


# Customized DMI for DK-STM BL3

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## Change Log

Version	Date	Author	Checked by	Approved by	Changed sections	Description
01.00	2017-03-31	XAAV	ECPn	PEVE		First Document release
02.00	2017-11-20	STN	BDK	ECPn	3 + 4	Description of touch screen is added. Optional locations of buttons are added

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# 1.0 Preface

The implementation of the European Railway Traffic Management System, ERTMS, has made it necessary, for a transitional period, to equip vehicles with a DK-STM (Danish Specific Transmission Module), which makes it possible to run vehicles with ETCS on ATC lines.

To be able to display the information to the driver on the DMI the way the drivers were used to in the legacy ATC ZUB123 system, a customized DMI has been specified. This customized DMI shall be used together with the DK-STM and is specified in this document.

Both the touch screen technology and the soft key technology is presented.

# 2.0 The DK-STM system

The DMI is connected to the ETCS On-board which via the STM Profibus is connected to the DK-STM. The DK-STM sends data packages via the Profibus to the ETCS and DMI, which acts as a screen, but the icons and text font size, is defined in the specification of the DMI.

The interfaces between the various parts of the systems are illustrated below:

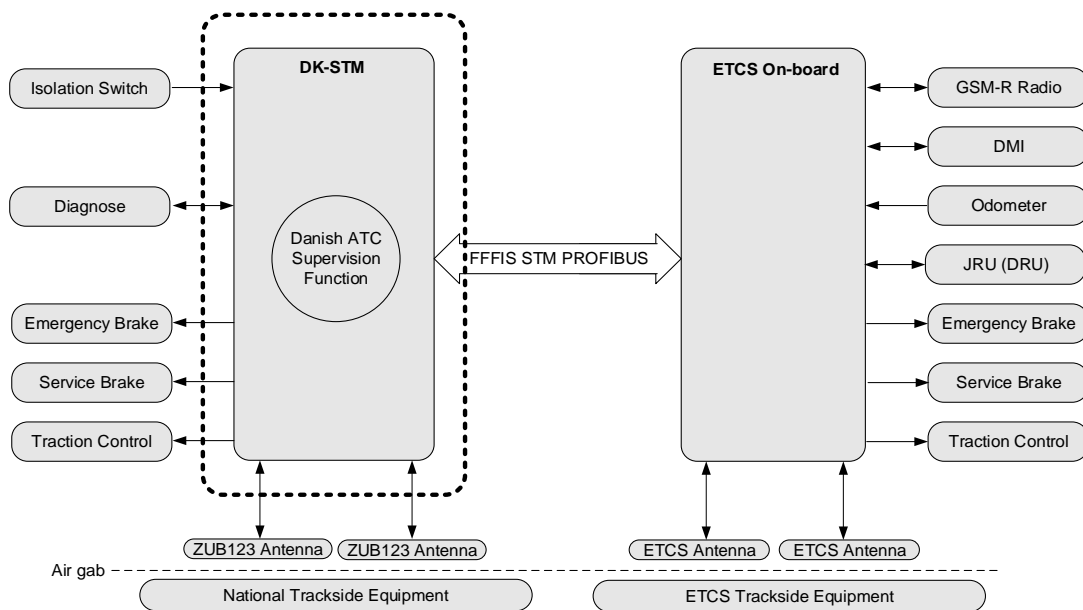


Figure 1: DK-STM's interfaces

# 3.0 Configuration of DK-STM for Baseline 3 DMI

## 3.1 Touch screen technology

STM /NTC			
STM id	STM name	STM Bsl3 /Bsl2	Customisable or Unified Service
30	ATC	BSL3	Customisable

*The cells below shall be filled in if the STM uses the DMI Customisable Service*

Indicator							
Indicator id	Text font size (Height in cells)	Horizontal alignment	Vertical alignment	STM indicator specific name	Flashing style	Slow flashing frequency (between 0,5 and 8Hz)	Fast flashing frequency (between 0,5 and 8Hz)
1	16	centred	centred	Yellow letters	Whole area	1 Hz	N/A
2	16	centred	centred	Red letters	Whole area	1 Hz	N/A
3	12	centred	centred	DRIFTSBREMSE	Whole area	1 Hz	N/A
4	12	centred	centred	NØDBREMSE	Whole area	1 Hz	N/A
5	12	centred	centred	ATC INDE	Whole area	1 Hz	N/A
6	12	centred	centred	YDRE SIGNAL	Whole area	1 Hz	N/A
7	12	centred	centred	Shunting	Whole area	1 Hz	N/A
8	12	centred	centred	Pass Stop	Whole area	1 Hz	N/A
9	12	centred	centred	LØS ATC	Whole area	1 Hz	N/A
10	16	centred	centred	--	Whole area	1 Hz	N/A
11	16	centred	centred	---	Whole area	1 Hz	N/A

