

11 Signal Flow of the BTS3012

About This Chapter

The BTS3012 signal flow is associated with the traffic and signaling of the BTS. The BTS3012 signal flow consists of DL traffic signal flow, UL traffic signal flow, signaling processing signal flow, and signal flow for combined cabinets.

11.1 DL Traffic Signal Flow of the BTS3012

The DL traffic signal flow sends user plane data from the BSC to the MS through the BTS3012. In the BTS3012, the DTMU, DTRU, and DDPU (DFCU or DFCB) work together to process DL traffic signals.

11.2 UL Traffic Signal Flow of the BTS3012

The UL traffic signal flow sends user data from the MS to the BSC through the BTS3012. In the BTS3012, the DDPU (DFCU or DFCB), DTRU, and DTMU work together to process UL traffic signals.

11.3 Signaling Flow of the BTS3012/BTS3012AE

The signaling flow of the BTS3012/BTS3012AE refers to the signaling flow on the Abis interface. Acting as the control part, the DTMU works together with the DTRU and DDPU (DFCU or DFCB) to process the signaling.

11.4 Signal Flow of BTS3012/BTS3012AE Combined Cabinets and Cabinet Groups

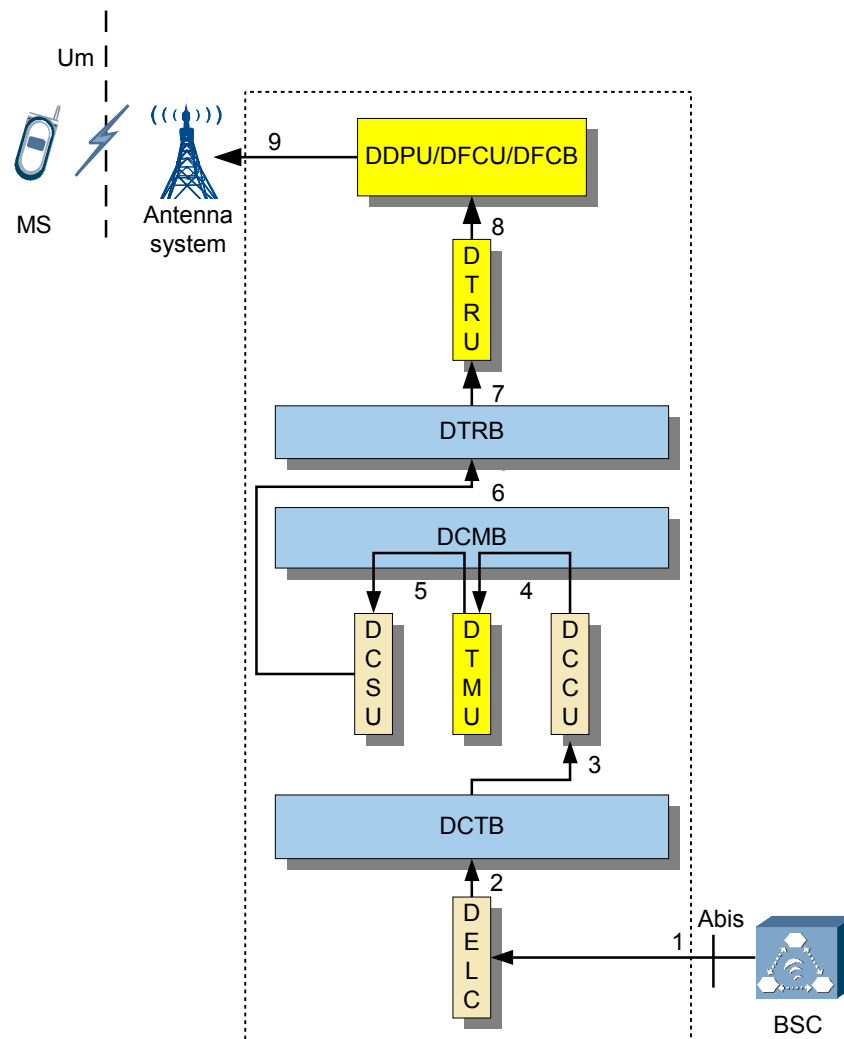
The signal flow of cabinet groups refers to the signal flow between the main cabinet group and the extension cabinet group. The signal flow of combined cabinets refers to the signal flow between the main cabinet and the extension cabinet that belong to one cabinet group. The combined-cabinet signal flow and cabinet-group signal flow consist of clock signals, data signals, and control signals.

