

SCHEDULE OF REQUIREMENTS

Appendix 5

No.	Technical specifications	Bidders Response
1	<p>FIRE ALARM CONTROL PANEL (FACP)</p> <p>The main FACP shall perform the following functions:</p> <p>Supervise and monitor all Analogue addressable detectors</p> <p>Monitor modules connected to the system for normal, trouble and alarm conditions.</p> <p>Supervise all initiating signal and notification circuits throughout the facility.</p> <p>Detect the activation of any initiating device and the location of the alarm condition.</p> <p>Operate all notification appliances and auxiliary devices as programmed.</p> <p>Visually and audibly annunciate any trouble, supervisory or alarm condition on operator's terminals and panel display.</p> <p>Cause operation of all notification appliances and auxiliary devices as programmed</p> <p>The FACP shall provide</p>	
2	<p>ENCLOSURES:</p> <p>The control panels shall be housed in a cabinet suitable for surface or semi-flush mounting. Enclosure shall be corrosion protected, given a rust-resistant prime coat, and manufacturer's standard finish.</p> <p>The back box and door shall be constructed of with provisions for electrical conduit connections into the sides and top.</p> <p>The door shall provide a key lock and shall include a glass or other transparent opening for viewing of all indicators</p> <p>Shall be made of Electrostatically painted steel and ABS.</p>	
3	<p>POWER SUPPLY:</p> <p>The Main Power Supply shall operate on 240 VAC, 50 Hz, and shall provide all necessary power for the FACP. The FACP to include internal batteries.</p>	
4	<p>BATTERIES</p> <p>The fire alarm panel shall have inbuilt chargers and batteries housed inside it for loop powered devices. The battery shall have sufficient capacity to power the fire alarm system for not less than seventy-two hours upon a normal AC power failure.</p> <p>The batteries are to be completely maintenance free, of reputed make.</p> <p>The fire alarm panel shall have an inbuilt charger to charge the batteries.</p> <p>The batteries shall be placed inside the FACP with low voltage indication/ battery fault indication in the front of the panel</p>	
5	<p>IRE DETECTORS</p> <p>Detectors shall be Analogue, addressable, and shall connect with two wires to the fire alarm control panel Signaling Line Circuits.</p> <p>Addressable smoke and thermal detectors shall provide alarm and power LED's. Both LED's shall flash under normal conditions, indicating that the detector is operational and in regular communication with the control panel, and both LED's shall be placed into steady illumination by the control panel, indicating that an alarm condition has been detected. If required, the flashing mode operation of the detector LED's shall be optional through the system program.</p>	

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	Smoke detector sensitivity shall be set through the Fire Alarm Control Panel and shall be adjustable in the field through the programming of the system. Sensitivity may be automatically adjusted by the panel on a time-of-day basis. Using software in the FACP, detectors shall automatically compensate for dust accumulation and other slow environmental changes that may affect their performance. The detectors shall be listed by UL as meeting the calibrated sensitivity test requirements of NFPA Standard 72, Chapter 7	
	The detectors shall be ceiling-mount with sealed sensing chambers and suitable for stable operation in an ambient temperature of 0 to 60°C and against air velocity that may be predetermined. The detectors shall include a separate twist-lock base, which includes a tamper proof feature	
	Detectors shall also store an internal identifying type code that the control panel shall use to identify the type of device Ionization, Photoelectric, Thermal: Rated at 60°C and have a rate-of-rise element rated at about 9°C per minute.	
6	MANUAL CALL POINT This shall be for immediate manual activation of fire alarm system by smashing in the glass plate and pressing a push button. It shall be required to have a protective clear glass cover. These shall also be wired in loop circuits.	
7	VOICE EVACUATION AMPLIFIER Max. Operating Voltage 30Vdc Max. Switch Current (to be determined by FACP) Cable Termination 0.5 to 2.5 mm ² Resettable Relative Humidity 0 to 95% (non-condensing) Ambient Temperature -10°C to +55°C Have LED flashing to indicate communication with FACP. Steady RED if a fault.	
8	VOICE EVACUATION AMPLIFIER System Controller (one per system) Four mic/line inputs and two BGM inputs Provides from 1-6 zones of output at full power Rack mounted Non-emergency front panel volume controls for BGM/Program input Zoned emergency paging from front panel microphone Zoned non-emergency paging using the optional RM-200MPS UL 2572 and UL 864 listed Distortion < 0.7 % (at 1 kHz, rated power) Frequency response 50 Hz - 20 kHz (at 1/3 rated output)	
9	CEILING MOUNT SPEAKER 8" in-ceiling speaker for high quality applications 25V & 70V transformer taps up to 5W Fits standard ceiling speaker template (PC-671R & others) perfect for retrofits Unique "monocoque" design provides better structural integrity Meets UL 2572 (UL 1480 UUMW)	
1	Power Source	24 V DC (Operating range: 14 - 28 V DC) Power input jack: Non-polarity type Usable power input plug(*2): Outer diameter ϕ 5.5 mm ϕ 2.1 mm
	Current Consumption	100 mA or less
	Audio Output	0 dB(*1)
	Distortion	1% or less

