.30 Fax
- Fax to Email
- Incoming Fax Tone Detection

#### Physical

- Size: 290 x 180 x 33 mm
- Power: AC 100-240V (12V, 3.33A)
- Operation Range: 0°C to 40°C, 32°F to 104°F
- Storage Range: -20°C to 65°C, -4°F to 149°F
- Humidity: 10-90% non-condensing

NOTE: No need for licenses or license fees for all add-on modules

## 2. 8 FXS Analog Gateway

### Interfaces

- a. Telephony Interfaces: RJ-11
- b. Network Interfaces: 1 10/100BASE-T Ethernet
- c. Indicators: Ports Status and Activity LEDs

### Media Processing

- d. Protocol: SIP (RFC3261), IAX2
- e. Transport: UDP, TCP, TLS, SRTP
- f. Codec: G.711 (alaw/ulaw), G.722, G.723, G.726, G.729A/B, GSM, ADPCM, iLBC
- g. Voice Capability: ITU-T G.168 LEC Echo Cancellation, Dynamic Jitter Buffer, VAD, CNG, PLC
- h. DTMF Mode: RFC2833, SIP Info, In-band
- i. Fax: T.38 and Pass-through T.30
- j. QoS: DiffServ, ToS, 802.1 P/Q VLAN tagging

### Telephony Features

- k. Call Handling
  - a. 3-way Conference, Attended and Blind Transfer,
  - b. Call Forward, Caller ID Display, Call Waiting,
  - c. CDR, Direct Caller ID Calling, Distinctive
  - d. Ringtone, Do Not Disturb, Flexible Dialing Plan,
  - e. Hunting Groups, Hotline, MWI, Speed Dial

### Security/ IP Services

- l. Firewall: Built-in Firewall, IP Blacklist, Attack Alert
- m. Network: DHCP, DDNS, OpenVPN, Static Route, VLAN
- n. Nat Traversal: Static NAT, STUN
- o. Network Protocol: FTP, TFTP, HTTP, HTTPS, SSH

### Management

- p. Protocol: RADIUS, TR-069
- q. Provisioning" Web GUI, Auto Provisioning, Backup and Restore, Firmware Upgrade by HTTP/TFTP
- r. Configuration:
  - a. Remote Management, Packet Capture, System Logs, Voice Menu for FXS Gateways Basic
  - b. Configuration, API

### Connectivity

- s. Signaling: FXS Loop Start, FXS Kewl Start
- t. Caller ID: BELL202, ETSI (V23), NTT (V23-Japan), and DTMF-based CID
- u. Disconnect Methods: Busy Tone, Polarity Reversal

## 3. 2 FXO Module

- a. Module with 2 FXO ports to terminate two analog PSTN(POTS) lines.

## 4. GSM 900/1800/1900 Module

- a. Module has 1 GSM port to terminate GSM networks
- b. GSM Channels: 1 channel
- c. Network Types: 850/900/1800/1900 MHz (quad-band)
- d. GSM Engine: SIMCom
- e. Transmitter Power: +33 dBm (2W) 850/900 MHz, +30 dBm (1W) 1800/1900 MHz
- f. SIM Card: 1 SIM per channel, small plug-in, 3

## B. Optical Fiber Backbone

### 1. 12-Core Fiber, Multi-Mode:

- a. Multimode
- b. Type: Stranded Loose Tube Light-Armored (SLLA)
- c. OM2 Multi-mode
- d. Cores: 12 cores
- e. Jacket: PE
- f. Core/Cladding Diameter: 50/125
- g. 480 meters per roll

### 2. 4U 19" Unloaded Panel (Max. 12 Panel Plates):

- a. Product compatibility: 12 optic cassettes
- b. Number of rack unit: 4U
- c. Number of port: 288
- d. Integrated connection type: LC
- e. Height: 175 mm
- f. Width: 482 mm
- g. Depth: 300 mm
- h. Environment Standards: EIA-310D and TIA/EIA-568

**3. Fibre Optic Front Adapters Plate with 12 x LC Dplx MM Adapters:**

- a. Material: PC
- b. Fixing mode: Snap-in
- c. Color tint: Black
- d. Width: 120mm
- e. Height: 35mm
- f. Depth: 5.6mm

**4. 4U Fusion splice tray kit (Full Set for up to 288 fiber)**

- a. Fixing mode: By screw
- b. Material: ABS (acrylonitrile butadiene-styrene)
- c. Color tint: Grey