11.1 DL Traffic Signal Flow of the BTS3012

The DL traffic signal flow sends user plane data from the BSC to the MS through the BTS3012. In the BTS3012, the DTMU, DTRU, and DDPU (DFCU or DFCB) work together to process DL traffic signals.

Figure 11-1 shows the DL traffic signal flow.

Figure 11-1 DL traffic signal flow



The signal flow of the DL traffic signals is as follows:

1. The BSC sends E1 signals to the DELC through E1 cables.
2. The DELC provides lightning protection for the received E1 signals and then sends the E1 signals to the DCTB.
3. The DCTB sends the E1 signals to the DCCU through the TOP signal cable, which connects the DCTB to the DCCU (or DSCU).
4. The DCCU sends the E1 signals to the DTMU through the DCMB.

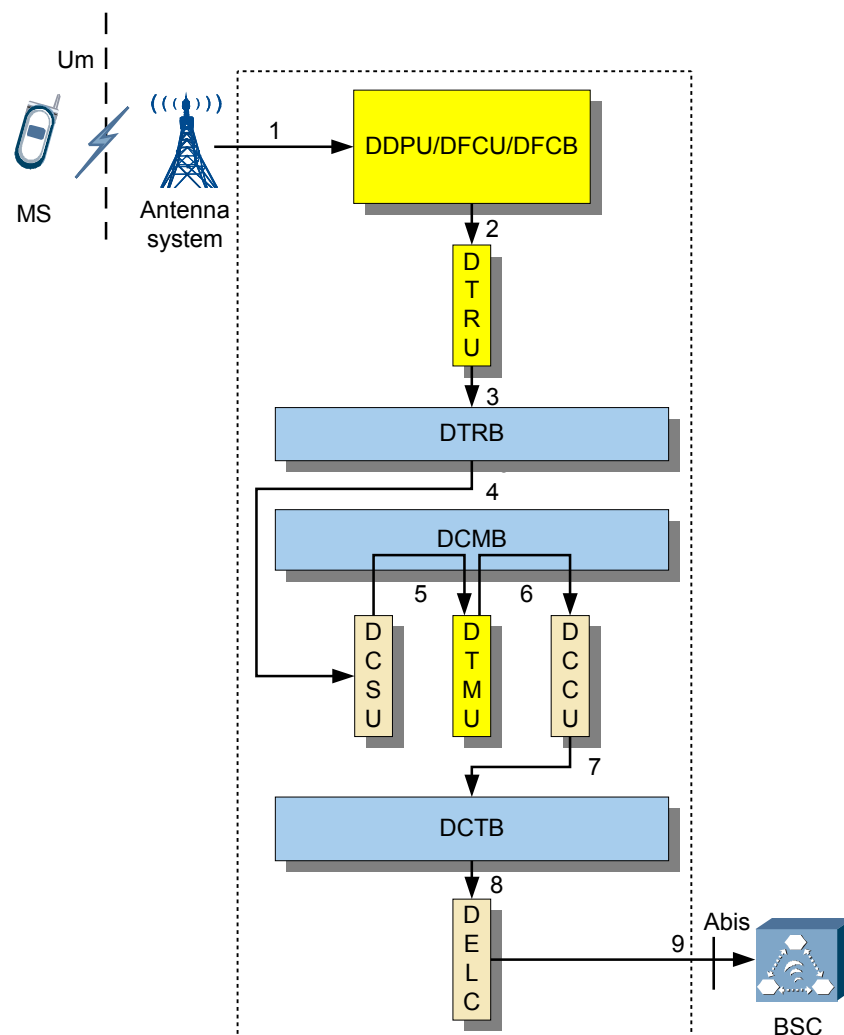
5. The DTMU receives the signals from the DCCU and then converts those signals through the data bus (DBUS) on the DCMB. The DTMU also assigns the data based on the data configuration on the L. Once done, the signals are sent to the DCSU through the DCMB.
6. The DCSU sends the signals to the DTRB.
7. The DTRB sends the signals to the DTRU.
8. Upon receipt of the signals, the DTRU performs digital filtering, up-frequency conversion, and filter amplification, and then sends the signals to the DDPU (DFCU or DFCB).
9. The duplexer in the DDPU (DFCU or DFCB) filters the signals from the DTRU and then transmits the signals through the antenna system.

