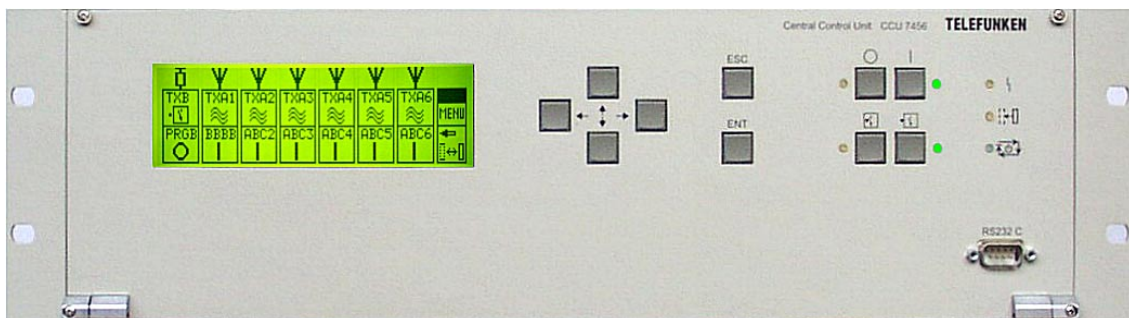




Central Control Unit CCU 7456 (n+1)





The Central Control Unit CCU 7456 (n+1)

The central control unit CCU 7456 (n+1) operates and controls a transmitter system consisting of up to 6 service transmitters and one reserve transmitter. A passive n+1 reserve system is realised by monitoring the service transmitter and implementing an auto switchover function.

The failure of a service transmitter results in an automatic switchover to the reserve transmitter. The switchover criteria, the time between RF indication and switchover as well as the priority of the service transmitter are freely selectable.

All program specific settings of the service transmitter are taken over by the reserve transmitter when a changeover takes place. Furthermore, a manual switchover as well as operation of the individual transmitter through the central control unit are possible. During the switchover procedure, the central control unit also controls the external RF switch for the modulation-and RF signals and the signal for the carrier blocking loop.

The central control unit is accommodated in a 19" EURO-cassette rack of 3-U height and is equipped with various assemblies depending on the model.

The individual assemblies are in the form EURO cards inserted in the back of the cassette rack. All operating and display elements are arranged on the hinged front panel. The set operating values are read from the graphic display. All connections to the components of a transmitter system are located at the back of the unit.

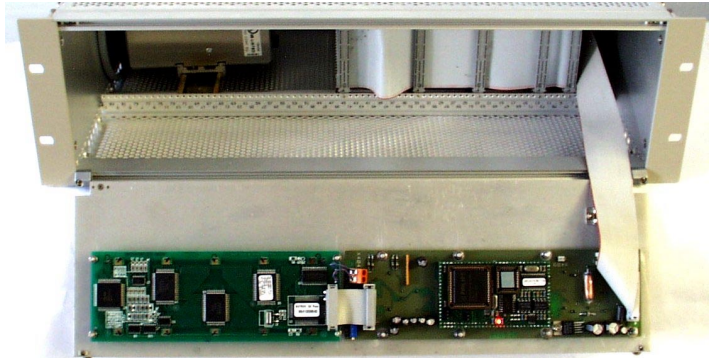
The commands and indications are in compliance with the specification of the Deutsche Telekom AG and of the ARD (Association of German Broadcasters).

Features of the Central Control Unit CCU 7456 (n+1):

- simple and clear operation via a menu system
- front panel LEDs give a fast visual indication of the operating status of the CCU
- up to 6 service transmitters and 1 reserve transmitter may be connected
- remote control via RS 232C, contacts or BITBUS
- transmitters connected via CAN-Bus or RS 232C
- voltage supply and control of the RF-2- way switch through the CCU
- voltage supply and control of the dummy load cooling through the CCU
- all settings are stored in a non-volatile EEPROM
- small mechanical dimensions:
 - width: 483 mm
 - height: 132 mm
 - depth: 350 mm

Sub-Units in the Central Control Unit CCU 7456 TRAM

Control Panel

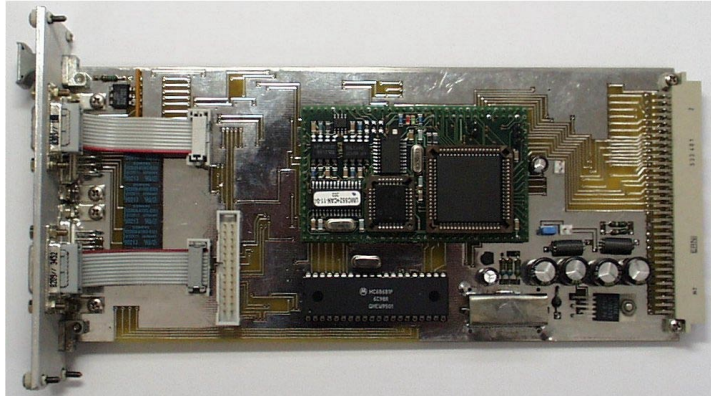


Front panel (tilted open)

The sub-unit fitted on the back of the front panel accommodates the LC-graphic display, as well as a plug-in micro controller module for the menu control at the LC-graphic display, the buttons ON/OFF, LOCAL/REMOTE and the status LEDs.

