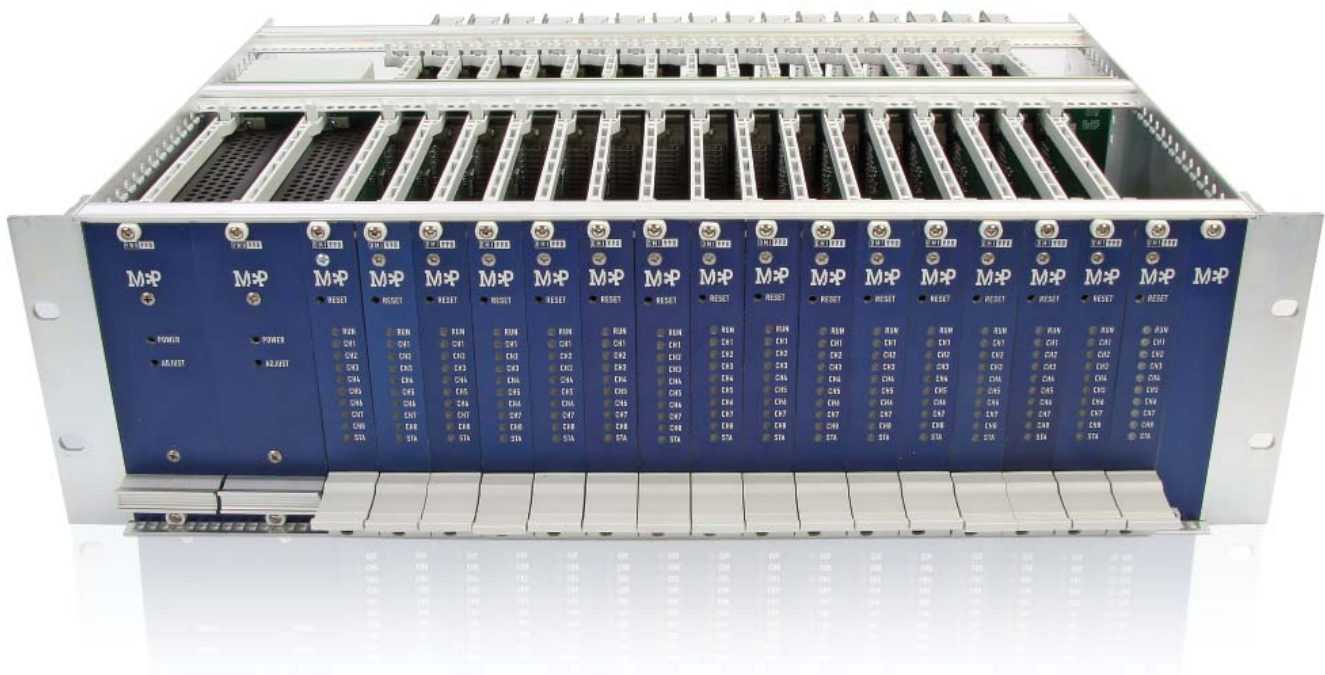


# ..... TCS 990

## Gateway to Communications



*The TCS990 is a fully digital switch specially designed to meet the needs of operators working around the clock in mission-critical situations. This is our third generation of voice switch. Its design is based on twenty years of experience in building voice switches. The switch supports external IP networks, (legacy)-telecom networks, remote line interfaces and a variety of operator panels. A powerful CMS tool enables the configuration and maintenance of the system. State of the art technology has allowed us to create a voice switch with the following properties.*

# ..... TCS 990

## Gateway to Communications

### Economics

By using innovative technology MEP has created the most cost effective voice switch on the market today. The switch is easily expandable without high costs. Making your investment a solid one for the future.

### Reliable

Built-in redundancy, low power consumption, high integration, low failure rates and reliable backup facilities, make it a highly available system.

### Versatile

The system is designed to facilitate all kinds of PMR applications like: maritime, air-traffic, public safety and land mobile. These applications are built with the same components and firmware. Distributed processing makes it easy to customize.

### Scalable

Small to large scale systems can be built with the same system components. Small systems start with only two system cards. By combining more system cards and racks together, systems with more than 500 connections are possible.

### Flexible

All configuration and parameterization are carried out with the use of our versatile Control & Monitoring tool. A wide range of plug-in modules support different kinds of interface and network connections.

