



Object SEG LINK Protocol	Subject Design specification	Issue 20
Drawn by Jan Erngren	Date 1999-08-16	

# SEG LINK Protocol Design specification

## NOTICE

Confidential/proprietary information of Bewator AB is contained herein and may not be disclosed, displayed, used reproduced or copied without its prior written consent. Failure to comply with this notice may result in liability for costs, damages or losses.

Object	Subject	Issue
SEG LINK Protocol	Design specification	20

## Contents

1	SCOPE .....	3
2	DEFINITION.....	3
3	NETWORK.....	4
3.1	CONFIGURATION.....	4
3.2	ADDRESS.....	4
3.3	ELECTRICAL SPECIFICATION.....	4
3.4	TRANSMISSION PARAMETERS .....	4
3.5	TRANSMISSION CODES .....	4
3.6	CONTROL CHARACTERS.....	4
3.7	TRANSMISSION TYPE .....	5
3.8	IDENTIFYING .....	5
3.9	MESSAGE .....	5
3.9.1	Overview .....	5
3.9.2	Message header .....	5
3.9.3	Message body.....	5
3.9.4	Message control.....	6
3.9.5	Polling .....	6
3.9.6	Selecting .....	6
3.9.7	Broadcasting .....	7
3.10	ERROR HANDLER.....	7
3.10.1	Overview .....	7
3.10.2	Polling error.....	7
3.10.3	Selecting error.....	7
4	MESSAGE DATA.....	8
4.1	CLASS 01 - PARAMETERS AND TABLE VALUES.....	8
4.1.1	Class 01 - type 01 - Card reader parameters.....	8
4.1.2	Class 01 - type 02 - Autonomy opening times.....	9
4.1.3	Class 01 - type 06 - Backlight control.....	10
4.1.4	Class 01 - type 07 - Autonomy security level .....	11
4.1.5	Class 01 - type 08 - Security device.....	12
4.1.6	Class 01 - type 09 - Reset control.....	13
4.1.7	Class 01 - type 10 - Sounder parameters .....	14
4.1.8	Class 01 - type 11 - Relay parameters.....	15
4.1.9	Class 01 - type 12 - Contact parameters.....	16
4.1.10	Class 01 - type 13 - Alarm parameters.....	17
4.1.11	Class 01 - type 14 - Owner group .....	18
4.2	CLASS 02 - TERMINAL MESSAGES .....	19
4.2.1	Class 02 - type 01 - Card read .....	19
4.2.2	Class 02 - type 02 - Key press .....	20
4.2.3	Class 02 - type 03 - Relay control .....	21
4.2.4	Class 02 - type 04 - LED control .....	22
4.2.5	Class 02 - type 05 - Sounder control.....	23
4.2.6	Class 02 - type 07 - Status request .....	24
4.2.7	Class 02 - type 08 - Status.....	25
4.2.8	Class 02 - type 09 - Version request.....	27
4.2.9	Class 02 - type 10 - Version.....	28
4.2.10	Class 02 - type 11 - Terminal error.....	29
4.2.11	Class 02 - type 12 - Voltage request.....	30
4.2.12	Class 02 - type 13 - Voltage.....	31
4.2.13	Class 02 - type 14 - External red LED request.....	32
4.2.14	Class 02 - type 15 - External red LED.....	33
4.2.15	Class 02 - type 16 - Group relay control.....	34
4.3	CLASS 30 - PRIORITY CARD .....	35
4.3.1	Class 30 - type 01 - Enable slot .....	35
4.3.2	Class 30 - type 02 - Disable slot .....	36
4.3.3	Class 30 - type 03 - Enable slot with owner group .....	37
5	ASCII TABLE .....	38
5.1	ASCII CONTROL CHARACTERS.....	38
5.2	ASCII PRINTING CHARACTERS.....	38
6	DOCUMENT HISTORY .....	39



Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

## 1 SCOPE

This document describes the segment communication protocol in the BEWAPASS/ENTRO system. The segment communication is between segment controllers and door controllers or door terminals.

To be as compatible as possible with the BEWAPASS/MC system, the names DT03, DT04 and MC11 are included.

## 2 DEFINITION

### *Door controller*

Unit which is mounted usually hidden from the door. The door controller works either controlling a door terminal or as stand alone unit.

### *Door terminal*

Unit mounted at the door, e.g. BC43, DT03, DT04 and DT05. Are either connected directly to the segment or to a door controller.

### *SR32*

Segment controller in BEWAPASS/ENTRO system.

### *DC11*

Door controller in the BEWAPASS/ENTRO system.

### *DC21*

Door controller in the BEWAPASS/ENTRO system.

### *DT05*

Door terminal in the BEWAPASS/ENTRO system.

### *Segment*

A segment includes one master, i.e. segment controller, and 0 to 31 slaves, i.e. door terminals and door controllers.

### *Segment controller*

Unit which controls door terminals and door controller.



Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

## **3 NETWORK**

### **3.1 CONFIGURATION**

Every SR32 can handle up to 31 door terminals and door controllers. SR32 acts as a master, and door terminals and door controllers as slaves.

### **3.2 ADDRESS**

The individual address for the door terminals and door controllers are 21H to 3FH (31 node addresses). These addresses are the same when SR32 tries to identify, poll or select. The address for broadcasting (address all door terminals at the same time) is 40H.

