NEW GENERATION IP COMMUNICATION SYSTEMS

KAREL DS200 SERIES
DS200 SERIES NEW GENERATION IP COMMUNICATION SYSTEMS PROVIDE NEW GENERATION COMMUNICATION SOLUTIONS FOR MIDDLE- AND LARGE-SCALE ORGANIZATIONS AND/OR ORGANIZATIONS WITH A POTENTIAL OF GROWTH WITH A SINGLE OR MULTIPLE HEADQUARTERS SUCH AS OFFICES, HOTELS, HOSPITALS, BANKS, UNIVERSITIES, FACTORIES ETC.

DS200 SERIES IP COMMUNICATION SYSTEMS PROVIDE MANAGEMENT AND CONTROL OF AUDIO, VIDEO AND DATA TRAFFIC FROM A SINGLE SOURCE. IT INTEGRATES MANY PRODUCT FUNCTIONS SUCH AS PBX, IP PBX AND IP GATEWAY IN A SINGLE STRUCTURE. IT ALSO PROVIDES MOBILE COMMUNICATION SOLUTIONS, NETWORKING APPLICATIONS AND COMPUTER TO TELEPHONE INTEGRATION APPLICATIONS.

DS200 SERIES PBXs, OFFERED WITH 4 MODEL OPTIONS AS DS200M, DS200S, DS200 AND DS200L ON BASIS OF THEIR CAPACITIES, CAN BE CUSTOMIZED ACCORDING TO THE SPECIFIC COMMUNICATION REQUIREMENTS OF ORGANIZATIONS WITH VARIOUS SIZES.
DS200 series NEW GENERATION IP COMMUNICATION SYSTEMS PROVIDE MOBILITY IN BUSINESS LIFE.

IT FACILITATES THE ACCESS TO THE MOBILE EMPLOYEES OF THE ORGANIZATION.

FLEXIBLE CAPACITY AND PERIPHERAL OPTIONS

DS200 series IP communication systems provide the opportunity to create unified systems and to expand since multiple PBXs can be operated as a single unit.

DS200 series IP communication systems are based on Linux and designed with distributed processor architecture. Thus, the module-based operations are performed more quickly and safely. Optional redundant Central CPU and central power supply unit of the system maximizes the system safety.

FLEXIBILITY OF PERIPHERALS

DS200 series IP communication systems support analog, digital, SIP, proprietary IP terminals and new generation audio compression algorithms in extensions. Thus, they provide the flexibility to use different peripherals.

Peripherals that can be used with DS200 series IP communication systems:
- Standard and Karel SIP Phones
  Any IP phones and IP softphones that support SIP signalling protocol
- Video SIP Phones
- WiFi SIP Phones
  WiFi compliant phones that support SIP signalling protocol
- Karel IP phones
  IP phones that support Karel’s proprietary advanced extension features

IP APPLICATIONS

- Karel Digital Phones
  Digital phones that support Karel’s proprietary advanced extension features
- IP DECT System
  IP DECT base stations and IP DECT handsets that support SIP signalling protocol
- Other terminals with SIP support

IP COMMUNICATION APPLICATIONS

Thanks to the IP communication applications, extensions can communicate continuously with access units that can communicate over IP such as IP phones, IP softphones, WiFi phones or VoIP enabled smart phones etc. from any point and at any time.

REMOTE OFFICE APPLICATIONS

In businesses with multiple locations, any extension in a branch office can get connected to the exchange in the head office directly over internet with various IP terminals without any additional equipment. Extensions in different locations can call each other with their extension numbers. This provides convenience and economy in communications.

DS200 series IP communication systems operate interactively with other SIP and H.323 compliant devices (PBX, gateway etc.) and provide cost-effective and high quality communications over the data networks that are already available or that will be established in the future.
VIDEO CALL
All IP extensions connected to DS200 series PBXs can make video calls between themselves or through external IP lines using videophones, special sets or smart phones.

MOBILITY
DS200 series IP communication systems provide mobility in business life. They also facilitate the access to the mobile employees of the organization.

- IP DECT base stations provide wireless communication at every point of the coverage after being placed in proper locations where company data network or internet access is available.

- DS200 series IP communication systems support WiFi structure. WiFi phones with SIP support can be used for wireless communication without any additional investment by using “Access Points” connected to the data network.

Smart mobile phones with SIP support can use system features by subscribing to the exchange over WiFi or 3G.

