

Date: November 2, 2004
Product: Z-Max
Subject: MB00 Firmware Release
Number: ZMax2004_02

Introduction:

MB00 is a no cost firmware update Z Max receiver. It succeeds the version M014. The major enhancement in MB00 is the improved algorithm to enable better performance for long baselines around 30 km. The MB00 was tested and validated also in FKP network.

Firmware modifications since M014

1. Improved algorithm enabling a faster initialization and RTK fixing time and higher precision, particularly for long baselines around 30 km.
2. Adaptation of the algorithm to the newest challenges of VRS and FKP networks.
3. PDL radios using 12.5 kHz spacing are supported.
4. The battery level control informing about the power status is improved. A warning is added when battery is weak.
5. The "Trap 700" error message occurring sometimes during different operations has been analyzed. The front panel should not show this message anymore.
6. The problem of data recording stopping on SD cards has been resolved. This has partially resolved the data card access error message on the front panel, preventing data recording on the card.
IMPORTANT NOTE: It is highly recommended to use original 64 MB SD cards and re-format them regularly (weekly) in format FAT32!
7. The Z-Max port C is not available for radio setups as this port is dedicated to Blue Tooth connection.
8. The display of correction age has been corrected.
9. When a Thales UHF radio is loaded into Z-Max, the channel is now correctly set to 00, instead of NA.
10. The front panel is now correctly informing the user about loading the radio parameters.
11. The internal radio and GSM configuration is now saved before the receiver is switched off and does not have to be re-loaded every time the receiver is switched on.

Known Problems and recommendations:

1. Sometimes, when loading the firmware from the SD card, the process of loading interrupts without any obvious reason. When the same process is repeated for a second or third time, the firmware loads successfully.
2. When loading the firmware the stage referring to the battery communication module may be bypassed. An error message will soon appear on the Z-Max front panel. However, the process continues successfully after this error message and the firmware loads correctly.
3. Current elevation mask default is 10 degrees. Most of the tests were performed with this setting. It is not desirable to set the elevation mask below 5 degrees because performance can degrade noticeably.
4. There are no Z-Max antenna parameters in receiver database. Default names for base and rover antennae are NONE. It is recommended to set base and/or rover antenna name to ASH701975.01A when ZMax antenna is used
5. Default setting \$PASHS,CPD,NET,0 (ignore FKP corrections). For the work using FKP corrections it is advisable to set this parameter to NET,1 (combine FKP corrected and not corrected data). Setting NET,2 (use only FKP corrected data) can often make performance even worse than NET,0.
6. When working in FKP networks it is advisable to turn on the auto differential mode (RTC,AUT,Y). In this case GGA string will be always sent to Network provider regardless the availability of the RTK solution. This will ensure an uninterrupted GGA feedback.
7. The reference data provided by the FKP network are not always correct. Sometimes, the service changes the base ID and the base coordinates from one station to another (including transition from VRS to non VRS mode) even though the rover was not actually moved. In this case the RTK is reset. Sometimes, FKP corrections can stop, while all the data are still being received. In those cases, it is always advisable and desirable to contact the Network provider.
8. In some cases the FKP network sends the wrong information in Message Type 23 (antenna name). It can also happen that Type 23 remains empty is not sent at all. In this case, the default antenna (NONE) is used for base. It is desirable to call the service to clarify actual antenna names and set the base name appropriately. In this case it is desirable to disable Type 23 message with the RTC,USE command.
9. When working in VRS mode, some network services can change base coordinates (Type 24) by a few meters. If this is not accompanied by changing base ID, then RTK will work uninterruptedly. If the base ID is changed, then RTK will reset even though the base coordinates have been changed by a little.
10. Some network services can have problems at week rollover (data can be stopped for some tens of seconds).
11. Some network services still send data in old RTCM version 2.1 format. The Z-Max expects RTCM version 2.3. That is why RTCM-2.1 may be decoded wrongly and RTK results will be not acceptable. In this case the command \$PASHS,RTC,ADV,ON can be issued to instruct the Z-Max that incoming data are of the format RTCM-2.1. The user should call the service provider first.

12. User-defined antenna parameters entered with ANP,PCO, ANP,ED1 and ANP,ED2 commands are not preserved in the receiver memory after restoring receiver settings to factory defaults.

Known Incompatibilities:

1. Z-Max on the base side transmitting RTK correction in CMR format is not compatible with Trimble GPS receivers.
2. Z-Max on the rover side is not always correctly interpreting the RTK corrections in CMR+ format.
3. There are some problems when working with DSNP format. With FST,OFF some epochs can be missed. With FST,ON frequent transitions from fixed to float can be observed. Those problems do not occur using RTCM and DBEN data format.