



**KAREL**

ECONOMIC IP COMMUNICATION SYSTEM

KAREL MS48C



MS48C IS BUILT TO HAVE A MODULAR  
STRUCTURE AND DIFFERENT CAPACITY  
OPTIONS. THANKS TO ITS ADVANCED  
FEATURES, IT PROVIDES EFFECTIVE, OPTIMUM,  
CONVENIENT AND PRACTICAL SOLUTIONS FOR  
THE CHANGING COMMUNICATION  
REQUIREMENTS OF THE BUSINESS WORLD.

## CAPACITY OPTIONS

MS48C has analog capacity options up to 12 external lines and 40 extensions, and IP capacity options up to 12 external lines and 24 extensions.

## FEATURES

- Capability to use the work phone as an extension to the PBX from anywhere with an internet connection at any time
- Video call
- Multimedia communication
- Economy and efficiency in communication
- Single number plan for multiple MS48Cs
- Mobile communication with IP phones, softphones, VoIP enabled mobile phones
- Presence, instant messaging support
- Caller identification (Caller ID) for all extensions
- Sending and receiving text messages (SMS) from landlines to all compatible phones
- Over 100 programmable usage features
- Low cost communication with least cost routing (LCR)
- Capability to use with SIP phones, proprietary phone sets and standard phones
- Automatic fax forwarding
- Door opening relay and diaphone connection
- Battery connection
- Detection of polarity reversal and charging signal
- Convenience of remote programming for service and maintenance operations

MS48C IS OFFERED WITH VALUE ADDING PERIPHERAL OPTIONS. MS48C MEETS THE CUSTOMER'S SPECIFIC REQUIREMENTS , VARIOUS DEMANDS AND NEEDS WHEN SUITABLE PERIPHERALS ARE USED.

## PERIPHERALS THAT CAN BE USED WITH MS48C

### AESTHETIC EQUIPMENT THAT PROVIDE CONVENIENT COMMUNICATION

#### OPERATOR/PROPRIETARY PHONE SETS

Accessing the PBX features with a single button. Functional, ergonomic and aesthetic phone sets that provide quick and convenient operation.

Quick and convenient usage of PBX features with proprietary sets designed for operators and/or users.

#### UNITS FOR DIRECT ACCESS TO EXTENSION

Phone units that allow monitoring of external lines and extensions; convenient and quick access to PBX features.

#### STANDARD AND CID PHONES

Standard and caller ID phones for users.

#### IP PHONES

IP phones that can be used over IP infrastructure.

#### PHONES WITH SMS FEATURE

Standard and caller ID phones that can send and receive SMS (text messages).

#### OPERATOR HEADSETS

Ergonomic and aesthetic operator headsets that allow making phone calls without keeping the hands busy. Capability to work with the phone and computer at the same time.

### SOLUTIONS THAT PROVIDE ECONOMY

#### GSM TERMINALS

Terminals that act as a bridge between the PBX and GSM network to ensure that calls made from phones connected to the PBX in the company to the mobile phones are charged with cheaper GSM call rates.

#### VOIP GATEWAY

High technology solutions that lower the communication costs of the companies by providing audio and fax communication over IP network.

#### OTHER INTERFACES

These interfaces allow connection of the PBX to external devices such as printers, computers, radios, CD players etc. External music connection with RS232

### MOBILITY IN THE OFFICE

#### IP DECT

Flexible and high performance solutions that use the secure DECT standard and VoIP technology together for the businesses with growing wireless communication requirements.

## MS48C

analog capacity options up to  
12 external lines / 40  
extensions,

IP capacity options up to 12  
external lines / 24 extensions



## COMPUTER TELEPHONY INTEGRATION (CTI) SOFTWARE

- **Net-CM:** This software allows recording of traffic information of calls made over the PBXs and performing of cost effectiveness analysis in the computer;
- **Net-Console:** This CTI (computer to telephony integration) software integrates two devices that PBX users use in office environment (telephones and computers) and allows control of audio communication over computers.
- **GT SMS Server:** This Windows based server software communicates with Karel GSM Gateway (FCT) products and allows sending SMS from the computers on the network that the PC running this software is connected to, and receiving incoming SMS and operator broadcast messages.

## AUTOMATIC CALL FORWARDING SYSTEM

### AUTO ATTENDANT AND VOICEMAIL BOX (EVM):

2 channels attendant and voicemail exchange that receives the incoming calls automatically without keeping the operator busy. Routing system that allows the caller to connect to any extension by dialling in, and leave messages using the message module.