DS200 series IP communication systems provide unified communications applications such as voice-over-IP, fax-over-IP*, conference call, video call, monitoring presence, instant messaging, mobil applications, remote extensions and remote office.

PRESENCE
Presence allows other extensions to see whether the extension is available, busy, online/offline and the special status that is set by the person himself/herself with a text entry. Thanks to the Presence feature, it becomes possible to access the relevant person with the quickest and most suitable method.

INSTANT MESSAGING
Extensions can communicate with each other instantly in written form with instant messaging feature; thus, the communication is performed very quickly and can be recorded.

NETWORKING
DS200 series IP communication systems can operate with SIP/H.323 IP external line interfaces or interfaces with ISDN QSIG support as a single communication system when more than one communication system shall be used together or in different locations. Thanks to the uniform numbering plan, extensions in different locations can call each other with their extension numbers. Frequently used PBX features such as caller ID, least cost routing, routing authorization, alternative routing, call forwarding and call transfer are supported in the network.
DS200 SERIES IP COMMUNICATION SYSTEMS CAN DIRECT THE CALLS TO THE ROUTE WITH THE LOWEST COST THANKS TO THE LEAST COST ROUTING FEATURE. THIS PROVIDES A GREAT SAVING IN THE COMMUNICATION COSTS THAT TAKES AN IMPORTANT PLACE IN THE OPERATIONAL COSTS.
CONFERENCE
DS200L and DS200 contained amongst the DS200 series IP communication systems, provide a conference for 32 users, and DS200S and DS200M provide a conference for 3 users simultaneously. This platform allows making conference calls with participants from remote locations and thus reduces the costs and time spent for meetings.

IP FAX SUPPORT
T.38 Fax-Over-IP support allows high-quality facsimile transmissions over the IP lines and eliminates the requirement of using PSTN lines.

ADVANCED CENTRAL PHONEBOOK
Users can enter information to the common memory on DS200 series IP communication systems. Access to common memory, which is available to all extensions, can be restricted on the basis of authorization levels. Users can easily search PBX phonebook and central phonebook using names and T9 algorithm from their special phone sets. Phonebooks can be uploaded to an external server thanks to this application that supports LDAP protocol. Thus, phone sets with LDAP support can use this feature. In this way, company’s phonebook can be directly used by the extensions thanks to the LDAP integration.

AUDIO QUALITY AND SECURITY
DS200 series IP communication systems have advanced audio algorithms. Thus, perfect audio quality is obtained with standard terminals with HD audio quality support and Karel HD terminals.

PBX has the capability to detect package losses caused by external conditions and to divert the communication to an alternative route (e.g. PSTN) until satisfactory quality is obtained in order to provide a stable audio quality. This ensures uninterrupted communication and stable audio quality in VoIP applications.

Alternative route definitions can be performed according to the connection or quality of service or both for VoIP external lines. If the same network infrastructure is used for both audio and data communication, QoS support provided by DS200 series IP communication systems ensures continuity of the audio quality by monitoring the performance on the network and taking necessary precautions. Standard SRTP/TLS encryption ensures high level of security in audio communications without the need for VPN installation. DS200 series IP communication systems, which allows management and control of audio, video and data traffic from a single source, provide safe, uninterrupted VoIP communication with high audio quality without the need for VPN connection.
DS200 series IP communication systems can be accessed remotely over an IP based network for management, programming or maintenance purposes. Thus, the workload of the technical service, time spent for the installations and the costs that occur accordingly are decreased.

**MULTI PBX PROGRAMMER**
Several systems at the same location or at different locations may be remotely managed and updated from a single point and over a single interface.

**AUTOMATIC BACK-UP MANAGER**
DS200 series IP communication systems can be backed up automatically from any location by specifying the start time.

**ALARM SOFTWARE**
Status of all DS200 series IP communication systems installed in the communication network can be monitored from a single point. Marking DS200 IP series IP communication systems on a map allows convenient monitoring of regional alarms. Warnings are displayed visually and audibly during the alarm and system manager is informed by e-mail and SMS.

**FIREWALL**
Firewall integrated to the PBX ensures safer IP communication. Packages other than the specified IPs, MAC addresses or ports may be blocked.

**SNMP (Simple Network Management Protocol)**
Internal SNMP application ensures management of multi-location systems from a single point and that many settings are performed rapidly with standard SNMP software without any need for special applications.

