KAREL

SERVER BASED IP COMMUNICATION PLATFORM

KAREL IPG SERIES: IPG500 | IPG1000

IPG COMMUNICATION PLATFORM CAN BE CONFIGURED AS A SOFTSWITCH (SERVER), A COMPACT IP BASED SYSTEM WITH INTEGRATED MEDIA GATEWAY OR A COMBINATION OF SERVER AND MEDIA GATEWAY RACKS.

FLEXIBLE STRUCTURE, HARDWARE AND SYSTEM FEATURES

KAREL IPG is a modular and server based IP communication platform designed to meet the needs of medium and large organizations.

FLEXIBLE STRUCTURE

Karel IPG communication platform meets different interface requirements and integrates with pure IP infrastructures, as well as hybrid and traditional TDM networks.

HARDWARE FEATURES

Depending on the interface and capacity requirements, IPG communication platform offers different hardware options. For pure IP configurations, the system runs on industry standard servers and provides a maximum capacity of 32000 IP ports. If traditional telephony interfaces are also required, IPG500 and IPG1000 racks serve as media gateways giving a maximum of 32000 ports for TDM. Therefore, the maximum system capacity becomes 64000 ports. There is also a compact usage of IPG500 and IPG1000 racks without requiring a server. This way, a single IPG500 rack can provide 224 TDM & 500 IP ports and a 3-rack-stacked configuration of IPG1000 system can provide a maximum of 1056 TDM & 2000 IP ports.

SYSTEM FEATURES

Communication platform is an essential component of an organisation's work processes and plays a critical role in efficiency. IPG communication platform simplifies the work processes in an organisation by integrating several services such as integrated voice response, voice mail, voice mail to email, voice logger, video/audio conferencing, presence, instant messaging, Microsoft Outlook integration and collaboration. IPG communication platform runs on SUSE Linux 12.2 operating system, which provides an open-ended architecture as well as lower processing requirements. Field tests show that even a low performance server with 1.6 GHz single-core processor and 512 MB RAM is enough to install a fully featured IPG communication platform serving to 2000 IP subscribers. Evidently, increasing the processing power increases the maximum capacity of the system.

CONVERGENCE

Developments in information technologies have already brought the concept of convergence. Today, it is not possible to think of a modern communication system independent of IT infrastructure. A telephone directory is now only a piece of data stored in organisation's LDAP (Lightweight Directory Access Protocol) server. Likewise, authentication of a user to log into a software component through RADIUS (Remote Authentication Dial In User Service) server is also applicable for authentication of IP phones.

BACKWARD COMPATIBILITY

IPG communication platform is an ideal solution for organisations that require backward compatibility while migrating to future technologies. Compliance both with IPv4 and IPv6 is only an example.

IPG500 AND IPG1000 RACKS ARE THE COMPACT IP BASED UNITS OF THE PLATFORM WITH INTEGRATED MEDIA GATEWAYS.

IPG500

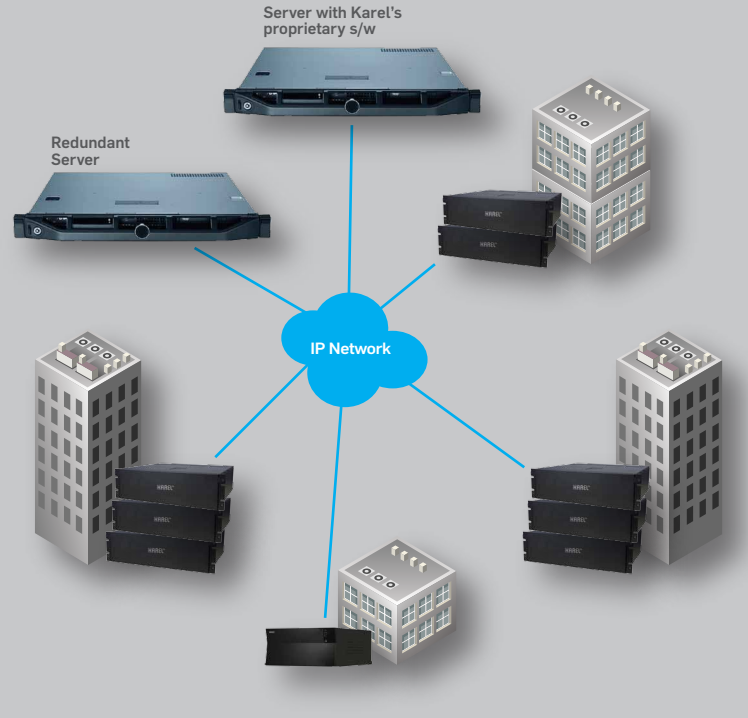
A SINGLE IPG500 RACK CAN SERVE UPTO 700 PORTS, WHEREAS THE TOTAL CAPACITY OF IPG PLATFORM CAN REACH UPTO 64000 PORTS.