The front panel of the CCU 7456 (n+1) is fitted with a series /RS-232 service interface.

Control Processor Board



The control processor is essentially based on the mini-controller module, that together with several interface devices takes over the complete control of the CCU as well as its integration in a transmitter system.

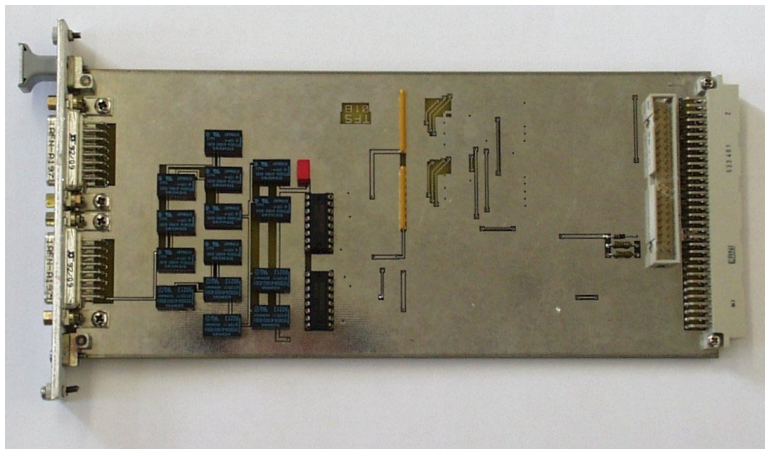
Three RS-232 interfaces are realized utilizing DUART circuits and transceiver devices, one of which handles data traffic between the control processor and the control board. The other two RS-232 interfaces are reserved for remote control and service purposes.

The interface ports are located at the back of the CCU and the front plate of the unit.

Furthermore, two parallel ports formed by multiplex circuits and relays are available for the connection of simple contact control equipment. One of these parallel ports is used for the switch-on control of the dummy load cooling. A CAN-bus port is mounted directly on the mini-controller module.

Communication with other assemblies in the CCU takes place through a serial data and various control and indication lines.

Parallel Interface 1

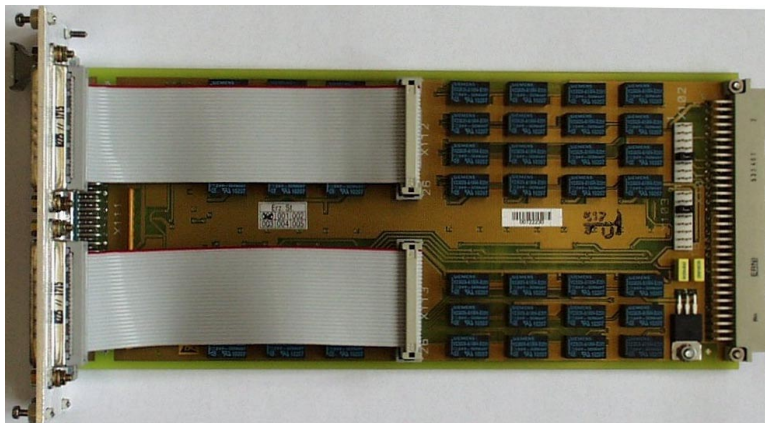


This parallel Interface 1 serves to control the RF switches which switch the RF-and modulation lines as well as the carrier blocking loop of the individual transmitter during a transmitter switchover procedure.

The commands from the control processor are passed as a serial data stream via the internal bus and finally routed via demultiplexers and relays to the RF switches. Return indications from the RF switches are converted to serial data signals by shift registers and read by the control processor.

