



dovetail  
GAMES

# Class 605 ICE TD



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# 1 Background

## 1.1 Multiple Unit

Deutsche Bahn commissioned the Class 605 ICE TD, a diesel InterCity Express multiple unit, to service their non-electrified routes. Developed and built alongside the 411 ICE T, the 605 shares many of the same elements as the ICE T. The notable differences between the two are the bogies, clearly recognisable by the crescent-shaped supports, and the removal of the pantograph. The ICE TD now currently runs services from Berlin up to Hamburg and on to Copenhagen with other services also running between Germany and Denmark.

## 1.2 Design & Specification

<b>Builder</b>	Bombardier/Siemens
<b>Locomotive Weight</b>	232 tonnes
<b>Vehicle Length</b>	106.7m
<b>Vehicle Width</b>	2897mm
<b>Vehicle Power</b>	2200kW
<b>Top Speed</b>	125mph (200km/h)
<b>Brake Types</b>	Rheostatic

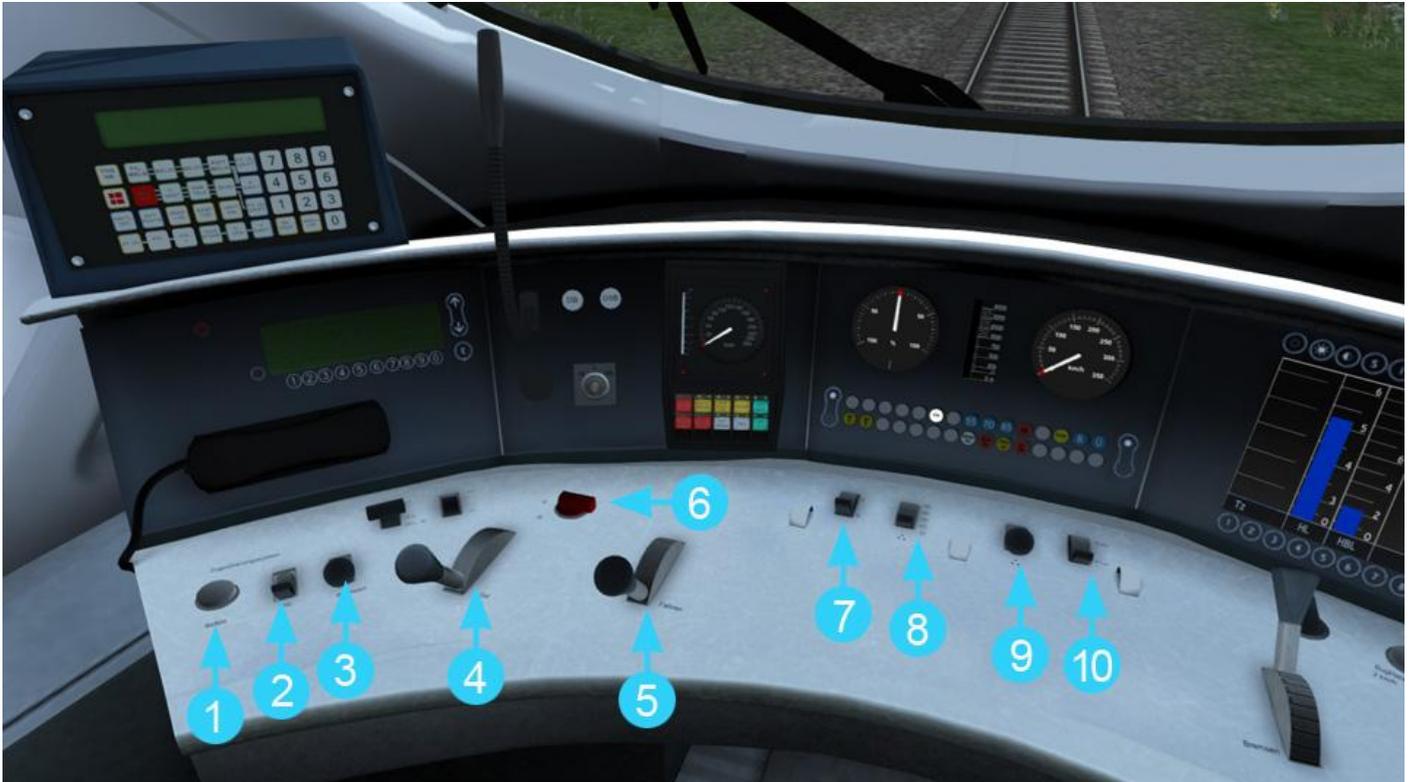
## 2 Rolling Stock

### 2.1 Class 605 ICE TD



## 3 Driving the ICE TD

### 3.1 Cab Controls



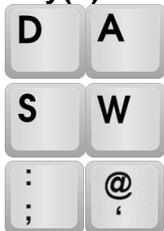
1	PZB Override	6	Reverser
2	PZB Release	7	Cab Light
3	PZB Acknowledge	8	Headlights
4	Speed Control Speed Set	9	Sander
5	Throttle	10	Horn