The DK-STM does not use fast flashing

ICONS WILL BE USED, NOT ACTUAL TEXT  
ICONS WILL BE USED, NOT ACTUAL TEXT

Indicator position id	Area position horizontal (X offset of upper left corner)	Area position vertical (Y offset of upper left corner)	Area size horizontal (Width in cells)	Area size vertical (Height in cells)	Area id in ERA layout (for information only)	
5	57	316	55	50	approx C2 & C3	<p>Content to be filled-in by DK-STM</p> <p>Content to be filled-in by DK-STM</p> <p>Content to be filled-in by DK-STM</p> <p>Content to be filled-in by DK-STM (yellow display)</p> <p>Content to be filled-in by DK-STM (red display)</p> <p>Note to be made, about the origin of X (horizontal) and Y (vertical) axes. It is considered this (0,0) point as the upper left corner.</p>
6	113	316	56	50	approx C3 & C4	
7	223	316	54	50	approx C5 & C6	
8	141	271	50	36	approx B3 & B4	
9	195	271	50	36	approx B4 & B5	

Button							
Button id	Text font size (Height in cells)	Horizontal alignment	Vertical alignment	STM button specific name	Flashing style	Slow flashing frequency (between 0,5 and 8Hz)	Fast flashing frequency (between 0,5 and 8Hz)
1	12	centred	centred	Valg	Whole area	1 Hz	N/A
2	12	centred	centred	Return	Whole area	1 Hz	N/A
3	12	centred	centred	Shunting	Whole area	1 Hz	N/A
4	12	centred	centred	Override	Whole area	1 Hz	N/A
5	12	centred	centred	Stop shunting	Whole area	1 Hz	N/A
6	12	centred	centred	Cancel	Whole area	1 Hz	N/A
7	12	centred	centred	Release ATC	Whole area	1 Hz	N/A
8	12	centred	centred	Release SB	Whole area	1 Hz	N/A
9	12	centred	centred	Release EB	Whole area	1 Hz	N/A
10	12	centred	centred	On sight	Whole area	1 Hz	N/A

Button position id	Area position horizontal (X offset of upper left corner)	Area position vertical (Y offset of upper left corner)	Area size horizontal (Width in cells)	Area size vertical (Height in cells)	Area id in ERA layout (for information only)	Linked key (for touch screen techno)	
1	580	315	64	50	F7	F7	<p>Usage to be filled-in by DK-STM. TBC for ERA layout vs. Touch screen usage</p> <p>Usage to be filled-in by DK-STM. TBC for ERA layout vs. soft key usage</p> <p>Usage to be filled-in by DK-STM. TBC for ERA layout vs. soft key usage</p> <p>Note to be made, about the origin of X (horizontal) and Y (vertical) axes. It is considered this (0,0) point as the upper left corner.</p>
2	580	365	64	50	F8	F8	
3	580	415	64	50	F9	F9	

Icon		
Icon id	text displayed upon icon (Y/N)	bitmap file name
1	No	ZUB123_1--.bmp
2	No	ZUB123_2---.bmp

Sound	
Sound id	wave file name
NA	NA

Speed and distance information	
Full scale	Re-use of ETCS speedo
Same as ETCS	Yes

**ETCS moved objects**

ETCS object area	ETCS object type	Function /name	New area position horizontal	New area position vertical	Linked soft key (for soft key techno)
F1	button	for selecting main window	NA	NA	NA
F2	button	for selecting override window	NA	NA	NA
F3	button	for selecting data view window	NA	NA	NA
F4	button	for selecting special window	NA	NA	NA
F5	button	for selecting settings window	NA	NA	NA
A4	indicator	for adhesion "slippery rail"	NA	NA	NA
B7	indicator	for ETCS mode display	NA	NA	NA
C1	indicator	for mode /level acknowledgment	NA	NA	NA
C7	indicator	for Override status indication	NA	NA	NA
C8	indicator	for ETCS level display	NA	NA	NA
C9	indicator	for brake indication	NA	NA	NA
E1	indicator	for safe radio connection indication	NA	NA	NA
G13	indicator	for local time	NA	NA	NA

