# GENERAL

## SYSTEM DESCRIPTION

### General Requirements

#### The specified unit shall be of manufacturer’s official product line, designed for commercial and/or industrial 24/7/365 use.

#### The specified unit shall be based upon standard components and proven technology using open and published protocols.

### Sustainability

#### The specified unit shall be manufactured in accordance with ISO 14001:2015.

#### The specified unit shall be compliant with the EU Directive 2011/65/EU (RoHS).

#### The specified unit shall be compliant with the EU Directive 2012/19/EU (WEEE).

## CERTIFICATIONS AND STANDARDS

### General abbreviations and acronyms

#### AES: Advanced Encryption Standard

#### API: Application Programming Interface

#### Bit Rate: The number of bits/time unit sent over a network

#### DHCP: Dynamic Host Configuration Protocol

#### DNS: Domain Name System

#### FPS: Frames per Second

#### FTP: File Transfer Protocol

#### H.264 (Video Compression Format)

#### IEEE 802.1x: Authentication framework for network devices

#### IP: Internet Protocol

#### IR light: Infrared light

#### ISO: International Standards Organization

#### JPEG: Joint Photographic Experts Group (image format)

#### LAN: Local Area Network

#### LED: Light Emitting Diode

#### MPEG: Moving Picture Experts Group

#### Multicast: Communication between a single sender and multiple receivers on a network

#### NTP: Network Time Protocol

#### ONVIF: Global standard for the interface of IP-based physical security products

#### PACS: Physical Access Control System

#### PoE: Power over Ethernet (IEEE 802.3af/at) standard for providing power over network cable

#### Progressive scan: An image scanning technology which scans the entire picture

#### QoS: Quality of Service

#### RPC: Remote Procedure Call

#### SIP: Session Initiation Protocol

#### SMTP: Simple Mail Transfer Protocol

#### SNMP: Simple Network Management Protocol

#### SSL: Secure Sockets Layer

#### TCP: Transmission Control Protocol

#### TLS: Transport Layer Security

#### Unicast: Communication between a single sender and a single receiver on a network

#### UPS: Uninterruptible Power Supply

#### VBR: Variable Bit Rate

#### VMS: Video Management System

#### WDR: Wide dynamic range

### The specified unit shall meet the following EMC standards:

#### EN 55024

#### EN 55032

#### FCC Part 15 – Subpart B Class B

#### 2014/30/EU

### The specified unit shall meet the following product safety standards:

#### EN 62368-1

#### IEC/UL 62368-1

#### 2014/35/EU

### The specified unit shall meet the following standards

#### Audio:

##### G.711

##### G.729

##### G.722 (wideband)

##### L16 / 16kHz (wideband)

#### Video:

##### H.264

##### M-JPEG

#### Networking:

##### 10/100 BASE-T Ethernet, IEEE 802.3

##### IEEE 802.3af (Power over Ethernet)

##### IPv4 (RFC 791)

## QUALITY ASSURANCE

### The Contractor or security sub-contractor shall be a licensed security Contractor with a minimum of five (5) years’ experience installing and servicing systems of similar scope and complexity and evidence that is completed at least three (3) projects of similar design and is currently engaged in the installation and maintenance of systems herein described.

### All installation, configuration, setup, program and related work shall be performed by electronic technicians thoroughly trained by the manufacturer in the installation and service of the equipment provided.

### The contractor or designated sub-contractor shall submit credentials of completed manufacturer certification, verified by a third-party organization, as proof of the knowledge.

### The Contractor shall provide four (4) current references from clients with systems of similar scope and complexity that became operational in the past three (3) years. At least three (3) of the references shall be utilizing the same system components, in a similar configuration as the proposed system

### The specified unit shall be manufactured in accordance with ISO 9001:2015.

## WARRANTY

### All security system components and labour furnished by the contractor including wiring, software, hardware and custom parts shall be fully warranted for parts, materials, labour and travel expenses for a minimum of three (3) years.

### The manufacturer shall provide warranty and optional extended warranty for the unit for a total period of maximum five years. If enacted as part of the contract, the contractor will repair or replace parts and/or labour per the warranty for the length of this warranty at no cost to the client.