It provides 14 relays outputs and 14 command inputs,

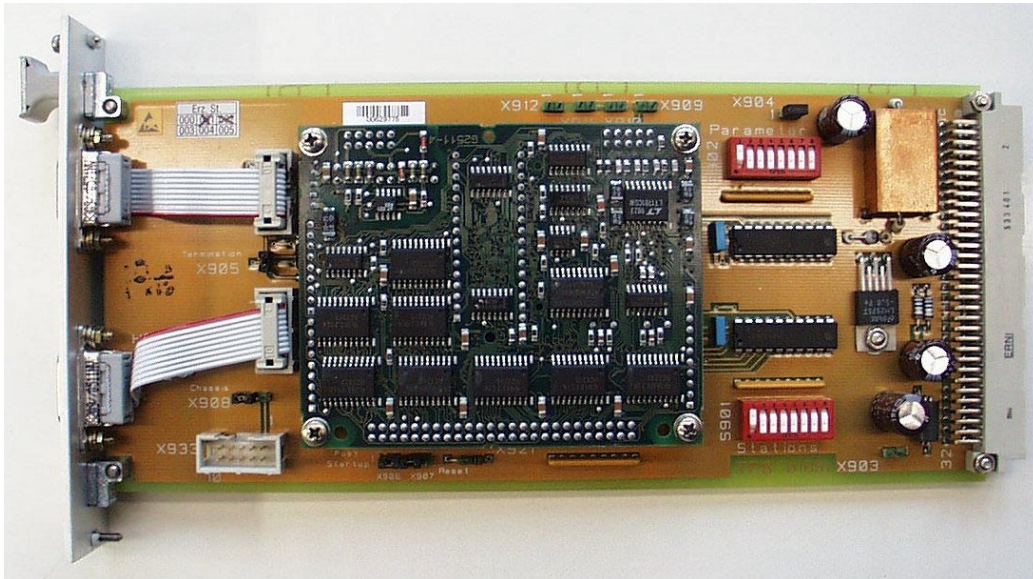
Parallel Interface 2



The optional parallel interface 2 serves to connect the CCU to remote control equipment with parallel contacts. It provides 48 relays outputs and 24 command inputs, whereby indications and commands are routed via separate plugs.

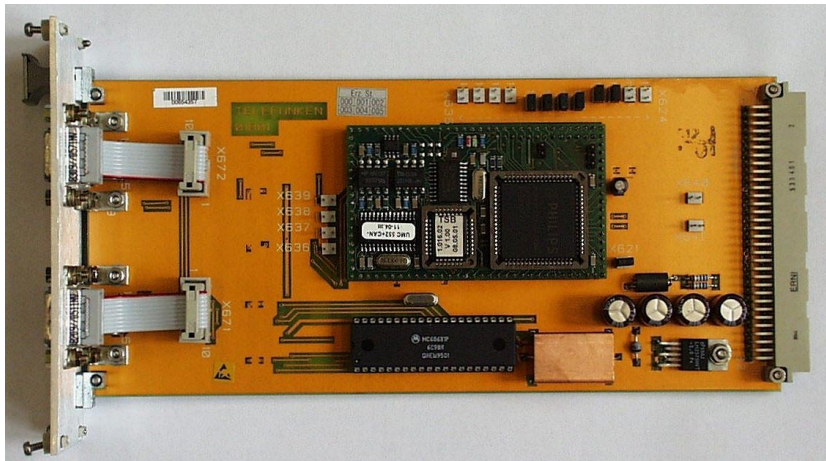
One parallel interface 2 handles the remote control of transmitter system comprising a max. of one reserve transmitter and two service transmitters (2+1). Systems with more service transmitters require two of these assemblies.

BITBUS Converter (Option)



Remote control of the CCU/Transmitter system respectively via a BITBUS requires that the RS 232 interface of the control processor is augmented by an optional BITBUS converter. Data conversion, i.e. commands and indications in the RS 232 interface is software implemented in the BITBUS-module plugged onto the BITBUS carrier board. This BITBUS Converter transforms the BITBUS conform RS-232 protocol into the BITBUS protocol (DIN IEC 864 part 2) according to a fixed algorithm.

CAN-BUS Converter (Option)



The CAN-BUS-RS 232-converter serves to connect transmitters to the CCU via an RS 232 interface. The CAN-BUS-RS 232 converter also allows the connection of transmitters controlled by a BITBUS conform RS 232 protocol as well as older transmitters and transposers.

Data conversion, i.e. commands and indications between the CAN-BUS and the RS 232 interface is software implemented in the mini-controller module plugged onto the converter board.

A max. of three transmitters may be connected to a CAN-BUS-RS 232 converter. A further converter is required if more than three transmitters are involved.



Specifications and Technical Recommendations applying to the CCU 7456 (n+1)

General conditions for transmission apparatus and plants

ARD 5/1.0 part 1

Deutsche Telekom TS 0152/96

General conditions for transmission apparatus and plants, data bus interconnection remote control interface

ARD 5/1.0 part 2

Operation of transmitter reserve systems

ARD 5/1.1

DIN/IEC Requirements

Connection of broadcast transmitters or transmitter systems with remote control system

DIN IEC 864, part 1, identical with IEC 864 part 1.

Interface standards using data bus interconnections

IEC 864, part 2

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