



Version
01.00

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R&S® FT5066 Trusted Filter

Firewall functionality for control information in secure radio operating environments

- ◆ Physical, logical, and electrical separation of red and black data
- ◆ Redundant and physically independent control functions
- ◆ Adaptable to standard modem and radio equipment
- ◆ Audio-visual status indicators
- ◆ Logging function
- ◆ Internal built-in tests
- ◆ Access control

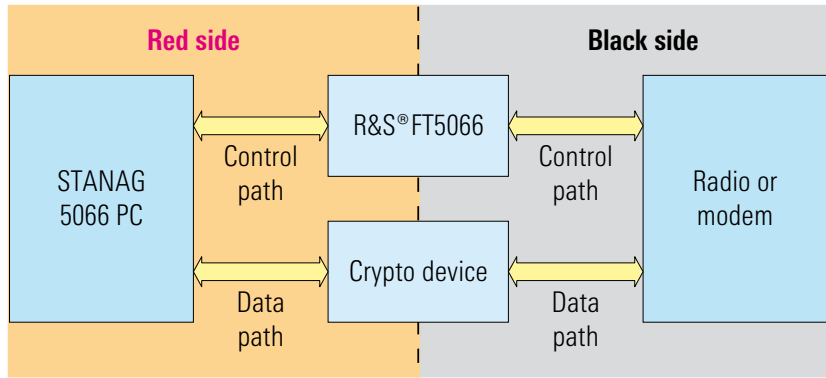
Separation of control/payload data

A strict red/black separation is vital in modern secure radio operating environments. One often-neglected aspect is the threat originating from the transmission of control information. The transmission path for control information is always plain. This path can be deliberately or unwittingly abused to circumvent the encryption mode and transmit sensitive information.

A potential security leak results from the fact that the PC processes red data (payload data) as well as data to control the modem and radio equipment at the black side of the system. An error condition occurring inside the PC may lead to an unintentional transfer of payload information to the black side, bypassing the cryptographic engine. The R&S®FT5066 is designed to prevent the accidental diversion of red data to the black side of the system.

R&S®FT5066 device functions

The R&S®FT5066 acts as a firewall between a data terminal equipment (DTE) and a modem or a radio device. Only predetermined (hard-coded) commands can be transmitted from the red to the black transmission channel. Prohibited commands are blocked and an audiovisual signal is produced.



R&S®FT5066 operating environment

Red side behavior

The R&S®FT5066 detects, blocks, signals, and protocols offending commands. The error counter is increased by one and an entry is made into the log list. The R&S®FT5066 remains operational until the log list exceeds a specified threshold, e. g. 100 entries; all communication on the red to black transmission channel is blocked after log list entry 101. The error condition can only be reset by switching the device off and on, or by pressing the "RESET" button. The red to black transmission channel is immediately blocked when a malfunction is detected.

Black side behavior

The black side checks for malfunction independently of the red side. The red to black transmission channel is immediately blocked if a malfunction is detected. The red LED is lit, an audio tone is generated, and all further transmission is blocked.

Resetting/logging

The "RESET" button resets the error counter to "0". The log list is deleted, and the R&S®FT5066 is reset. The "log start" button reads out the log list using a computer connected to the device. The transmission is unidirectional, so that no data can be sent from the computer to the R&S®FT5066 log interface. The "log start" button writes out the log file port.



The R&S®FT5066 is equipped with flanges to enable secure fastening into rack systems. All important indicators and interfaces are on the front panel for easy access during operation.

Security concept implementation

- ◆ Tamper detection using seals on the housing access points and fixation screws
- ◆ Software can only be loaded into the R&S® FT5066 at the manufacturer's facilities
- ◆ Redundant filter function (red to black transmission channel) using two independent processor systems
- ◆ Logical connection of the two processors via a single internal serial connection
- ◆ The first processor translates the commands on this serial connection. The commands are retranslated into the original format by the second processor
- ◆ A unidirectional driver ensures that no information can pass the device from the red to the black side over the black to red transmission channel

Specifications

Power	
Input voltage	nominal 24 V DC, min. 20 V DC, max. 28 V DC
Dissipated power	typ. 1.5 W, max. 4 W
Red and Black Interfaces	
Electrical interface	V.28
Data format	asynchronous 8N1 (8 data bits, no parity, 1 stop bit)
Data rate	9600 Baud (expandable)
Log Interfaces	
Electrical interface	V.28
Data format	asynchronous 8N1 (8 data bits, no parity, 1 stop bit)
Data rate	38400 Baud (expandable)
Temperature	
Operating temperature range	−20 °C to + 70 °C
Storage temperature range	−40 °C to + 85 °C
Mechanical Data	
Dimensions (W × H × D)	130 mm × 165 mm × 45 mm 5.12 in × 6.50 in × 1.77 in

Ordering information

Designation	Type	Order No.
Trusted Filter	R&S® FT5066	5412.2450.02
Option		
24 V DC Wall Power Supply		3571.5773.00



More information at
www.rohde-schwarz.com
(search term: FT5066)



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