### **3.3 ELECTRICAL SPECIFICATION**

The segment protocol is carried over an industrial standard EIA RS 485 twisted pair link. Half duplex carrier with an cable impedance of ~120 Ohm is used. The protocol does, however, allow other carriers, such as glass fibre etc.

### **3.4 TRANSMISSION PARAMETERS**

BAUD-rate: 9600  
Mode: Asynchrony 1 start bit, 1 stop bit  
Data: 8 bits ASCII  
Parity: None

### **3.5 TRANSMISSION CODES**

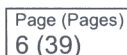
Transmission codes is ASCII 00H to FFH (see chapter 5).  
00H and 1FH are reserved for control characters.

### **3.6 CONTROL CHARACTERS**

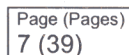
Name	Char	Comment
SOH	01H	Start of Header
STX	02H	Start of Text
ETX	03H	End of Text
EOT	04H	End of Transmission
ACK	06H	Affirmative Acknowledgement
DC1	11H	Device Control 1 (Identify)
DC2	12H	Device Control 2 (Identify reply)



Document d62.doc, created 1998-10-29, latest saved 2002-04-25, printed 2002-04-25







If SR32 doesn't receive any ACK from a door terminal or door controllers when transmit a message, SR32 retransmits the message two times.

Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

## 4 MESSAGE DATA

### 4.1 CLASS 01 - PARAMETERS AND TABLE VALUES

#### 4.1.1 Class 01 - type 01 - Card reader parameters

<b>Message</b>	Card reader parameters	
<b>Transmitter</b>	SR32, (MC11)	
<b>Receiver</b>	BC615, DC11, DC21, DT05, (DT03, DT04)	
<b>Field</b>	<b>Format</b>	<b>Comment</b>
Class no.	A1	21H
Type no.	A1	21H
Start position1	N2	Start position in card mag strip, where card info is taken
Card length1	N2	No. of char taken from mag strip
Start position2	N2	Start position1 rotated <sup>1)</sup>
Card length2	N2	Card length1 rotated <sup>1)</sup>

1) Rotate all bits one bit to the left. Bit 0 is loaded from bit 7.

EXAMPLE: Start position is 10 and card length is 8:  
STX 21H 21H 31H 30H 30H 38H 62H 60H 60H 70H ETX

Note: By default is or when Start position1 is 0 and Card length1 is 16, following is valid (i.e. Bewator standard):

- If card data is more than 15 bytes, You should read position 9 - 16 bytes.
- If card data is less than 16 bytes, You should read the last 8 bytes
- If card data is less than 8 bytes, You should read and place as least significant and fill up with leading zeros.

Example: 12345678901234567890, will be 90123456,  
1234567890, will be 34567890,  
12345, will be 00012345.





Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

#### 4.1.2 Class 01 - type 02 - Autonomy opening times

<b>Message</b>	Autonomy opening times	
<b>Transmitter</b>	SR32, (MC11)	
<b>Receiver</b>	DC21, (DT03, DT04)	
<b>Field</b>	<b>Format</b>	<b>Comment</b>
Class no.	A1	21H
Type no.	A1	22H
Autonomy Door opening time1	N2	01 - 99 seconds
Autonomy Door opening time2	N2	Door opening time1 rotated <sup>1)</sup>
Autonomy Door-held warning time1	N2	01 - 99 seconds
Autonomy Door-held warning time2	N2	Door-held warning time1 rotated <sup>1)</sup>

1) Rotate all bits one bit to the left. Bit 0 is loaded from bit 7.

EXAMPLE: Autonomy door opening time is 10 seconds and autonomy door-held warning time is 23 seconds:

STX 21H 22H 31H 30H 62H 60H 32H 33H 64H 66H ETX

Note: This change has been made comparing ROB to MC11 system:

- Fields Door-held warning time1 and 2 are new.

Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

#### 4.1.3 Class 01 - type 06 - Backlight control

<b>Message</b>	Backlight control	
<b>Transmitter</b>	SR32	
<b>Receiver</b>	DC11, DC21, DT05	
<b>Field</b>	<b>Format</b>	<b>Comment</b>
Class no.	A1	21H
Type no.	A1	26H
Command	N1	1 = Light on 2 = Light off

EXAMPLE: Backlight off:  
STX 21H 26H 32H ETX

Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

#### 4.1.4 Class 01 - type 07 - Autonomy security level

<b>Message</b>	Autonomy security level	
<b>Transmitter</b>	SR32, (MC11)	
<b>Receiver</b>	BC615, DC11, DC21, DT05, IOR6 (DT03, DT04)	
<b>Field</b>	<b>Format</b>	<b>Comment</b>
Class no.	A1	21H
Type no.	A1	27H
Autonomy security level <sup>1)</sup>	N1	1 = unlocked 2 = card 3 = card bistable 4 = personal code 5 = card+PIN 6 = card+PIN bistable 7 = 4 eyes <sup>2)</sup> 8 = closed <sup>3)</sup> 9 = locked <sup>3)</sup>
Autonomy security level2	N1	Autonomy security level1 rotated <sup>4)</sup>

1) Security levels:

Product	BEWAPASS/ENTRO									BEWAPASS/MC								
	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
BC615	X							X		X								X
DT03/04	X				X					X				X				
DT05	X							X	X	X								
DC11	X							X	X	X								
DC21	X	X			X			X	X	X				X				
IOR6	X								X									

2) 4 eyes means that two different card+pins must be used, i.e. witness.

