SCRIPTS AND ICONS FOR THE GERMAN (DB) SIGNALS – VERSION 1.1

1 Foreword

1.1 Signaling systems in Germany

At present in Germany 5 different signaling systems are used.

- **Hp**: it is used in the ex federal Germany: it can use light signals or, on local lines and old freight yard, semaphores. Light signals and semaphores don't give any information about speed but only the entry turnout speed (typically 40 km/h).
- **Hl**: it is used in the ex democratic Germany and it gives information about speed.
- **Ks**: it's a new system used after the reunification and it mixes Hp and Hl systems. It is used in the new plants.
- **Sk**: for the first time on the line Ausburg – Donauwörth and there still used.
- **Sv**: since 1928 it is used in the Berlin and Hamburg urban rails

This zip file contains icons and scripts needed to simulate German (DB – *Deustche Bahn*) signals in Traindir 3[1], but **only those related with Hh system** which is the most important one. Some signals, of smaller relevance, are omitted. There are both light signals and semaphores.
They work since version 3.8w of the program, but using the latest version is always recommended.

1.2 Sources

These are the most important sources I have referred to.
http://www.bahnstatistik.de/Signale/SB-DBAG.pdf
http://www.sh1.org/eisenbahn/index.htm
http://mysite.du.edu/~jcalvert/railway/germaust.htm
http://www.tf-ausbildung.de/home.htm
http://stellwerke.de/signal/deutsch/index.html
http://www.hurrug.de/bahn/bahnindex.html
http://www.joernpachl.de/glossar.htm

1.3 Acknowledgments

I want to express my appreciation to Giampiero Caprino whose skills and perseverance allow the implementation of TD package; to Paolo Rosati for his Rfi, Sncf and Ffs signal packages, unlimited source of ideas. And eventually to Paengel_Anton for his help in testing the package into his DB scenarios.

2 Installation

Create a new folder, i.e. C:\Program Files\Traindir3\Signals\BB. Open the .zip file, select all the files and extract them in that folder and set it as the "Path to signal scripts" in the "Environment" tab of the Edit | Preferences command.

3 Summary of the available color light signals

- Distant (Vorsignale) and main entry signals (Einfahrttsignale) in stations or interlocking areas, with or without shunting indications
- Main exit signals (Ausfahrttsignale) for stations or interlocking areas, with shunting and opposite track indications
- Intermediate block signals (Zentralblocksignale) with or not distant signal
- Permissive block signals (Selbblocksignale) with or not distant signal
- Other signals: dwarfs and high shunting signals, shunting limits, dead ends, opposite track and speed indications

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[1] *A software by Giampiero Caprino.*

3.1 Aspects

3.1.1 Main signals (Hauptsignale, Hp)

Hp1	green	clear
Hp2	Green yellow	Clear with 40km/h if not indicated otherwise
Hp0	Red or double red	stop

3.1.2 Distant signals (Vorsignale, Vr)

Hp1	Green	Clear
Hp2	Green yellow	Clear with 40km/h if not indicated otherwise
Hp0	Red or double red	stop
Vr1	Double green	Expect clear
Vr2	Green yellow	Expect clear with 40 km/h
Vr0	Yellow yellow	Expect stop
Vrb	off	Distant signal is off if its main one, on the same mast, is red

3.1.3 Dwarf main signals (Niedrigessignal)

Hp0	Red or double red	stop
Sh	Red + 2 white lights (down left, up right)	Shunt
Zs1	Red + 3 white lights at the vertexes of an A	May pass this signal and continue with previous indications
Zs1	off	Clear shunting signal and continue with previous indications
Zs8	Double red + 3 white flashing lights at the vertexes of an A	Exit or continuation signal for opposite track