	Frequency Response	100 - 20	
	S/N Ratio	60 dB or more	
	Microphone	Unidirectional electret condenser microphone	
	No. of Function Keys	13	
	Emergency Broadcast(*3)	Activation of Emergency Broadcast (pre-recorded announcement or live microphone announcement) by Emergency Broadcast Switch	
	Volume Control	Microphone volume control	
	Finish	ABS resin	
	Dimensions	190 (W) × 76.5 (H) × 215 (D) mm (Gooseneck microphone excluded)	
	Weight	750 g	
	Option	Wall mounting bracket: WB-RM200	
	EMERGENCY POWER SUPPLY UNIT		
	Power fully to have the following specs.		
2	i) Power Source:	220 – 230 V AC, 50 / 60 Hz	
	ii) Power Consumption:	2800 W max. in total (at rated output with charging), 350 W max. each	
	iii) DC Power Output (AC mode):	Rated output: 2300 W (31 V, 72.5 A, total DC power output), Peak output: 2780 W (29 V, 96 A, total DC power output)	
	iv) DC Power Output:	8 x 31 V (19 – 33 V) 25 A max. each, M4 screw terminal, distance between barriers: 11 mm 3 x 31 V (19 – 33 V) 5 A max. each, removable terminal block (3 x 2 pins) 1 x 24 V (16 – 25 V) 0.3 A max., removable terminal block (1 x 2 pins)	
	SURVEILLANCE FRAME/VOICE EVACUATION SYSTEM		
	Voice Evacuation System / System surveillance frame		
	following Specification:-		
3	i) Power Source:	31VDC (operating Range; 20-40VDC)	
	ii) Speaker Output:	4AB Zones,	
	iii) Power Amplifier:	4	
	iv) Audio Output:	4(Line; -20dB/Mic -60dB, Phantom power selectable.	
	v) Remote Mic Link:	2(Max 8RM)	
	vi) Control Input:	16+2(voltage-controlled)	
	vii) Control output:	8+3(CPU OFF)	
	viii) LAN:	2	
	ix) Attenuation Control output:	8.	

SPECIFICATIONS FOR PROPOSED FIRE ALARM SYSTEM INSTALLATION AT ROYSAMBU AND RUIRU OFFICES.

1) FIRE ALARM CONTROL PANEL (FACP)

The main FACP shall perform the following functions:

- ❖ Supervise and monitor all Analogue addressable detectors
- ❖ Monitor modules connected to the system for normal, trouble and alarm conditions.
- ❖ Supervise all initiating signal and notification circuits throughout the facility.
- ❖ Detect the activation of any initiating device and the location of the alarm condition.
- ❖ Operate all notification appliances and auxiliary devices as programmed.
- ❖ Visually and audibly annunciate any trouble, supervisory or alarm condition on operator's terminals and panel display.
- ❖ Cause operation of all notification appliances and auxiliary devices as programmed.