11.2 UL Traffic Signal Flow of the BTS3012

The UL traffic signal flow sends user data from the MS to the BSC through the BTS3012. In the BTS3012, the DDPU (DFCU or DFCB), DTRU, and DTMU work together to process UL traffic signals.

Figure 11-2 shows the UL traffic signal flow.

Figure 11-2 UL traffic signal flow



The signal flows of the UL traffic signals is as follows:

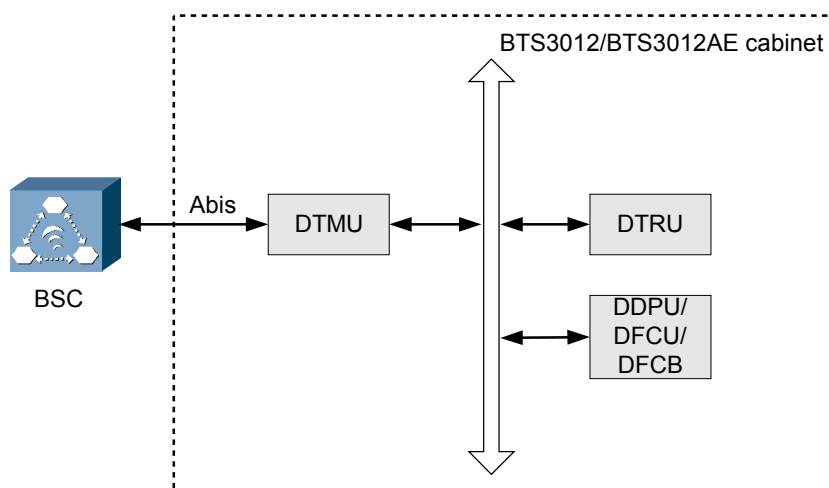
1. The antenna receives the signals from the MS. After being amplified by the TMA, the signals are transmitted to the DDPU (DFCU or DFCB) through the feeder. The TMA is optional. It is used to compensate the feeder loss and enhance the receive sensitivity of the DDPU (DFCU or DFCB) antenna port.
2. The DDPU (DFCU or DFCB) receives the UL signals and transmits the signals to the DTRU after they are filtered by the duplexer and amplified by the lower noise amplifier (LNA).
3. The DTRU receives the signals from the DDPU (DFCU or DFCB) and transmits the signals to the DTRB after amplification and down-frequency conversion.
4. The DTRB sends the signals to the DCSU.
5. The DCSU sends the signals to the DTMU through the DCMB.
6. The DTMU backs up the received signals and converts the received E1 signals through the DBUS on the DCMB and then sends the converted signals to the DCCU through the DCMB.
7. The DCCU sends the signals to the DCTB through the TOP signal cable, which connects the DCTB to the DCCU (or DSCU).
8. The DCTB sends the signals to the DELC.
9. The DELC provides lightning protection for the received signals and then sends the signals to the BSC through the E1 cables.

11.3 Signaling Flow of the BTS3012/BTS3012AE

The signaling flow of the BTS3012/BTS3012AE refers to the signaling flow on the Abis interface. Acting as the control part, the DTMU works together with the DTRU and DDPU (DFCU or DFCB) to process the signaling.

Figure 11-3 shows the signaling flow of the BTS3012/BTS3012AE.

Figure 11-3 Signaling flow



The signaling flow is as follows:

1. The BSC sends the signaling data to the DTMU of the BTS.
2. After processing the signaling, the DTMU sends the signaling to the DTRU and DDPU (DFCU or DFCB).

