GSM Communication Unit R&S®GC128

GSM-based data and voice communications

The GSM Communication Unit R&S®GC128 is the ideal solution for wireless TCP/IP-based communication links between monitoring or RF measurement systems.

◆ Data rate 9.6 kbit/s per GSM channel
◆ Up to two additional GSM modules available for multilink

◆ Further optional GSM module for use as telephone
◆ Operable with GSM 900 and GSM 1800
◆ Minimum interference with RF measurement equipment in vehicles, permitting simultaneous RF measurement and GSM transmission

◆ Ideal for transportable or mobile RF measurement and radiomonitoring systems
◆ Wide power supply range 9 V to 30 V DC

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Introduction

Modern technologies call for mobile and transportable solutions to extend the range of fixed monitoring stations. To communicate with these remote stations, a GSM connection is frequently the best choice.

The GSM Communication Unit R&S®GC128 from Rohde & Schwarz is the perfect solution for wireless TCP/IP-based communication links between monitoring or RF measurement stations.

Overview

The GSM Communication Unit R&S®GC128 is designed to enable efficient wireless connections between computer networks via GSM.

The standard model is equipped with one GSM module for data transfer. Three more optional modules can be integrated. Two additional modules for multilink (to increase the data rate) and/or one module for audio transmission are possible.

When an audio transmission module is included, the R&S®GC128 can be used as a "normal" mobile phone.

It is also possible to use the three added modules for independent data links.

Both the GSM 900 and the GSM 1800 bands are supported.

Built as a 19-inch, one-height-unit rack-mount model, it can be easily integrated into standard racks for indoor use. When integrated into the Rohde & Schwarz Transportable Communication System R&S®TMS-C, where it is protected by the transit case, it can also be used outdoors.

The device provides various interfaces to GSM antennas, network equipment such as routers, and RS-232-C and USB interfaces for remote control via a process controller.

The R&S®GC128 with optional headset

Description

The central part of the R&S®GC128 is the mainboard. It consists of the processor, the power supply, a DC filter and, in the standard version, one Siemens MC35 GMS module. Three more slots are available for integrating further modules for audio transmission and/or for data multilink.

With its wide input power range from 9 V to 30 V DC, the R&S®GC128 is ideal for integration into vehicles. The bench power supply, included as a standard accessory, also allows the unit to be powered using 100 V to 240 V AC at 50 Hz to 60 Hz.

All permanently installed connectors are located at the rear of the unit, including the ANTENNA connector, where up to four GSM antennas can be connected, and the four interfaces DATA CHANNEL1 to DATA CHANNEL4 for connecting the GSM modules with the router. Each installed GSM module requires a separate antenna. The power supply connector and the interfaces to the process controllers (1× RS-232-C and 1× USB2.0) are also integrated into the rear panel.

The control elements are conveniently located at the front panel. They include the main power switch, a loudspeaker, the SIM-card holders, etc.
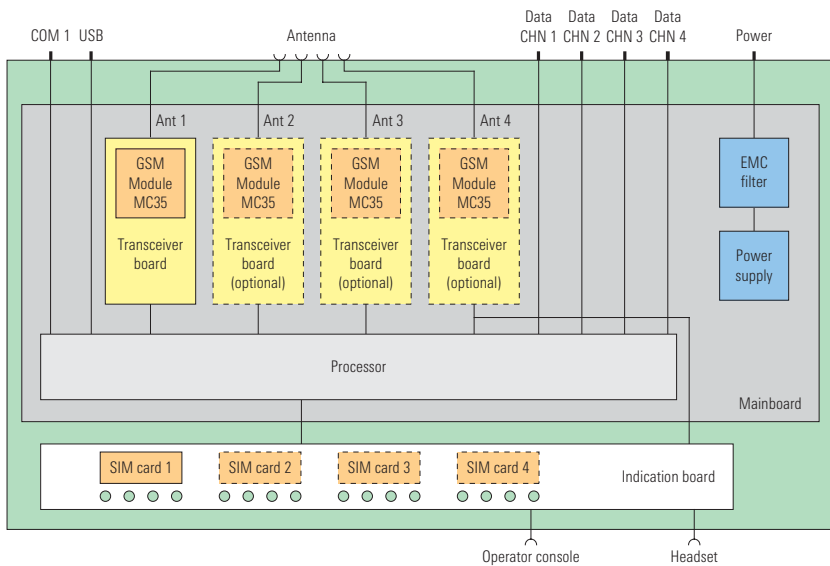
One SIM card is required for each integrated GSM module. To minimize trans-

mission costs, the SIM cards should be obtained from the local network operators, i.e. they are not included in the standard scope of delivery.

For successful operation, the data service must be enabled!

Four LEDs are available for each GSM module. These LEDs provide detailed information about the status of the respective module, e.g. searching for network, incoming call or data transmission in progress.

If a module for audio transmission (option R&S®GC128A) is installed, a headset can be connected via the headset connector.