**MAINTENANCE**
Software on the central processor may be updated by different connection methods such as TFTP and SNMP.
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<thead>
<tr>
<th>PHONE SETS</th>
<th>NT10D</th>
<th>NT30D</th>
<th>ST30</th>
<th>ST28</th>
<th>FT20</th>
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## General Features

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### User Interface

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### Phone Features

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### Audio

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IP Phones:
**TECHNICAL SPECIFICATIONS**

**CAPACITY**
- DS200M: 144 TDM port, 750 IP extensions, 100 IP external lines
- DS200S: 224 TDM port, 750 IP extensions, 100 IP external lines
- DS200: 1344 TDM port, 750 IP extensions, 100 IP external lines
- DS200L: 32000 TDM port, 5000 IP extensions, 1000 IP external lines

**Analog Extension Boards:**
- EX200 (0/16C), Analog Extension Module for 16 extensions with Caller ID
- EX200 (0/16R), Analog Extension Module for 16 extensions with Caller ID, metering pulse generation, distant extension feeding, automatic testing

**Analog External Line Board:**
- EX200 (8+/0), Analog Line Module for 8 lines with optional Caller ID

**Digital Extension Boards:**
- EX200 (0/8KoU), Digital Extension Module for 8 proprietary digital phones
- EX200 (0/16KoU), Digital Extension Module for 16 proprietary digital phones

**LB Extension Board:**
- EX200 (0/8LB), Local Battery Extension Module for 8 local battery phones

**ISDN BRI Boards:**
- EX200 (0/8S0), ISDN BRI Extension Module for 8 ISDN-BRI extensions
- EX200 (8T0/0), ISDN BRI Line Module for 8 ISDN-BRI lines

**ISDN PRI/R2 External Line Boards:**
- EX200 (1S2/0), ISDN PRI Module for E1-PRI interface
- EX200 (1S2-R2/0), Combo E1 Module for either E1-PRI or E1-R2 interface

**E&M External Line Boards:**
- EX200 (4E&M/0), E&M Line Module for 4 E&M lines
- EX200 (8E&M/0), E&M Line Module for 8 E&M lines

**PLC External Line Board:**
- EX200 (4PLC/0), PLC Line Module for 4 Power Line Communication

**TWT External Line Board:**
- EX200 (4TWT/0), TWT Line Module for 4 Two Wire Trunk Lines

**PROCESSOR**
- Stored program control (SPC)
- Distributed processor architecture
- High system reliability
- Optional backup CPU (only for DS200 and DS200L)

**SWITCHING**
- IP/TDM/PCM

**EXTENSION INTERFACE**
- Analog extension interface
- Advanced features such as generating Caller ID information, generating charging signal, automatic gain adjustment, automatic line control, polarity reversal
- EURO ISDN compliant S0 interface
- Two-wire digital extension interface
- 40 VDC supply voltage for ISDN or digital extension lines IP/SIP user

**EXTERNAL LINE INTERFACES**
- Analog external line interface
- Advanced features such as DP/DTMF signalling, detecting Caller ID information, detecting 12/16 KHz charging signal, polarity reversal detection
- EURO ISDN compliant T0 interface
- EURO ISDN compliant S2 interface
- IP/VoIP Ethernet interface (H.323, SIP)
- E&M
- TWT
- E1-R2

**OTHER INTERFACES**
- PC (Ethernet, RS232), 2 external relays, external music interface

**AMBIENT CONDITIONS**
- 5 to 40 °C temperature, 10% to 80% humidity

* Please contact our sales department for detailed information about these features.

** Karel’s right to make changes on the features specified in this booklet is reserved. 
USER FEATURES

EXTENSION SERVICES

→ Presence
→ Instant messaging
→ Defining same number for multiple phones
→ Integrated digital FCT
→ GSM integration with Bluetooth
→ Calling with customer code
→ Automatic calling
→ Music on hold
→ Busy queuing
→ Call back option
→ Call hold and obtaining information
→ Call parking and returning to a parked call
→ Call hunting
→ Call transfer
→ Executive-Secretary feature
→ Conference
→ Conference Room
→ Do not disturb
→ Door relay activation
→ Call forwarding
→ Remote call forwarding
→ Extension with headphone
→ Emergency line
→ Intervention
→ Automatic or manual external line selection
→ Redialing last number
→ Putting through external lines
→ Dropping an external line
→ External line marked access
→ Parallel ringing
→ Phone lock
→ Reminder and wake-up service
→ Serial calling
→ Volume setting
→ Night guard code

CALL RECORD SERVICES

→ Detailed call record list for extensions and groups
→ Call reporting
→ Credit signal detection
→ Polarity reversal switching detection
→ Entering the credit price
→ Rate tables
→ Automatic e-mailing of call records