IPG1000

DISTRIBUTED ARCHITECTURE

Standalone components of IPG communication platform are location independent. Server, redundant server or media gateway racks can all be distributed to different locations. In addition to typical trunking protocols such as SIP or H.323, IPG platform employs IPCC, a proprietary protocol developed by Karel, for seamless integration of servers and racks (media gateways) through an IP network. IPCC lets the distributed components of the system to work as a single communication platform.

In case of a failure in communication between server and media gateways, media gateways automatically switch to self-survival mode and continue providing the same services over the internal server. This internal server is in the form of a CPU card with Qseven module and redundancy for this CPU card is also available in the system.



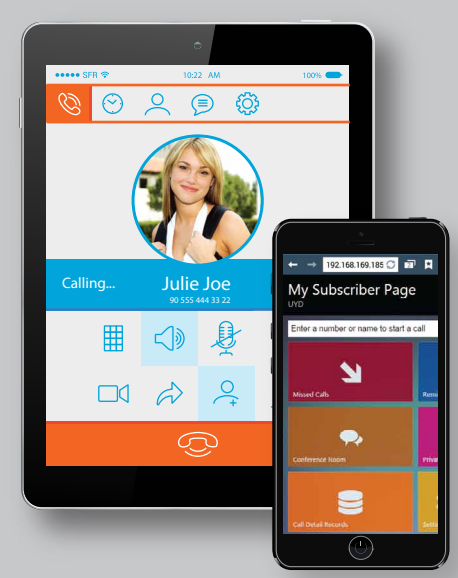
USER INTERFACES

All user interfaces of IPG communication platform are web based and compatible with all popular web browsers including the browsers of mobile devices such as smartphones or tablets. This gives the convenience of becoming location independent when using or managing the system remotely.

FUTURE PROOF

IPG communication platform allows growing organizations to expand their communication systems cost effectively over time.

IN ADDITION TO STANDARD FEATURES OF SIP TELEPHONY, IPG COMMUNICATION PLATFORM PROVIDES UNIFIED COMMUNICATIONS TO ALL USERS THROUGH COMPATIBLE IP PHONES AND MOBILE DEVICES.



IP APPLICATIONS & UNIFIED COMMUNICATIONS

MOBILITY

IPG Series provide a reliable and cost effective communication platform to mobile workers. Karel's smartphone or softphone applications extend the unified communications features to smartphones, tablets or laptops through 3G or Wi-Fi networks.

To keep pace with desk free people at work, IPG communication platform provides coverage through DECT base stations or Wi-Fi access points and enables a reliable cordless communication at every point.

Organisations are becoming location independent and often all workers are not in the office at the same time. Besides, some people in the office rarely need a phone. This brings the idea of saving from office resources and sharing of a telephone device. Hot desking feature of IPG communication platform lets the users share an IP phone by logging in with their own accounts. After logging in, a common IP phone becomes the personal phone of the user with his/her own extension number and customized settings. Reports of calls through these common phones will be kept as per users' specific extension numbers. With hot desking feature, a common phone in a meeting room often used to ask for refreshments can immediately become an executive phone with extensive calling permissions and features.

