

|         |                                 |                      |      |            |
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|         | Dealt with by-Utfärdare         | Telephone-Telefon-nr |      | <b>1</b>   |
|         | Sven-Erik Karlsson              | 187050               |      |            |
|         | <b>DCU30c Desk Control Unit</b> |                      |      |            |

## 1. GENERAL

The DCU30c is a drop in panel designed to be operator interface on ABB MasterFieldbus short distance bus (RS485). The panel is operating at High or Low communication speed.

The DCU30c contains a 2\*16 characters alphanumerical LCD-display and 16 push buttons with light indications. Each push button may have an individual color and description made by a PVC stripe. The display can be divided into one to six different fields of optional size where each field can contain text or value.

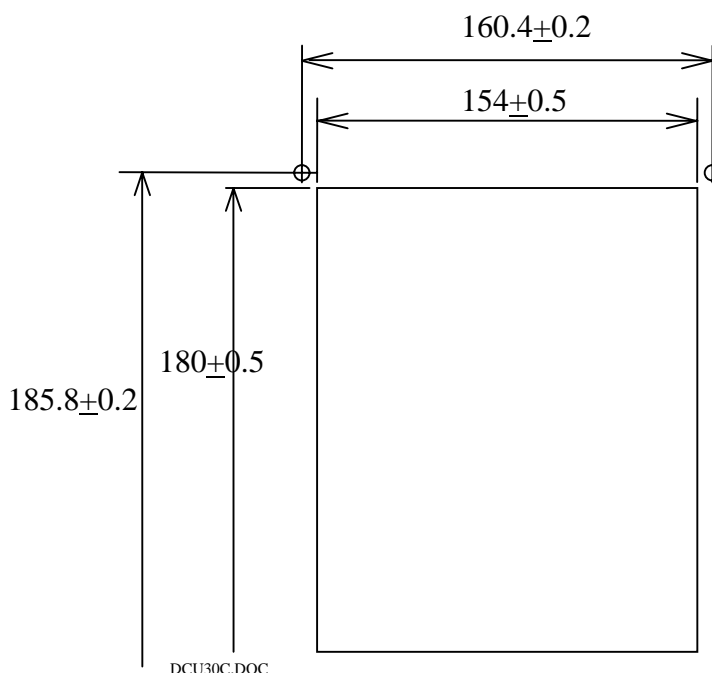
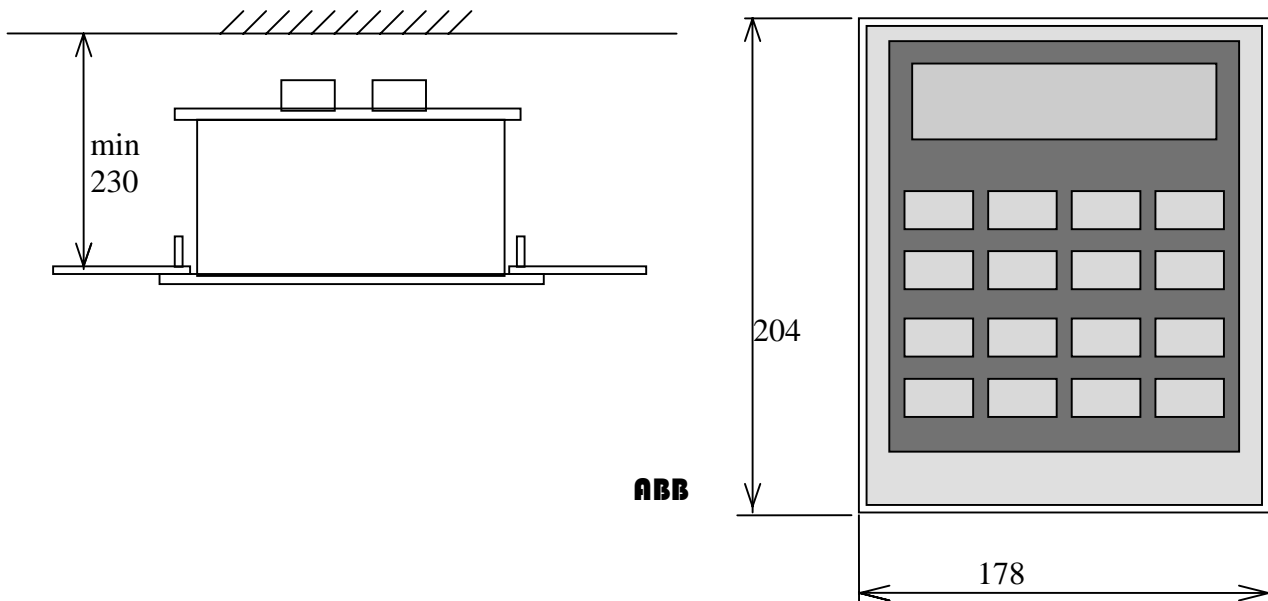
The presentation in the different fields of the display is controlled by logical signals from the ABB Master unit. The DCU30c may have up to 240 different text strings stored. The texts that can be presented on the display are preloaded to a separate memory chip of the DCU30c at delivery but it is possible to change with a Prom programmer.

