BIZERBA-WERKE
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Balingen, December 17, 97
TE-LW-A
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Change history

13.01.11	record 02 scale state ‚34' added	Frech
12.01.12	Record 71/72 added Record 38/39 Mode 6, 7, 10 and 12 added	Buck
17.09.14	State 56: Scale Sentry	

Description of Protocol - Checkout-Dialog 06

RECORD CASH REGISTER TERMINAL (POS) → SCALE

- **Record No. 01: transmission of unit price**

```
<EOT><STX> 01 <ESC> D5 D4 D3 D2 D1 DO <ETX>
           \/       \_______________/
         Record         Unit price
           No.          5/6 digits
```

- **Record No. 03: transmission of unit price and a tare value**

```
<EOT><STX> 03 <ESC> D5 D4 D3 D2 D1 DO <ESC> T3 T2 T1 T0 <ETX>
           \/       \_______________/       \_________/
         Record         Unit price          Tare value
           No.          5/6 digits           4 digits
```

- **Record No. 04: transmission of unit price and text**

```
<EOT><STX> 04 <ESC> D5 D4 D3 D2 D1 DO <ESC> A .... A <ETX>
           \/       \_______________/       \_____/
         Record         Unit price         Text (ASCII)
           No.          5/6 digits         13 digits
```

- **Record No. 05: transmission of unit price tare value and text**

```
<EOT><STX> 05 <ESC> D5 D4 D3 D2 D1 DO <ESC> T3 T2 T1 T0 <ESC> A .... A <ETX>
           \/       \_______________/       \_________/       \_____/
         Record         Unit price          Tare value       Text (ASCII)
           No.          5/6 digits           4 digits         13 digits
```

RECORD CASH REGISTER TERMINAL (POS) → SCALE

- **Record No. 08: request for status information after receipt of NAK (response = record 09)**

```
<EOT><STX> 08 <ETX>
           \/
        Record No.
```

- **Record No. 10: Transmitting checksums + correction value to the scale**

```
<EOT><STX> 10 <ESC> CS1 KW1 CS2 KW2 .. CSn KWn <ETX>
           \/       \     /
         Record      \   /______  CS1  KW1 (checksum, correct. value) 1
           No.                   CS2  KW2 (checksum, correct. value) 2
                                 CSn  KWn (checksum, correct. value) n
```

- The checksum and the correction value are represented in hexadecimal ACSII format (whereby 'n' may be max. 5)

  Example: CS1 = 74AEH, which results in 37H, 34H, 41H, 45H

- **Record No. 20: logic version number ON/OFF**

```
<EOT><STX> 20 <ESC> D0 <ETX>
           \/      \
         Record     \___ 30H = logic version number OFF
           No.           31H = logic version number ON
```

RECORD CASH REGISTER TERMINAL (POS) → SCALE

- **Record 38: Request current scale status**
  (from version 2.00)

```
<EOT><STX> 38 <ETX>
           \/
        Record No.
Or

<EOT><STX> 38 <ESC> M1M0 <ETX>
           \/       \__/
       Record No.   Mode

Mode==00 -> reserved
Mode==01 -> reserved
Mode==02 -> reserved
Mode==03 -> reserved
Mode==04 -> reserved
Mode==05 -> reserved
Mode==06 -> Scale state and decimal places „price“ over record 39
Mode==07 -> Scale state and decimal places “weight” over record 39
Mode==08 -> reserved
Mode==09 -> reserved
Mode==10 -> Scale state and no of weight unit over record 39
              30H = lb : oz / 1/8 oz
              31H = lb / 0,01
              32H = lb / 0,005
              33H = kg; 3 decimal places
              34H = kg; 2 decimal places
Mode==11 -> reserved
Mode==12 -> Scale state and protocol version over record 39
            Protocol version format:     2-places major version
                                         2-places minor version
```

- **Record 71: Request weight price and tare**
  (from version 2.00)

```
<EOT><STX> 71 <ETX>
```

Answer see record 72

- **ENQ: Request for scale data (response = record 02)**
  Request for record 11 (check OK/check not OK)

```
<EOT><ENQ>
```

- **Standardizing of scale: the scale interface is set to its basic state. 'EOT' must be prefixed to each request**

```
<EOT>
```

RECORDS SCALE → CASH REGISTER TERMINAL (POS)

- **Record No. 02: valid weight value**

```
<STX>0 2<ESC>X<ESC>D4 D3 D2 D1 DO<ESC>D5 D4 D3 D2 D1 D0<ESC>D5 D4 D3 D2 D1 D0<ETX>
     \ /     |     \_____________/     \_________________/     \_________________/
   Record  Scale       Weight             Unit price            Selling price
     No.   status     5 digits            5/6 digits              6 digits
```