11	Sifa Reset Pedal	13	Wipers
12	Train Brake	14	Wiper Speed Control
		15	Emergency Brake

### 3.2 Keyboard Controls

**Key(s)**



**Action**

Decrease or Increase Throttle Control

Move Reverser Control Backward or Forward

Decrease or Increase the Train Brake

### 3.3 General Keyboard Controls

Key(s)	Action
	<b>Load/Unload</b> passengers
	<b>Lights.</b> Repeatedly pressing will cycle through headlight states where appropriate. Illuminated Dials will also come on.
	<b>Windscreen Wipers.</b> Press once to switch on and again to switch off.
	<b>Desk Light.</b> Toggle Desk light and dial illuminations on and off.
	<b>(Expert) Engine Stop/Start.</b> By default engines will already be running at the start of a scenario. Press this button to stop and then again to restart the engine.
	<b>(Expert) Sander.</b> Causes sand to be laid on the rails next to the wheels to assist with adhesion. Press once to apply sand and again to stop.
	<b>Horn.</b> Sound the horn's low tone.
 	<b>Couple manually.</b>
	

## 4 Automatic Speed Control

The ICE TD is equipped with an Automatic Speed Control which allows the driver to set the target speed. An on board computer will then apply the Throttle Control to obtain that speed and maintain it through further applications of the Throttle Control, or by applying braking when necessary. You can almost think of it as a kind of Cruise Control for trains.

To operate system, follow these steps:

Activate Speed Control.

Set the speed control to the desired value. In the speedometer a small red diamond “bug” will slide around to the configured speed in steps of 5km/h.

Release the Brakes.

Move the Throttle Control to the desired level of acceleration, at this point the train will begin moving and accelerate to the configured speed.

All speed changes should be managed with the Automatic Speed Control, simply change the target speed as required and the computer will apply Throttle and Brakes appropriately.

Key	Function
	Activate/Deactivate
	Increase Speed Set
	Decrease Speed Set

## 5 SIFA

SIFA is short for Sicherheitsfahrschaltung or “Safety Driving Switch”.

The SIFA vigilance alerter is disabled at start-up, but can be activated or deactivated by pressing ‘Shift + Enter (Numpad)’. While activated the SIFA light on the cab dashboard is normally switched off. While the train is moving the driver is required to confirm an alarm every 30 seconds.

When the 30 second alarm is triggered the SIFA light on the cab dashboard will illuminate, and after an additional 4 seconds an audible alert will sound.

After a further 2.5 seconds the emergency brake will be applied. This can be avoided by acknowledging the alarm at any stage by pressing the ‘Enter(Numpad)’ key.

Key(s)		Function
		(Numpad) Activate / Deactivate Sifa
		(Numpad) Acknowledge / Reset

## 6 PZB90 Cab Signaling

The PZB90 function is similar to the UK AWS function. By default it is disabled.

The following keyboard controls are used for operation:

Key(s)	Function
 	(Numpad) Activate/Deactivate
	Override
	Release
	Acknowledge

There are six cab dashboard lights associated with the function:

`85', `70', `55', `1000', `500' and `befehl40'

Function	Control Panel Light(s)
85km/h maximum / Normal operation	`85'
45km/h maximum	`85' + `70' Alternating
Distant at warning passed. 85km/h maximum	`85' (flashing) + `1000'
Stop signal approaching. 45km/h maximum	`85' + `500'
Emergency brake applied	`500' + `1000' (flashing)

### 6.1 Pulling away

When first pulling away the PZB will enter the starting program mode until speed exceeds 5km/h. This is shown by the `70' and `85' lights flashing alternately. Speeds below 45km/h will be allowed for the next 700m. If there is no adverse stop signal ahead the speed monitoring can be cancelled with the `End' key. However, if the monitoring is cancelled and the next signal is red when passing the 500Hz magnet (similar to an AWS ramp), the emergency brakes will be applied, whatever the train speed.

## 6.2 Passing a Distant Signal at Warning

When passing a distant signal set at warning, the signal should be acknowledged with the Acknowledge key ('Page Down') within 2.5 seconds of passing or the emergency brakes will be applied. After acknowledging the signal, the '1000' light will show, and '85' will start flashing. You now have 23 seconds to reduce speed to 85km/h or less, or the emergency brakes will be applied.