# PRODUCTS

## General

### Answering units shall be IP-based and comply with established network and video standards. No gateways or similar devices will be needed.

### Answering units shall be powered by the switch utilizing the network cable.

## Answering units schedule

### Answering unit types listed below describing various features shall be supplied by a single intercom/ answering unit manufacturer.

### The answering unit manufacturer and model numbers will be as follows:

#### IP answering unit shall be 2N Indoor Compact.

## Answering unit

### IP answering unit

#### The answering unit shall meet or exceed the following design specifications:

##### The answering unit shall include a built-in web server.

##### The answering unit shall be of a compact non-modular design, suitable for flush mounting, with 4mm tempered glass front panel.

##### The answering unit shall have a color LCD video display, 4,3´´ with 480 x 272-pixel resolution

##### The answering unit shall provide touch control via 7 capacitive context touch buttons with white and RGB LED backlight.

##### The answering unit shall provide full-duplex hands-free HD audio communication exclusively.

##### The answering unit shall be installed into a round flush box with a diameter of 100mm.

##### The answering unit shall support the adjustment of the vertical installation angle by up to 5° to the left or right.

#### The answering unit shall meet or exceed the following performance specifications:

##### Backlight

###### The answering unit shall support manual adjustment of the button backlight intensity.

###### The answering unit shall support manual adjustment of the display backlight intensity.

###### The answering unit shall support manual backlit disable.

###### The answering unit shall support an automatic Idle Mode with configurable inactivity timeout after which the device switches to this mode

##### Audio

###### The answering unit shall support two-way full duplex audio:

Input sources

Internal microphone

 Output sources

Built-in speaker, 2W

Induction loop output: 600 mV RMS

###### The answering unit shall support separately adjustable volume levels for:

Call

Ring Tones

Call-Progress Tone

Key Beep Volume

Warning Tone Volume

Suppress Warning Tones

User Sound Volume

###### The answering unit shall support a minimum of 10 User sounds – tones which signal variable operational statuses. It will be possible to modify sound signalling for the following states:

Ringing before Call Pickup – set the ringtone to be played before an incoming call is picked up (device ringtone).

Ringback Tone – set the sound to be played when the called user is ringing. The PBX ringtone is preferred to the user ringtone in the device.

Call Busy Tone – set the tone to be played when the called user is busy.

Call Hang-Up Signaling – set the tone to signal the call end.

Doorbell – set the tone to be played when the doorbell is used.

###### Encoding

The answering unit shall support:

G.711

G.722 (wideband)

G.729

L16 / 16kHz (wideband)

###### The answering unit shall be equipped with an active echo cancellation.

###### The answering unit shall allow for audio to be received over:

RTP (Unicast & Multicast)

##### Call functionality

###### The answering unit shall support VoIP standards, namely SIP protocol

###### It will be possible to use the answering unit in peer-to-peer mode (without the need of a central or main server) or integrated into SIP/PBX.

###### The answering unit shall support the use of SIP Proxy, which can be the same as the SIP registrar for outgoing calls.

###### The answering unit shall support at least two SIP Accounts

###### The answering unit will have the possibility to set the call time limit after which the call is automatically terminated.

###### The answering unit shall support dialling of up to 1000 separate numbers.

###### The answering unit shall support manual or auto call answering.

###### The answering unit shall support Do Not Disturb Mode (DND). When DND is active, the device is at relaxing, the device does not play the selected ringtone and the display shows the camera view if available.

##### Access control functionality

###### The answering unit shall support remote lock trigger of an intercom using DTMF code.

###### The answering unit shall support at least three different DTMF codes per each destination.

###### The answering unit shall support remote lock trigger of an intercom using HTTP command.

###### The answering unit shall support three different locks to be triggered by HTTP commands per each intercom at least.

##### Event functionality

###### The answering unit shall support an audio notification upon triggering an internal input (e.g. doorbell button connected). It will be possible to select different audio to be played for doorbell button triggered notification than for a call from an Intercom.