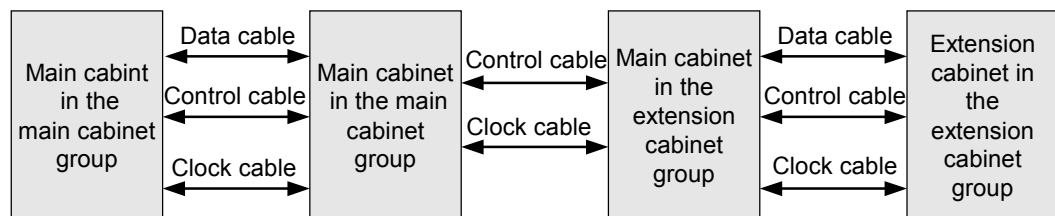
3. The DTRU and DDPU (DFCU or DFCB) report their board status to the DTMU.
4. The DTMU obtains the status of the BTS3012 by collecting and analyzing the states of all boards and then transmits the information to the BSC through the Abis interface.

11.4 Signal Flow of BTS3012/BTS3012AE Combined Cabinets and Cabinet Groups

The signal flow of cabinet groups refers to the signal flow between the main cabinet group and the extension cabinet group. The signal flow of combined cabinets refers to the signal flow between the main cabinet and the extension cabinet that belong to one cabinet group. The combined-cabinet signal flow and cabinet-group signal flow consist of clock signals, data signals, and control signals.

Figure 11-4 shows the bus connection between the BTS3012/BTS3012AE combined cabinets and the BTS3012/BTS3012AE cabinet groups.

Figure 11-4 Bus connection between the combined cabinets and the cabinet groups



The relation between the combined cabinets and the cabinet groups is as follows:

- The signals between the main cabinet and the extension cabinet consist of data signals, control signals, and clock signals.
- The signals between the main cabinets belonging to different cabinet groups consist of clock signals and control signals.

NOTE

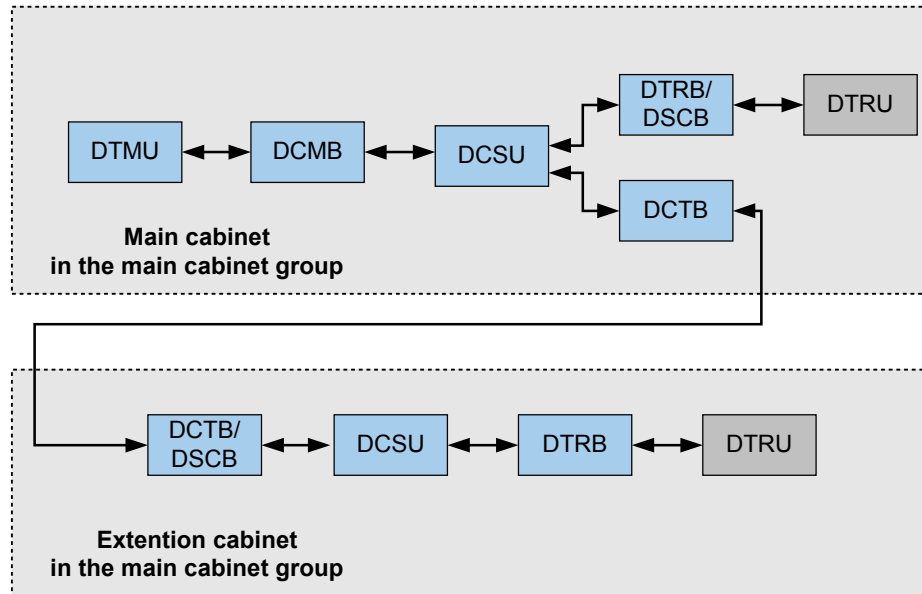
You can define the main cabinet group and the extension cabinet group, as well as the main cabinet and the extension cabinet by setting the DIP switches on the DCSU. For details about the setting of the DIP switches, refer to [DIP Switches on the DCSU](#).

Clock Signals

For details about the clock signal flow, refer to [10 Synchronization of the BTS3012 Clock](#).

Data Signals

The main cabinet and the extension cabinet that belong to one cabinet group are connected with data bus. For details about the data signal flow, refer to [Figure 11-5](#).

Figure 11-5 Data signal flow**NOTE**

The DCTB shown in [Figure 11-5](#) is the cabinet top backplane of the BTS3012. The DSCB is the cabinet signal connection backboard of the BTS3012AE.

