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 transmitter to generate the noise signal. The noise transmitter operates in the range of 5 ... 7 MHz.

Features

The module is provided twice (redundant remote bus connection) in every multi-purpose processing station of the PROCONTROL bus system.

Disturbances on the module are signalled by a light-emitting diode provided at the front. The module converts the bi-phase signals of the remote bus to single clock signals (TTL level) or vice versa.

Description

BASIC DESIGN

The module essentially consists of the following functional sections:

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

The output signals of the two transmitters are each switched to one common repeater via an isolating transformer and a transmission filter. 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.
Annunciation functions

ANNOUNCEMENTS 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
- QES Acknowledgement event transfer.

The module disturbance annunciation lamp ST is energized when the checkback signal of the transmission level $\mathcal{S}_P$ or the checkback signal of the noise level $\mathcal{N}_P$ does not agree with the activated transmitters.

The annunciation is generated in bus coupling module 88 FNO1 and applied to frequency module via input $\mathcal{S}_S$.

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 QES is set when the noise transmitter is in operation; i.e. the light-emitting diode is reset when reception of a telegram is acknowledged or when no event is present.
Connection diagram

Local bus in the multi-purpose processing station, to 88 TK02

e.g. multi-purpose processing station X
Mechanical design

Board size: 6 units, 1 division, 160 mm deep

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

Weight: approx. 0.45 kg

Front view:

- Module disturbance
- Telegram transfer
- Acknowledgement event station
Technical data

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

POWER SUPPLY

Operating voltage

\[ \begin{align*}
UD^+ &= +5 \text{ V} \\
UB^+ &= +24 \text{ V}
\end{align*} \]

Current consumption

\[ \begin{align*}
ID^+ &< 120 \text{ mA} \quad \text{(both transmitters off)} \\
&< 170 \text{ mA} \quad \text{(baseband transmitter on)} \\
IB^+ &< 70 \text{ mA} \quad \text{(both transmitters off)} \\
&< 270 \text{ mA} \quad \text{(baseband transmitter on)} \\
&< 470 \text{ mA} \quad \text{(both transmitters on)}
\end{align*} \]

Power dissipation

\[ \begin{align*}
P_V^\text{min} &= 2.3 \text{ W} \\
P_V^\text{max} &= 12.2 \text{ W}
\end{align*} \]

ZD - Reference conductors for

\[ \begin{align*}
UD^+ \text{ and } UB^+
\end{align*} \]

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 remote bus coupling module for remote bus.

INPUT SIGNALS

\[ \begin{align*}
IA &\text{ - Information} \\
STA &\text{ - Takeover clock} \\
SA &\text{ - Command baseband transmitter} \\
PE &\text{ - Command noise transmitter} \\
SE &\text{ - Output stage baseband transmitter} \\
SE &\text{ - Activation disturbance annunciation lamp}
\end{align*} \]

OUTPUT SIGNALS

\[ \begin{align*}
SP &\text{ - Annunciation baseband transmitter} \\
SP &\text{ - Annunciation noise transmitter} \\
IE &\text{ - Input information} \\
\alpha,\beta,\gamma &\text{ - Output information to bus coupling module for remote bus}
\end{align*} \]

TRANSFER VALUES

Switching times baseband

Transmission - reception

Level monitoring

\[ \begin{align*}
\tau_{\text{on}} &< 500 \text{ ns} \\
\tau_{\text{off}} &< 4 \text{ \mu s} \\
&< 32 \text{ \mu s} \\
\tau_{\text{on}} &< 2 \text{ \mu s} \\
\tau_{\text{off}} &< 15 \text{ \mu s}
\end{align*} \]

ORDERING DATA

Type designation: 88 FT01/R0100

Order number: GJR2332200R0100

Technical data are subject to change without notice!