USER WEB PAGE (WEB-CONSOLE)

With IPG communication platform, telephony experience of users is not limited to a telephone device. Each user of IPG communication platform has a web based interface for making calls and managing their accounts from their PCs, tablets or smartphones. Users can initiate calls, manage conference rooms, set call forwarding parameters, monitor call history, view missed calls or receive voice mails through web-console interface.

MICROSOFT OUTLOOK® INTEGRATION

IPG communication platform integrates with Microsoft Outlook® software. Users of IPG communication platform can perform call tasks through their email software.

CONFERENCE ROOMS

Conferencing facility lets the organisations save from travel costs and time. Users can define passwords for restricted access to their conference rooms or manage conferences through their web based interfaces.

INSTANT MESSAGING

IP phone users of IPG communication platform can send and receive instant text messages.

PRESENCE

Presence states of all users can be monitored through web interfaces or phones having BLF (Busy Lamp Field).

VIDEO COMMUNICATION

All IP extensions of IPG communication platform can enjoy video communication by using IP video phones or Karel's smartphone/softphone applications.

USERS OF IPG COMMUNICATION PLATFORM KEEP COMMUNICATING THROUGH VARIOUS DEVICES WHENEVER AND WHEREVER THEY ARE.

WEB-PHONE

IPG communication platform supports click-to-call feature to be initiated from organisation's web site. By clicking the link on a web page, visitors can directly talk to predefined extensions of IPG communication platform.

AUTO ATTENDANT

Integrated auto attendant feature of IPG communication platform provides an efficient distribution of incoming calls, nevertheless contributes to the corporate image.

VOICE MAIL TO EMAIL

Integration of telephony with email is a favorable feature of convergence in communications. In addition to the well known voice mail feature, users of IPG communication platform can receive their voice mails as emails.

VOICE LOGGER (CALL RECORDING)

Quality assurance, performance evaluation, training or lawful interception are the common reasons of using a voice logger system. Karel IPG communication platform provides a fully integrated voice logger solution with various monitoring or storage options. In addition to local or remote storage facilities, recorded calls can be processed together with call details through WEB-CM interface or they can be automatically sent as email attachments.

CALL DETAIL RECORDING (WEB-CM)

WEB-CM software of IPG communication platform provides efficiency in storing, analysing and billing call details. It is possible to define call tariffs on subscriber or trunk line group basis and validity of a specific tariff plan can be programmed as per various date and time parameters.

FAX SERVER

IPG communication platform supports T.38 protocol for transmission of fax messages over IP lines and employs a fax server for distribution of fax messages through email.

GSM GATEWAY & SMART CALL BACK

IPG communication platform is fully compatible with Karel GT40M GSM gateway. A common drawback of having a missed call from an organisation's GSM gateway occurs when the called party wants to call back. As the initial call to the mobile phone has passed through the GSM gateway, called party would only see the common phone number of the SIM card installed in the GSM gateway.

Therefore, if the called party calls back the missed number, the call would be most probably answered by the operator or the auto attendant, but not by the specific person who initiated the first call. For such cases, IPG communication platform automatically diverts the call-back of missed mobile call to the initial caller.

INTEGRATION WITH OTHER SYSTEMS

It is possible to integrate IPG communication platform with various solutions through standard interfaces and protocols. Integration facilities include hotel/property management systems such as Fidelio, video conferencing, collaboration solutions, security solutions, customer relationship management solutions or call centers.

EASE OF MANAGEMENT & INTEGRATION WITH IT INFRASTRUCTURE

WIDEA

WIDEA is the web based management software of IPG communication platform for programming, maintenance and alarm management. Different authority levels can be assigned to different administrator accounts using WIDEA. As the software is web based, administrators have the flexibility of having remote access to the system through PC's, tablets or smartphones.

REMOTE SOFTWARE UPDATE

All software components of IPG communication platform can be remotely loaded to the system. By just having an Ethernet access to the system, administrators can perform all the software related issues from a remote location.

AUTO CONFIGURATION

Depending on the quantity of IP phones in an organisation, reconfiguring all the IP phones one-by-one may become practically impossible. Auto configuration feature of IPG communication platform lets IP phones to be configured all together or as groups.