SYSTEM SERVICES

→ Backup CPU
→ Backup Power Supply
→ Remote access via IP network or modem
→ Alarm software with automatic e-mailing support
→ Firewall
→ T38 Fax over IP support*
→ Scheduled backup
→ Automatic external line holding
→ Automatic system check
→ Extension authorization levels
→ Call restriction
→ External line call duration
→ Serial call transfer
→ Equal load distribution for external lines
→ Direct access to an extension
→ Different ring cadences
→ Equal load distribution for the operator
→ Intervention authorization control
→ External call forwarding
→ Flexible numbering
→ Automatic least cost routing (LCR)
→ External line access groups
→ Automatic external line control
→ Music on hold
→ Night service
→ Extension groups
→ Remote programming
→ Selective line transfer to extension
→ External line and extension connection in power failures
→ System query
→ Assigning a system administrator
→ Tone and pulse assignment option
→ Network applications
→ Adjustable tone cadences
→ Adjustable flashing time
→ QSIG support
→ IP CCTV integration support
→ SNMP compatibility
→ LDAP - Central phonebook support
→ Mobile smart call back
→ IP voice encryption

ISDN SERVICES

→ Charging:
  → Start of call (AOC-S)
  → During call (AOC-O)
  → End of call (AOC-E)
→ Calling line identification presentation (CLIP)
→ Calling line identification restriction (CLIR)
→ Connected line identification presentation (COLP)
→ Connected line identification restriction (COLR)
→ Call forwarding (CFU, CFB, CFNR)
→ Call waiting (CW)
→ Completion of calls to busy subscriber (CCBS)
→ Direct dial-in (DDI)
→ Call hold (CH)
→ Multiple subscriber numbering (MSN)
→ Terminal portability (TP)
→ Sending and receiving messages (UUS)
→ Three party conference
→ Point-to-point connection
→ Point-to-multi-point connection

Some services may not be used in IP extensions and IP external lines.
IP SOFTPHONES PROVIDE SOLUTIONS TO YOUR VARIOUS COMMUNICATION REQUIREMENTS SUCH AS VOICE CALL, VIDEO CONFERENCE, INSTANT MESSAGING AND PRESENCE FROM EVERYWHERE A NETWORK OR AN INTERNET ACCESS EXISTS.
## SOFTPHONE

<table>
<thead>
<tr>
<th>Feature</th>
<th>YT510</th>
<th>YT520</th>
<th>YT530</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voice Call</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Video Call</td>
<td>-</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Status Monitoring</td>
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### GENERAL FEATURES

<table>
<thead>
<tr>
<th>Feature</th>
<th>YT510</th>
<th>YT520</th>
<th>YT530</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Active Accounts</td>
<td>2</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Number of Call Channels</td>
<td>2</td>
<td>3</td>
<td>6</td>
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<tr>
<td>Audio Codecs</td>
<td>G.729, G.711u/a</td>
<td>G.729, G.711u/a, G.722, iLBC, EG711a, EG711u, ISAC, IPCMWB</td>
<td>G.729, G.711u/a, G.722, iLBC, EG711a, EG711u, ISAC, IPCMWB</td>
</tr>
<tr>
<td>SIP Compatibility</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Audio and Video Prioritization</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>with QoS</td>
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</tr>
<tr>
<td>Encryption (TLS-SRTP)</td>
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</tr>
<tr>
<td>USB Plug-and-Play</td>
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<tr>
<td>Internal Phonebook</td>
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<tr>
<td>Microsoft Outlook Integration</td>
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</tr>
<tr>
<td>Number of Video Conference Channels</td>
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<tr>
<td>Video Codecs</td>
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<td>•</td>
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<tr>
<td>Voice Call Record</td>
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<tr>
<td>Audio Conference Channel Capacity</td>
<td>2</td>
<td>3</td>
<td>6</td>
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</table>

### MINIMUM REQUIREMENTS

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
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<tbody>
<tr>
<td>Minimum RAM Requirement</td>
<td>512 MB.</td>
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<tr>
<td>Minimum Harddrive Space</td>
<td>100 MB.</td>
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<tr>
<td>CD-ROM Drive</td>
<td>Required</td>
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<tr>
<td>IP Network Connection</td>
<td>Broadband, LAN, Wireless</td>
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<tr>
<td>Sound Board Specifications</td>
<td>Full-Dublex, 16 bit</td>
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