### Technology

The TCS 990 is a full digital switch built with the most advanced components and techniques. The redundant system bus transports voice and data. With the use of Field Programmable Gate Arrays and high performance Digital Signal Processors, this single platform can handle all signaling, coding and telecom protocols.

### Non blocking

Every audio output can be simultaneously connected to all inputs. The summed signal is processed by a numerical limiter to provide a conditioned output. The number of summed voice channels has no influence on the performance of the switch.



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## Temperature

All components used are of an industrial grade. The switch can handle an extended temperature range from -20° to +70°C.

## Remote

For remote radios there are two different units that connect the radio to the switch. The CLI990 is a single euro-card and connects to one radio. The CVS990 is a 1U high 19" rack and can connect up to 16 radios. Radios with a data connection can be remotely monitored and controlled.

## Panels

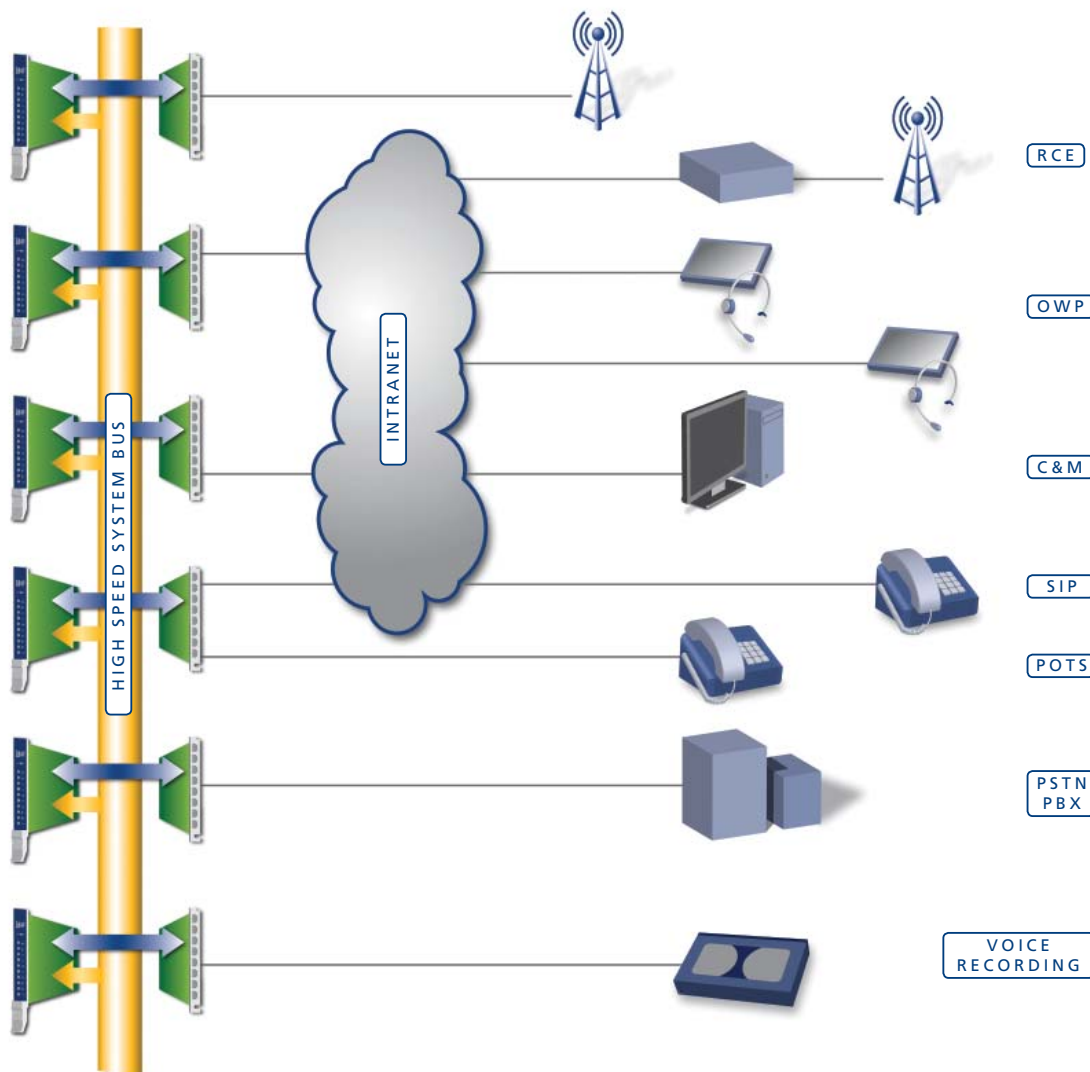
There are a wide variety of control panels. Ranging from a simple 4 channel table top unit to 5,7", 12" and 15" touch screen panels working position. The touch screen panels supports both radio and telephony.