Once train speed drops below 85km/h the speed will be monitored to this maximum. This cannot be cancelled while the '1000' light is lit. 700m after passing the distant signal, the 1000 light will go out. The speed monitoring can now be released.

If the train speed drops below 10km/h while 1000Hz 85km/h monitoring is active, then the maximum speed will be reduced to 45km/h. This is indicated by '70' and '85' flashing alternately as per the start program mode.

If speed monitoring is not cancelled with the Release key ('End') it will expire 1250m after the distant signal (providing another active distant has not been passed).

## 6.3 Approaching a Stop Signal at Danger

If the stop signal ahead is red then passing a 500Hz magnet will cause the 85 and 500 lights to be displayed steady. If the train speed exceeds 65km/h at this point the Emergency Brakes will be immediately applied. If not, you have 153m to reduce speed to below 45km/h, or again the Emergency Brakes will be applied.

If the train speed drops below 10km/h while 500Hz 45km/h monitoring is active then the maximum monitored speed will be reduced to 25km/h. This is indicated by 70 and 85 flashing alternately together with the 500Hz lit.

Speed monitoring cannot be released while the 500Hz light is on. It is extinguished, and the 500Hz monitoring expired, 250m after passing the 500Hz magnet, which should be approximately the position of the associated stop signal.

If an adverse stop signal is passed (2000Hz magnet) the Emergency Brakes will immediately be applied.

## 6.4 Passing a Stop Signal at Danger

If it is necessary to pass a red signal, press and hold the Override key ('Del') while passing the signal. Ensure train speed is below 40km/h. As the signal is passed, the befehl40 light will show. The Override key can now be released. If the '1000' and '500' lights are out then any speed monitoring can be cancelled using the Release key.

## 7 LZB

LZB is a cab signaling and train protection system. LZB Brake Intervention is off by default. It can be enabled with 'Ctrl - Numpad+'. The 'B' light will show when LZB Brake Intervention is enabled. LZB displays will activate when needed, regardless of Brake Intervention state. The 'Ü' light is lit when LZB is active.

LZB is activated by an LZB start sign. It is ended by LZB end magnets. Displays can also be enabled/disabled by the user pressing 'Ctrl/Shift - Numpad+' (useful for existing routes with no magnets).

LZB will override any enabled PZB. PZB will run in the background and will take over when LZB deactivates. This may be in a restricted state resulting from 1000Hz magnets. Active 2000Hz magnets will also cause a brake application with LZB.

When active LZB shows the distance to the next speed change, on a 4000m range graphic bar, or digits up to 9900m. The next speed target is shown in digits at the base of the speedo, however, if the next speed target is less than the current speed limit, the current speed limit is shown. The current speed limit is always displayed with a bug on the speedo.

Exceeding the limit will cause the 'G' light to be shown. When LZB Brake Intervention is enabled if the limit is exceeded for 5 seconds the brakes will be applied.

When approaching reduced speed targets (including 000 for red signals) the limit bug will command a deceleration rate by gradually moving the bug counter clockwise. While commanding deceleration the 'G' light will be shown.

If the AFB is used with active LZB then the train speed will be managed to the lower value of the AFB target or LZB target, and thus provides a degree of automatic train control. It will not stop for stations.

At the end of an LZB section the 'Ende' light will flash. If LZB Brake Intervention is enabled this must be acknowledged within 10 seconds or the brakes will be applied.

Key(s)	Function
 	(Numpad) Activate / Deactivate LZB
  	(Numpad) Activate / Deactivate LZB Display

## 8 Scenarios

### 8.1 Berlin to Hamburg via Uelzen

**Season:** Autumn  
**Weather:** Rain  
**Duration:** 50 minutes  
**Difficulty:** Hard

**Description:** Disruptions at Bergedorf have resulted in most services being diverted via Uelzen this evening. Carry on this ICE-TD express passenger to Hamburg.

### 8.2 Football Relief Service

**Season:** Summer  
**Weather:** Cloudy  
**Duration:** 40 minutes  
**Difficulty:** Medium

**Description:** It is World Cup Semi-final day and extra services have been required in the form of Class 605 ICE-TD's. You will be running the last service before kick-off.

### 8.3 Hamburg to Berlin via Uelzen

**Season:** Autumn  
**Weather:** Cloudy  
**Duration:** 50 minutes  
**Difficulty:** Medium

**Description:** A service to Berlin diverted south via Uelzen.

## 9 Acknowledgements

Dovetail Games would like to thank the following people for their contribution to the development of the Class 605 ICE TD:

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