“chura-Krüger” (Krüger+) matrix mod styling guide

Hello fellow OMSI player,

This styling guide is for OMSI players who would like to create and style their own destination displays for the Krüger+ matrix.

Structure of the depot file terminus section

(If you are already familiar with this, just skip to the next section.) Firstly, we need to understand how the termini are specified in an OMSI 2 depot file. Depot files can be opened with any text editor, such as the Notepad application that comes with Windows. Let’s look at the structure of the terminus section, with a snippet from the depot (.hof) file for the Projekt Szczecin map as an example:

A	B	C	0	1	2	3	4	5
[addterminus_list]								
{ALLEX}	0	Empty						
{ALLEX}	10	Zjazd do zajezdni	ZJAZD DO ZAJEZDNI	ZJAZD DO	ZAJEZDNI	DO ZAJEZDNI	Sz_SPAK.tga	Zjazd do zajezdni
	571	Kollataja 57	KOLLATAJA		KOLLATAJA	KOLLATAJA	Sz_57_Kollataja.tga	Kollataja
	572	Warszewo 57	WARSZEWO		WARSZEWO	WARSZEWO	Sz_57_Warszewo.tga	Warszewo
...								
[end]								

(OMSI 1-format terminus lists may be used as well.) In the actual depot file, the columns above are separated by tab characters, and they may not necessarily align into columns in your text editor, which may be confusing. One way to ameliorate this is to save the section as a CSV (comma-separated values; extension .csv) file and import it into a spreadsheet program such as Microsoft Excel or LibreOffice Calc, specifying the tab character as the field delimiter, which will divide the list into columns. When editing is finished, it may be re-exported as a CSV file again.

Each row between [addterminus_list] and [end] defines one destination display, and the columns have the following meanings:†

- **A** {ALLEX} means no passengers will board and existing passengers will alight when this terminus is displayed.
- **B** This is the “Ziel” code (on the IBIS) for the terminus represented by this row.
- **C** This tells the passengers where the destination of the bus is (do not change this column without identical changes in the timetable files).
- **0** This is what is displayed on the old IBIS displays on buses such as the MAN SD 200.
- **1 and 2** These are the first and second lines respectively on the front destination displays.
- **3** This is the line for the one-line display on the side of some buses such as the SD 200.
- **4** This is the image path for the roller-blind image for this terminus.
- **5** This is what is displayed on the IBIS-2 displays on buses such as the NL 202.

Since in OMSI 2, the Krüger display is on the NL 202 and NG 272 buses, neither the 0th or the 3rd columns are utilized by the display. Thus, we may ignore these columns for now. On the other hand, columns 1 and 2 contain the text that will be displayed, and these columns are what will mainly concern us. Additionally, as we shall see in the following sections, the “Ziel” codes are part of our styling process as well.

† Two more columns may be added after the last column to specify the image paths of the windscreen destination cardboards and those of custom matrix bitmaps respectively. While outside the scope of this guide, they can be used with this mod.

Specifying styled terminus lines

While modifications to the terminus list are needed to style terminus lines, this mod is designed so that the resulting modified list is still usable with other buses, so that there need not be an extra depot file. This is achieved by leaving the original list intact, and appending extra rows of styled terminus lines to the end of the list.

To specify a styled terminus line, insert a new row at the end (but before the [end] marker), with a “Ziel” code that is 20000 more than the original “Ziel” code of the terminus entry you wish to style, and with the same column C and column 5 texts as that for the original terminus entry. Thus, for example, if the original terminus entry says the following:

106	Römerberg ZOB Steig 5	RÖMERBERG ZOB ST5	GLETSCHER-XPRESS	RÖMERBERG ZOB	GLETSCHER-XPRESS	RB_Gletscher3.tga	Römerberg ZOB

Then a new entry should be inserted after the rest of the list, but before the [end] marker, thus:

20106	Römerberg ZOB Steig 5						Römerberg ZOB

The original line (with “Ziel” code 106) still needs to be present for the styled line (with “Ziel” code 20106) to function, so don’t delete the original! The original line is used by other buses as well.