Train Data Entry according to SUBSET-035 Chapter 10.7.3.8 - 2	Caption and value of the button	Comment
Buttons F1	1	numeric input
Buttons F2	2	numeric input
Buttons F3	3	numeric input
Buttons F4	4	numeric input
Buttons F5	5	numeric input
Buttons F6	6	numeric input
Buttons F7	7	numeric input
Buttons F8	8	numeric input
Buttons F9	9	numeric input
Buttons F10	0	numeric input



### 3.2 Soft key technology

STM /NTC			
STM id	STM name	STM Bsl3 /Bsl2	Customisable or Unified Service
30	ATC	BSL3	Customisable

*The cells below shall be filled in if the STM uses the DMI Customisable Service*

Indicator							
Indicator id	Text font size (Height in cells)	Horizontal alignment	Vertical alignment	STM indicator specific name	Flashing style	Slow flashing frequency (between 0,5 and 8Hz)	Fast flashing frequency (between 0,5 and 8Hz)
1	16	centred	centred	Yellow letters	Whole area	1 Hz	N/A
2	16	centred	centred	Red letters	Whole area	1 Hz	N/A
3	12	centred	centred	DRIFTSBREMSE	Whole area	1 Hz	N/A
4	12	centred	centred	NØDBREMSE	Whole area	1 Hz	N/A
5	12	centred	centred	ATC INDE	Whole area	1 Hz	N/A
6	12	centred	centred	YDRE SIGNAL	Whole area	1 Hz	N/A
7	12	centred	centred	Shunting	Whole area	1 Hz	N/A
8	12	centred	centred	Pass Stop	Whole area	1 Hz	N/A
9	12	centred	centred	LØS ATC	Whole area	1 Hz	N/A
10	16	centred	centred	--	Whole area	1 Hz	N/A
11	16	centred	centred	---	Whole area	1 Hz	N/A

The DK-STM does not use fast flashing

ICONS WILL BE USED, NOT ACTUAL TEXT  
ICONS WILL BE USED, NOT ACTUAL TEXT

Indicator position id	Area position horizontal (X offset of upper left corner)	Area position vertical (Y offset of upper left corner)	Area size horizontal (Width in cells)	Area size vertical (Height in cells)	Area id in ERA layout (for information only)	
5	57	301	55	50	approx C2 & C3	<p>Content to be filled-in by DK-STM</p> <p>Content to be filled-in by DK-STM</p> <p>Content to be filled-in by DK-STM</p> <p>Content to be filled-in by DK-STM (yellow display)</p> <p>Content to be filled-in by DK-STM (red display)</p> <p>Note to be made, about the origin of X (horizontal) and Y (vertical) axes. It is considered this (0,0) point as the upper left corner.</p>
6	113	301	56	50	approx C3 & C4	
7	223	301	54	50	approx C5 & C6	
8	141	256	50	36	approx B3 & B4	
9	195	256	50	36	approx B4 & B5	

Button							
Button id	Text font size (Height in cells)	Horizontal alignment	Vertical alignment	STM button specific name	Flashing style	Slow flashing frequency (between 0,5 and 8Hz)	Fast flashing frequency (between 0,5 and 8Hz)
1	12	centred	centred	Valg	Whole area	1 Hz	N/A
2	12	centred	centred	Return	Whole area	1 Hz	N/A
3	12	centred	centred	Shunting	Whole area	1 Hz	N/A
4	12	centred	centred	Override	Whole area	1 Hz	N/A
5	12	centred	centred	Stop shunting	Whole area	1 Hz	N/A
6	12	centred	centred	Cancel	Whole area	1 Hz	N/A
7	12	centred	centred	Release ATC	Whole area	1 Hz	N/A
8	12	centred	centred	Release SB	Whole area	1 Hz	N/A
9	12	centred	centred	Release EB	Whole area	1 Hz	N/A
10	12	centred	centred	On sight	Whole area	1 Hz	N/A