The processing of the data signals for the combined cabinets is as follows:

1. The DTMU of the main cabinet sends the data (through signal conversion of relevant boards) to the DTRU for processing.
2. The DTRU of the main cabinet sends the data (through signal conversion of relevant boards) to the DTMU for processing.
3. The DTMU of the main cabinet sends the data (through signal conversion of relevant boards) to the extension cabinet through the cables connecting the combined cabinets. After the signals are processed by the relevant boards in the extension cabinet, these signals are sent to the DTRU of the extension cabinet.
4. The DTRU of the extension cabinet sends the data (through signal conversion of relevant boards) to the main cabinet through the cables connecting to the combined cabinets. After the signals are processed by the relevant boards of the main cabinet, these signals are sent to the DTMU of the main cabinet for processing.

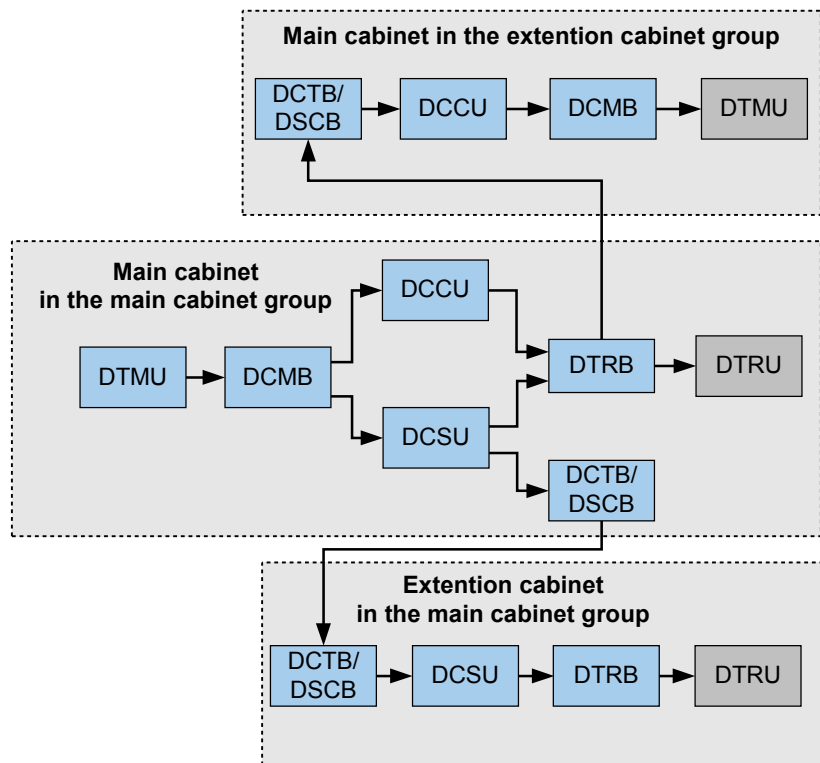
Control Signals

The control signal flow is classified into CBUS1, CBUS2, and CBUS3.

- The CBUS1 sets up communication channels for all the DTMUs from the main cabinet group and the extension cabinet group.
- The CBUS2 sets up communication channels between the DTRU and the DTMU of one cabinet (main cabinet or extension cabinet).
- The CBUS3 sets up communication channels between the DTMU of the main cabinet and the DEMU, DATU, NFCB, DSCA, and DAFU of the main and the extension cabinets.

For details about the signal flow, refer to [Figure 11-6](#) and [Figure 11-7](#).