## OTHER ADDITIONAL OPERATIONAL AND SECURITY ACCESSORIES

- **DY01 Diaphone:** This unit allows the connection between the PBX and entrance door of the workplace. Operator welcomes the visitor by audio call, opens the entrance door automatically by dialing the relevant code from the phone and thus secure entrance is ensured.
- **USB-RS232 Serial Port:** It is used for connection from USB port to the serial port in PCs/notebook computers with no serial ports or lacking adequate number of serial ports. Net-Console, Net-CM, Idea, Iris Explorer, GT system manager applications operate seamlessly with USB-RS232 converter.
- **RLO4:** 4x External Relay. Provides control of 4 different points (door, device etc) connected to the PBX.

# TECHNICAL SPECIFICATIONS

## PROCESSOR

Stored program control (SPC)

## SWITCHING

CMOS Crosspoint Switch

## EXTENSION CONNECTION

DP/DTMF phones, special set connectivity

## EXTERNAL LINE CONNECTION

DP/DTMF signalling, 12/16 kHz charging signal detection, polarity reversal detection

## OTHER INTERFACES

RS232 serial port

## AMBIENT CONDITIONS

0 to 45 C° temperature, 20% to 80% uncondensed humidity



## OPERATION FEATURES

### MS48C

SIP extension and external line support	•
High audio quality in IP calls	•
G.711, G.729 A/B, G.723.1, G.726/G.727 codec support	•
Video call support	•
T.38 fax-over-IP support	•
RTP/RTCP	•
RFC 2833, SIP INFO and in-band DTMF detection, generation	•
Dynamic jitter buffer	•
Packet loss compensation	•
Automatic gain adjustment	•
Silence detection	•
Echo canceller	•
Caller identification (CID)	•
Short message service (SMS)	•
Emergency line	•
Intervention	•
Music on hold	•
Call transfer	•
Call forwarding (external line/extension)	•
External line to external line connection	•
Automatic external line answering	•
External line authorization restriction	•
Diaphone	•
Direct line	•
Direct access to an extension	•
Direct dialing-in in power cut-offs	•
Flexible night service	•
Facsimile forwarding	•
Delayed emergency line	•
Real rate charging	•
External music input	•
Reminding service	•
Extension/external line grouping	•
Door opening	•
Conference	•
Warning to busy extension	•
Common and individual memory	•
Automatic calling	•
Automatic external line control	•
Programmable external line call time	•
Do not disturb	•
Line selection	•
Serial transfer	•
Queuing (extension/external line)	•
Redial	•
Encrypted locking	•
Remote programming	•

## ACCESSORIES COMPATIBLE WITH THE MODELS

### MS48C

FT10	•
FT15	•
OP48S	•
OP50	•
DSS10-00	•
DSS10-16	•
DSS10-28	•
NT32I	•
NT42I	•
NT62I	•
IP111	•
IP112	•
IP116	•
IP118	•
YT500	•
Fulya	•
Ladin	•
TM120	•
BT104	•
TM211	•
TM900	•
TM910	•
FM210	•
GLA101	•
GLS201	•
GLS300	•
GLA200	•
NetCM+Net Console	•
EVM48S	•
GT10M-P	•
DB210	•

## PHONE SETS

	OP48S	OP50	FT10	FT15
Displaying CID Information	•	•	•	•
Displaying Names of Callers Recorded in the Phonebook	-	•	•	•
Handsfree	-	•	•	•
Display	7 columns x 10 rows LED	8 rows, 60mmx93mm	2 or 4 rows x 20 characters	4 rows x 20 characters
Display Illumination	-	•	-	•
Monitoring of Extensions and External Lines from Display	•	•	-	-
Monitoring of Services and Features from the Display	•	•	•	•
Detailed Instant Monitoring of Services and Features from the Display	•	•	-	-
Number of Phonebook Records	-	60	100	100
Call List - Answered - Missed Call List	-	•	•	•
Displaying Error Messages	•	•	•	•
Soft Keys on the Display	-	-	•	•
Navigation Key Structure	-	•	-	•
Programmable Illuminated Keys with DSS feature	-	12	16	12
Connectivity for Additional DSS	-	-	DSS10-16/DSS10-28	-
Function Keys	Flash, transfer, auto, h/r, redial, message	Phonebook, redial, flash, transfer, park	Phonebook, redial, flash, transfer, park	Phonebook, redial, flash, transfer, park
Volume control keys	-	Speaker/handsfree volume up and down, mute button	Speaker/handsfree volume up and down, mute button	Speaker/handsfree volume up and down, mute button
Ringing Warning Light	-	•	-	•
Operator Headset Input	-	•	•	•
Adjustable Display Angle	-	•	-	•