## Service

The system is easy to service and maintenance-free. With the help of built-in test facilities, failures can be found quickly. The system cards are hot-swappable to allow a non interrupted operation during servicing. A VPN connection and SNMP trap make it possible to service the switch on a remote site. All system parts are field-upgradeable, making it possible to add new features without replacing a single unit.

## CMS

The TCS990 is controlled and monitored by the CMS system. With the CMS all system interfaces and functions can be initialized or edited. All system events, operator and service actions are logged. The CMS system is a thin client server application. Multiple access is possible with standard web browsers. Graphical screens with different kinds of symbols and colors will give you a quick overview of the system status.



# Gateway to communication

### Specifications:

Power supply:	230VAC/100VA or 12 DC/6A
Power consumption:	less than 1 W per channel.
Dimensions:	19" x 3U x 15"
Nr. of slots:	16 cards and 2 power supplies in every rack.
EMC:	EN55022, EN55024
Safety:	EN60950
Temperature range:	-20°/+70°C
Humidity:	5% to 90% non condensing.

### Interfaces and modules:

DMI 990:	Digital Matrix Interface (processor board)
LLI 990:	4 circuits 2/4 wire (M1040), E&M+4 digital ports
LBI 990:	4 circuits LB ring in/ ring out+E&M
ETM 990:	IEEE 802.3 (100 Base T Ethernet)
SDM 990:	X.21 or RS 422/RS 485
MDM 990:	isolated dual RS485
ADM 990:	RS 232.
DAM 990:	FXS (PSTN/PABX)
SCM 990:	FXO (POTS)
CDM 990:	64 kBit/s G.703
BSM 990:	4 best signal selection circuits
GPM 990:	GPS receiver for time synchronization and simulcast over IP
BRM 990:	ISDN 2B+D
PRM 990:	ISDN 30+D (E1)

### Radio functions:

- Receive and transmit (with indication)
- Monitor
- Add/remove channels
- Cross coupling
- Best signal selection (with SS indication)
- Multicast (COOC)
- Retransmission (with indication)
- Main/standby selection
- Automatic radio backup switching
- Remote control of radio functions
- Selcall
- DSC (coastal stations)
- NAVTEX
- ATIS decoding/suppressing (maritime)
- Last call recording
- External voice logger
- ZVEI decoder/encoder

### Operator functions

- Log on/off with name and password
- Adjust audio profile
- Selection of headset
- Selection of handset
- Volume adjust
- Control of radio's (work/monitor/off)
- Playback calls
- System status indication
- Role based sets
- Selection of information pages
- Editing personal phone book
- Phone functions
- Radio functions
- cross coupling
- active/backup switching of radios

### Phone functions:

- Answer call
- Call queue
- Hold
- Call transfer
- Group call
- Group hunt
- priority call
- Instantaneously access
- Direct access keys
- Manual dial
- Short dial
- Last number redial
- Call forwarding
- Conference calls
- Merge calls
- Mute
- Phone to radio connect
- Common and personal phone book
- Caller ID

### Control & Monitoring functions

- Configuration of connections
- Configuration of radio features
- Configuration of IP addresses
- Configuration of SNMP traps
- Up/down load data bases
- Overview system errors
- Graphical overview with symbols/colors
- Configure roles/presets
- Start system tests
- Start radio tests
- Monitor internal connections
- Inspect action logging
- Change names and access rights

### Supported protocols:

TCP/IP, SIP, RTP, XML SOAP, CSTA, DSS1, MFC R2/No5, QSIG, DTMF, ZVEI, V23, G.711 A-law, DSC, ATIS, AIS and NAVTEX.