Styling terminus lines

For the most part, terminus lines are styled by appending certain asterisked commands to the end of the text entries under columns 1 and 2 (just as in bus_fanat’s full matrix for the Mercedes O405N2). As an example, the *I command inverts a line of text, and the *K command specifies a smaller text size, so to invert the first line of and use small fonts for the terminus text in the preceding example, one might have the following (example from the Römerberg depot file):

20106	Römerberg ZOB Steig 5		GLETSCHER-XPRESS*I*K				Römerberg ZOB

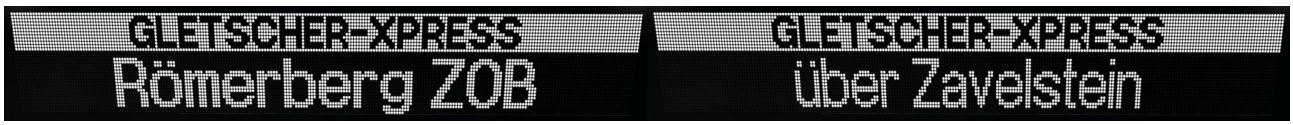
Furthermore, unlike for the default ANNAX and Krüger displays, it is possible to display lower-case letters in the terminus display. Thus, if I would like the second terminus line to have proper capitalization, I would have this:

20106	Römerberg ZOB Steig 5		GLETSCHER-XPRESS*I*K	Römerberg ZOB*B			Römerberg ZOB

where *B has also been added to display that line in bold face font. Moreover, multi-page displays may be specified by adding extra rows with 1000 added to the “Ziel” code for each new page. Thus if I wanted to have a second page that gives information on where the bus will pass through, I could do so with the following:

20106	Römerberg ZOB Steig 5		GLETSCHER-XPRESS*I*K	Römerberg ZOB*B			Römerberg ZOB
21106	Römerberg ZOB Steig 5		GLETSCHER-XPRESS*I*K	über Zavelstein			Römerberg ZOB

The result will be that when “Ziel” code 106 is specified in the IBIS (either directly, via specifying the “Linie” / “Route” combination, or typed in), the matrix will alternate between these two pages:



A third page, if desired, could also be created with “Ziel” code 22106, and so on.

To specify asterisked commands for all styled terminus lines in the depot file, a “terminus” entry with “Ziel” code 14990 may be used. For example, if I want the first line of every styled terminus entry to be in bold type and use Central European fonts, and the second line to use Central European fonts as well, I would add the following row to my terminus list (example from the Projekt Szczecin depot file):

14990		*B*CE	*CE				

That is, global commands for the first line are in column 0, and those for the second line are in column 1. Additionally, styled terminus lines specifically for AI buses may be defined by adding 15000 to the original “Ziel” code.

See the appendix for a list of asterisked commands available.

Using custom fonts

There may be occasions when you wish to use different matrix fonts for realism, or when the character you wish to have displayed is not available, or when you wish to display a different script† altogether. These may be accomplished by using custom fonts, of the same type as other fonts in the OMSI 2\Fonts folder, and placed inside that folder. While the creation of OMSI fonts is outside the scope of this guide, custom fonts may be specified with the following special "terminus" entries, with "Ziel" codes 14991 to 14994 and 14996 to 14999:

14991	[1-row custom font 1]	[1-row custom font 2]	[1-row custom font 3]	[1-row custom font 4]	[1-row custom font 5]
14992	[2-row custom font 1]	[2-row custom font 2]	[2-row custom font 3]	[2-row custom font 4]	[2-row custom font 5]
14993	[route custom font 1]	[route custom font 2]	[route custom font 3]	[route custom font 4]	[route custom font 5]
14994	[icon custom font]				
14996	[LED 1-row custom font 1]	[LED 1-row custom font 2]	[LED 1-row custom font 3]	[LED 1-row custom font 4]	[LED 1-row custom font 5]
14997	[LED 2-row custom font 1]	[LED 2-row custom font 2]	[LED 2-row custom font 3]	[LED 2-row custom font 4]	[LED 2-row custom font 5]
14998	[LED route custom font 1]	[LED route custom font 2]	[LED route custom font 3]	[LED route custom font 4]	[LED route custom font 5]
14999	[LED icon custom font]				

Alternatively, if the custom font for the flip-dot display is named fontname, and no LED custom font is specified, it will try to use the font named fontname++ for the LED display.

The fonts should be specified by their names, as defined in the *.oft files (not by their file names!). For example, one of the default Krüger matrix fonts has the name "Krueger 7x7". It is not necessary that every font slot be filled; unused slots may be left empty. Once custom fonts have been specified, they may be selected for the terminus lines in a particular entry with either the *CF command, which will sequentially use the specified custom fonts if the preceding font is too large for the text to fit (just as with the default OMSI 2 Krüger fonts), or the *CF1 to *CF5 commands, which will specifically select font number 1 to font number 5. Custom route number fonts may similarly be selected by the use of the commands *CN and *CN1 to *CN5. Custom icons are selected somewhat differently: they are specified with the command *CI followed by the letter that represents your desired icon in the icon font file.