##### Screen lock

###### It shall be possible to enable/disable the screen lock (parental lock). The lock will be protected by a PIN code.

##### User Interface

###### Web server

The answering unit shall contain a built-in web server making functionality and configuration available to multiple clients in a standard operating system and browser environment using HTTP, without the need for additional software.

###### Language Specification

The answering unit shall provide a function for altering the language of the user interface, and shall include support for at least 7 different languages and include an ability to support an additional language through customization.

###### IP addresses

The answering unit shall support both fixed IP addresses and dynamically assigned IP addresses provided by a Dynamic Host Control Protocol (DHCP) server.

The answering unit shall allow for automatic detection of the intercom based on WS Discovery when using a computer with an operating system supporting this feature.

The answering unit shall provide support IPv4.

##### Protocols

###### The answering unit shall incorporate support for at least HTTP, HTTPS, SIP 2.0, SSL/TLS, RTSP, RTP, DHCP, NTP, IPv4, TCP, IGMP, UDP, ARP, DNS, Syslog

##### Security

###### The answering unit shall restrict access to the built-in web server by username and password.

###### The answering unit shall force the user to change the admin password upon the first installation.

###### The answering units shall block its login page for 30 seconds after three faulty passwords have been submitted.

###### The answering unit shall provide centralized certificate management, with the ability to upload CA certificates. The certificates shall be signed by an organization providing digital trust services.

##### API support

###### The answering unit shall be interoperable with major PBX and gateway manufacturers, including:

Cisco

Avaya

Broadsoft

##### Installation and maintenance

###### The answering unit shall support secure configuration using HTTPS.

###### The answering unit shall allow updates of the software (firmware) over the network, using web interface.

###### The answering unit shall allow updates of the software (firmware) locally over a memory card.

###### The answering unit shall accept external time synchronization from an NTP (Network Time Protocol) server.

###### The answering unit shall support TR-069 protocol for remote device configuration and management.

###### The answering unit shall support back-up and restore of configuration.

###### The answering unit shall store all customer-specific settings in a non-volatile memory that shall not be lost during power cuts or soft reset.

##### Answering unit diagnostics

###### The answering unit shall be equipped with LEDs, capable of providing visible status information. LEDs shall indicate the unit’s operational status and provide information about power and network state.

###### The answering unit shall be monitored by a Watchdog functionality, which shall automatically re-initiate processes or restart the unit if a malfunction is detected.

###### The answering unit shall support capture and download of diagnostics logs for the administrator via the web interface.

###### It will be possible to send a PING from the answering unit to verify network address accessibility.

##### Hardware interfaces

###### Network interface

The answering unit shall be equipped with one 10BASE-T/100BASE-TX Fast Ethernet-port, using a standard RJ45 connector and shall support auto-negotiation of network speed (100 MBit/s and 10 MBit/s) and transfer mode (full and half duplex).

###### Inputs and outputs

The answering unit shall be equipped with digital input for the doorbell button connection.

The answering unit shall be equipped with line output (600 mV RMS).

###### Power

The answering unit shall be equipped with a removable terminal block with screws providing connectivity for external power supply.

##### Enclosure

###### The answering unit shall:

Be manufactured with 4mm tempered glass touch front panel.

Be of compact non-modular design.

Be designed for flush mounting.

Support adjustment of the vertical installation angle by up to 5° to the left or right.

Be available in black and white versions.

##### Power

###### Power over Ethernet IEEE 802.3af/802.3at Type 1 Class 0

###### 12 V DC, Max: 1A

##### Environmental

###### The answering unit shall:

Operate in a temperature range of 0°C to +50 °C (32°F to 122°F).

Operate in a humidity range of 10–90% RH (non-condensing).

Storing temperature: -20 to 70 °C

# execution

## installation

### The Contractor shall carefully follow instructions in documentation provided by the manufacturer to ensure all steps have been taken to provide a reliable, easy-to-operate system.

### All equipment shall be tested and configured in accordance with instructions provided by the manufacturer prior to installation.

### All firmware found in products shall be the latest and most up-to-date provided by the manufacturer.

### All equipment requiring users to log on using a password shall be configured with user/site-specific password/passwords. No system/product default passwords shall be allowed.

END OF SECTION