



PRODUCT APPLICATION NOTE

NUMBER:	907-0201-001
REVISION:	B
DATE:	6/6/19
PRODUCT:	BinMaxx ComLink
CATEGORY:	Interfacing
SUMMARY:	BinMaxx weights data stream on its RS232 port
REFERENCE:	None

INTRODUCTION

If properly configured, as described in Appendix D of this Note, then the RS232 port on the BinMaxx ComLink will output bin net weights and related data at approximately 2 Hz, the entire time it is powered.

OUTPUT DETAILS

Data is output at 9600 baud, with eight data bits, one start bit, one stop bit, no parity, in a fixed record of 21 bytes. All numeric representations are binary data, i.e., no ASCII or BCD.

The layout of the data is shown in **Table 1**, beginning on the following page. Both the Lift Number and Net Bin Weight are byte representations of integer values. Examples of data format appear in **III**.

Example, below.

Transmitted data will most often not be fresh. For instance, the Lift Number will refer to the most recent lift even if it occurred minutes or hours previously. (The Lift Number will increment until reset by the user at the BinMaxx Display.) Data that is not available at the time of transmission will have those bytes set to 0xFF. Similarly, bytes that are not yet defined will be set to 0xFF.

The updated Net Bin Weight is transmitted within 0.5 seconds of completion of the weighing cycle, when the bin moves past the lower proximity sensor on its way to the ground. In an error condition, this weight will be 0.

The elapsed time's error is expected to be less than 0.5%.

Table 1: BinMaxx RS232 Data Stream Output Message Format

Byte	Contents
0	Lift elapsed hours time stamp (0 – 23) since scale’s most recent power up
1	Lift elapsed minutes time stamp (0 – 59) since scale’s most recent power up
2	Lift elapsed seconds time stamp (0 – 59) since scale’s most recent power up
3	Low byte, Lift Number
4	High byte, Lift Number
5	Low byte, Net Bin Weight
6	High byte, Net Bin Weight
7	Error status: 0 = No error 1 = Bad lift cycle 2 = Weighing error: bin lifted, not emptied 3 = Weighing error: empty bin lifted, emptied 4 = Scale error (e.g., sensor fault, scale not calibrated) 5 - 254 = Reserved 255 = Not available / not applicable
8	Reserved for future use by Air-Weigh
9	Reserved for future use by Air-Weigh
10	Reserved for future use by Air-Weigh
11	Reserved for future use by Air-Weigh
12	Reserved for future use by Air-Weigh
13	Reserved for future use by Air-Weigh
14	Reserved for future use by Air-Weigh
15	Reserved for future use by Air-Weigh
16	Software major version number
17	Software minor version number
18	Configuration byte; see Appendix A, below
19	CRC of preceding 19 bytes; see Appendix B, below
20	Checksum of preceding 20 bytes, modulo 256; see Appendix B, below

EXAMPLE

As an example of the weight, a Net Bin Weight of 8400 lbs would be represented in two bytes as hexadecimal 0x20D0. Then Byte 5 would be 0xD0, and Byte 6 would be 0x20.

For a software version number 1.10, Byte 16 will show 0x01, and Byte 17 will show 0x0A.

APPENDICES

Configuration Byte

Table 2: Data Stream message byte 16, bit encoding

Bit 0	1 = all weights are given in kilograms 0 = all weights are given in pounds
Bits 1 - 15	Not used

CRC and Checksum

CRC algorithm:

```
unsigned char CRC_Byte(unsigned char Seed, unsigned char Data)
```

```
{  
  unsigned char j;  
  for (j = 0; j < 8; j++)  
  {  
    if (((Data ^ Seed) & 1) != 0)  
    {  
      Seed ^= 0x18;  
      Seed >>= 1;  
      Seed |= 0x80;  
    }  
    else Seed >>= 1;  
    Data >>= 1;  
  }  
  return (Seed);  
}
```

Use, including checksum:

```
void CalculateCRC_AndChecksum(unsigned char MessageOut[19])
```

```
{  
  unsigned char i;  
  
  MessageOut[19] = 0xFF;  
  for (i = 0; i < 19; i++)  
    MessageOut[19] = CRC_Byte(MessageOut[19], MessageOut[i]);  
  
  MessageOut[20] = 0;  
  for (i = 0; i < 20; i++)  
    MessageOut[20] += MessageOut[i];  
}
```

Cables

Table 3: Connections to On-Board Computer (OBC)

Function ID	Cable Connectivity	LoadMaxx P/N
A	<i>ComLink to OBC</i>	014-0500-046
B	<i>ComLink to Bulkhead</i>	014-0400-037
C	<i>Bulkhead to OBC</i>	014-0300-052

For connection from the BinMaxx ComLink's RS232 port to OBC's under the dash, use P/N 014-0500-046.

For connection to OBC's visible in the cab, use P/N 014-0400-037 to create an in-dash bulkhead connection from the ComLink to the bulkhead. Use 014-0300-052 from the bulkhead connection to the OBC.

In all cases, the DB-9 connector to the OBC has the following pinout:

Pin 2: ComLink RxD
Pin 3: ComLink TxD
Pin 5: ComLink Gnd

Pin 5 is BinMaxx's clean on-board digital ground.

Configuring the BinMaxx to Output a 2 Hz Data Stream

1. Push the ESC button until you see the top menu: PRINT, ERASE / SETUP / DIAGNOSTICS. If you see SETUP instead of PRINT,SETUP, then the scale is already configured for 2 Hz Data Stream output.
2. Push the ▲ or ▼ button until SETUP is blinking, then push the OK button.
3. Push the ▼ (down) button repeatedly until PRINTER PORT is blinking, then push the OK button.
4. Push the ▲ or ▼ button until DATA STREAM is blinking, then push the OK button.

The scale is now configured to output a 2 Hz data stream, as described in this Note.