

Terminal 3710 Data Interface

TECHNICAL DESCRIPTION

Terminal 3710 Data Interface

Product	Versions	Features
Terminal	3710	

Terminal 3710 Data Interface

Contents	Page
0.1 Status	3
0.2 Modifications relative to previous version	3
0.3 Cross-references	3
0.4 Text system used.....	3
1 INTRODUCTION	4
2 PHYSICAL PROPERTIES.....	4
2.1 RS232 interface (V.24) connection.....	4
2.1.1 Equipment-side connection with 9 pin SUB-D connector.....	4
2.1.2 Equipment-side connection with 5 pin round connector(s).	5
2.2 USB interface connection.....	7
2.2.1 Equipment-side connection with 4 pin standard connector.	7
2.2.2 Equipment-side connection with 4 pin round connector(s).	8
2.3 Ethernet connection	9
3 DATA TRANSFER PARAMETERS	9
4 LOGICAL PROPERTIES.....	9
4.1.1 Protocol content	9
4.1.2 Dataset from terminal (standard).....	10
4.1.3 Request dataset.....	11
4.1.4 Instruction codes	12
4.1.4.1 General instruction codes	12
4.1.5 Control characters for DP applications.....	13
Tables and Illustrations.....	Page
Table 1: RS232 connector assignments.....	4
Table 2: RS232 connector assignments.....	5
Table 3: USB connector assignments.....	7
Table 4: USB connector assignments.....	8
Table 5: DP request datasets	11
Table 6: general instruction codes.....	12
Table 7: Control characters for DP applications	13
Illustration 1: Pin assignments for SUB-D connector (9-pin, female)	4
Illustration 2: 5 pin round connector (solder side)	5
Illustration 3: Data signal level for RS 232C (V.24).....	6
Illustration 4: Interface RS 232C (V.24) (schematic).....	6

Terminal 3710 Data Interface

Illustration 5: 4 pin standard connector	7
Illustration 6: 4 pin round connector (solder side)	8

0.1 Status

Date:	Status	Version	Editor	Approved by
22/10/2012	First edition	1.0	Rausch	

0.2 Modifications relative to previous version

Date:	Status	Version	Editor	Approved by
05/12/2012	Revision of Table 5: Control characters for DP applications and PLU example added	1.1	Hauke	
05/11/2013	Revision of Table 5: Control characters for DP applications and neutral measurement for version 3.02 and higher standardversion 1.05	1.2	Hauke	
05/11/2013	2.3 Ethernet	1.2	Rausch	

0.3 Cross-references

Title	Soehnle Part No.
Technical Description USER MODE 3710	470.702.099

0.4 Text system used

Microsoft Office Word 2000

Terminal 3710 Data Interface

1 Introduction

The industrial evaluation unit 3710 family can be fitted with up to 3 bidirectional serial data interfaces. These interfaces can be connected to printers and/or data processing devices (e.g. PC, scanner). Other options available on request.

2 Physical properties

2.1 RS232 interface (V.24) connection

2.1.1 Equipment-side connection with 9 pin SUB-D connector.

Protection class: IP42

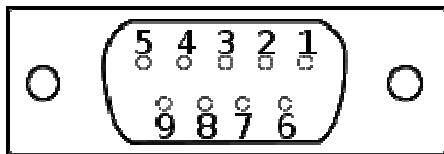


Illustration 1: Pin assignments for SUB-D connector (9-pin, *female*)

The interface can operate with unidirectional or bidirectional data. The evaluation unit is always ready to receive, and therefore does not have any handshake signals. The interface is not galvanically isolated.

Pin	Evaluation unit assignments
1	n.c.
2	TxD (V24)
3	RxD (V24)
4	n.c.
5	Signal ground
6	n.c.
7	n.c.
8	n.c.
9	n.c.

Table 1: RS232 connector assignments

Terminal 3710 Data Interface

2.1.2 Equipment-side connection with 5 pin round connector(s).

Protection class: IP67
 Manufacturer: Binder, 702 Series, 5-pin flange socket

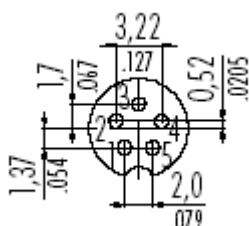


Illustration 2: 5 pin round connector (solder side)

The interface can operate with unidirectional or bidirectional data. The evaluation unit is always ready to receive, and therefore does not have any handshake signals. The interface is galvanically isolated.

Pin	Evaluation unit assignments
1	TxD (V24)
2	RxD (V24)
3	Signal ground
4	n.c.
5	n.c.