3.2 Description of the scripts

`DB_Hp_esig.tds`	Entry main signal (Einfahrtsignal) for station or interlocking area where shunting operations are not permitted. It is always combined with distant signal. Speed on diverted route is 40km/h if not indicated otherwise. Aspects: HpxVry with x and y from 0 to 2. Mast white-red-white.
`DB_Hp_esig_S.tds`	Entry main signal (Einfahrtsignal) for stations or interlocking areas where shunting operations are permitted. It is always combined with distant signal. Speed on diverted route is 40km/h if not indicated otherwise. Aspects: HpxVry with x and y from 0 to 2. Hp0Sh1Vrb, clear for shunting with Hp red, Sh1 [shunting] switched on, Vr off. Mast white-red-white.
`DB_Hp_asig.tds`	Exit main signal (Ausfahrtsignale) from stations with shunting. Normally it isn't combined with a distant signal.. Aspects: HpxVry with x and y from 0 to 2 Hp0Sh1, shunting permitted Mast white-red-white.
`DB_Hp_asig_Zs8.tds`	Exit main signal (Ausfahrtsignale) from stations with shunting and and substitution signal Zs8 for opposite track. aspects: HpxZs8d with x from 0 to 2 and Zs8 switched off Hp0Zs1 red and Zs8 switched on Hp0Zs8Sh1 shunting Mast white-red-white. You must put a fake station named "gg" at the beginning of the opposite track.
DB_Hp_Zsig.tds	Intermediate interlocking signal (Zwischensignal) placed between an entry and an exit signals. It has shape and aspects like an entry signal, but if after there isn't an exit signal (a branch line) and if the distance from the next block signal is more than 2000 m, it operates like an exit signal. Aspects: HpxVry with x and y from 0 to 2 Hp0Sh1, shunting permitted Mast white-red-white.

DB_Hp_Bz_HpVr.tds	Main intermediate signal (Zentralblocksignal) with distance signal. Its aspect is always red and it must be placed with "intermediate" option in the editor. Aspects: HpxVry whth x = 0, 1 and y = 0, 1, 2, b Mast white-red-white.
DB_Hp_Bz.tds	Main intermediate signal (Zentralblocksignal) without distance signal. Its aspect is always red and it must be placed with "intermediate" option in the editor. A distant signal must precede it. Aspects: Hpx with x = 0, 1, 2. Mast white-red-white.
DB_Hp_Bs.tds	Permissive signal (Selbblocksignal) without distance signal. Usually these signals turn automatically back to the most clear aspect as soon as possible, so they should be placed in the scenario using the 2 head icon of the editor. All the automatic signals must be "activated" at the beginning of the simulation with the "Set sig. to green" menu command. A distant signal must precede it. Aspects: Hpx with x = 0, 1, 2. Mast white-yellow-white-yellow-white.
DB_vor.tds	Pure distant signal (Vorsignal). If the distance to the next main signal is less than 1000 m, there is a white light (reduced distance). Aspects: Vrx with x= 0 , 1, Aspects with K as suffix are for a reduced distance signal (white light). On the mast there is a white iron plate with a black S. Andrew cross
DB_vorw.tds	Distant repeater signal (Wiederholenvorsignal). It repeats the aspects of pure distant signal if the distance between pure distant and main signals is less than 1000 m. On the mast there is no plate.

3.2.1 Dwarfs and shunting signals.

These signals are the same in Hp, Kl, and Ks systems. So the file mane hasn't Hp indication.

DB_N_esig.tds	Dwarf (Niedrigessignal) entry main signal (Einfahrtsignal) with a subsidiary signal (Zusatzsignal) Zs1 (Ersatzsignal). Usually it is used in the interlocking areas. If Zs1 is turned on (Red + 3 white lights at the vertexes of an A), the engineer must overlook this signal and proceed according to the previous indications. The previous signal has aspects according to the next main signal. Aspects: Hp0Zs1x con x = d (Zs1 turned off, red), l (Zs1 turned on, clear)

DB_N_asig.tds	Dwarf (Niedrigessignal) exit signal (Ausfahrtsignal) with a subsidiary signal (Zusatzsignal) Zs1 (Ersatzsignal), Zs8 (Gegengleisfahrtt) counter line signal, Sh1 shunting permitted.
	Usually it is used in the interlocking areas.
	Aspects: Hp00 red, unclear
	       Zs1 exit to normal track (overlook this signal)
	       Zs8 exit to counter track
	To turn on Zs8, must be placed a fake station named "gg" at the beginning of the opposite track.