Additionally, there are two vertical positioning commands, *^# and *v#, which can be appended after the font names and may be applied individually to each custom font. These commands will raise or lower the position of texts using the corresponding font by # pixels (maximum 7 pixels).

For examples of the use of custom fonts, see the included sample depot files for Gladbeck (custom logo in the route number position), Römerberg (custom icon for "Ziel" code 20172 to Waldkirche) and Omninsk (custom Cyrillic fonts).

Specifying a mixed-size terminus display

By a "mixed-size terminus display", a display such as the example to the right is meant.

This is achieved by specifying a third line of terminus text in column 3, which is unused by the NL 202 or the NG 272, and then appending the command *IT at the end of the third line. For example, the terminus list row that would define the display above (not including the route number, of course) is the following (example from the Projekt Szczecin depot file):

20072	Police Osiedle Chemik 107		Osiedle	Chemik	Police*B*F>5*IT		Police Osiedle Chemik

For more mixed-size terminus display examples, see the included sample Projekt Szczecin depot file.

† As of the time of writing, OMSI 2 only supports single-byte character encodings for horizontal and non-complex scripts. In particular, the use of Unicode and multi-byte East Asian encodings is not possible, and only single-byte encodings such as some Windows code pages and some ISO-8859 encodings, can be used.

Specifying colours on multi-colour LED display

IMPORTANT: All colours are only approximate.

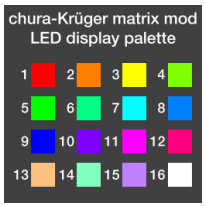
Moreover, on the flip-dot or the single-colour LED displays, text colours are ignored, and background colours function identically to the invert (*I) command.

On the multi-colour LED display, the colours and the background colours of the following elements may be specified with asterisked commands:

- Overall display, using the commands *DC and *DBGC
- Route number, using the commands *NC and *NBGC
- Icon, using the commands *IC and *IBGC
- Terminus lines 1 to 3, using the commands *C and *BGC in the appropriate line

There are various ways of specifying the colours, as described below.

Using a depot-specific custom palette: *C[*n*] where *n* is a positive integer up to 16



A sixteen-colour palette in the OMSI 2\Vehicles\Anzeigen\Krueger\230x32\palettes folder may be used to set a colour.

Make a new palette of 16 colours with the given template, and name it as [depot name].bmp to use colours 1 to 16 in the depot file with commands such as *BGC[9] or *IC[14].

Using pre-defined colour codes: *C[??] where ?? is a two-letter colour code

The following colours are pre-defined by their two-letter codes:

AZ Azure	**BL** Blue	**BK** Black	**CG** Charteuse Green	**CP** Coral Pink	**CY** Cyan	**EB** Electric Blue	**FP** Fuchsia Pink	**GR** Green
GY Grey	**KH** Khaki	**LG** Light Green	**LM** Lime	**MG** Magenta	**MR** Maroon	**NV** Navy	**OL** Olive	**OR** Orange
PP Purple	**RD** Red	**RS** Rose	**SB** Slate Blue (light)	**SG** Spring Green	**TL** Teal	**VL** Violet	**YL** Yellow	**WH** White

To use these colour codes, put them inside the square brackets, e.g. *NBGC[NV].

Using HSV values: *C[H###], *C[S###], *C[V###]

One may specify only the hue (H) in degrees, and saturation (S) and brightness (value) (V) in percent, for the desired colour. For example, if the default values of saturation and brightness are both 100%, then *C[H030] would indicate an orange colour specified by hue 30° and saturation and brightness 100%. These three commands may be used successively to specify the other HSV values.

Using RGB values: *C[#####] where each # is a hexadecimal digit

This matrix mod uses the HSV colour system internally, but can use RGB values for convenience to give an approximation of the desired colour. These are the same hexadecimal colour codes as used on web pages. For example, *C[FFCC00] would indicate a “cadmium yellow” colour.

Multi-colour custom bitmap

WARNING: May impact on performance. Use on AI or for multi-page displays is not recommended.

To use a multi-colour custom bitmap for a destination display, create a bitmap in the OMSI 2\Vehicles\Anzeigen\Krueger\230x32 folder based on the provided template, and fill in the “Full colour” box near the right-side with white. Then specify the bitmap file’s file name as in the following Sittingen map example:

{ALLEX}	20092	AusbildungSVB	AUSBILDUNG SVB	Wir suchen dich!*B	www.svb.de**K	AUSBILDUNG SVB	SVB.tga	Ausbildung	{{Sittingen\Ausbildung.png *POLY}}

That is, in the column that is two columns to the right of the IBIS-2 display text (column 5), add the *POLY command to the end of the file name, and enclose it all with double braces. It is also necessary to change the stringcount_terminus value near the top of the corresponding depot file to at least 8. (See appendix A for similar commands for other matrix types.)