WEB BASED USER INTERFACES

All computer interfaces of IPG communication platform are web based. Any device with a compatible web browser can be used for accessing the system from any location.

COMPATIBILITY WITH IT ENVIRONMENT

Hardware components of IPG communication platform perfectly fit into the IT room. Servers and racks are compatible with 19" standard cabinets. As the communication between the standalone units of the platform are purely through IP, integrating them require only standard network elements or cables such as CAT5/6 or fiber optics. All interface ports of the platform (including TDM ports) require only the standard RJ45 connectors.

OPERATING SYSTEM AND COMPUTER PERIPHERIALS

SUSE Linux 12.2 operating system provides an open-ended architecture and lower processing requirements to IPG communication platform. It is also possible to directly connect computer peripherals such as monitor, keyboard or mouse to servers or racks of IPG communication platform.

IPv6 COMPATIBILITY

In order to provide a future proof solution, Karel IPG communication platform is compatible with IPv4, IPv6 as well as hybrid networks that utilize both IPv4 and IPv6.

DIRECT FIBEROPTIC CONNECTIVITY & INTERNAL ETHERNET SWITCHES

IPG communication platform does not require any external devices for fiber optic connectivity. It is possible to directly terminate fiber optic cable on IPG500 or IPG1000 racks. Also, the platform is equipped with built-in Ethernet switches on CPU, media gateway and fiber optic cards. As IPG platform does not require an external Ethernet switch or fiber optic converter, related complexities of feeding or maintaining these critical components are eliminated.

ALARM AND FAILURE MANAGEMENT

IPG communication platform is equipped with an integrated alarm and failure management system. This system lets system administrators to monitor (real time), report (real time) or log the

possible system faults or link/port failures. Depending on the importance of fault conditions, alarm actions may include triggering calls, SMS or email messages to predefined recipients or initiating audiovisual signals on the alarm panel. It is also possible to monitor the alarms of distributed systems on a map through the alarm interface.

With four additional alarm inputs, IPG communication platform also acts as an alarm communication hub for other alarms to be triggered by other systems in the organisation such as UPS, fire alarms, burglar alarms or a like.

SNMP

IPG communication platform supports Simple Network Management Protocol. For organisations with a varying amount of IT equipment, managing all this equipment with different proprietary interfaces may become too difficult and time consuming. SNMP sets a simple platform for system administrators to manage of all supported devices on IP networks.

RADIUS / ACTIVE DIRECTORY SUPPORT

IPG communication platform seamlessly integrates with RADIUS and Active Directory services.

INTEGRATION WITH LDAP

Organisations using an LDAP (Lightweight Directory Access Protocol) server do not need to care about creating or updating a separate directory for IPG communication platform, which is compatible with LDAP.

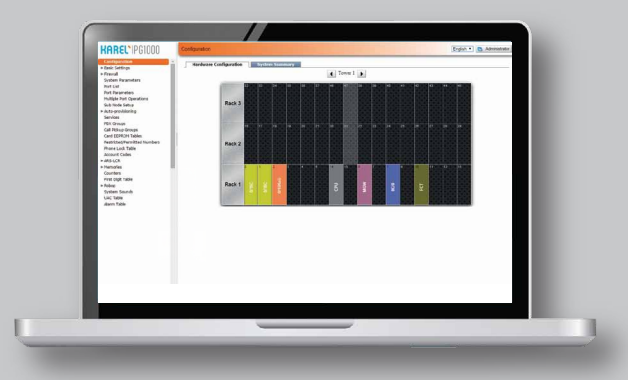
SECURITY

In order to ensure a secure communication platform, Karel IPG series support the following features:

- Encryption (sRTP, TLS)
- Protection against DDOS attacks
- Password aging
- Different administrator account levels

RTP PROXY – REMOTE IP EXTENSIONS WITHOUT VPN

Communication with remote IP phones behind a NAT (Network Address Translator) is a common difficulty in VoIP platforms. RTP proxy feature of IPG communication platform allows the system administrators to bridge the VoIP communication between the server and remote IP phones behind a NAT without requiring a VPN (Virtual Private Network).