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| <b>DCU30c Desk Control Unit</b> |                         |                      |        |            |

## 2. TECHNICAL DESCRIPTION

### 2.1 Dimension and mounting

To obtain the best immunity to electric noise the DCU30c front panel must be electrically connected to the control desk panel through the fix screws in each corner. Use nuts that make scratches in the paint of the back side of the panel. All parts of the control desk must be electrically connected to each other.



Front size: 178 x 204 (w x h)  
 Cut out size: 154 x 180  
 Screw pos : 160.4 x 185.8  
 Drill hole diam: 5.5

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|--|---------------------------------|
|  | <b>DCU30c Desk Control Unit</b> |
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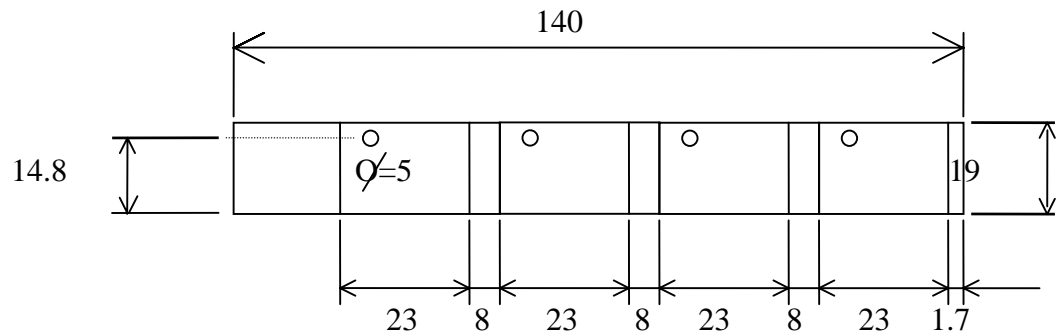
Required mounting deep: 230

**2.2 Push button identification inserts**

Each push button may have an individual colour and a description with five characters on line one and nine characters on line two and three.

Materiel: White PVC or other nontransparent

Thickness: 0.2mm



**2.3 Technical data**

**Auxiliary Power**

+24V DC (18-35V DC), typical 2.5W, at startup 8W, Max fuse: 4A

**Communication**

RS-485

Transmission speeds 375kbit/s or 2mbit/s

Max cable length :short dist. <=25m

Cable type FLFR 3x2x0.34

Occupies one node on MasterFieldBus

**Dimensions**

Front size: 178mm x 204mm (w x h)

Cut out size: 154mm x 180 mm

Screw positions: 160.4mm x 185.8mm

Drill hole diam: 5.5mm

Required mounting deep:230mm

**Enclosure class**

Front: IP65, Back side: IP00

**Enviromental data**

Operation +5..+40 derees C.,Storage -40..+70 degrees C.

|                                 |                         |                      |      |            |
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| <b>DCU30c Desk Control Unit</b> |                         |                      |      |            |

Electrical environment: PL3,SS 436 15 03 and 436 15 22

## 2.4 Strapping

The address of the DCU30c is made with jumpers in connector X1 or dip switches at the connector board.

| BUS ADDRESS | JUMPERS   | DIP SWITCHES |
|-------------|-----------|--------------|
| 0           |           |              |
| 1           | K-L       | 1            |
| 2           | K-M       | 2            |
| 3           | K-L-M     | 1,2          |
| 4           | K-N       | 3            |
| 5           | K-L-N     | 1,3          |
| 6           | K-M-N     | 2,3          |
| 7           | K-L-M-N   | 1,2,3        |
| 8           | K-P       | 4            |
| 9           | K-L-P     | 1,4          |
| 10          | K-M-P     | 2,4          |
| 11          | K-L-M-P   | 1,2,4        |
| 12          | K-N-P     | 3,4          |
| 13          | K-L-N-P   | 1,3,4        |
| 14          | K-M-N-P   | 2,3,4        |
| 15          | K-L-M-N-P | 1,2,3,4      |

| BUS NO | JUMPERS | DIP SWITCHES |
|--------|---------|--------------|
| 1      | K-R     | 5            |
| 2      | K-S     | 6            |
| 3      | K-R-S   | 5,6          |
| 4      | K-T     | 7            |

### TERMINATION

When the unit is the last one on the bus, the bus must be terminated by a connection between K and B,L and D, M and F in connector X2 or by 3 jumpers on connector board.