Scale status X

30_H = lb : oz / 1/8 oz
31_H = lb / 0,01
32_H = lb / 0,005
33_H = kg; 3 decimal places
34_H = kg; 2 decimal places

- **Record No. 09: status information after 'NAK'**

```
<STX>0 9<ESC>S1 S0<ETX>
            \   /
           Status

S1  S0

 0   0        ; there is no error present
 0   1        ; GENERAL error on scale
 0   2        ; PARITY error, or more characters than permitted
 1   0        ; incorrect record number detected
 1   1        ; no valid unit price
 1   2        ; no valid tare value received
 1   3        ; no valid text received
 2   0        ; scale still in motion (no equilibrium)
 2   1        ; no motion since last weighing operation
 2   2        ; price calculation not yet available
 3   0        ; scale in MIN range
 3   1        ; scale in underload range or negative weight display
 3   2        ; scale in overload range
 3   3        ; scale was not unloaded for approx. 2 minutes
 5   6        ; Scanners with scale sentry function: the
                weighing item was not positioned correctly on the
                load plate
```

RECORDS SCALE → CASH REGISTER TERMINAL (POS)

- **Record No. 11: Response or request for the checksum:**

```
<STX>11<ESC> D0 Z<ETX>
     \/       \  \___ Random number only if D0  =  32H
   Record      \
     No.        \_____ 30H = check not in order
                       31H = check in order
                       32H = retransmit record 10 by using the random number 'Z'
```

Representation of random number 'Z' identical to the checksum and the correction value.

ACK: positive acknowledgement

NAK: negative acknowledgement

a) if error on scale
b) if parity error on interface has been detected
c) if incorrect record number has been detected
d) if no valid unit price has been received
e) if no valid tare value has been received
f) If no valid text has been received
g) if more than 50 characters have been received
h) if scale is still in motion
i) if there was no more motion after the last weighing operation
j) if the scale is below MIN
k) if the scale is in the underload range
l) if the scale is in the overload range

No response

a) if ETX was not detected (on receipt of unit price)
b) if STX was not detected (on receipt of unit price)
c) if ENQ was not detected (on call of scale data)

RECORDS SCALE → CASH REGISTER TERMINAL (POS)

- **Record 39: Current scale status as response to record 38**
  (from version 2.00)

```
Response to: <EOT><STX> 38 <ETX>

<STX> 39 <ESC> S1 S0 <ETX>
      \/       \___/
    Record    Status
     No.

Response to: <EOT><STX> 38 <ESC> M1 M0 <ETX>

<STX> 39 <ESC> S1 S0 <ESC> M1 M0 <ESC> D8 D7 D6 D5 D4 D3 D2 D1 DO <ETX>
      \/       \___/       \___/       \_____________________/
    Record    Status       Mode                Value
     No.
```

Status S1 S0: see definition record 9

Mode M0 M1: Repetition of mode of record 38

- **Record 72: Valid weight value**
  (from version 2.00)