### 3.2.1 Physical locations of buttons

There are 3 possible options for placement of the DK-STM buttons

#### Option 1 (the preferred option):

Button position id	Area position horizontal (X offset of upper left corner)	Area position vertical (Y offset of upper left corner)	Area size horizontal (Width in cells)	Area size vertical (Height in cells)	Area id in ERA layout (for information only)	Linked soft key (for soft key techno)	Meeting comment (2015.11.10)  Usage to be filled-in by DK-STM. TBC for ERA layout vs. soft key usage Usage to be filled-in by DK-STM. TBC for ERA layout vs. soft key usage Usage to be filled-in by DK-STM. TBC for ERA layout vs. soft key usage  Note to be made, about the origin of X (horizontal) and Y (vertical) axes. It is considered this (0,0) point as the upper left corner.
1	448	430	64	50	approx F8	F8	
2	512	430	64	50	approx F9	F9	
3	576	430	64	50	approx F10	F10	

#### Option 2

Button position id	Area position horizontal (X offset of upper left corner)	Area position vertical (Y offset of upper left corner)	Area size horizontal (Width in cells)	Area size vertical (Height in cells)	Area id in ERA layout (for information only)	Linked soft key (for soft key techno)	Usage to be filled-in by DK-STM. TBC for ERA layout vs. soft key usage Usage to be filled-in by DK-STM. TBC for ERA layout vs. soft key usage Usage to be filled-in by DK-STM. TBC for ERA layout vs. soft key usage  Note to be made, about the origin of X (horizontal) and Y (vertical) axes. It is considered this (0,0) point as the upper left corner.
1	384	430	64	50	approx F8	F7	
2	448	430	64	50	approx F9	F8	
3	512	430	64	50	approx F10	F9	

**Option 3:**

Button position id	Area position horizontal (X offset of upper left corner)	Area position vertical (Y offset of upper left corner)	Area size horizontal (Width in cells)	Area size vertical (Height in cells)	Area id in ERA layout (for information only)	Linked soft key (for soft key techno)	
1	320	430	64	50	approx F8	F6	Usage to be filled-in by DK-STM. TBC for ERA layout vs. soft key usage Usage to be filled-in by DK-STM. TBC for ERA layout vs. soft key usage Usage to be filled-in by DK-STM. TBC for ERA layout vs. soft key usage Note to be made, about the origin of X (horizontal) and Y (vertical) axes. It is considered this (0,0) point as the upper left corner.
2	384	430	64	50	approx F9	F7	
3	448	430	64	50	approx F10	F8	

Icon		
Icon id	text displayed upon icon (Y/N)	bitmap file name
1	No	ZUB123_1-- .bmp
2	No	ZUB123_2--- .bmp

Sound	
Sound id	wave file name
NA	NA

**Speed and distance information**

Full scale	Re-use of ETCS speedo
Same as ETCS	Yes

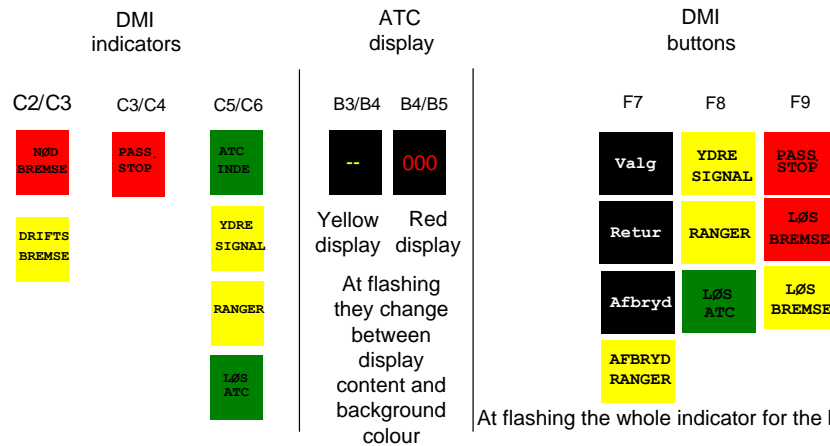
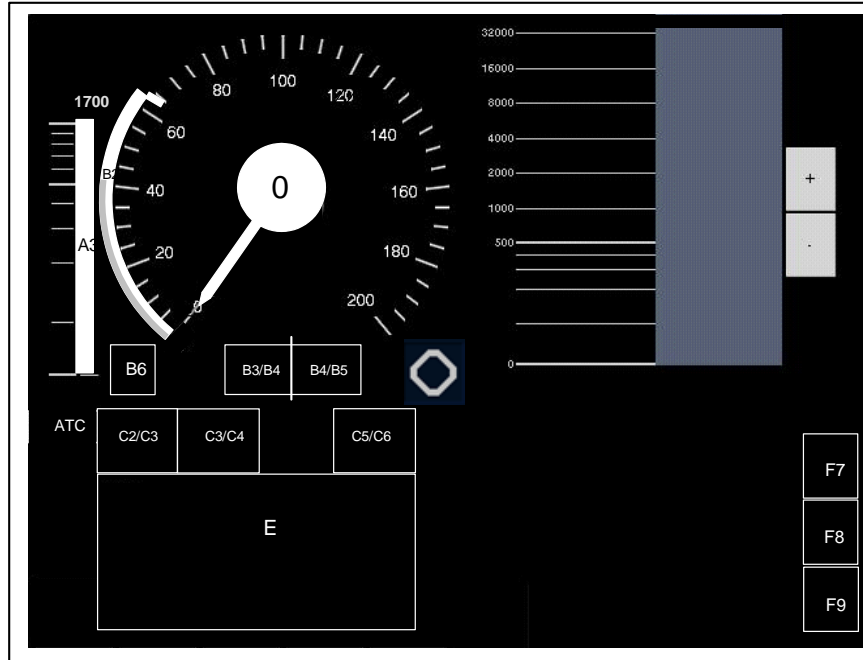
**ETCS moved objects**