Block diagram labels: COM 1 USB — Antenna — Data CHN 1, Data CHN 2, Data CHN 3, Data CHN 4 — Power

Ant 1 | Ant 2 | Ant 3 | Ant 4 — EMC filter

GSM Module MC35 | GSM Module MC35 | GSM Module MC35 | GSM Module MC35 — Power supply

Transceiver board | Transceiver board (optional) | Transceiver board (optional) | Transceiver board (optional)

Processor — Mainboard

SIM card 1 | SIM card 2 | SIM card 3 | SIM card 4 — Indication board

Operator console — Headset

Operation

The R&S®GC128 is mainly used to connect mobile or transportable monitoring systems to a regional and/or central control station. In standard setups, it is connected to a router. All information necessary for a connection (e.g. IP address, phone number) is part of the router configuration.

If a link for data transmission is requested by the process controller, the router automatically establishes a connection via the R&S®GC128. To minimize communication costs, the data connection is automatically terminated after a user-definable connection period without data transfer.

On the control side, standard network equipment is required. Analog modems or ISDN modems (V.110) are the preferred choice. Of course, an R&S®GC128 can be used as well.

If data rates higher than the standard 9.6 kbit/s are required, one or two more GSM modules for data transmission (option R&S®GC128D) can be integrated. Each module needs its own SIM card and antenna. Since the multilink procedure creates some overhead for data management, further modules would not significantly increase the net data rate.

Each module is connected to the router via the DATA CHANNEL1 to DATA CHANNEL3 interfaces. Therefore, the router must be equipped with an appropriate number of serial interfaces.

If the R&S®GC128 is equipped with an audio module and a headset, phone calls can be made.

If all communication equipment needs to be contained in one box, the R&S®GC128 can be integrated into the Transportable Communication Unit R&S®TMS-C. The R&S®TMS-C can additionally be equipped with a router and a modem for analog PSTN lines and/or ISDN lines. Furthermore, the GPS Receiver R&S®GPS129 can be installed to provide the precise location as well as a reference frequency. For detailed information, refer to the data sheet (PD 0758.2419.32) for the R&S®TMS-C.

The standard scope of delivery includes a configuration tool that can be installed on the process controller. The connection to the R&S®GC128 can be set up via the RS-232-C or the USB interface.

Using this tool, the operator can define and modify the connection settings for the installed GSM modules. It is also possible to make a phone call simply by entering the phone number for the audio transmission module.

Furthermore, modules can be activated or deactivated and the respective PIN codes can be entered.

Since this tool indicates the connection status, the provider and the input level, it is especially helpful while setting up a connection.

To ensure sufficient error correction for safe and reliable data transmission, it is mandatory that the **RLP protocol** is available in the GSM network.

The R&S®GC128 was especially developed for integrating remote measurement stations that are running the R&S®ARGUS or R&S®RAMON radio monitoring software into large nationwide networks. But owing to its universal concept and design, it is the perfect tool for general wireless data transmission between computer networks.

Rear view of the R&S®GC128

Specifications

Interfaces	
USB	USB jack, 4 pins (X1) USB interface, for device configuration
ANTENNA	D-Sub jack with 4 RF jacks (X2)
COM 1	D-Sub plug, 9 pins (X3) standard serial interface for device configuration and remote control
DATA CHANNEL 1 to 4	D-Sub jacks, 9 pins (X7 to X4) serial interface, RS-232-C
POWER	D-Sub jack with 2 high-voltage contacts (X100), external power supply, +9 V to 30 V DC
CONSOLE	Mini-DIN jack, 6 pins (X10) (front) interface for connecting an optional external control unit (not yet available)
HEADSET	RJ-10 jack, 4 pins (X11) (front) audio input and output for connecting a headset
General data	
Operating temperature range	−10 °C to +55 °C
Storage temperature range	−40 °C to +70 °C
Humidity	95 % relative humidity at +55 °C
Sinusoidal vibration	5 Hz to 150 Hz
Random vibration	10 Hz to 300 Hz
Shock	40 g shock spectrum
EMC	meets EMC directive of EU (89/336/EEC) and German EMC law
Safety	meets EN 60950/VDE0805

Quality standard	developed and manufactured in compliance with ISO 9000
Power supply	9 V to 30 V DC 100 V to 240 V AC at 50 Hz to 60 Hz (via bench power supply)
Power consumption	max. 20 W (depending on number of GSM modules installed)
Dimensions (W × H × D)	19" rackmount, 1 HU – 427 mm × 43 mm × 250 mm 483 mm × 43 mm × 296 mm (overall)
Weight (basic version)	approx. 2.5 kg

Ordering information

Designation	Type	Order No.
Basic version		
Communication Unit for data transfer via one GSM/GPRS 900/1800 link	R&S®GC128	3027.8518.02
Options		
Additional Module with headset for audio transfer via one GSM 900/1800 link	R&S®GC128A	3028.1517.02
Additional Module for data transfer via one GSM 900/1800 link	R&S®GC128D	3028.1769.02

More information at
www.rohde-schwarz.com
(search term: GC128)

Certified Quality System
ISO 9001
DQS REG. NO 1954 QM

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ISO 14001
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