Minuetto

Rel 1.0.2

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1. Foreword

The entire development of the Minuetto was based on the target of creating a machine with realistic and detailed handling. Therefore, a number of important procedures are simulated, both for enabling, testing the various on-board systems and for stationing.

The 3D models and texturing are specific to this project.

For the drive control part driven by the infrastructure, it was decided not to develop the system from scratch, but instead to delegate it to the DLC WG-FS SCMT, by now a heavily tested and valid plugin. In case plugin is missing, the Minuetto handle only a part of the RSC portion via a dedicated instrument that replace the plugin one.

> Due to certain limitations of TSC and the complexity of the management algorithm, incorrect use of the procedures provided for the Minuetto may lead to strange behaviour. In some case incorrect procedures have been ensured by locking some controls, but in general it is recommended to read this manual carefully and follow the procedures provided. Also, again due to some limitations of TSC or by lack of documentation, some procedures may not be 100% as in the real world.

2. Introduction

2.1. Minuetto

The Minuetto is the name given to the ALe501-LE220-ALe502 (electric version) and ALn501-LE220-ALn502 (diesel version) trainsets commissioned by Trenitalia in the early 2000's, produced by Alstom Ferroviaria and used for regional transport, They are part of the Coradia Meridian family.

A multiple consist can consist of up to three Minuetto, although in theory multiple control is only allowed on 2.

> Usage of 4 or more Minuetto in the same consist is not allowed.

2.2. Pack content

3 liveries are included: DPR, XMPR and the new Trenitalia regional.

2.3. Requirements

Here are the requirements for use:

- Simulator: Train Simulator Classic (DTG)
- DLC: WG – FS SCMT (optional but recommended. If not available a default RSC instrument is used)

For a complete and correct experience, we recommend usage in routes equipped with:

- Signals: Pack Segnali Cast0213
- SCMT (optional)

It is recommended to enable EFX in the TSC setting.

2.4. Save

Saving feature is implemented through the usual TSC F2 shortcut. Even if In theory the procedure will resume the exact status at the moment of saving, it is recommended to save the scenario when loco is in a stopped position (like in a station).

2.5. Acronyms

CG = Main brake pipe
LCM = Manual Torque Lever to move the train
LCA = Automatic Torque Lever to move the train
LINV = Reverser
LV = Automatic Speed Set Lever
BM = Main bench
IR = Rapid switch
FE = Dynamic Brake
GS = Static Group / Compressors

3. SCMT Plugin

3.1. Description

SCMT is a system controlling the progress of the train, depending from a lot of factors.

Conceptually – and really simplifying it – is splitted in 2 macro environments. One can be considered a passive and hidden controls, that decide and perform actions on the train controls without the driver intervention, and one can be considered active, requiring some actions from the driver, without which the system reacts directly on the train controls.

The passive area is mainly handled by the SCMT system, while the active area is mainly handled by the RSC system, that is anyway part of the same SCMT instrument (RSC was the first train control used in Italy as a basic system, followed by the SCMT that has added mor features).

3.2. SCMT

SCMT send via the track buoys (part of the SST or terrain sub system) a lot of informations to the train system (part of the SSB or board sub system). Data sent are essentially, the type of signals in front of us, the speed allowed in the track sections (not the speed used in the track itself, but the 4 speed as per italian rules that refer to the various rank of the train), the slope category, the distance of the next speed limit change or slope change, etc, etc).

The SSB will then calculate a speed reduction curve or breaking curve to arrive at the next important point, if any, with the right speed, and if the driver is not acting to stay in this curve, the SSB will take actions like a simple warning with a traction cut, or an emergency brake, etc.

Covering all the possible situation is not easy, and this is the reason why it has been decided to use the external plugin from Worcester George to install the SST on the route and the SSB on the Minuetto. As mentioned this is not mandatory to drive in the route (especially because older loco had not the SCMT available, but maybe only the RSC). This plugin has already been tested in different situations and in different routes and it is now a very robust addon.

After installing the SCMT plugin, in theory the WG provider product should be already ticked on, but in case it is not, this provider and product has to be activated. The SCMT instruments in the Minuetto if the plugin is installed is as in the next image (left). If not is like in the right image.

Pls refer to the extensive manual provided by the plugin to have informations on how to setup and how it works (it is in italian language only but full of images).

3.3. RSC

The RSC is working differently. It is called continuous repetition of signals in cab. This means that every time a signal in front of us will change aspect, the RSC will recognize it and decide if the signal in front of us is having now a more restrictive aspect, equal restrictive aspect or less restrictive aspect.

In case equal or less aspect is happening, there could some warning lamp switching on in the instrument, but nothing has to be done by the driver. In case of restrictive signal, then the driver has to react in different way depending on the next signal aspect.

Normally a changes in the instruments is done when passing a signal, starting therefore to receive info from the next one. But it could happen also in the middle, when for AI traffic the next signal change aspect.

Also for this, it is recommended to read the manuals, or in general to look at the route video published in the JT youtube channel here where are explained the more frequent situations. Compared to the SCMT, after a short learning curve, it is more easy to understand the logic behind.