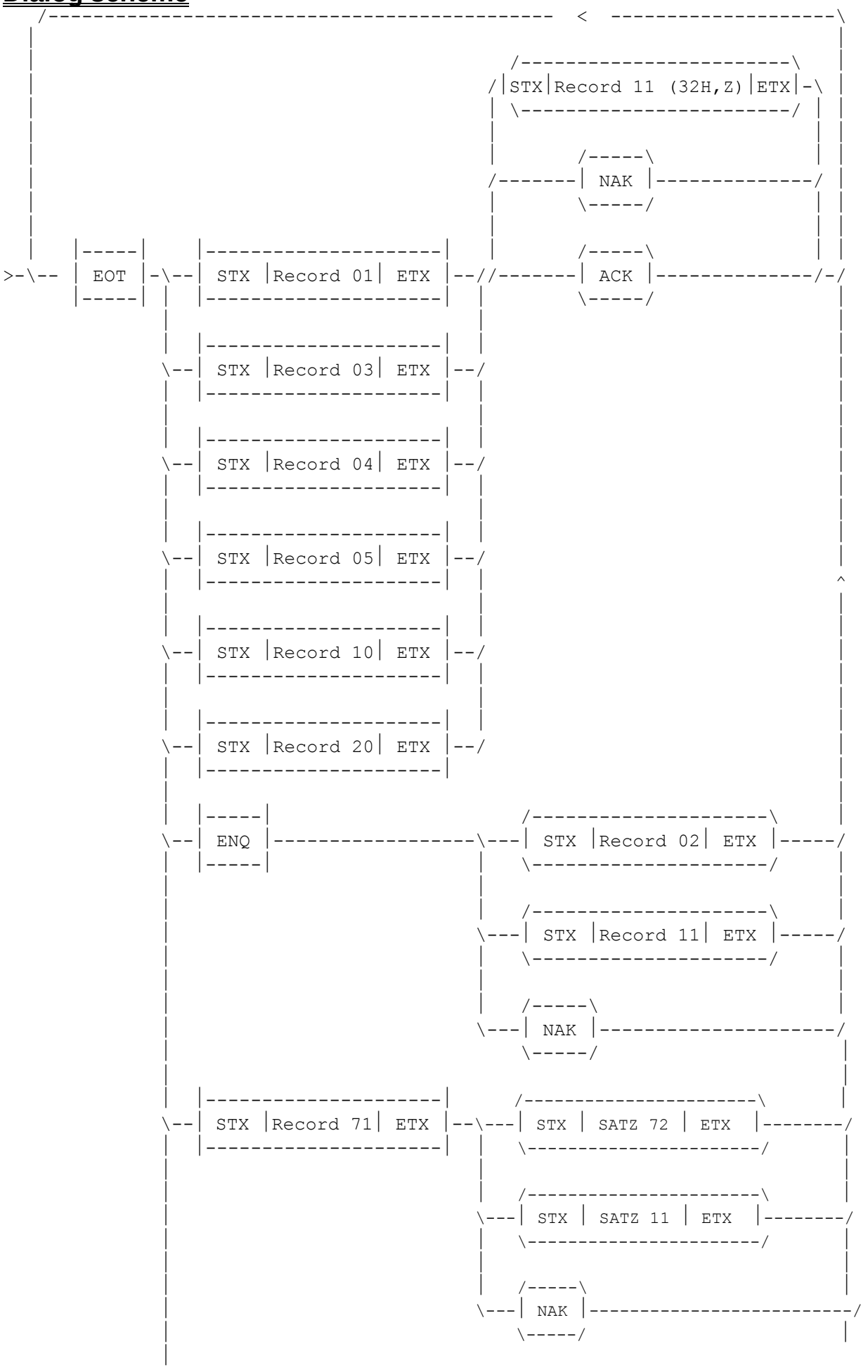
Record 72 as answer to record 71

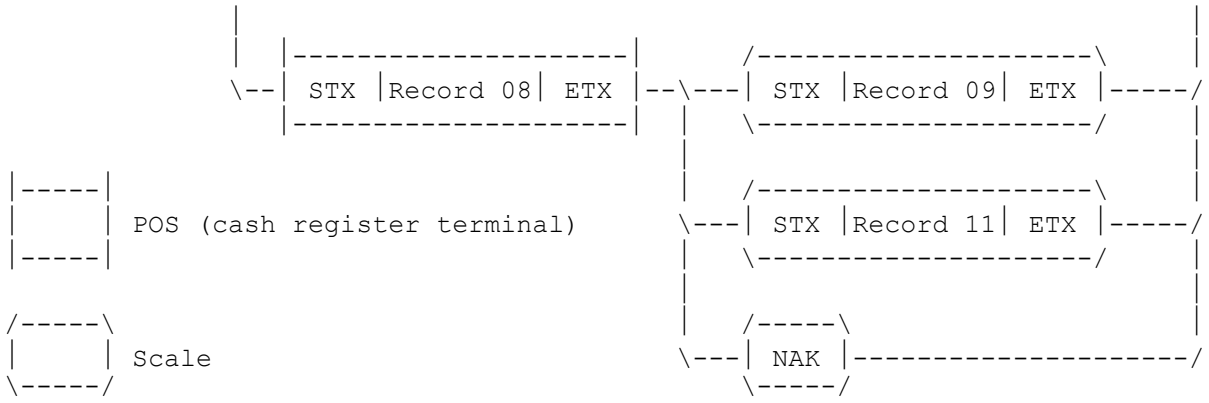
```
<STX> 72 <ESC> S1 S0 <ESC> D4D3D2D1DO <ESC> D5D4D3D2D1D0 <ESC> D5D4D3D2D1D0
      \/       \___/       \________/       \__________/       \__________/
    Record    Status         Weight          Unit price        Selling price
      No.    of scale       5 digits          6 digits          6 digits


<ESC> D3D2D1D0 <ETX>
      \______/
      Tare
      4 digits
```