DB_N_gg_esig.tds	Dwarf (Niedrigessignal) main or block signal (Ausfahrtsignal) with a subsidiary signal (Zusatzsignal) Zs1 (Ersatzsignal), Zs8 (Gegengleisfahrt) counter line signal (it isn't necessary to place a fake station "gg")
	Aspects: Hp0Zs1d red
	       Hp0Zs1l back to normal track
	       Hp0Zs8l proceed along counter track

DB_gsp.tds	Dwarf (Niedrigessignal) shunting signal (Gleissperrsignal)
	Aspects: Gps0 – red
	       Sh1 shunting permitted
	       Sh1d clear

DB_sh.tds	Just like DB_GSP.tds, but with different shape Aspects: Sh0 via red Sh1 shunting permitted

DB_rht.tds	This simulates the limit of shunting movements (Rangierhalttafel). It can be automatically cleared by trains (if not in shunting maneuvers) using intermediate option.
DB_Zp9.tds	Departure signal. It's a distant signal placed before an exit signal. Aspects: Zp90 red 　　　　Zp91 clear
DB_Zp9_z-y.tds	Main departure signal. It can be cleared only if the next exit signal is cleared. If the next exit signal becomes unclear, the present signal becomes automatically unclear. The present script takes into consideration the existence, between the stop point and the exit signal, of any dwarf signal; because of this, the script must be customized by inserting the coordinates of present signal. The modified script must be distributed with the scenario. Aspects: Zp90 red 　　　　Zp91 clear 　　　　Shunt
DB_Zs6.tds	Distant signal for counter track. A fake station "gg" must be placed at the beginning of the opposite track. Aspects: dnk turned off 　　　　Gle turned on
DB_gaz.tds	Speed indicator. It is mounted to a main signal. It is a distant signal.it must be placed before the main signal. Aspects: gaz4 speed 40 km/h 　　　　gaz6 speed 60km/h 　　　　dnk turned off
DB_gas.tds	Dead end. It should be linked to the last track element of an exit point to block the trains, that would otherwise exit the scenario. It is always red and previous signals will show the correct aspect.
DB_Sh1.tds	Usually used at dead-end tracks if this track is a direct entry line or entered by regular train movements (e.g. at a terminal station) to block the trains, that would otherwise exit the scenario. It should be linked to the last track element of an exit point. It is always red and previous signals will show the correct aspect.

4　Summary of the available semaphores signals

4.1　Description of the scripts

DB_F_esig.tds	Entry main signal (Einfahrtsignal) with tow arms (Formsignal). The upper arms are a main signal, the lower signal is a distant signal. Speed on diverted route is 40km/h. Aspetti: Hp0 red 　　　　Hp1 clear and expect clear 　　　　Hp2 clear and expect red or braking Mast white-red-white.
DB_F_asig.tds	Exit main signal (Ausfahrtsignale) from stations with tow arms and shunting. Normally it isn't combined with a distant signal.. Aspects: HpxVry with x and y from 0 to 2 　　　　Hp0Sh1, shunting permitted `Mast white-red-white.`
DB_F1_Hp.tds	Exit or block signal. Only one arm. A distant signal must precede it at a distance greater than 1000 m. It can be a *intermediate* signal. Aspects: red 　　　　Hp1 clear Mast white-red-white.
DB_F_vor.tds	Pure distant signal which usually precedes `DB_F_esig.tds`

	Aspects: red expect red
	          Vr1 expect clear and advanced warning for clear
	          Vr2 expect braking

`DB_F1_vor.tds`	Pure distant signal which usually precedes `DB_F1_Hp.tds`. Aspetti: Vr0 expect red Vr1 expect clear.