The FACP shall provide:

- ❖ Acceptance switch
- ❖ Alarm silence switch.
- ❖ System reset switch.
- ❖ Fire drill/Walk test switch.
- ❖ Lamp test switch.
- ❖ Block Acknowledge
- ❖ Control-By-Time
- ❖ Drift Compensation
- ❖ Pre-alarm Control Panel Indication
- ❖ Periodic Detector Test
- ❖ Trouble Reminder
- ❖ Upload/Download to PC Computer
- ❖ Smoke Detector Maintenance Alert
- ❖ Expandable via network options
- ❖ Patented intelligent sensing technology
- ❖ Backward compatible
- ❖ 150 addresses per loop
- ❖ Produced in accordance with EN54-2, EN54-4.
- ❖ 96 zone capability.
- ❖ 220-240V AC mains power supply.
- ❖ 4 fully monitored siren outputs with a rating of 24V / 0,5A and 6 programmable relays as well as a built in network circuit.
- ❖ Incorporated power supply with a rating of 24V/100W and built-in battery charger for 24V batteries with a capacity of up-to 12Ah.
- ❖ The panels offer an extensive list of adjustments and characteristics for the control of the installed devices and sirens. These parameters can easily be adjusted using a PC based program.
- ❖ Allow Programming of the panel through the PC.



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- ❖ Ethernet control capability.
- ❖ Optional Modbus expansion.
- ❖ Optional external printer expansion.
- ❖ Messages can be viewed on the big LCD (320x240 pixels) whereas LEDs shall be used to show basic operations such as alarms, faults and isolated sections
- ❖ The operation shall be done using the built-in 16 key keypad.
- ❖ Incorporated safety lock.
- ❖ Shall include a thermal printer
- ❖ Generate system status reports and recall/print each operation at command of operator.
- ❖ Interrogate each detector and analyze detector response
- ❖ Display and print abnormal deviation without inhibiting the system performance.
- ❖ 'Pre-signal alarm' signal when the detector is at 80% of its alarm threshold.
- ❖ Trigger the Following operations upon activation of any detector, break glass unit or switch, unless otherwise specified:
 - Activate all programmed notification circuits until silenced.
 - Activate all audio-visual annunciation devices until reset.

2) ENCLOSURES:

- ❖ The control panels shall be housed in a cabinet suitable for surface or semi-flush mounting. Enclosure shall be corrosion protected, given a rust-resistant prime coat, and manufacturer's standard finish.
- ❖ The back box and door shall be constructed of with provisions for electrical conduit connections into the sides and top.
- ❖ The door shall provide a key lock and shall include a glass or other transparent opening for viewing of all indicators
- ❖ Shall be made of Electrostatically painted steel and ABS.

3) POWER SUPPLY:

The Main Power Supply shall operate on 240 VAC, 50 Hz, and shall provide all necessary power for the FACP. The FACP to include internal batteries.

4) BATTERIES

The fire alarm panel shall have inbuilt chargers and batteries housed inside it for loop powered devices. The battery shall have sufficient capacity to power the fire alarm system for not less than seventy-two hours upon a normal AC power failure.

The batteries are to be completely maintenance free, of reputed make.

The fire alarm panel shall have an inbuilt charger to charge the batteries.



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The batteries shall be placed inside the FACP with low voltage indication/ battery fault indication in the front of the panel.

5) FIRE DETECTORS

Detectors shall be Analogue, addressable, and shall connect with two wires to the fire alarm control panel Signaling Line Circuits. Addressable smoke and thermal detectors shall provide alarm and power LED's. Both LED's shall flash under normal conditions, indicating that the detector is operational and in regular communication with the control panel, and both LED's shall be placed into steady illumination by the control panel, indicating that an alarm condition has been detected. If required, the flashing mode operation of the detector LED's shall be optional through the system program.

