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SEAB 1F

Protocol for controlling PLC KOS devices from AEG

version 7.11
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1. Introduction

The protocol serves for controlling the PLC KOS 130 device from AEG. The CU exchanges messages with PLC KOS in short intervals, stores them into its flash memory and sends regular messages to the centre in longer intervals. In the case of a loss in communication with the PLC the CU sends a message to the centre immediately.

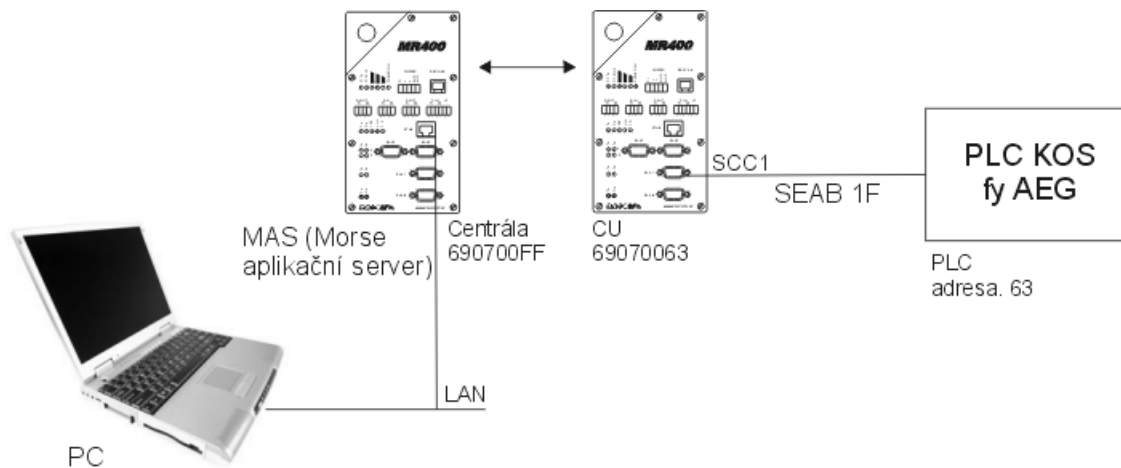


Fig. 1: Modification of the SEAB 1F protocol implemented in Morse

2. Data format

Data packet -

address	function	data	chs
1 byte	1 byte	3 byte	1 byte

- address - 7 bit. Eighth bit -1 - short message (e.g. 0xE3), 0 - long message (e.g. 63FA 3000 0056)
 - 0 to 0x7E - max.number of stations is 127
 - 7F - broadcast
- function -

- FA - administration message - there are no new messages
- FB - general, general broadcast, restore
- 9B - command
- 8A - alarm - events transferred immediately
- data -
message data, a longer message is split into 3-byte parts and more packets are transferred
11 bits (start bit, 8 bits data, odd parity, stop bit)
- chs -
check sum

According to Obr.1 - call from the CU to the PLC for transferring a message and also the end of a message from the PLC -

0xE3

3. Implementation in Morse

Communication between the centre and individual stations occurs at pre-selected times to prevent the accumulation of messages at a single instant. For that reason all CUs maintain synchronous time, via the functions in menu `(U)nit (e)dit`.

Parameter `(c)ycle` is used to set the time, e.g. 120 sec, over which all stations take it in turns to send a regular *administration message* to the centre. Each CU sets the instant of transmission automatically different based on the value of the last byte of its address.

In addition *restore* messages are sent 1x per hour and *general* messages 2x per hour. Transmission times for sending these messages are set to selected minutes in the hour by configuration parameters. These times need to be selected in each CU differently, however, it is not considered a fault if two CU have the same time as the MORSE system will handle this.

3.1. Example of communication

The CU and PLC exchange messages 0xE3 (address + set upper bit), in cycle an *administration message* is generated informing the centre that there are no new messages:

```

07:51:57.001 tx      1 | S01
E3
07:51:57.540 rx;i   1 | S01
E3
07:51:58.001 tx      1 | S01
E3
07:51:58.539 rx;i   1 | S01
E3
07:51:59.002|690F00FF 690F0063|690F00FF 690F0063|R01I   IN   6N89 6dat
63FA 3000 0056
07:51:59.539 rx;i   1 | S01
E3
07:52:00.000 tx      1 | S01

```

The connection to the PLC is interrupted. After a delay defined by fail count an alarm *KOS fault ON* is generated.

```

07:52:06.001 tx      1 | S01
E3
07:52:06.540 rx;i   1 | S01
E3
07:52:07.001 tx      1 | S01
E3
07:52:07.223 ---     0 | S01;RX BREAK
07:52:08.001 tx      1 | S01
E3
07:52:09.001 tx      1 | S01
E3
07:52:09.302|690F00FF 690F0063|690F00FF 690F0063|R01I   IN   6N89 7dat
638A 0F80 0099
07:52:10.001 tx      1 | S01
E3
07:52:11.001 tx      1 | S01
E3
07:52:12.001 tx      1 | S01
E3

```

4. Configuration parameters

```
SEAB parameters:
(a)ddress RTU:0063
a(d)dress CENTER:00FF
(p)oll:1000ms
(t)imeout:300ms
(c)ycle:20s
(f)ail count:3
(b)cast:0001
(G)A:1 GAtim(1):12min GAtim(2):42min
(R)T:1 RTt(i)m:20min
(A)dm:1
f(w)size:0000
(q)uit
>>
```

- (a)ddress RTU:0063 - lower 1st byte of address of CU and PLC
- a(d)dress CENTER:00FF - lower 2nd byte of centre address
- (p)oll:1000ms - period of communication between CU and PLC
- (t)imeout:300ms - delay in waiting for a response from PLC
- (f)ail count:3 - number of delays (t)imeout, following which the alarm is generated
- (c)ycle:20s - length of the cycle for an *administration message*, a greater value than the number of stations is selected in sec
- (b)cast:0001- receipt of broadcasts
 - 0 - not permitted
 - 1 - permitted
- (G)A:1 - *general message* -
 - 0 - not permitted
 - 1 - permitted
- GAtim(1):12min GAtim(2):42min - selection of minutes each hour when the *general message* is sent
- (R)T:1 - *restore message*
 - 0 - not permitted
 - 1 - permitted
- RTt(i)m:20min - minute each hour when the *restore message* is sent
- (A)dm:1 - *administration message* in case there are no new messages is -

- 0 - forbidden
- 1 - permitted
- `fw_size:0000` - diagnostics data about the immediate length of data ready in Flash memory (in words)

5. History

The description applies from fw version 6.62 and higher.