ETCS object area	ETCS object type	Function /name	New area position horizontal	New area position vertical	Linked soft key (for soft key techno)
F1	button	for selecting main window	NA	NA	NA
F2	button	for selecting override window	NA	NA	NA
F3	button	for selecting data view window	NA	NA	NA
F4	button	for selecting special window	NA	NA	NA
F5	button	for selecting settings window	NA	NA	NA
A4	indicator	for adhesion "slippery rail"	NA	NA	NA
B7	indicator	for ETCS mode display	NA	NA	NA
C1	indicator	for mode /level acknowledgment	NA	NA	NA
C7	indicator	for Override status indication	NA	NA	NA
C8	indicator	for ETCS level display	NA	NA	NA
C9	indicator	for brake indication	NA	NA	NA
E1	indicator	for safe radio connection indication	NA	NA	NA
G13	indicator	for local time	NA	NA	NA

Train Data Entry according to SUBSET-035 Chapter 10.7.3.8 - 2	Caption and value of the button	Comment
Buttons F1	1	numeric input
Buttons F2	2	numeric input
Buttons F3	3	numeric input
Buttons F4	4	numeric input
Buttons F5	5	numeric input
Buttons F6	6	numeric input
Buttons F7	7	numeric input
Buttons F8	8	numeric input
Buttons F9	9	numeric input
Buttons F10	0	numeric input