3) The difference between closed and locked is that in level closed the exit button can be used.

4) Rotate all bits one bit to the left. Bit 0 is loaded from bit 7.

EXAMPLE: Autonomy security level for a DT05 is locked:  
STX 21H 27H 39H 6EH ETX

Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

#### 4.1.5 Class 01 - type 08 - Security device

<b>Message</b>	Security device	
<b>Transmitter</b>	SR32, (MC11)	
<b>Receiver</b>	(DT03, DT04)	
<b>Field</b>	<b>Format</b>	<b>Comment</b>
Class no.	A1	21H
Type no.	A1	28H
Security device1	A1	J = Security device N = No security device
Security device2	A1	Security device1 rotated <sup>1)</sup>

1) Rotate all bits one bit to the left. Bit 0 is loaded from bit 7.

EXAMPLE: It is a security device:  
STX 21H 28H 4AH 94H ETX



Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

#### 4.1.6 Class 01 - type 09 - Reset control

<b>Message</b>	Reset control	
<b>Transmitter</b>	SR32	
<b>Receiver</b>	DC11, DC21, DT05, IOR6	
<b>Field</b>	<b>Format</b>	<b>Comment</b>
Class no.	A1	21H
Type no.	A1	29H

EXAMPLE: Reset:  
STX 21H 29H ETX

Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

#### 4.1.7 Class 01 - type 10 - Sounder parameters

<b>Message</b>	Sounder parameters	
<b>Transmitter</b>	SR32	
<b>Receiver</b>	BC615, DC11, DC21, DT05	
<b>Field</b>	<b>Format</b>	<b>Comment</b>
Class no.	A1	21H
Type no.	A1	2AH
Command	N1	1 = Enable sounder 2 = Disable sounder

EXAMPLE: Enable sounder:  
STX 21H 2AH 31H ETX





Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

#### 4.1.8 Class 01 - type 11 - Relay parameters

<b>Message</b>	Relay parameters	
<b>Transmitter</b>	SR32	
<b>Receiver</b>	DC21	
<b>Field</b>	<b>Format</b>	<b>Comment</b>
Class no.	A1	21H
Type no.	A1	2BH
Relay no.	N2	01 = Door release relay 02 = Door warning relay 03 = Door alert relay 04 = Alarm by-pass relay
Type	N1	Door alert relay: 0 = Autonomy Alert 1 = Autonomy Motor lock control Alarm by-pass: 0 = None 1 = Mono-stable 2 = Bi-stable 3 = Bi-stable pulse mode

EXAMPLE: The alarm by-pass output should be of bi-stable function:  
STX 21H 2BH 30H 34H 32H ETX



Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

#### 4.1.9 Class 01 - type 12 - Contact parameters

<b>Message</b>	Contact parameters	
<b>Transmitter</b>	SR32	
<b>Receiver</b>	DC11, DC21, DT05	
<b>Field</b>	<b>Format</b>	<b>Comment</b>
Class no.	A1	21H
Type no.	A1	2CH
Contact no.	N2	01 = Door contact 02 = Lock contact
Contact mode <sup>1)</sup>	N1	1 = Normally close and first edge 2 = Normally open and first edge <sup>2)</sup> 3 = Normally close and second edge <sup>3)</sup> 4 = Normally open and second edge <sup>4)</sup>

1) Normally close: The door is defined closed, when the door contact is closed; and the the door is definied open, when the door contact is opened, or,  
the door is definied locked, when the lock contact is closed; and  
the door is definied unlocked, when the lock contact is opened,

Normally open: The door is definied closed, when the door contact is opened; and the the door is definied open, when the door contact is closed, or,  
the door is definied locked, when the lock contact is opened; and  
the the door is definied unlocked, when the lock contact is closed,

First edge: Used in Door Open sequence. The door release relay will be inactivated when the door contact indicate that the door is open.

Second edge: Used in Door Open sequence. The door release relay will be inactivated when the door contact indicate that the door is closed.

EXAMPLE: Set door contact mode to normally open and first edge:  
STX 21H 2CH 30H 31H 32H ETX



Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

#### 4.1.10 Class 01 - type 13 - Alarm parameters

<b>Message</b>	Alarm parameters	
<b>Transmitter</b>	SR32	
<b>Receiver</b>	DC21	
<b>Field</b>	<b>Format</b>	<b>Comment</b>
Class no.	A1	21H
Type no.	A1	2DH
External red led max flank time.	N2	01 - 99, i.e. 0.1 - 9.9 seconds
Autonomy alarm activation warning time	N2	01 - 99 seconds
ASF Input	N1	0 No ASF input. Alarm button as normal 1 ASF connected.
ASF Normally	N1	0 Normally open (Alarm OFF -> Open, Alarm ON -> Closed) 1 Normally closed (Alarm OFF -> Closed, Alarm ON -> Open)

EXAMPLE: The maximum time for indicating external red LED flash, i.e. max flank time, should be 1.5 seconds:  
STX 21H 2DH 31H 35H ETX

Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

#### 4.1.11 Class 01 - type 14 - Owner group

<b>Message</b>	Owner group	
<b>Transmitter</b>	SR32	
<b>Receiver</b>	DC21	
<b>Field</b>	<b>Format</b>	<b>Comment</b>
Class no.	A1	21H
Type no.	A1	2EH
Owner group no.	N2	00 - 98 = Owner group no. 99 = Owner all

EXAMPLE: Set owner group number to 47:  
STX 21H 2EH 34H 37H ETX



Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

## 4.2 CLASS 02 - TERMINAL MESSAGES

### 4.2.1 Class 02 - type 01 - Card read

<b>Message</b>	Card read	
<b>Transmitter</b>	BC615, DC11, DC21, DT05, (DT03, DT04)	
<b>Receiver</b>	SR32, (MC11)	
<b>Field</b>	<b>Format</b>	<b>Comment</b>
Class no.	A1	22H
Type no.	A1	21H
Card information	N8	00000000 - 99999999
Sub terminal address	N1	Used only by door controller. 0 - 8 = Sub terminal 9 = Clock & data

EXAMPLE A: A card with card information 12345678 is swiped at a DT05:  
STX 22H 21H 31H 32H 33H 34H 35H 36H 37H 38H ETX

EXAMPLE B: A card with card information 12345678 is swiped at a DC21's sub terminal with address 1:  
STX 22H 21H 31H 32H 33H 34H 35H 36H 37H 38H 31H ETX

EXAMPLE C: A card with card information 12345678 is swiped at a DC21's clock & data input:  
STX 22H 21H 31H 32H 33H 34H 35H 36H 37H 38H 39H ETX



Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

#### 4.2.2 Class 02 - type 02 - Key press

<b>Message</b>	Key press	
<b>Transmitter</b>	BC615, DC11, DC21, DT05, (DT03, DT04)	
<b>Receiver</b>	SR32, (MC11)	
<b>Field</b>	<b>Format</b>	<b>Comment</b>
Class no.	A1	22H
Type no.	A1	22H
Key no.	A1	'0' - '9', 'A' and 'B'
Sub terminal address	N1	0 - 8

EXAMPLE A: The key '2' is pressed at a DT05:  
STX 22H 22H 32H ETX

EXAMPLE B: The key 'A' is pressed at a DT21's sub terminal witch address 0:  
STX 22H 22H 41H 30H ETX





Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

#### 4.2.3 Class 02 - type 03 - Relay control

<b>Message</b>	Relay control	
<b>Transmitter</b>	SR32, (MC11)	
<b>Receiver</b>	BC615, DC11, DC21, DT05, (DT03, DT04)	
<b>Field</b>	<b>Format</b>	<b>Comment</b>
Class no.	A1	22H
Type no.	A1	23H
Relay no. <sup>1)</sup>	N2	01 = Door release relay 02 = Door warning relay 03 = Door alert relay 04 = Alarm by-pass relay
Command	N1	1 = Inactivate relay 2 = Activate relay
Time limit	N2	Time limit only together with activating relay. 00 = No time limit 01 - 99 seconds

1) DT05, DT03 and DT04 have only door release relay.

EXAMPLE: Activate the door release relay in 10 seconds:  
STX 22H 23H 30H 31H 31H 31H 30H ETX

Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

#### 4.2.4 Class 02 - type 04 - LED control

<b>Message</b>	Led control	
<b>Transmitter</b>	SR32, (MC11)	
<b>Receiver</b>	BC615 <sup>1)</sup> , DC11, DC21, DT05, (DT03, DT04)	
<b>Field</b>	<b>Format</b>	<b>Comment</b>
Class no.	A1	22H
Type no.	A1	24H
Led no.	N2	01 = Red 02 = Yellow 03 = Green
Command	N1	1 = On 2 = Off 3 = Cycling
Time on <sup>2)</sup>	N3	Time in 1/10 s for led on (001-255)
Time off <sup>2)</sup>	N3	Time in 1/10 s for led off (001-255)
No. of cycles <sup>2)</sup>	N3	000 = No limit for no. of cycles 001 - 255 cycles

- 1) BC615:
- LED on: Only red and yellow LED
  - LED off: All three LEDs
  - LED cycles: Red and green LEDs flash at 3 Hz forever  
Yellow LED flash at 3 Hz in 1-9 times.

- 2) The fields are only used when cycling mode.

EXAMPLE A: Set yellow LED on:  
STX 22H 24H 30H 32H 31H ETX

EXAMPLE B: Set red LED off:  
STX 22H 24H 30H 31H 32H ETX

EXAMPLE C: Set green LED to blink with time on 12.3 seconds, time off 1 second and 4 no. of cycles to a DT05:  
STX 22H 24H 30H 33H 33H 31H 32H 33H 30H 31H 30H 30H 34H  
ETX

Note: These changes have been made comparing ROB to MC11 system:

- Field *Time on* had 001 - 300,
- Field *Time off* had 001 - 300,
- Field *No. of cycles* had 001 - 999.

Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

#### 4.2.5 Class 02 - type 05 - Sounder control

<b>Message</b>	Sounder control	
<b>Transmitter</b>	SR32	
<b>Receiver</b>	BC615 <sup>1)</sup> , DC11, DC21, DT05	
<b>Field</b>	<b>Format</b>	<b>Comment</b>
Class no.	A1	22H
Type no.	A1	25H
Command	N1	1 = Sounder on 2 = Sounder off 3 = Sounder cycling
Frequency	N4	0000 - 9999 [Hz]
Time on <sup>2)</sup>	N3	Time in 1/10 s for sounder on (001-255)
Time off <sup>2)</sup>	N3	Time in 1/10 s for sounder off (001-255)
No. of cycles <sup>2)</sup>	N3	000 = No limit for no. of cycles 001 - 255 cycles

1) BC615:  
Sounder cycling means activate "Alarm activate warning tone".

2) The fields are only used when sounder cycling mode.

EXAMPLE A: Set sounder on with frequency 1234 Hz:  
STX 22H 25H 31H 31H 32H 33H 34H ETX

EXAMPLE B: Set sounder off:  
STX 22H 25H 32H ETX

EXAMPLE C: Set sounder cycling with frequency 1234 Hz, time on 12.3 seconds, time off 1 second and 4 no. of cycles to a DT05:  
STX 22H 25H 33H 31H 32H 33H 34H 31H 32H 33H 30H 31H 30H 30H 30H 34H ETX

Note: These changes have been made comparing ROB to MC11 system:

- Field *Time on* had 001 - 300,
- Field *Time off* had 001 - 300,
- Field *No. of cycles* had 001 - 999.



Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

## 4.2.6 Class 02 - type 07 - Status request

<b>Message</b>	Status request	
<b>Transmitter</b>	SR32, (MC11)	
<b>Receiver</b>	BC615, DC11, DC21, DT05, IOR6 (DT03, DT04)	
<b>Field</b>	<b>Format</b>	<b>Comment</b>
Class no.	A1	22H
Type no.	A1	27H
Function <sup>1)</sup>	N2	01 = Lock contact 02 = Relay 03 = Door contact 07 = Tamper switch 14 = Alarm button 16 = Input contact
Function no.	N2	01 – 99 Relay: 01 = Door release relay 02 = Door warning relay 03 = Door alert relay 04 = Alarm by-pass relay Input contact: 00 = All 01-99 = Input contact

### 1) Status request to products

Product	01	02	03	07	14	16
BC615				X		
DC11		X	X	X		
DC21	X	X	X	X	X	
DT03/04				X		
DT05			X	X		
IOR6				X		X

EXAMPLE A: Ask for the status of the door contact from a DT05:  
STX 22H 27H 30H 33H 30H 31H ETX

EXAMPLE B: Ask for the status of the Alarm by-pass relay from a DC21:  
STX 22H 27H 30H 32H 30H 34H ETX



Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

## 4.2.7 Class 02 - type 08 - Status

<b>Message</b>	Status	
<b>Transmitter</b>	BC615, DC11, DC21, DT05, IOR6 (DT03, DT04)	
<b>Receiver</b>	SR32, (MC11)	
<b>Field</b>	<b>Format</b>	<b>Comment</b>
Class no.	A1	22H
Type no.	A1	28H
Function: <sup>1)</sup>	N2	01 = Lock contact 02 = Relay 03 = Door contact 06 = Exit button 07 = Tamper switch 12 = Main 14 = Alarm button 15 = Sub terminal 16 = Input contact
Function no.	N2	01 – 99 Relay: 01 = Door release relay 02 = Door warning relay 03 = Door alert relay 04 = Alarm by-pass relay Exit button: <sup>2)</sup> 01 = Pressed first time 02 = Still pressed Tamper switch: 01 = DC is inactivated 02 = DC is activated Main: 01 = DT03, DT04 02 = DT05 03 = DC21 04 = DC11 05 = DT05T 06 = BC615 07 = IOR6 08 = DC01 Sub terminal: 00 - 08 = address
Status	N1	Lock contact: 1 = Door is unlocked 2 = Door is locked Relay: 1 = Inactivated 2 = Activated 3 = Activated with time limit Door contact: 1 = Door is opened 2 = Door is closed Exit button: 1 = Not pressed 2 = Pressed Tamper switch: <sup>3)</sup> 1 = Inactivated

Object  
SEG LINK Protocol

Subject  
Design specification

Issue  
20

		2 = Activated
		Main:
		1 = Started
		Alarm button:
		1 = Not pressed
		2 = Pressed
		Sub terminal:
		1 = Started
		2 = Stopped
		Input contact:
		1 = Contact is opened
		2 = Contact is closed
Sub terminal quantity <sup>4)</sup>	N1	Used only by DC.
Sub address <sup>4)</sup>	N1	0 - 9 = No. of sub terminals
		Used only by DC.
		0 - 8
Sub tamper status <sup>4)</sup>	N1	Used only by DC.
		1 = Inactivated
		2 = Activated
Main status <sup>5)</sup>	N1	1 = Cold start
		2 = Watch-dog time out
		3 = Regulary

## 1) Status from products

Product	01	02	03	06	07	12	14	15	16
BC615			X	X	X	X			
DC11		X	X	X	X	X		X	
DC21	X	X	X	X	X	X	X	X	
DT03/04				X	X	X			
DT05			X	X	X	X			
IOR6					X	X			X

2) Exit button: The field *Function no* is valid when the field *Status* is pressed.