TERMINALS FOR KAREL IPG SERIES: IPG500 | IPG1000

ANALOG PHONES

TM142 — Single Line Telephone; 10 memory keys; wall mountable; message indicator; handsfree; hold; transfer; redial; mute

TM131 — Single Line Telephone with Caller ID; 2 memory keys; power-over-line; received call list up to 80 records; dialed call list up to 10 records; phonebook up to 70 records; handsfree; hold, transfer, redial, mute

PROPRIETARY PHONES

NT10D — 2-line x 20 character display; phonebook up to 50 records; 8 flexible speed dial keys; illuminated handsfree, message warning & mute keys; displays up to 10 call records (dialed/received/missed calls)

NT30D — 8-line x 24 character backlight LCD; adjustable display angle; phonebook up to 120 records; navigator keys (4 directions); 8 function keys for easy access to frequently used features (phonebook, call log, menu, function, redial, conference, park, transfer); handsfree; mute; optional DSS modules with 24 flexible keys (LCD or paper label)

ST26 — 4-line x 20 character LCD; phonebook up to 50 records; 16 flexible keys with two-color LEDs for monitoring the status of assigned extensions / lines; 6 function keys for easy access to the frequently used features (phonebook, menu, redial, flash, park, transfer); handsfree; mute; optional DSS module with 28 flexible keys

ST30 — 8-line x 24 character backlight LCD; adjustable display angle; phonebook up to 50 records; 16 flexible keys with two-color LEDs for monitoring the status of assigned extensions / lines; 6 function keys for easy access to frequently used features (phonebook, menu, redial, flash, park, transfer); handsfree; mute; optional DSS module with 28 flexible keys; optional Bluetooth® support

FT20 — 2-line x 20 character or 4-line x 20 character LCD options; phonebook up to 100 records; 16 flexible keys with two color LEDs for monitoring the status of assigned extensions / lines; 6 function keys for easy access to frequently used features (phonebook, menu, redial, flash, park, transfer); handsfree; mute; optional DSS modules with 28 flexible keys or busy display panel (displays status of 200 extensions in single unit)

IP PHONE SETS

IP121 — 5-line LCD; two-port 10/100 Ethernet switch; optional PoE support; 1 SIP account; headset support; wall mountable; call & message waiting indication; local 3-way conferencing; phonebook up to 1000 records; 6 feature keys (message, headset, redial, transfer, mute, handsfree); 5 navigation keys

IP111 — HD voice; 5-line LCD; two-port 10/100 Ethernet switch; optional PoE support; up to 2 SIP accounts; headset support; wall mountable; call & message waiting indication; local 3-way conferencing; phonebook up to 1000 records; 6 features keys (message, headset, redial, transfer, mute, handsfree); 6 navigation keys; 2 line keys with LED

