



**ERRATA SHEETS  
FOR  
MX 9400R REFERENCE STATION  
MANUAL**

**June 6, 1996  
ERR3606.dat**

**ERRATA**

DIFFERENTIAL OUTPUT SCREEN

This menu selection allows the user to control the output of RTCM messages. The user can specify how often RTCM type 3 (Reference Station Location), RTCM type 7 (Beacon Almanac), and Leica Proprietary type 671 (differential corrections) are output. Additionally, as in the case of the type 671 messages, the user is given the control to select where the information is to be sent. The RTCM type 3 and 7 messages are always output on the RTCM Port.

For Leica DGPS 12 Channel Navigators, additional accuracy may be obtained by using the high accuracy information contained in the RTCM Accucode™ message (type 59). Output of this information is enabled by setting the Accucode™ Smoothing Output Rate to a non-zero value.

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LEICA 9400R REF CDU AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA AAAAAAAAAAAAAAA
Latitude N 33 48.51684 UTC 22:16:15 11/17/1995
Longitude W 118 21.00430 Station ID 40
Ellipsoid Ht -2.00 meters Frequency Offset -1.0153 PPM
Mode Corrections Out
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA Differential Output AAAAAAAAAAAAAAAAAAAAA
3 Differential RTCM Version RTCM Ref Stn ID 671 Int
3 Output EIII» UAAAAA¿ UAAAAA¿
3 0.000000000000» 2 40 0
3 RTCM EIII¼ AAAAAAÜ AAAAAAÜ
3 RTCM Type 3 RTCM Max Avg 671 Po
3 Interval Data Rate EIIIIII
3 UAAAAA¿ UAAAAA¿ RTC
3 15 min 9600 bits/sec EIIIIII
3 Accucode (tm) AAAAAAÜ AAAAAAÜ
3 Smoothing
3 Output Rate RTCM Type 7 Count All RTCM RTCM
3 UAAAAA¿ Interval in Avg Data Rate With <C
3 10 sec EIIIII» EIII
3 AAAAAAÜ 11 min 0 Yes 0 Ye
3 EIIIII¼ EIII
<ESC>=Exit <SPACE>=Toggle choice <ENTER>=Save choice
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

```

Figure 3-7. Differential Output Screen

Differential Output

Select the RTCM differential correction message type to be generated. The possible choices are:

- > Disable No differential outputs are generated.
- > RTCM Type 1 This selection causes the Reference Station to generate binary type 1 RTCM differential correction records. This message is generated 1/second and is sent to the RTCM Port.
- > RTCM Type 9-3 This selection causes the Reference Station to generate binary type 9-3 RTCM differential correction records. Type 9-3 means that each RTCM Type 9 record will contain a maximum of three DGPS corrections. This message is generated 1/second and is sent to the RTCM port.
- > \$PMVXG,671 This selection enables the reference station to generate a Leica proprietary message (type 671)

which can be transmitted on any port. This message contains the RTCM differential correction information in a hex-ASCII format. The type 671 message is generated at the rate specified in the 671 Interval field. If the interval is set to zero, the output is disabled. Type 671 messages are typically used in situations which require the navigator to accept DGPS corrections via one of the control ports. Refer to the Leica DGPS 12 Channel Technical Reference Manual for a detailed description of this message.

**RTCM Version** The reference station generates messages in the RTCM version 2 format. Any other choice will not be accepted by the receiver.

**RTCM Ref Stn ID** Enter the identification number of this reference station. Each reference station within a network should have a unique ID. This number appears in the Key Parameters Area of the Main Menu and is transmitted in the header portion of each binary RTCM message. This value must be between zero and 1023.

**671 Interval** Specify the interval, in seconds, that type 671 (hex-ASCII differential corrections) messages are to be generated. If a zero is entered then the output is disabled. Note that if the Differential Output field is not \$PMVXG ,671, then this field has no effect.

**RTCM Type 3 Interval** Specify the interval, in minutes, that type 3 (Reference Station Location) messages are to be generated. If a zero is entered then the output is disabled. The default value is 15 minutes.