3) Tamper switch: The field *Status* indicates the actual tamper switch status for the node address. E.g. if the node address is occupied by a DC21 the actual status is activate if any of DC21 or its sub terminal is activated.

4) Tamper switch: These fields are dynamics and are used only when the field *Function* is tamper switch.

5) Main status: Free of use

EXAMPLE A: The door contact shows that the door is open in a DT05:  
STX 22H 28H 30H 33H 30H 31H 31H ETX

EXAMPLE B: The exit button is still pressed at a DT05:  
STX 22H 28H 30H 36H 30H 32H 32H ETX

EXAMPLE C: The tamper switch in a DC21 is inactivated, inactivated in a sub terminal with address 0 and activated in a sub terminal with address 1:  
STX 22H 28H 30H 37H 30H 31H 32H 32H 30H 31H 31H 32H ETX

EXAMPLE D: A DT21 has main started:  
STX 22H 28H 31H 32H 30H 33H 31H ETX



Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

#### 4.2.8 Class 02 - type 09 - Version request

<b>Message</b>	Version request	
<b>Transmitter</b>	SR32	
<b>Receiver</b>	BC615, DC11, DC21, DT05, IOR6	
<b>Field</b>	<b>Format</b>	<b>Comment</b>
Class no.	A1	22H
Type no.	A1	29H

EXAMPLE: Version request:  
STX 22H 29H ETX

Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

#### 4.2.9 Class 02 - type 10 - Version

<b>Message</b>	Version	
<b>Transmitter</b>	BC615, DC11, DC21, DT05, IOR6	
<b>Receiver</b>	SR32	
<b>Field</b>	<b>Format</b>	<b>Comment</b>
Class no.	A1	22H
Type no.	A1	2AH
Product type	N2	02 = DT05 03 = DC21 04 = DC11 05 = DT05T 06 = BC615 07 = IOR6 08 = DC01
Software version	N3	XXX
Sub terminal quantity	N1	Used only by DC. 0 - 9 = No. of sub terminals
Sub address <sup>1)</sup>	N1	Used only by DC. 0 - 8
Sub type <sup>1)</sup>	N1	Used only by DC. 1 = BC42 2 = BC43 3 = M43 4 = 5298 Pin & Proximity Reader 5 = 5291 Prox reader 6 = SM501 Smart card reader 7 = SM501K smart card w/pin pad 8 = PR500 Prox reader
Sub software version <sup>1)</sup>	N3	Used only by DC. 0.00 - 9.99. Use 0.00 for unknown.

1) These fields are dynamics.

EXAMPLE A: The version of a DT05 is 1.23:  
STX 22H 2AH 30H 32H 31H 32H 33H ETX

EXAMPLE B: The version of a DC21 is 1.23, and it has no sub terminals:  
STX 22H 2AH 30H 33H 31H 32H 33H 30H ETX

EXAMPLE C: The version of a DC21 is 1.23, the version of a BC43 at address 0 is 4.56 and the version of a BC42 at address 3 is unknown, i.e 0.00:  
STX 22H 2AH 30H 33H 31H 32H 33H 32H 30H 32H 34H 35H 36H 33H 31H 30H 30H 30H ETX

Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

#### 4.2.10 Class 02 - type 11 - Terminal error

<b>Message</b>	Terminal error	
<b>Transmitter</b>	DC11, DC21, DT05, IOR6 (DT03, DT04)	
<b>Receiver</b>	SR32, (MC11)	
<b>Field</b>	<b>Format</b>	<b>Comment</b>
Class no.	A1	22H
Type no.	A1	2BH
Error code	N2	01 = Card, bad LRC 02 = Card, start or stop bits missing 03 = Card, format error <sup>1)</sup> 04 = Sub terminal malfunction 05 = Voltage too low 06 = Voltage too high 07 = Eeprom error
Sub terminal address	N1	Used only by DC. 0 - 8 = Sub terminal 9 = DC

1) Card format error is generated when all of below are compliance:

- Bewator card reading standard is not current,
  - the read card has no data within specified start position and card length.
- Example: A card has data 12345678. The start position is 5 and card length is 8.

EXAMPLE A: Voltage too low in a DT05:  
STX 22H 2BH 30H 35H ETX

EXAMPLE B: Bad card LRC for a sub terminal with address 1 at a DC21:  
STX 22H 2BH 30H 31H 31H ETX

Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

#### 4.2.11 Class 02 - type 12 - Voltage request

<b>Message</b>	Voltage request	
<b>Transmitter</b>	SR32	
<b>Receiver</b>	DC11, DC21, DT05, IOR6	
<b>Field</b>	<b>Format</b>	<b>Comment</b>
Class no.	A1	22H
Type no.	A1	2CH

EXAMPLE: Voltage request:  
STX 22H 2CH ETX

Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

#### 4.2.12 Class 02 - type 13 - Voltage

<b>Message</b>	Voltage	
<b>Transmitter</b>	DC11, DC21, DT05, IOR6	
<b>Receiver</b>	SR32	
<b>Field</b>	<b>Format</b>	<b>Comment</b>
Class no.	A1	22H
Type no.	A1	2DH
Voltage	N3	00.0 - 99.9 [V]