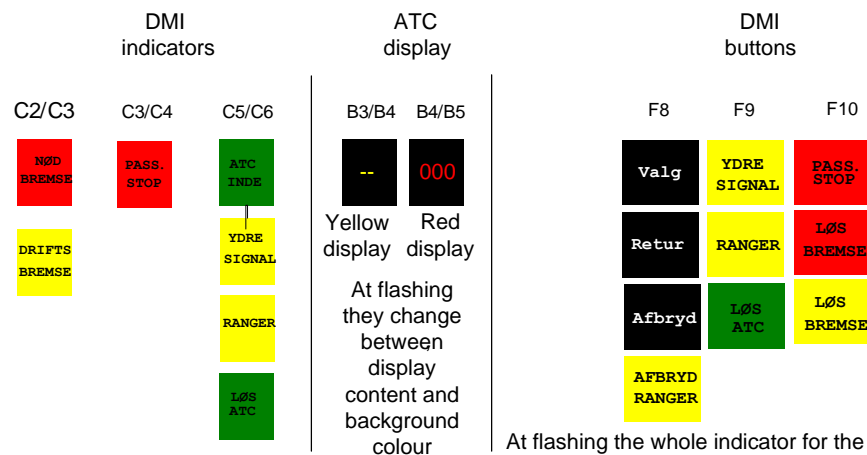
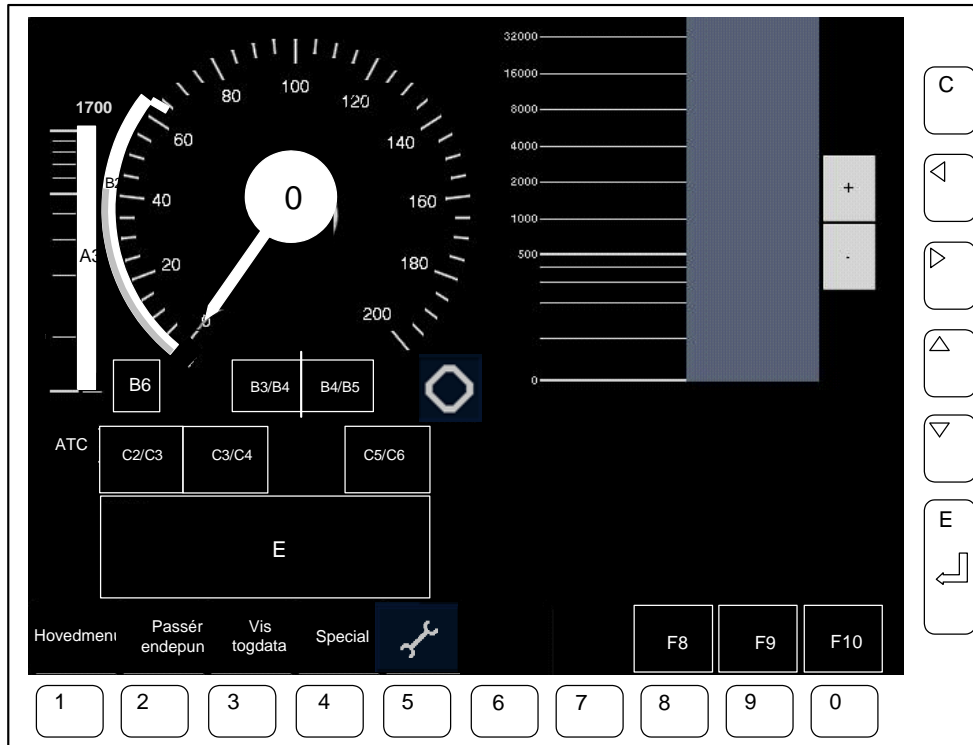
# 4.0 DMI Screen lay-out

## 4.1 Touch screen technology



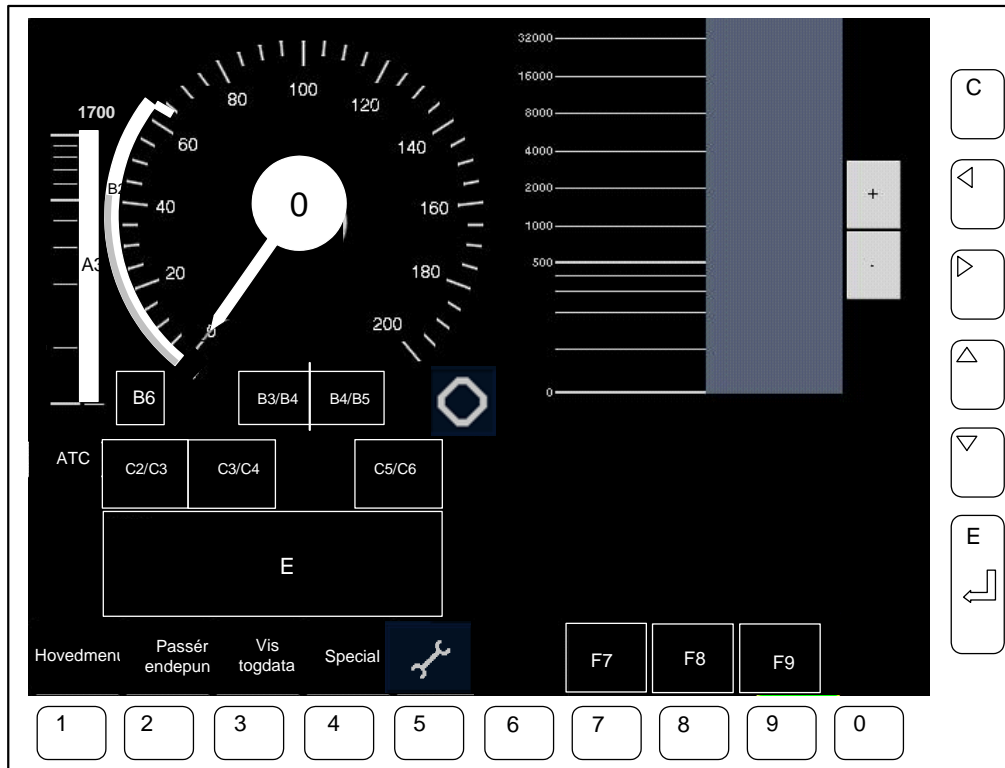
## 4.2 Soft key technology

Option 1 (the preferred option):