For more colour-styling examples, see the included sample Gladbeck depot file.

Appendix A: List of asterisked commands

NB New commands in release 0.6 are marked in a light green background; commands at the end are processed first

Command(s)	Argument type	#Args	Usage examples	Description	Usable in lines: 1	2	3
Normal styling commands † If one argument, use argument for flip-dot and double (2×) the argument for LED; if two arguments, use argument 1 for flip-dot and argument 2 for LED							
***^, *v**	1–2 digits	1–2	*^3 *v0,1	Move line up or down respectively by the specified number of pixels†	✓	✓	✓
***B**	—	0	*B	If there is enough space, use bold type font for the current line	✓	✓	✓
****B**	—	0	**B	If LED display and if there is enough space, use bold type font for the current line	✓	✓	✓
***BR**	—	0	*BR	Add British Rail logo as icon	✓	✓	✗
***CE**	—	0	*CE	Use fonts supporting Central European characters for flip-dot display for the current line (not compatible with *K) (not applicable for LED display; all LED fonts support CE characters)	✓	✓	✓
***CF**	0 or 1 digit	0–1	*CF *CF5	Use custom font (specified font number if supplied) for the current line	✓	✓	✓
***CI**	1 char	1	*CIB	Use custom icon represented by the specified character in the custom icon font file	✓	✓	✗
***CN**	0 or 1 digit	0–1	*CN *CN1	Use custom font (specified font number if supplied) for the route number	✓	✓	✗
***DB**	—	0	*DB	Add Deutsche Bahn logo as icon	✓	✓	✗
***F**	—	0	*F	Add airport icon	✓	✓	✗
***F<, *F>**	1–2 digits	1–2	*F>2 *F>5,12	Move the front destination display left or right by the specified number of pixels†	✓	✓	✓
***I**	—	0	*I	Invert line for the current line, i.e. like this	✓	✓	✓
****I**	—	0	**I	If LED display, invert line for the current line, i.e. like this	✓	✓	✓
***I<, *I>**	1–2 digits	1–2	*I<1 *I>3,0	Move icon left or right by the specified number of pixels†	✓	✓	✗
***IT**	0–3 digits	0–2	*IT *IT65 *IT70,170	Use mixed-size display, with specified line 3 X-coordinate limit if supplied†	✗	✗	✓
***K**	—	0	*K	Use small fonts for the current line, and enlarge font for the other line (no Central European glyph support for flip-dot)	✓	✓	✗
****K**	—	0	**K	If LED display, use small fonts for the current line, and enlarge font for the other line	✓	✓	✗
***L**	[1–5 chars]	1	*L[N8P]	Force route number displayed to be the specified characters	✓	✓	✗
***MI**	—	0	*MI	Invert matrix	✓	✓	✗
***MX**	1–2 digits	1–2	*MX7 *MX8,14	Allow only fonts up to standard width (i.e. *m* for an *n* × *m* font) of specified number of pixels†	✓	✓	✓
***N**	—	0	*N	Hide (do not display) route number	✓	✓	✗
***NG**	—	0	*NG	Force use of large route number font on front display (does not affect side or rear displays)	✓	✓	✗
****NG**	—	0	**NG	If LED display, force use of large route number font on front display	✓	✓	✗
***NH<, *NH>**	—	0	*NH>	Display route number on the front display on the left or right side respectively	✓	✓	✗
***NI**	—	0	*NI	Invert route number	✓	✓	✗
***NMX**	1–2 digits	1–2	*NMX6 *NMX8,24	Allow only fonts for route number up to standard width of specified number of pixels†	✓	✓	✗
***N^#, *Nv#**	1–2 digits	1–2	*N^1 *Nv1,1	Move route number up or down respectively by the specified number of pixels†	✓	✓	✗
***P**	—	0	*P	Add coffee cup (break, Pause) icon	✓	✓	✗
***S**	—	0	*S	Add S-Bahn icon	✓	✓	✗
***SCH**	—	0	*SCH	Add school icon	✓	✓	✗
***T**	—	0	*T	Add tram icon	✓	✓	✗
***U**	—	0	*U	Add U-Bahn icon	✓	✓	✗
LED colour commands NB For flip-dot or monochrome LED, all background colour (BGC) commands invert instead of setting the background colour							
***DC, *DBGC**	see below for types of argument		see below for usage examples	Specify the default text or background colour, and resets all colours to the new defaults (Tip: put this command *after* other colour commands)	✓	✓	✗
***C, *BGC**				Specify the text or background colour of the current line	✓	✓	✓
***IC, *IBGC**				Specify the text or background colour of the icon	✓	✓	✗
***NC, *NBGC**				Specify the text or background colour of the route number	✓	✓	✗
The above commands take the following arguments:							
***DC, *DBGC, *C, *BGC, *IC, *IBGC, *NC, *NBGC**	[1–2 digits]	1	*NBGC[7]	Use the colour number specified in the depot colour palette			
	[2 chars]		*BGC[AZ]	Use the colour specified by the colour code			
	[H 3 digits]		*C[H060]	Set the hue of the colour to the specified value (0° to 359°)			
	[S 3 digits]		*NC[S100]	Set the saturation of the colour to the specified value in percent (0% to 100%)			
	[V 3 digits]		*IC[V050]	Set the brightness (value) of the colour to the specified value in percent (0% to 50%)			
	[6 hex digits]		*C[80BFBF]	Use the colour represented by the hexadecimal RGB code specified (NB all RGB colours are only approximate)			
Commands to select terminus text according to matrix type To use the following commands, put commands at the end, and enclose the applicable text with double braces. See usage examples							
***FLIP**	—	0	{{Aarhus*FLIP}}	Select text inside double braces if flip-dot; select text outside otherwise	✓	✓	✓
***LED**	—	0	{{Spandau*LED}}	Select text inside double braces if LED; select text outside otherwise	✓	✓	✓
***MONO**	—	0	{{Essen*MONO}}	Select text inside double braces if single-colour LED; select text outside otherwise	✓	✓	✓
***POLY**	—	0	{{Oulu*POLY}}	Select text inside double braces if multi-colour LED; select text outside otherwise	✓	✓	✓
***GOTO**	[5 digits]	1	{{*GOTO[20120] *MONO}}	Place command immediately before one of the above four commands to use the terminus text corresponding to the "Ziel" number specified (NB can only redirect once)	✓	✓	✓
Usage examples				NB all text inside double braces must be to the right of any text outside double braces			
Freudstr.{{Freudstraße*LED}}				Select text "Freudstraße" if LED display; select text "Freudstr." otherwise			
EXPRESS{{Express*MONO}}{{Express*BGC[3]*POLY}}				Select text "Express*BGC[3]" if multi-colour LED; "Express" if single-colour LED; "EXPRESS" otherwise			
Betriebsfahrt{{*GOTO[20698]*POLY}}				Use the terminus text defined by "Ziel" number 20698 if multi-colour LED; select text "Betriebsfahrt" otherwise			