EXAMPLE: The voltage is 12.3 volts:  
STX 22H 2DH 31H 32H 33H ETX

Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

#### 4.2.12 Class 02 - type 13 - Voltage

<b>Message</b>	Voltage	
<b>Transmitter</b>	DC11, DC21, DT05, IOR6	
<b>Receiver</b>	SR32	
<b>Field</b>	<b>Format</b>	<b>Comment</b>
Class no.	A1	22H
Type no.	A1	2DH
Voltage	N3	00.0 - 99.9 [V]

EXAMPLE: The voltage is 12.3 volts:  
STX 22H 2DH 31H 32H 33H ETX





Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

#### 4.2.13 Class 02 - type 14 - External red LED request

<b>Message</b>	External red LED request	
<b>Transmitter</b>	SR32	
<b>Receiver</b>	DC21	
<b>Field</b>	<b>Format</b>	<b>Comment</b>
Class no.	A1	22H
Type no.	A1	2EH

EXAMPLE A: External red LED request:  
STX 22H 2EH ETX



Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

#### 4.2.14 Class 02 - type 15 - External red LED

<b>Message</b>	External red LED	
<b>Transmitter</b>	DC21	
<b>Receiver</b>	SR32	
<b>Field</b>	<b>Format</b>	<b>Comment</b>
Class no.	A1	22H
Type no.	A1	2FH
Status	N1	1 = On 2 = Off 3 = Blink
Blink time on 1)	N2	00 - 99, i.e. 0.0 - 9.9 s
Blink time off 1)	N2	00 - 99, i.e. 0.0 - 9.9 s

1) Blink time on and blink time off are only used when status is blink.

EXAMPLE A: The external red LED input is indicating alarm on:  
STX 22H 2FH 31H 30H 30H 30H 30H ETX

EXAMPLE B: The external red LED input is indicating alarm blinking with 1.2 s on and  
3.4 s off:  
STX 22H 2FH 33H 31H 32H 33H 34H ETX



Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

#### 4.2.15 Class 02 - type 16 - Group relay control

<b>Message</b>	Relay control	
<b>Transmitter</b>	SR32	
<b>Receiver</b>	IOR6	
<b>Field</b>	<b>Format</b>	<b>Comment</b>
Class no.	A1	22H
Type no.	A1	30H
No. of relay no. bytes	N1	1 – 9
Relay no.	A1 – A9	Format is 0b01FEDCBA, where A = relay1, and so on, i.e. each relay no. byte contain 6 relays. A = 0, then untouch relay1, A = 1, then handle relay1 as below
Command	N1	1 = Inactivate 2 = Activate 3 = Cycling
Time limit / No. of cycles	N2	Time limit, only together with activating relay. 00 = No time limit 01 - 99 seconds or No. of cycles, only together with cycling relay: 00 = No limit for no. of cycles 01 – 99 cycles
Time activate	N2	Time in 1/10 s for relay activate (00-99)
Time inactivate	N2	Time in 1/10 s for relay inactivate (00-99)
Poststate	N1	Relay status after cycling: 1 = Inactivate 2 = Activate

EXAMPLE A: Activate the relay3 in 12 seconds:  
STX 22H 30H 31H 44H 32H 31H 32H ETX

EXAMPLE B: Inactivate the relay1:  
STX 22H 30H 31H 41H 31H ETX

EXAMPLE C: Activate the relay2, relay6 and relay 8 with 7 cycles in 1.2 s activate and 3.4 s inactivate; and the state of the relay should be inactivate after the cycling:  
STX 22H 30H 32H 62H 41H 33H 30H 37H 31H 32H 33H 34H 31H ETX



Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

### 4.3 CLASS 30 - PRIORITY CARD

#### 4.3.1 Class 30 - type 01 - Enable slot

<b>Message</b>	Enable slot	
<b>Transmitter</b>	(MC11)	
<b>Receiver</b>	DC21, (DT03, DT04)	
<b>Field</b>	<b>Format</b>	<b>Comment</b>
Class no.	A1	3EH
Type no.	A1	21H
Slot no.	N2	00 - 99
Card no.	N8	
Pin code	N4	Cryptated pin code <sup>1)</sup>

1) If the pin code is *abcd*, then the cryptated code is  $[\sim(\text{Ascii}(a) + 35)] [\sim(\text{Ascii}(b) + 7)]$   
 $[\sim(\text{Ascii}(c) + 13)] [\sim(\text{Ascii}(d) + 17)]$ .

EXAMPLE: Enable slot no.12, with card no. 12345678 and pin code 1234, then the cryptated pin code is  $[\sim(31H + 35)] [\sim(32H + 7)] [\sim(33H + 13)] [\sim(34H + 17)]$ , i.e. [ABH] [C6H] [BFH] [BAH]:  
STX 3EH 21H 31H 32H 31H 32H 33H 34H 35H 36H 37H 38H ABH C6H  
BFH BAH ETX



Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

#### 4.3.2 Class 30 - type 02 - Disable slot

<b>Message</b>	Disable slot	
<b>Transmitter</b>	SR32, (MC11)	
<b>Receiver</b>	DC21, (DT03, DT04)	
<b>Field</b>	<b>Format</b>	<b>Comment</b>
Class no.	A1	3EH
Type no.	A1	22H
Slot no.	N2	00 - 99

EXAMPLE: Disable slot no. 12:  
STX 3EH 22H 31H 32H ETX

Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

### 4.3.3 Class 30 - type 03 - Enable slot with owner group

<b>Message</b>	Enable slot with owner group	
<b>Transmitter</b>	SR32	
<b>Receiver</b>	DC21	
<b>Field</b>	<b>Format</b>	<b>Comment</b>
Class no.	A1	3EH
Type no.	A1	23H
Slot no.	N2	00 - 99
Card no.	N8	
Pin code	N4	Cryptated pin code <sup>1)</sup>
Owner group no.	N2	00 - 98

1) If the pin code is *abcd*, then the cryptated code is  $[\sim(\text{Ascii}(a) + 35)] [\sim(\text{Ascii}(b) + 7)]$   
 $[\sim(\text{Ascii}(c) + 13)] [\sim(\text{Ascii}(d) + 17)]$ .