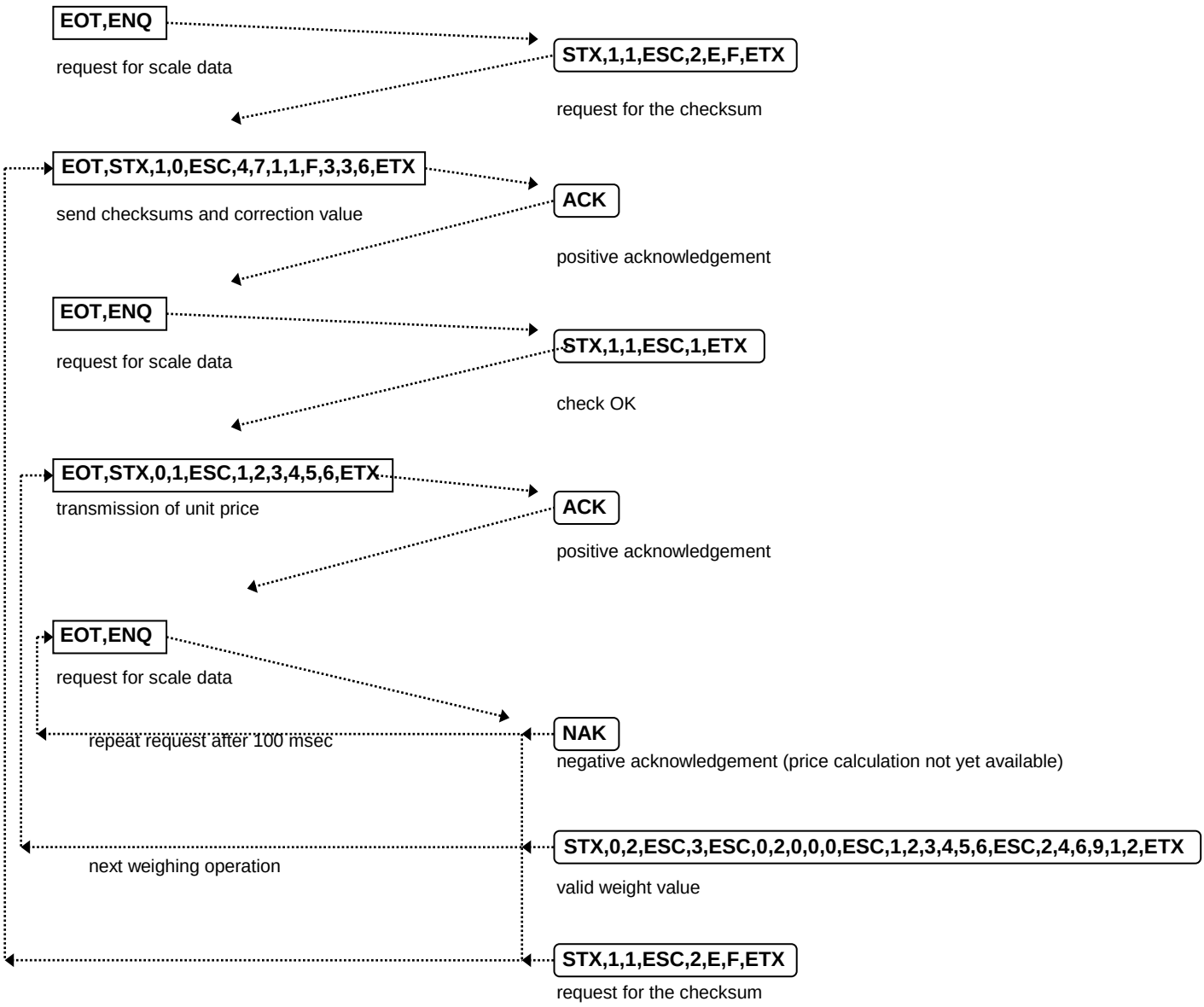
Status S1 S0: see definitions record 9

Dialog scheme




STX Record 08 ETX
STX Record 09 ETX
POS (cash register terminal)
STX Record 11 ETX
Scale
NAK

Example for Dialog



This is only one example for dialog between cash register and scale !!

DATA FORMAT AND TRANSMISSION SPEED

Transmission speed:	9600 baud
Mode of transmission:	asynchronous
Data format:	7 bits + parity
Parity:	odd
Stop bit:	1 bit

- The data output on the scale may be an RS 232, RS 422 or a TTY 20 mA interface.
  In the data cable, only the send and receive lines or GND are wired. There are no further control cables supported.

  Bizerba offers various data cables with different plugs to POS. The type of cables and plugs must be clarified prior to placement of order.

NOTES CONCERNING THE FUNCTION

- The 06 checkout dialog represents an extension of the checkout dialog 02. The records 10, 11 and 20 are new.

- After startup, the scale will be in its normal weighing mode.

- The scale requests the record 10 from POS by means of record 11 (32H, Z). After a relevant check, the request is acknowledged with record 11 (check OK/check not OK).

Check not OK

If POS transmits a unit price and the checksum check has not been carried out, the scale will respond by transmitting record 11 (32H, Z). In this case, the unit price will not be indicated (audible error signal).

Record 11 (32H, Z) is normally transmitted after

- scale ON/OFF
- scale error

- protocol error
- interface error
- after 50 weighing operations of the scale in conjunction with the cash register (cyclic test of POS)
- display of logic version number

Check OK

After the checksum check has taken place, the scale waits for the transmission of ENQ or a unit price from the interface. At this time, it ranges in the 'Cash register' mode for which reason the keyboard is inactive. This means also that operations can now only be carried out via the interface.