Table 2: RS232 connector assignments

Terminal 3710 Data Interface

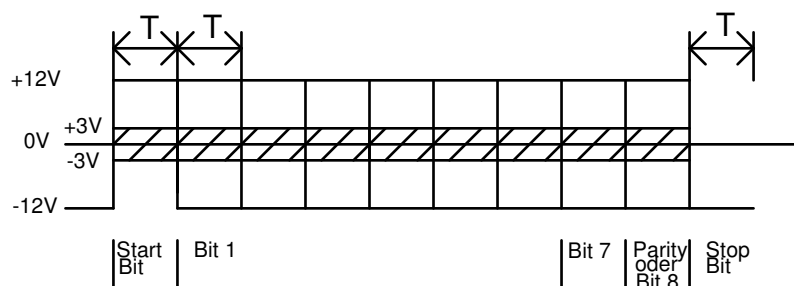


Illustration 3: Data signal level for RS 232C (V.24)

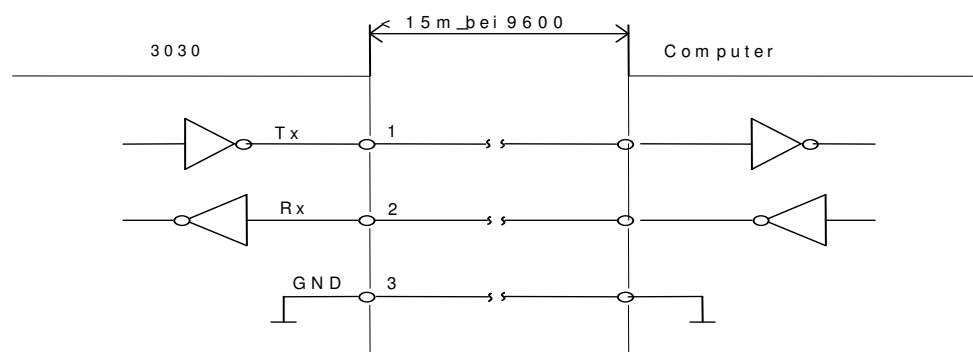


Illustration 4: Interface RS 232C (V.24) (schematic)

Terminal 3710 Data Interface

2.2 USB interface connection

2.2.1 Equipment-side connection with 4 pin standard connector.

Protection class: IP42

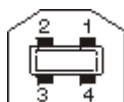


Illustration 5: 4 pin standard connector

The interface can operate with unidirectional or bidirectional data. The evaluation unit is always ready to receive, and therefore does not have any handshake signals.

Pin	Evaluation unit assignments
1	VCC
2	D -
3	D +
4	Signal ground

Table 3: USB connector assignments

The correct driver for a virtual COM port (VCP) must be installed on the PC side (FTDI FT232RL). The COM port used can be identified in the system control panel. Drivers for various operating systems are provided on the CD supplied (SP No. 775.005.013). USB data cable SP No. 2550.03.018

Terminal 3710 Data Interface

2.2.2 Equipment-side connection with 4 pin round connector(s).

Protection class: IP67
 Manufacturer: Binder, 702 Series, 4-pin flange socket

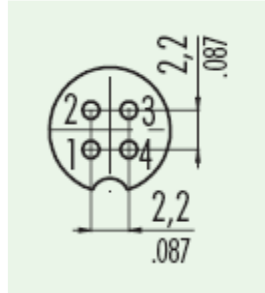


Illustration 6: 4 pin round connector (solder side)

The interface can operate with unidirectional or bidirectional data. The evaluation unit is always ready to receive, and therefore does not have any handshake signals.

Pin	Evaluation unit assignments
1	VCC
2	D -
3	D +
4	Signal ground

Table 4: USB connector assignments

The correct driver for a virtual COM port (VCP) must be installed on the PC side (FTDI FT232RL). The COM port used can be identified in the system control panel. Drivers for the various operating systems are provided on the CD supplied (SP No. 775.005.013). USB data cable SP No. 2550.03.011

Terminal 3710 Data Interface

2.3 Ethernet connection

connection RJ45
10/100 Mbit Ethernet
Auto crossover detection

MAC adress from **00-50-C2-97-D0-00** to **00-50-C2-97-DF-FF**

IP- Adresse:	Im UCAL configurable
Standard- Gateway:	Im UCAL configurable
Subnet Mask:	Im UCAL configurable
Telnet- Port:	Im UCAL configurable

Assisted all Instruction codes of the EDV- Mode at Telnet

Activate the Ethernet - Interface at the UCAL – Mode (Soe.- Nr. 470.702.099)

3 Data transfer parameters

The interface parameters are described in the "Techn. Description USER Mode 3710" Soe. No. 470.702.099, and can be configured on the program terminal in Setting mode.