Option 2:



DMI indicators

ATC display

DMI buttons

C2/C3	C3/C4	C5/C6
NØD BREMSE	PASS. STOP	ATC INDE
DRIFTS BREMSE		YDRE SIGNAL
		RANGER
		LØS ATC

B3/B4	B4/B5
--	000

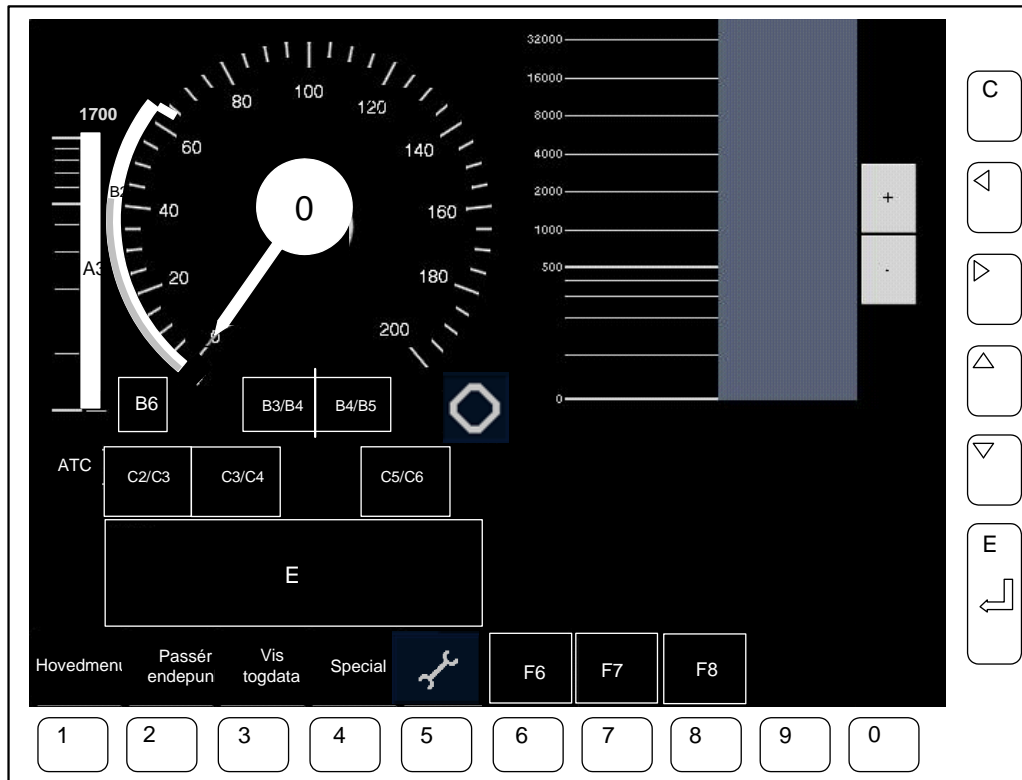
Yellow Red  
display display

At flashing they change between display content and background colour

F7	F8	F9
Valg	YDRE SIGNAL	PASS. STOP
Retur	RANGER	LØS BREMSE
Afbryd	LØS ATC	LØS BREMSE
AFBRYD RANGER		

At flashing the whole indicator for the button flashes between content and background colour

Option 3:



DMI indicators

C2/C3	C3/C4	C5/C6
NØD BREMSE	PASS. STOP	ATC INDE
DRIFTS BREMSE		YDRE SIGNAL
		RANGER
		LØS ATC

ATC display

B3/B4	B4/B5
--	000
Yellow display	
Red display	
At flashing they change between display content and background colour	

DMI buttons

F6	F7	F8
Valg	YDRE SIGNAL	PASS. STOP
Retur	RANGER	LØS BREMSE
Afbryd	LØS ATC	LØS BREMSE
AFBRYD RANGER		

At flashing the whole indicator for the button flashes between content and background colour