Figure 11-6 Signal flow of the CBUS1 and CBUS2

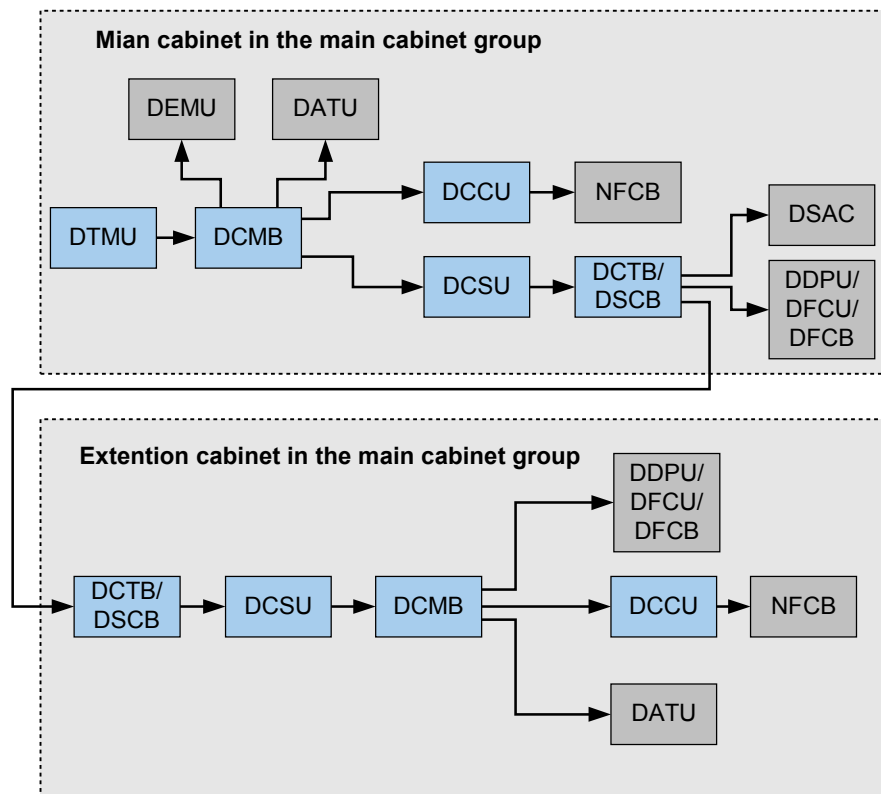


NOTE

The DCTB shown in [Figure 11-6](#) is the cabinet top backplane of the BTS3012. The DSCB is the cabinet signal connection backboard of the BTS3012AE.

The processing of the signals in the CBUS1 and CBUS2 is as follows:

- The CBUS1 sets up communication channels for all the DTMUs from the main cabinet group and the extension cabinet group. The DTMU from the main cabinet of the main cabinet group sends the data (through signal conversion of relevant boards) to the main cabinet of the extension cabinet group through the cables connecting to the cabinet groups. After the signals are processed by the relevant boards from the main cabinet of the extension cabinet group, these signals are sent to the DTMU for processing.
- The CBUS2 sets up communication channels between the DTRU and the DTMU of one cabinet (main cabinet or extension cabinet). For the main cabinet, the DTMU sends the data (through signal conversion of relevant boards) to the DTRU. For the extension cabinet, the DTMU sends the data (through signal conversion of the relevant boards of the main cabinet) to the extension cabinet through the cables connecting to the combined cabinets. After the signals are processed by the relevant boards in the extension cabinet, these signals are sent to the DTRU of the extension cabinet.

Figure 11-7 Signal flow of the CBUS3**NOTE**

The DCTB shown in [Figure 11-7](#) is the cabinet top backplane of the BTS3012. The DSCB is the cabinet signal connection backboard of the BTS3012AE.

The processing of signals in the CBUS3 is as follows:

1. The DTMU of the main cabinet sends the data (through signal conversion of relevant boards) to the DEMU, DATU, NFCB, DSAC, and DDPU (DFCU or DFCB) for processing.
2. The DEMU, DATU, NFCB, DSAC, and DDPU (DFCU or DFCB) sends the data (through signal conversion of relevant boards) to the DTMU for processing.
3. The DTMU of the main cabinet sends the data (through signal conversion of the relevant boards of the main cabinet) to the extension cabinet through the cables connecting the combined cabinets. After the signals are processed by the relevant boards of the extension cabinet, these signals are sent to the DATU, NFCB, and DDPU (DFCU or DFCB) for processing.
4. The DATU, NFCB, and DDPU (DFCU or DFCB) of the extension cabinet sends the data (through signal conversion of the relevant boards of the extension cabinet) to the main cabinet through the cables connecting the combined cabinets. After the signals are processed by the relevant boards of the main cabinet, these signals are sent to the DTMU for processing.