EXAMPLE: Enable slot no.12, with card no. 12345678 and pin code 1234 to owner group number 5.

The cryptated pin code is  $[\sim(31H + 35)] [\sim(32H + 7)] [\sim(33H + 13)]$

$[\sim(34H + 17)]$ , i.e. [ABH] [C6H] [BFH] [BAH]:

STX 3EH 23H 31H 32H 31H 32H 33H 34H 35H 36H 37H 38H ABH C6H

BFH BAH 30H 35H ETX



Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

## 5 ASCII TABLE

### 5.1 ASCII CONTROL CHARACTERS

Dec	Hex	Ctrl	Name	Dec	Hex	Ctrl	Name
000	00	^@	NUL	016	10	^P	DLE
001	01	^A	SOH	017	11	^Q	DC1
002	02	^B	STX	018	12	^R	DC2
003	03	^C	ETX	019	13	^S	DC3
004	04	^D	EOT	020	14	^T	DC4
005	05	^E	ENQ	021	15	^U	NAK
006	06	^F	ACK	022	16	^V	SYN
007	07	^G	BEL	023	17	^W	ETB
008	08	^H	BS	024	18	^X	CAN
009	09	^I	HT	025	19	^Y	EM
010	0A	^J	LF	026	1A	^Z	SUB
011	0B	^K	VT	027	1B	^[	ESC
012	0C	^L	FF	028	1C	^\	FS
013	0D	^M	CR	029	1D	^]	GS
014	0E	^N	SO	030	1E	^^	RS
015	0F	^O	SI	031	1F	^_	US

### 5.2 ASCII PRINTING CHARACTERS

Char	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex
	032	20	8	056	38	P	080	50	h	104	68
!	033	21	9	057	39	Q	081	51	i	105	69
"	034	22	:	058	3A	R	082	52	j	106	6A
#	035	23	;	059	3B	S	083	53	k	107	6B
\$	036	24	<	060	3C	T	084	54	l	108	6C
%	037	25	=	061	3D	U	085	55	m	109	6D
&	038	26	>	062	3E	V	086	56	n	110	6E
'	039	27	?	063	3F	W	087	57	o	111	6F
(	040	28	@	064	40	X	088	58	p	112	70
)	041	29	A	065	41	Y	089	59	q	113	71
*	042	2A	B	066	42	Z	090	5A	r	114	72
+	043	2B	C	067	43	[	091	5B	s	115	73
,	044	2C	D	068	44	\	092	5C	t	116	74
-	045	2D	E	069	45	]	093	5D	u	117	75
.	046	2E	F	070	46	^	094	5E	v	118	76
/	047	2F	G	071	47	_	095	5F	w	119	77
0	048	30	H	072	48		096	60	x	120	78
1	049	31	I	073	49	a	097	61	y	121	79
2	050	32	J	074	4A	b	098	62	z	122	7A
3	051	33	K	075	4B	c	099	63	{	123	7B
4	052	34	L	076	4C	d	100	64		124	7C
5	053	35	M	077	4D	e	101	65	}	125	7D
6	054	36	N	078	4E	f	102	66	~	126	7E
7	055	37	O	079	4F	g	103	67	□	127	7F





Object SEG LINK Protocol	Subject Design specification	Issue 20
-----------------------------	---------------------------------	-------------

## 6 DOCUMENT HISTORY

Issue	Date	Comment	By
1	1995-06-12	First issue	JEN
2	1995-07-27	Second issue	JEN
3	1995-10-30	Third issue	JEN
4	1996-01-30	Fourth issue	JEN
5	1996-02-27	Fifth issue	JEN
6	1996-03-21	Sixth issue	JEN
7	1996-05-28	Seventh issue	JEN
8	1996-08-15	Eighth issue	JEN
9	1996-10-21	Ninth issue	JEN
10	1996-12-10	Tenth issue	JEN
11	1997-01-09	Eleventh issue	JEN
12	1997-02-02	Twelfth issue	JEN
13	1997-02-22	Thirteenth issue	JEN
14	1998-02-17	Included DC11 and DT05T in "Version".	JEN
15	1998-10-29	Included M43 in "Version". New EEPROM error in "Terminal error".	JEN
16	1999-06-09	Included BC615 and IOR6.	JEN
17	1999-07-27	Included DC01 and changed "Group relay control".	JEN
18	1999-08-16	Included motor lock and none in "Relay parameters"	JEN
19	2002-01-14	ASF additions	TV
20	2002-04-25	Added some reader types to Version reply	TV