Appendix B: Additional IBIS suffixes (requires enabling)

The Krüger+ matrix mod uses the same IBIS Linie code suffixes as the original Krüger matrix, but the extra suffixes tabulated below are available by changing the constant Matrix_UseExtraIBISSuffixes from 0 to 1 in the Vmatrix_const.txt file in the OMSI 2\Vehicles\MAN_NL_NG\Script\churaKrueger folder.

Suffix	Display	Suffix	Display	Suffix	Display	Suffix	Display	Suffix	Display	Suffix	Display
08	0	**22**	0###	**48**	___H	**60**	___T	**76**	F___	**88**	R___
11	1###	**37**	CE__	**49**	___I	**61**	___U	**77**	G___	**89**	S___
12	2###	**38**	NE__	**50**	___J	**62**	___V	**78**	H___	**90**	T___
13	3###	**39**	SB__	**51**	___K	**63**	___W	**79**	I___	**91**	U___
14	4###	**40**	DB	**52**	___L	**64**	___X	**80**	J___	**92**	V___
15	5###	**41**	___A	**53**	___M	**65**	___Y	**81**	K___	**93**	W___
16	6###	**42**	___B	**54**	___N	**66**	___Z	**82**	L___	**94**	X___
17	7###	**43**	___C	**55**	___O	**71**	A___	**83**	M___	**95**	Y___
18	8###	**44**	___D	**56**	___P	**72**	B___	**84**	N___	**96**	Z___
19	9###	**45**	___E	**57**	___Q	**73**	C___	**85**	O___		
20	0#	**46**	___F	**58**	___R	**74**	D___	**86**	P___		
21	0##	**47**	___G	**59**	___S	**75**	E___	**87**	Q___		

In the table, # represents digits of the Linie code and ___ represents the first three numbers of the Linie code with initial zeroes removed. Other IBIS Linie code suffixes are as in the original matrix.