4 Logical properties

4.1.1 Protocol content

The contents are:

- Dataset from terminal
- Request dataset for DP host
- Instruction codes
- Control characters for DP applications

4.1.2 Dataset from terminal (standard)

[illegible]

The diagram illustrates a barcode label structure. It consists of two main parts: a large linear barcode at the top and a smaller, more complex barcode below it. The large barcode contains numbers from 1 to 42. The smaller barcode contains the sequence 0, 0, 0, 1, 0, 1, followed by the letter N, a hyphen, the number 1, three zeros, a period, another zero, the letter k, and the letter g. To the right of the barcodes, there are definitions for some symbols: CR= Carriage return, LF= Line feed, K= Identifier, and V= Prefix.

Digit 1 = Underload
Digit 2 = Overload
Digit 3 = Scales stable
Digit 4 = Empty signal
Status 0 = not active
Status 1 = active

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42				
A	0	0	0	0	0	0	1	0	0	0	1	0	1	N					-	1	0	0	0	,	0		k	g																	
Alibi memory identifier								Status				Scales		Net value with identifier, prefix and dimension																															

A = alibi memory identifier
7-digit consecutive number incremented for each entry

With our service software, these datasets can be adapted, control codes added, and different transfer modes assigned.

Terminal 3710 Data Interface

4.1.3 Request dataset

A host computer can request measurement data from the scales using the commands listed below (ASCII strings). For data requests, there are 2 functionally compatible user terminal instruction sets with immediate and without acknowledgement. These instructions differ only in that they are in upper/lower case.

When a valid instruction is received, it is acknowledged with an ACK. For invalid complete instructions, a NAK is sent.

Instruction format:

< A >

			End character(3EH)
			Instruction (A...Z)
			Start character (3CH)

Request with no ACK

Request with no ACK	Request with ACK	Description	Answer immediate	Answer if condition is met & scales stable
<A>	<a>	Send value immediately and once only	DP data	
		Send value once if there is a change and when stable, with alibi identifier		DP data
<C>	<c>	Send values always after a change and when stable		DP data
<D>	<d>	Always when stable and there is a change in advance of empty signal		DP data
<E>	<e>	As for <D>, but after unloading		DP data
<F>	<f>	Send value continuously	DP data	

Table 5: DP request datasets

Terminal 3710 Data Interface

4.1.4 Instruction codes

A host computer can initiate functions using the commands listed below (ASCII strings). For data requests, there are 2 functionally compatible instruction sets with immediate and without acknowledgement. These instructions differ only in that they are in upper/lower case.

When a valid instruction is received, it is acknowledged with an ACK. For invalid complete instructions, a NAK is sent.

These instructions can be used in weighing mode only.

4.1.4.1 General instruction codes

Request with no ACK	Request with ACK	Description	Answer immediate	Answer if condition is met & scales stable	Cannot execute
<T>	<t>	Taring	ACK		NACK
<TC>	<tC>	Cancel taring	ACK		NACK
<T9999>	<t9999>	Manual tare set to 9999 (value with 1...7 digits)	ACK		

Table 6: general instruction codes

Terminal 3710 Data Interface

4.1.5 Control characters for DP applications

- The characters marked with an X below can be used for controlling DP communication. Values are assigned to the corresponding function, and activate the function. A receive acknowledge is returned, not followed by an execution acknowledgement.
- Values are entered in the selected unit (Counting/Neutral Measurement) or in the calibrated unit weight of the measuring station used.

Control instruction	Use		Data processing
0	Not active		
5	Full keylock On		X
6	Full keylock Off		X
7	Zero setting		X
8	<i>X10 Switch function On</i>		X
9	<i>X10 Switch function Off</i>		X
10	Read tare value (manual) into tare memory		X
11	Taring		X
14	Clear the tare memory		X
80	Count / PLU transfer		X
81	Formula transfer		
82	Delete count / reference weight		
85	Price / kg labelling (Decimal separator=point)		X
86	Currency for price labelling (3-digit)		X
150	Reference value		
151	Positive tolerance		
152	Negative tolerance		
220	Print (button)		X

Table 7: Control characters for DP applications

Terminal 3710 Data Interface

Instruction code:

<K instruction code (3-digit with leading zeros) K, parameter>

Example 1: Reference value: **<K150K 1000>** -> "1000" is entered in the calibrated unit.

Example 2: Print button: **<K220K>** -> print button is released.

Example 3: PLU – memory: **<K080Kplu;name;piece;tare>** PLU dataset is entered in memory

The Product Look-Up has 100 memory locations and the content of the dataset must be as follows:

- "plu" is the PLU number with a value from 001 to 100
- "name" consists of up to 20 characters (the first 7 characters are displayed)
- "piece" is the piece weight value in gr, with a point as decimal separator
- "tare" is the tare weight value in gr, with a point as decimal separator