**RTCM Max Avg Data Rate** Specify the effective bit rate for data transmission. Zero indicates that the data should be sent at the maximum rate the hardware can handle. Null records will be sent to fill up the hardware bandwidth. A non-zero entry also means that no more than one null record per second is sent when corrections are not available. This field has no effect when interfaced to a beacon modulator.

**671 Port** Select to which port the type 671 (hex-ASCII differential corrections) message is to be sent. The possible choices are: Control, RTCM, or Equipment.

**Accucode™ Smoothing Output Rate** When set to non-zero, this field enables output of type 59 RTCM Accucode™ messages which contain high accuracy information which may be used by Leica 12 Channel DGPS Navigators to further improve their positional accuracy. Output of this message will use up the same bandwidth as RTCM type 1 (DGPS corrections) records. This output should be enabled ONLY when Leica 12 Channel DGPS Navigators are employed in the net to accept this data.

**RTCM Type 7 Interval** Specify the interval, in minutes, that type 7 (Beacon Almanac) messages are to be generated. If a zero is entered then the output is disabled. This message is required only when the reference station is used as part of a DGPS Beacon System. The message is used by navigators to allow automatic transitioning between beacons. The default value is 11 minutes.

**Count All RTCM  
in Avg Data Rate**

If set to **No**, then only RTCM Type 1 records (differential corrections) are used when computing the RTCM Average Data Rate. This is useful only when transmitting RTCM data over a limited bandwidth link which can tolerate the "bursts" caused by occasional transmission of non-Type 1 RTCM records. If set to **Yes**, then all RTCM records are used to compute the RTCM Average Data Rate.

**RTCM Ends  
With <CR><LF>**

Select **Yes** if the receiver is to append a carriage return and line feed to the end of the RTCM message, or **No** if not.



allow data entry. For all other datums, this field will display the value from the datum data base. The MX 9400 automatically multiplies the entered scale factor by  $10^{-6}$  and adds 1. Therefore, for a desired scale factor of 1.0 the operator would enter 0.0. For a scale factor of 1.000321 the operator would enter 321.

***Delta X, Y, Z***

This field is used to report/enter the delta X, Y, and Z offset between the selected datum and WGS-84, in meters; and alternates between a display field and a data entry field depending on the datum number chosen. Operator defined datums (1 - 5) will cause this field to allow data entry. For all other datums, this field will display the value from the datum data base.

***Rotation X, Y, Z***

This field is used to report/enter the rotation about the X, Y, and Z axes between the selected datum and WGS-84, in seconds; and alternates between a display field and a data entry field depending on the datum number chosen. Operator defined datums (1 - 5) will cause this field to allow data entry. For all other datums, this field will display the value from the datum data base.

***Position  
Format***

***Display***

The user can select the format for position output and display. The possible choices are: *Latitude/Longitude*, *UTM/UPS*, or *MGRS*. The records affected by this field are defined in the DGPS 12 Channel Technical Reference Manual, Appendix C, and are listed below:

Control Port Input Records: 400

Control Port Output Records: 412, 413, 414, 831

Instrumentation/Raw Data Records: 10, 13

**2-D GPS** A navigation mode whereby latitude, longitude and time are computed from three satellites using a fixed value for altitude.

**2-D DGPS** A navigation mode whereby differentially corrected latitude, longitude and time are computed from three satellites, using a fixed value for altitude.

**2D P-DGPS** A navigation mode whereby differentially corrected (using Leica AccuCode™ corrections) latitude, longitude and time are computed from three satellites, using a fixed value for altitude.

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**3-D GPS** A navigation mode whereby latitude, longitude, altitude and time are computed from four satellites.

**3-D DGPS** A navigation mode whereby differentially corrected latitude, longitude, altitude and time are computed from four satellites.

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