OP48S



OP50



FT10



FT15



# IP PHONES

IP111      IP112      IP116      IP118      NT32I      NT42I      NT62I

## GENERAL FEATURES

Display Type	3 rows LCD (2 rows x 15 characters + 1 icon row)	132X64 gray toned (4 levels) LCD	320x160 gray toned (4 levels) LCD	4.3" TFT-LCD, 16.7 M Colors	160X100 gray toned (4 levels) LCD	480X272 24 Bit Color touchscreen TFT display	480X272 24 Bit Color touchscreen TFT display
Ethernet Port	2x (LAN/WAN)	2x (LAN/WAN)	2x (LAN/WAN)	2x Gbit (LAN/WAN)	2x (LAN/WAN)	2x (LAN/WAN)	2x (LAN/WAN)
PoE	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Operator Headset Connectivity	•	•	•	•	•	•	•
DSS Module Addition	-	-	•	•	•	•	-
Bluetooth	-	-	-	-	Optional	Optional	Optional
PSTN Output	-	-	-	-	-	-	Optional

## USER INTERFACE

Color Display	-	-	-	•	-	•	•
Touchscreen Display	-	-	-	-	-	•	•
Display Illumination	•	•	•	•	•	•	•
Volume Control Keys	•	•	•	•	•	•	•
Integrated DSS Keys	-	-	10	10	6	-	-
Message Warning Light	•	•	•	•	•	•	•

## PHONE FEATURES

Protocol	SIP v1, SIP v2	SIP v1, SIP v2	SIP v1, SIP v2	SIP v1, SIP v2	SIP v1, SIP v2	SIP v1, SIP v2	SIP v2.0 (RFC3261)
SIP Accounts	2	3	6	6	3	3	10
Handsfree	Full Duplex	Full Duplex	Full Duplex	Full Duplex	Full Duplex	Full Duplex	Full Duplex
Phonebook Capacity	300	300	300	1000	128	128	128
Export/Import Phonebook	•	•	•	•	•	•	•
Black List	•	•	•	•	-	•	-
Installing Additional Ring Tones	•	•	•	•	•	•	•
Installing Logo to the LCD	•	•	•	•	•	•	•
Automatic Update	•	•	•	•	•	•	•
WAN Static IP/DHCP/PPPoE	•	•	•	•	Static IP/DHCP	Static IP/DHCP	Static IP/DHCP
TLS, SIPS, SRTP	•	•	•	•	-	-	-
Web Interface	HTTP/HTTPS	HTTP/HTTPS	HTTP/HTTPS	HTTP/HTTPS	HTTP	HTTP	HTTP
xML Phonebook (Central Phonebook)	-	•	•	•	-	-	-
BLA/BLF, Voicemail, SMS	Voicemail	BLF, Voicemail, SMS	BLA/BLF, Voicemail, SMS	BLA/BLF, Voicemail, SMS	BLF, Voicemail	BLF, Voicemail	BLF, Voicemail
Hotdesking	-	•	•	•	-	-	-
Proprietary Features	-	-	-	-	•	•	•

## AUDIO

HD Audio Quality	•	•	•	•	•	•	•
Codecs	G.722, G.711A, G.711U, G723, G729AB, ILBC	G.722, G.711A, G.711U, G723, G729AB, ILBC	G.722, G.711A, G.711U, G723, G729AB, ILBC	G.722, G.711A, G.711U, G723, G729AB, ILBC	G.722, G.711A, G.711U, G723, G729AB	G.711, G.723, G.726, G729, G722.2, ILBC, G.722	G.711, G.723, G.726, G729, ILBC, G722, SPEEX
QoS	802.1p/Q, TOS/DSCP	802.1p/Q, TOS/DSCP	802.1p/Q, TOS/DSCP	802.1p/Q, TOS/DSCP	802.1p/Q, TOS/DSCP	802.1p/Q, TOS/DSCP	802.1p/Q, TOS/DSCP

## VIDEO

Camera Head	-	-	-	-	-	-	Moveable Camera Head
Video Camera Features	-	-	-	-	-	-	Adjustable 300K pixel CMOS
Analog Video Output	-	-	-	-	-	-	•
Video Codecs	-	-	-	-	-	-	H.263, H.263+, H.264
Color Alternatives	Black	Black	Black	Black	Black / White	Black / White	Black / White



IP111



IP112



IP116



IP118



NT32I



NT42I



NT62I

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

YT510

YT520

YT530

Voice Call

•

•

•

Video Call

-

•

•

Status Monitoring

•

•

•

## GENERAL FEATURES

Number of Active Accounts

2

10

10

Number of Call Channels

2

3

6

Audio Codecs

G.729, G.711u/a

G.729, G.711u/a, G.722, iLBC,  
EG711a, EG711u, ISAC,  
IPCMWB

G.729, G.711u/a, G.722, iLBC,  
EG711a, EG711u, ISAC,  
IPCMWB

SIP Compatibility

•

•

•

Audio and Video Prioritization with QoS

•

•

•

Encryption (TLS-SRTP)