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The detectors shall be ceiling-mount with sealed sensing chambers and suitable for stable operation in an ambient temperature of 0 to 60°C and against air velocity that may be predetermined. The detectors shall include a separate twist-lock base, which includes a tamper proof feature.

Detectors shall also store an internal identifying type code that the control panel shall use to identify the type of device Ionization, Photoelectric, Thermal: Rated at 60°C and have a rate-of-rise element rated at about 9°C per minute.

6) MANUAL CALL POINT

This shall be for immediate manual activation of fire alarm system by smashing in the glass plate and pressing a push button. It shall be required to have a protective clear glass cover. These shall also be wired in loop circuits.

General specifications:

- ❖ Max. Operating Voltage 30Vdc
- ❖ Max. Switch Current (to be determined by FACP)
- ❖ Cable Termination 0.5 to 2.5 mm²
- ❖ Resettable
- ❖ Relative Humidity 0 to 95% (non-condensing)
- ❖ Ambient Temperature -10°C to +55°C
- ❖ Have LED flashing to indicate communication with FACP.



SPECIFICATIONS FOR PROPOSED FIRE ALARM SYSTEM INSTALLATION AT ROYSAMBU AND RUIRU OFFICES.

- ❖ Steady RED if a fault.

7) VOICE EVACUATION AMPLIFIER

- ❖ System Controller (one per system)
- ❖ Four mic/line inputs and two BGM inputs
- ❖ Provides from 1-6 zones of output at full power
- ❖ Rack mounted
- ❖ Non-emergency front panel volume controls for BGM/Program input
- ❖ Zoned emergency paging from front panel microphone
- ❖ Zoned non-emergency paging using the optional RM-200MPS
- ❖ UL 2572 and UL 864 listed
- ❖ Distortion < 0.7 % (at 1 kHz, rated power)
- ❖ Frequency response 50 Hz - 20 kHz (at 1/3 rated output)

8) CEILING MOUNT SPEAKER

- ❖ 8" in-ceiling speaker for high quality applications
- ❖ 25V & 70V transformer taps up to 5W
- ❖ Fits standard ceiling speaker template (PC-671R & others) perfect for retrofits
- ❖ Unique "monocoque" design provides better structural integrity
- ❖ Meets UL 2572 (UL 1480 UUMW)

9) MICROPHONE

Power Source	24 V DC (Operating range: 14 - 28 V DC) Power input jack: Non-polarity type Usable power input plug(*2): Outer diameter ϕ 5.5 mm ϕ 2.1 mm
Current Consumption	100 mA or less
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S/N Ratio	60 dB or more
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Weight	750 g
Option	Wall mounting bracket: WB-RM200



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10) EMERGENCY POWER SUPPLY UNIT

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ii) Power Consumption: 2800 W max. in total (at rated output with charging), 350 W max. each
iii) DC Power Output (AC mode): Rated output: 2300 W (31 V, 72.5 A, total DC power output), Peak output: 2780 W (29 V, 96 A, total DC power output)
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11. Surveillance Frame/Voice Evacuation System

Voice Evacuation System / System surveillance frame
following Specification:-
i) Power Source: 31VDC (operating Range: 20-40VDC)
ii) Speaker Output: 4AB Zones.
iii) Power Amplifier: 4
iv) Audio Output: 4(Line; -20dB/Mic -60dB, Phantom power selectable.
v) Remote Mic Link: 2(Max 8RM)
vi) Control Input: 16+2(voltage-controlled)
vii) Control output: 8+3(CPU OFF)
viii) LAN: 2
ix) Attenuation Control output: 8.

12. Training

Provide training schedule (User and administrators) detailing the course contents, duration and relevant certifications to be attained for the key system components. The training shall capture all operational and basic preventive maintenance/response functions.

The trainer shall provide certificate and necessary attestations to the participants.