IP PHONE SETS

	IP112	HD voice; 5-line LCD; two-port 10/100 Ethernet switch; optional PoE support; up to 3 SIP accounts; headset support; wall mountable; call & message waiting indication; local 3-way conferencing; phonebook up to 300 records; 5 feature keys (message, headset, redial, transfer, handsfree); 6 navigation keys; 3 line keys with LED
	IP116	HD voice; 320x160 LCD; two-port 10/100 Ethernet switch; optional PoE support; up to 6 SIP accounts; headset support; call & message waiting indication; local 3-way conferencing; phonebook up to 1000 records; 8 feature keys (message, headset, hold, mute, transfer, redial, conference, handsfree); 16 flexible keys with two color LEDs for monitoring the status of the assigned extensions/lines
	IP136	HD voice; dual-port Gigabit Ethernet; 4.3" 480 x 272-pixel color display with backlight; built-in USB port; Bluetooth headset support (through USB Dongle); up to 6 SIP accounts; paper label free design; PoE; headset support; stand with 2 adjustable angles; wall mountable; call & message waiting indication; wallpaper; CID with name, number & photo; 3-way conferencing; phonebook up to 1000 records; 10 line keys with LED, 10 line keys can be programmed up to 27 various features (3-page view); 7 feature keys (message, headset, hold, mute, transfer, redial); handsfree; 6 navigation keys
	IP138	HD voice; dual-port Gigabit Ethernet; POE; 7" 800 x 480-pixel color touch screen with backlight; built-in USB port; Bluetooth headset support (through USB Dongle); up to 16 SIP accounts; paper label free design; headset support; wall mountable; call & message waiting indication; wallpaper; CID with name, number & photo; 3-way conferencing; phonebook up to 1000 records; 29 one-touch DSS keys; 7 feature keys (message, headset, hold, mute, transfer, redial); handsfree; 6 navigation keys
	NT32I	HD voice; 4-line LCD; two-port 10/100 Ethernet switch; up to 4 SIP accounts; message waiting indicator; 6 speed dial keys; 3-way conferencing; mute; handsfree; phonebook up to 128 records; 4 navigation keys; standard/proprietary IP; optional DSS modules with 24 flexible keys (LCD or paper label)
	NT42I	HD voice; TFT LCD display (480x272, 24-bit); touch screen; two-port 10/100 Ethernet switch; up to 4 SIP accounts; message waiting indicator; 3-way conferencing; mute; handsfree; phonebook up to 128 records; 4 navigation keys; standard/proprietary IP; optional DSS modules with 24 flexible keys (LCD or paper label)
	VP116	HD voice; 7" digital TFT-LCD, touch screen; 2M rotatable CMOS sensor camera; two-port 10/100 Ethernet switch; up to 4 SIP accounts; 3-way video conferencing; 18 one-touch soft DSS keys; door phone and IP camera application; Picture-in-Picture (PIP); message waiting indicator; phonebook with contact picture; wallpaper; 6 feature keys (mute, camera, phonebook, transfer, redial, handsfree); USB2.0 port; SD card slot

SOFTPHONE APPLICATION

	YT500	YT Series PC/laptop application for various communication requirements such as audio call, video conference, instant messaging and presence. Available in 3 versions with different feature sets: YT510 (audio call, 2 way audio conferencing), YT520 (audio & video call, 3 way audio & 2 way video conferencing), YT530 (audio & video call, 6 way audio & 4 way video conferencing)
	Karel Mobile	Softphone client for smartphones and tablets (available for Android and IOS). Turns your smart phone into a full-featured IP softphone of your PBX.

TERMINALS FOR KAREL IPG SERIES: IPG500 | IPG1000

Wi-Fi PHONE

ICW-1000G — SIP-based Wi-Fi phone, allows you to become an extension of Karel PBX and make calls over a wireless network with powerful specifications and features like long-lasting battery, polyphonic MIDI ring / vibration ringer, simultaneous bell & vibration effects, phonebook that supports up to 500 records with 30 groups, 99 speed dial, phonebook search during call, call mute, call hold, CID, CID blocking

IP DECT SYSTEMS

DB211 — IP DECT base station; SIP support, plug-and-play installation, PoE or local power supply, air synchronization, internal multi-directional antenna, maximum 1000 base stations and 10.000 handsets can be used.

DE242 — Handset for DB211; GAP-compliant, vibration, wideband audio quality, mute, navigation keys, phone-book for storing 250 entries, central phonebook support

DE243 — Handset for DB211; GAP-compliant, color display, vibration, wideband audio (G.722), mute, navigation keys, phonebook for storing 250 entries, water resistant (Ingress Protection: IP44), central phonebook support, messaging (optional)

DB260 — IP DECT base station; SIP support, plug-and-play installation, internal multi-directional antenna, air synchronization, 30 users can be registered in a base, maximum 40 base stations and 200 handsets can be used.

