Module Description

Application
The module is used to generate and receive the baseband in the range of 0.1 ... 2 MHz needed for telegram transfer. In addition, it contains a noise receiver for the reception of event and acknowledgement announcements in the range of 5 ... 7 MHz.

The module is used in the master station. A remote bus line is directly connected to it.

The module is available in two versions. These differ only by the fact that their noise receivers are conditioned differently.

88 FV01/R0100: for connection of remote bus lines with a length of 850 m to 1.5 km
88 FV01/R0200: for connection of remote bus lines up to a maximum length of 850 m.

Features
Disturbances on the module are signalled by a light-emitting diode provided at the front.

Description
BASIC DESIGN
The module essentially consists of the following functional sections:

- Baseband transmitter
- Transmission level monitoring for baseband transmitter
- Baseband receiver
- Noise receiver.

The signals of the baseband transmitter and of the noise receiver are each switched to a common repeater via an isolating transformer and a transmission/reception filter.

PROCONTROL 44 Transfer
Frequency Module for Master Station
88 FV01/R0100/R0200

The transmission filter of the baseband transmitter is also used as reception filter.

The basic design of the module is shown in the functional diagram.

BASEBAND TRANSMITTER
The coded transmission signal at input IA is input by a clock signal at input STA and then fed as potential-isolated signal to the transmission filter via a driver stage and an output stage.

The supply voltage of the output stage can be interrupted and, hence, the transmitter switched off via the input SE.
The output stage is activated when the input SE is connected with reference conductor Z.

The presence of a transmission level is signalled by the transmission level monitor. If a transmission level is present, i.e. if the baseband transmitter is in operation, a 0 signal is output at output SF.

BASEBAND RECEIVER
A received signal is fed to a subsequent equalizer amplifier via the transmission filter and the isolating transformer. Then it is limited in a further stage and conditioned in a switching stage. The signal conditioned in this way is available at output IE.

NOISE RECEIVER
The noise signal is fed to a limiter amplifier via a reception filter and a subsequent isolating transformer.

The limited signal is then rectified and filtered in a low-pass filter. The noise level signal is derived, in a subsequent switching stage, from the signal obtained in this way.

The noise level signal is available at output RF.
Annunciation functions

ANNUNCIATIONS ON THE MODULE

The following annunciations are indicated by light-emitting diodes at the front of the module:

- ST  Disturbance in module
- TS  Telegram transfer
- QEE  Acknowledgement event reception.

The module disturbance annunciation lamp ST is set when the checkback signal of transmission level SF does not agree with the activated baseband transmitter. The annunciation is generated in bus coupling module 88 FN01 or 88 FN02 and applied to the frequency module 88 FV01 via input SSE.

The time indication is extended to one second.

The light-emitting diode for annunciation TS is set when the baseband transmitter is in operation or when telegrams are transmitted.

The light-emitting diode for annunciation QEE is set when a noise level is available on the remote bus, i.e. the light-emitting diode is reset when reception of a telegram is acknowledged or when no event is present.
Connection diagram

to multi-purpose processing station(s)

88FK01

Remote bus

88FV01

IA STA SA SP IE SSE RP SE

88FN01/FN02

Local bus in the master station, to 88 VK01

e.g. master station A

e.g. remote bus line A2
Mechanical design

Board size: 6 units, 1 division, 220 mm deep

Connector: according to DIN 41 612
48-pole, edge connector type F

Weight: approx. 0.42 kg

Front view:

- Module disturbance
- Telegram transfer
- Reception of acknowledgement event
Technical data

In addition to the system data, the following values apply:

POWER SUPPLY

Operating voltage

$U_{D+} = +5 \text{ V}$

$U_{B+} = +24 \text{ V}$

Current consumption

$I_{D+} < 60 \text{ mA} \ (\text{transmitter off})$

$< 130 \text{ mA} \ (\text{transmitter on})$

$I_{B+} < 55 \text{ mA} \ (\text{transmitter off})$

$< 260 \text{ mA} \ (\text{transmitter on})$

Power dissipation min.

$P_v = 1.6 \text{ W}$

max.

$P_v = 6.7 \text{ W}$

ZD - Reference conductors for

$U_{D+}$ and $U_{B+}$

INPUT/OUTPUT VALUES

The signal exchange between the module and all other modules of the master station is carried out with TTL signal levels, except signal $SE$ and the output signal to the bus coupling module for remote bus.

INPUT SIGNALS

$IA$ - Information

$STA$ - Takeover clock

$SA$ - Command baseband transmitter $OFF$

$SE$ - Output stage baseband transmitter $ON$

$SSE$ - Activation disturbance annunciation lamp

OUTPUT SIGNALS

$TP$ - Annunciation baseband transmitter $OFF$

$TP$ - Annunciation noise transmitter $OFF$

$IE$ - Input information

$\alpha, \beta, \gamma$ - Output information to bus coupling module for remote bus

TRANSFER VALUES

Switching times baseband

Transmission - reception

$T_{on} < 500 \text{ ns}$

$T_{off} < 4 \mu\text{s}$

$< 32 \mu\text{s}$

Switching times noise receiver

$T_{on} < 10 \mu\text{s}, \text{ depending on level}$

$T_{off} < 25 \mu\text{s}, \text{ depending on level}$

ORDERING DATA

Type designation: 88 FV01/R0100

88 FV01/R0200

Order number: GJR233230R0100

GJR233230R0200

Technical data are subject to change without notice.