## 2.5 Change of display brightness

It is possible to adjust the brightness of the display.

1. Give the order lamp test to DCU30c.
2. Change brightness with push button 14 and 15

|                                 |                         |                      |      |                        |
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| <b>DCU30c Desk Control Unit</b> |                         |                      |      |                        |

**2.6 Connections**

**X1**

17 pins connector of CANON make type CA 3102E20-29P-B-F80 to connect supply,bus and strappings.

Cable contact CA 3106E20-29S-B-F80

**X2**

14 pins connector of CANON make type CA 3102E20-27P-B-F80 to connect supply,bus and termination.

Cable contact CA 3106E20-27S-B-F80

| X1  |                            | Transmission speed |         |
|-----|----------------------------|--------------------|---------|
|     |                            | 375kbits           | 2 mbits |
| PIN |                            |                    |         |
| A   | SC                         | X                  | X       |
| B   | DATA                       | X                  | X       |
| C   | DATA-N                     | X                  | X       |
| D   | CLOCK                      |                    | X       |
| E   | CLOCK-N                    |                    | X       |
| F   | R                          | X                  | X       |
| G   | R-N                        | X                  | X       |
| H   | +24V                       | X                  | X       |
| J   | 0V                         | X                  | X       |
| K   | Bus address see strappings |                    |         |
| L   | “                          |                    |         |
| M   | “                          |                    |         |
| N   | “                          |                    |         |
| P   | “                          |                    |         |
| R   | Bus no see strappings      |                    |         |
| S   | “                          |                    |         |
| T   | “                          |                    |         |

| X2  |        | Transmission speed |         |
|-----|--------|--------------------|---------|
|     |        | 375kbits           | 2 mbits |
| PIN |        |                    |         |
| A   | SC     | X                  | X       |
| B   | DATA   | X                  | X       |
| C   | DATA-N | X                  | X       |
| D   | CLOCK  |                    | X       |

|                                 |           |                      |      |            |
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|   |                            |   |   |
|---|----------------------------|---|---|
| E | CLOCK-N                    |   | X |
| F | R                          | X | X |
| G | R-N                        | X | X |
| H | +24V                       | X | X |
| I |                            |   |   |
| J | 0V                         | X | X |
| K | Termination see Strappings |   |   |
| L | “                          |   |   |
| M | “                          |   |   |
| N |                            |   |   |

**3. DESCRIPTION OF THE COMMUNICATION INTERFACE**

The communication between DCU30c and ABB Master is made with the use of COM-CV11 and COM-CVO1 elements in the ABB Master unit.

**3.1 Orders to ABB Master unit from DCU30c**

Configuration of COM-CV11 element.

COM-CV11(0,1)

|          |    |  |
|----------|----|--|
| :UNIT_NO | F1 | F=100-115,200-215,300-315,400-415        |
| :DBINST  | F2 | F=Instance number of CV unit in Database |
| :ALBLK   | 41 | 0  |
| :PBIND1  | 42 | “Order”                                  |

“Order”

|        |                    |
|--------|--------------------|
| Bit 00 | Push button no 1.  |
|        | “                  |
|        | “                  |
| Bit 15 | Push button no 16. |

**3.2 Signals from ABB Master unit to DCU30c**

Configuration of COM-CVO1 element

COM-CVO1(1)

|          |    |                                       |
|----------|----|---------------------------------------|
| :UNIT_NO | F1 | F=100-115,200-215,300-315,400-415     |
| :REMOTE  | 1  | Light indication in push button no 16 |
| :PBORD1  | 5  | “Ind”                                 |
| :PBORD2  | 6  | “IndF”                                |
| :I4ORD1  | 7  | “Value2”                              |
| :RORD1   | 11 | “Disp1”                               |
| :RORD2   | 12 | “Disp2”                               |
| :RORD3   | 13 | “Disp3”                               |

# PROCESSELEKTRONIK AB

Copies to-Kopior till

Ref.