-

•

•

USB Plug-and-Play

•

•

•

Internal Phonebook

•

•

•

Microsoft Outlook Integration

•

•

•

Number of Video Conference Channels

0

2

4

Video Codecs

-

H263-1998, H263, LSVX, H264

H263-1998, H263, LSVX, H264

Voice Call Record

•

•

•

Audio Conference Channel Capacity

2

3

6

## MINIMUM REQUIREMENTS

Operating Systems

Windows Vista Business, Windows 7 Enterprise, Windows XP Professional, Windows Server 2008 R2 Enterprise, Windows Server 2003 Enterprise

Minimum RAM Requirement

512 MB.

Minimum Harddrive Space

100 MB.

CD-ROM Drive

Required

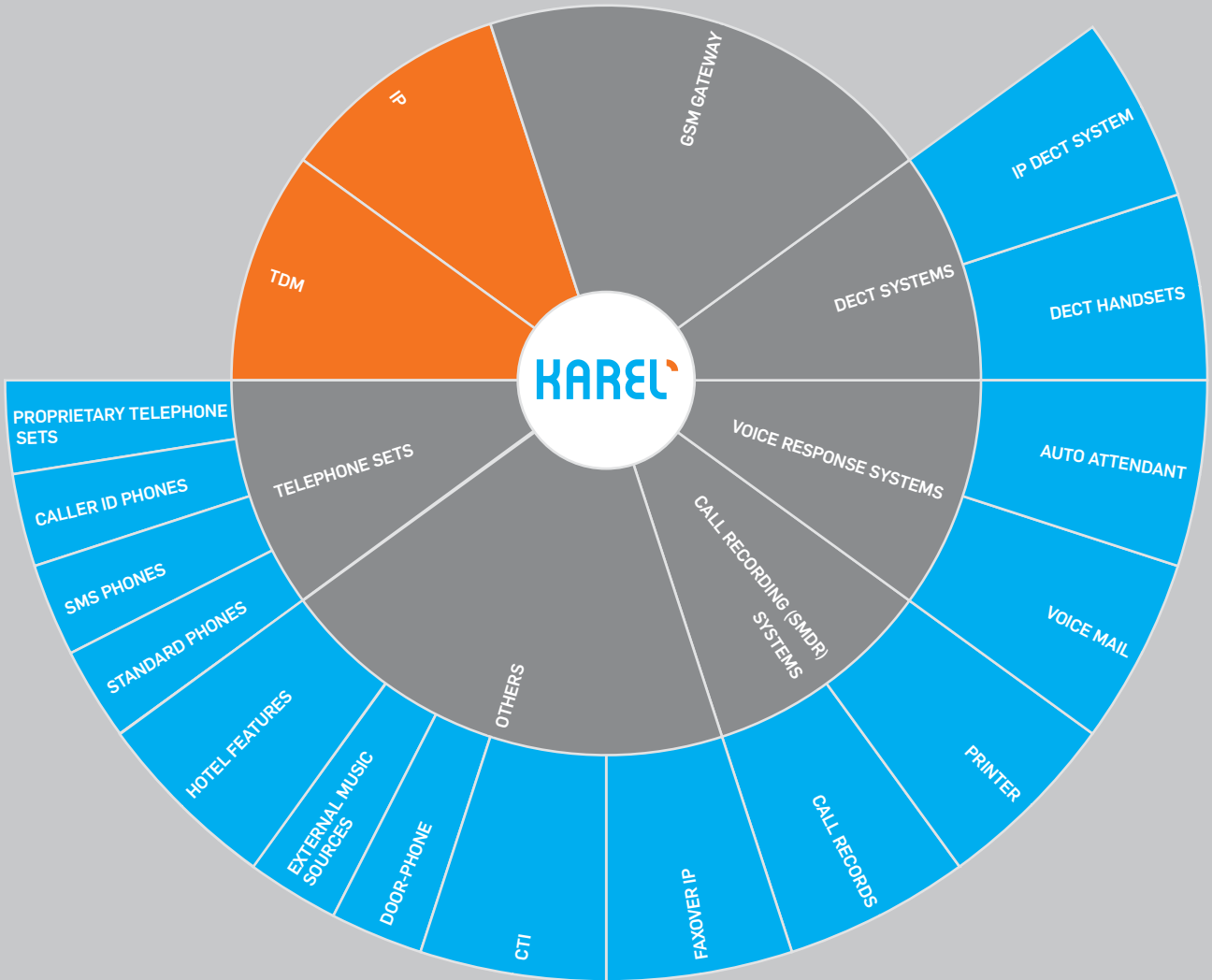
IP Network Connection

Broadband, LAN, Wireless

Sound Board Specifications

Full-Duplex, 16 bit





**KAREL**