**4. Stand-alone Unmanaged Gigabit Ethernet Media Converter, 1x 10/100/1000Base-T RJ45 to 1x 1000Base-X SC/FC/ST, Dual Fiber, 850nm 550m:**

- a. Converter Type: Stand-alone Unmanaged
- b. Port Type: 1x RJ45 to 1x SC/FC/ST
- c. RJ45 Rate: 10/100/1000Base
- d. Fiber Rate: 1000Base
- e. Fiber Mode: Multimode
- f. Fiber Type: Dual Fiber
- g. Wavelength: 850nm
- h. Distance: 550m
- i. Power: AC100V~240V/DC44V~72V/DC8V~28V
- j. Storage Temperature: -20°C~+85°C

**5. Mini Media Converter Chassis, 1U Rack Mount, 12 Slots, Dual Power AC 220V:**

- a. Product Type: Mlni Converter Rack Chassis
- b. Number of Slot: 12
- c. Input voltage: AC100V~240V/DC36V~72V
- d. Output voltage: DC5V
- e. Power output: 36 Watts maximum
- f. Case Material: Iron
- g. Dimensions(mm): 485 (W) x 270 (D) x 44.5 (H)
- h. Weight: 3.2Kg approx
- i. Relative Humidity: 5%~95%
- j. Storage Temperature: -20°C~+70°C

**5. 1U 19" Unloaded Panel (Max. 3 Panel Plates)**

- a. Product compatibility: 3 optic cassette
- b. Number of rack unit: 1U
- c. Number of port: 72
- d. Integrated connection type: LC
- e. Height: 44 mm
- f. Width: 482 mm
- g. Depth: 300 mm

**6. Fusion Splice Tray Kit (Max. 24 Fibers)**

- a. Range compatibility: 19" fibre optic panel
- b. Product destination: Empty fibre optic panel
- c. Device composition:

- a. 1 splice tray
  - b. 2 insert
  - c. 2 cable disc
  - d. 1 cable gland
  - e. 1 cable gland holder
  - f. 30 heat shrink splice protector tube
  - g. 4 ring
  - h. 1 cover
  - i. 4 nut
  - j. 4 screw
- d. Number of port 24 Material: ABS (acrylonitrile butadiene-styrene)
- e. Fixing mode: By 2 screws in with fibre patch panel or By rivet in with fibre patch panel with quick-fix function
- f. Length: 155.2 mm
- g. Height: 10 mm
- h. Width: 92.4 mm

#### **7. 1U SC SM Duplex Panel Plate, with 6 Duplex Adaptors**

- a. Product or component type: Cover plate with adaptors
- b. Accessory / separate part destination: Fibre optic panel
- c. Provided equipment: 6 duplex multi-mode adaptor SC
- d. Material: PC
- e. Fixing mode: Snap-in
- f. Color tint: Black
- g. Width: 137 mm
- h. Height: 35 mm
- i. Depth: 5.6 mm

#### **8. 42U Data Cabinet 600mm Wide x 1070mm Deep Enclosure with Sides, Black, Single Rack Assembled**

##### Physical

- a. Net Weight: 125.09 kg
  - b. Maximum Height: 1991.0 mm
  - c. Maximum Width: 600.0 mm
  - d. Maximum Depth: 1070.0 mm
  - e. Minimum Mounting Depth: 7.52
  - f. Maximum Mounting Depth: 36.02
  - g. Rack Height: 42 U
  - h. Color: Black
  - i. Units per Pallet: 1.0
  - j. Vertical Posts: 16 gauge
  - k. Front Door: 16 gauge
  - l. Rear Door: 18 gauge
  - m. Roof: 18 gauge
  - n. EIA Mounting Rails: 14 gauge
  - o. Side Panels: 18 gauge
- Environmental:
- p. CFM: 0
- Conformance
- q. Approvals: UL 2416 , UL 60950-1
  - r. Standard warranty: 5 year repair or replace

#### **9. Rack PDU, Switched, 1U, 16A, 208/230V, (8)C13**

- a. Voltage Input: 230, 200, 208 VAC
- b. Voltage Output: 230, 208 VAC

Prepared by:

**Engr. Mishell Dahuya-Lawas, PECE**  
Consultant, Electronics Engineering