PE1294B/rev1

|                                 |           |                      |      |            |
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```

:RORD4    14    "Disp4"
:RORD5    15    "Disp5"
:RORD6    16    "Disp6"
:SCALE1   21    D=32768
:SCALE2   22    D=32768
:SCALE3   23    D=32768
:SCALE4   24    D=32768
:SCALE5   25    D=32768
:SCALE6   26    D=32768
:RORD7    31    "Time"
:RORD8    32    "Value1"
:RORD9    33    "Value3"
:RORD10   34    "Value4"
:RORD11   35    "Value6"
:RORD12   36    "Deltim"
:RORD13   37    D=0
:RORD14   38    D=0
:I4ORD2   39    "Value5"
:SCALE7   41    D=32768
:SCALE8   42    D=32768
:SCALE9   43    D=32768
:SCALE10  44    D=32768
:SCALE11  45    D=32768
:SCALE12  46    D=32768
:SCALE13  47    D=0
:SCALE14  48    D=0
    
```

### "Ind"

```

Bit 00    Light indication in push button no 1.
"
"
Bit 14    Light indication in push button no 15.
Bit 15    Not used .Key 16 indication see Input REMOTE
    
```

### "DispX"

|           |    |            |            |                   |    |    |    |          |          |                     |    |    |    |    |    |
|-----------|----|------------|------------|-------------------|----|----|----|----------|----------|---------------------|----|----|----|----|----|
| Lamp test |    | Fast flash | Slow flash | No of dec 0-4 (7) |    |    |    | Mode 0-3 | No pres. | Start position 0-31 |    |    |    |    |    |
| 15        | 14 | 13         | 12         | 11                | 10 | 09 | 08 | 07       | 06       | 05                  | 04 | 03 | 02 | 01 | 00 |

### "DispX " bit 00-04 Start position

|                                 |                         |                      |      |            |
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The start position of field with text or a value on the display is given as a number between 0 and 31. Zero is used to indicate top left position. The selected string will be written from the given start position to the start position of the next active field or to the end of the display. A text string which is larger then the available space will be truncated by the next active field or the end of the display. A text string which is shorter than the avaiable space will “blank” the remaining space to the next active filed or to the end of the display. Two active fields with the same start position will be indicated with “-----”. The two display lines are handled as one line,i.e one string may cover both lines.

“DispX “ bit05 No presentation of field

“0” The field is active and will affect the previos field.

“1” The field is not active and will not affect theother fields.

“DispX “ bit 06-07 Presentation mode

Mode 0, the field will present text rigtwards from the given start position.

Mode 1, the field will present a numerical value leftwards from the start position of the next active field or from the end of the display. The numerical value will be written backwards until the string reach the start position of it’s own field.

A value that is greater (has more figures) than the available space will be indicated with “9999”.

A value that is less (has less figures) than the available space will “blank” the remainingspace to the left.

Note! The presentation of numerical value is limited to six figures.

i.e the presented value has to be in the range 999999 to -99999.

Value 1,3,4 and 6 use only 2 bytes and is limited to 32767 to -32768.

Mode 2, the field will present a numerical value without clearing the leading zeroes. This possibility may, as an example be used to give a time “0730”. All other functions are equal to Mode 1.

Mode 3, this mode is not defined.

“DispX “ bit 08 Not defined

“DispX “ bit 09-11 Number of decimals in the presentation of a numerical 0

Set decimals to 0-4.



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| <b>DCU30c Desk Control Unit</b> |                         |                      |      |            |

“DispX “ bit 12 Flash of the field  
 “0”, the field is blank but still active.  
 “1”, normal presentation.  
 The flashing is controlled from PC program.

“DispX “ bit 13 Fast flash of the field  
 “1”, the field is flashing with a frequency given by the “Time” parameter which is described below.  
 “0”, normal presentation.

“DispX “ bit 14 Not defined

“DispX “ bit 15 Lamptest  
 “1”, lamptest is performed and it is possible to change the display brightness with the use of push buttons 14 and 15.  
 “0”, normal presentation.  
 Note! This bit is only defined for “Disp1”

“Time”  
 The Time will give the frequency according to the equation.  

$$\text{Pulse length} = 250\text{mS} + \text{“Time”} \times 10\text{mS}$$
 i.e. for a Time parameter value of 25 the Flash pulse time will be 0.5s.

“Value1-6”  
 The value is used to select a text string to be presented or as a numerical presentation depending on the “Mode” parameter in “DispX”  
 Value 1,3,4 and 6 use 2 bytes (integer) and is limited to values between 32767 to -32768.  
 Value 2 and 5 use 4 bytes (integer long)

“Deltim”  
 Deltim is used to obtain a minimum pulse time for push buttons. Set 1280 to obtain 200mS minimum pulse from a push button. This will ensure that the PC program running at 200mS can catch a fast operator order.  
 Push buttons are scanned with 40 mS in the DCU30c.