DR265 — Repeater for DB260; Extending the DECT coverage, worldwide DECT support, repeater to repeater registration (max. 3 repeaters in daisy chain), handling of 5 active narrow-band calls or 2 active wide-band calls simultaneously

DE255 — Handset for DB260; HD audio support (G.722), 1,44'' TFT display (128 x 128), polyphonic ringtones, central phonebook support (LDAP), local phonebook with 50 entries, firmware upgradable over-the-air, wideband speakerphone

DE260 — Handset for DB260; GAP and CAT-iq compliant, color display, vibration, wideband audio (G.722), polyphonic ringtones, headset connector (3.5mm), software update with air synchronization

GSM GATEWAY

GT40M — Provides simultaneous services from 4 different GSM operators with a single terminal, parallel ringing, echo canceller, noise suppression, call diversion, call barring, maximum 256 lines in a single system

TECHNICAL SPECIFICATIONS

SYSTEM CAPACITY

Independent Switching Units
IPG500: 224 TDM & 500 IP ports
IPG1000: 1056 TDM & 2000 IP ports (with three racks)

Total IPG Platform
32000 IP ports (Server)
32000 TDM ports (Combination of IPG500 and IPG1000 racks)

INTERFACE CARDS

Analog Extension Card (FSK Caller ID)
Analog Line Card (FSK or DTMF Caller ID)
Proprietary Digital Extension Card
Hybrid Card
E1 Line Card (PRI, R2 or QSIG)
E&M Line Card
MGW Card (for the interconnection of IP and TDM ports)
VRC Card (for auto attendant, voice mail and voice logger (call recording))
FOC Card (Fiber Optic Converter with 4 RJ-45 and 1 SC connectors)
FCT Card (GSM Interface Module for Karel GT40M GSM Gateways)
I/O Card (with 2 analog extension ports, alarm inputs, door opener, music source connector, paging port, RS232 port)

PROCESSOR

Stored program control (SPC)
Distributed processor architecture
High system reliability
Optional CPU redundancy (for IPG1000)

HARDWARE SPECIFICATIONS

Ethernet Interface: 10/100/1000 Base-TX
IP Protocols: H. 323 (for lines), SIP (for lines/extensions)
Analog Extension Interface: Caller ID, DP/DTMF signaling, 12 KHz metering pulse generation, polarity reversal, automatic gain adjustment, automatic line control
Analog Line Interface: Caller ID, DP/DTMF signaling, 12/16 KHz metering pulse & polarity reversal detection
E1 Interface: ETSI EN 300 402
PRI ISDN Interface: DSS1 (Q921 & Q931) - ETSI EN 300 403
R2 Digital Interface: DC Loop or Pulse signaling
E&M Interface: Types 1/ 2/3/4/5, 2-wire/4-wire audio connections, wink/immediate/delay start signaling, DP/DTMF number dialing.
USB: 2xUSB 2.0
Power: 48 VDC, max 350 Watt/rack
Connectors: RJ45 (Ethernet, Lines / Extensions), 623K4 (Relay/Music Source), RJ11 (RS232), Pin type-2 pin (External Devices)
Peripherals: Standard Telephones, Karel Feature Phones (FT20), Karel Digital Phones (ST26, ST30, NT30D, NT10D), Karel DSS Modules (DSS20-00,DSS20-28,DSS25-28,DSS3K-24,DSS3L-24), PC/Serial Printer, Alarm, Paging
CRL (Call Record Listing): PC Interface (LAN or PC), Serial Printer Interface

SOFTWARE SPECIFICATIONS

Servers: Embedded Proxy, Registrar, Presence & IM
Operating System: Linux Suse 12.2
CRL Capacity: 7.250.000 (for IPG1000) – 1.000.000 (for IPG500)

PHYSICAL SPECIFICATIONS

IPG500

3U chassis, 19" compatible or wall-mountable
268 (w) x 131 (h) x 387 (d) (mm)
483 (w) x 131 (h) x 387 (d) (mm) (including support brackets)
Weight: 7 kg

IPG1000 (per rack)

19'' 3U chassis
440 (w) x 132.5 (h) x 440 (d) (mm)
480 (w) x 132.5 (h) x 462 (d) (mm) (including power supply)
Weight: 10 kg

AMBIENT CONDITIONS

Temperature: -5°C to +40°C, Humidity: 20% to 80%

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www.karel-electronics.com