3.4. Plugin, si o no

Being an external and not mandatory plugin, the Minuetto has been giften of a default SCMT instruments that cover only the RSC portion.

So, yes or no?

If you're use to the SCMT passive system, this for sure will give you the full experience as it should be in the actual Italian railway. On the other side, the SCMT is controlling the train, and need a lot of attention to avoid automatic intervention of the system, causing the driver to for example move the torque levers back to neutral to put again a train in traction or to get rid of an "unexpected" emergency braking decided by the software via specific procedures.

Additionally, a series of information has to be inserted via the instruments to supply the train needed information to the system, like mass, braked mass, length, maximum speed, number of drivers and so on, and this has to be done every scenario, like it happens in the reality.

If not use to, or maybe because more interested to make a quick scenario having not enough time to setting up, than the default RSC could be used. As explained in specific paragraph, it is also possible to use the default RSC even with the plugin installed, by using as a first action a specific keyboard shortcut (CTRL+SHIFT+A). Using the default RSC will not require to insert any train info.

To be considered and mentioned here that the default RSC will handle the more important feature (at least in the current release) of the RSC. Some very rare feature or some speed constraint linked to the RSC are not at the moment covered by the default tool. To be more quantitative, the default tool is covering 90% of the theorically requested features.

Regarding the SST portion, if you do not have the plugin installed, they are simply ignored as not available assets. They will also be ignored by the Minuetto in case they are installed but it has been decided to use the default RSC,

3.5. Plugin download link

The plugin can be downloaded in the page of the plugin creator here.

4. Laying

4.1. Manual laying

Before rolling stock is laid, both the "Cast0213/Minuetto" and "Cast0213/Common" provider/product for rolling stock and the "Worcester-George/SCMT" provider/product must be enabled if installed.

Minuetto is already available composed in consist (ALe501-Le220-ALe502). In the chosen scenario, you can find them by filtering the rolling stock with the 'Compositions' button and choosing the livery you want to lay as shown in the figure. There also AI version of the Minuetto in all the 3 liveries to be used as AI traffic.

4.2. Quick drive

It is possible to use the Minuetto directly in routes that support Quick Drive mode. It will therefore not be necessary to position it manually in the chosen scenario, however, it is still necessary to enable the SCMT plugin and then restart the scenario in order to display the SCMT instruments in the cab.

5. Cab

5.1. Cameras

The Minuetto has five cab cameras. To move between the cameras use the left/right arrows. The default view is the normal driving view. The second is pointed at the rear switchboard. The third is pointed at the cabinet where the SCMT plate is located, the fourth is pointed at the right seat of the cab. The fifth is aimed at the destination and message management equipment. On the other hand, the cabinet where bipolar switch is located and also the rear switchboard are visible by turning the main camera towards the rear of the train.

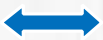
5.2. Dialogue box

To visualize the various dialogue box in italian, due to a limitation in TSC, it is necessry to create a file (even empty), called “Italian.txt” to be placed in the main Minuetto folder, therefore under Assets/Cast0213/Minuetto. If this file is not present, alle the messages will be visualized in english.

5.3. Controls

All controls can be used via the mouse and for the most part also via key shortcuts. The complete list of keyboard shortcuts can be found in the appendix. For the sake of analogy and ease, it has been chosen to use - where identical and where possible - the same combinations used for the E464 created by Worcester-George.

The following paragraphs describe all the controls - divided by type of usage - and their positioning in the cab. Please refer to the following legend for each figure:

	Simulated command
	Instruments
	Command not simulated
	Mouse usage via horizontal or vertical movement
	Mouse usage via left button click
	Mouse usage via click and hold left button
	Keyboard usage via shortcut
	Camera used (1-5)

5.3.1. Commands for startup phase

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This section describes all the commands related to the startup phase of the train.

1. Bench key (BM). The BM key at the start of the scenario is placed on the bench. Once inserted it activates the instrument lights and start the diagnostic cycle on the 2 terminals (instrument and diagnostic). The key can be switched off with the same procedure.

2. Pantograph lever 1. Raises/lower the front pantograph. Raising is done if sufficient pressure conditions exist.

3. Pantograph lever 2. Raises/lower the rear pantograph. Raising is done if sufficient pressure conditions exist.

> Lowering the pantographs causes the Rapid Switch (IR) to open immediately, unless the Parking procedure is activated.

4. Rapid Switch opening control button.

5. Control button for closing the Rapid Switch. The Rapid Switch must be closed in order for the compressors to start and the train startup to be completed successfully.

6. Brake interception lever. The lever at the beginning of the scenario is positioned on the bench. Once engaged, it allows the subsequent opening of the brake circuit. The lever can be disengaged with the same procedure, after turning it horizontally in the closed position.

7. Battery insertion button. The battery button inserts the low-voltage loads required for enabling and operating the machine.

8. Battery switch-off button.

9. Button to exclude the dynamic brake.

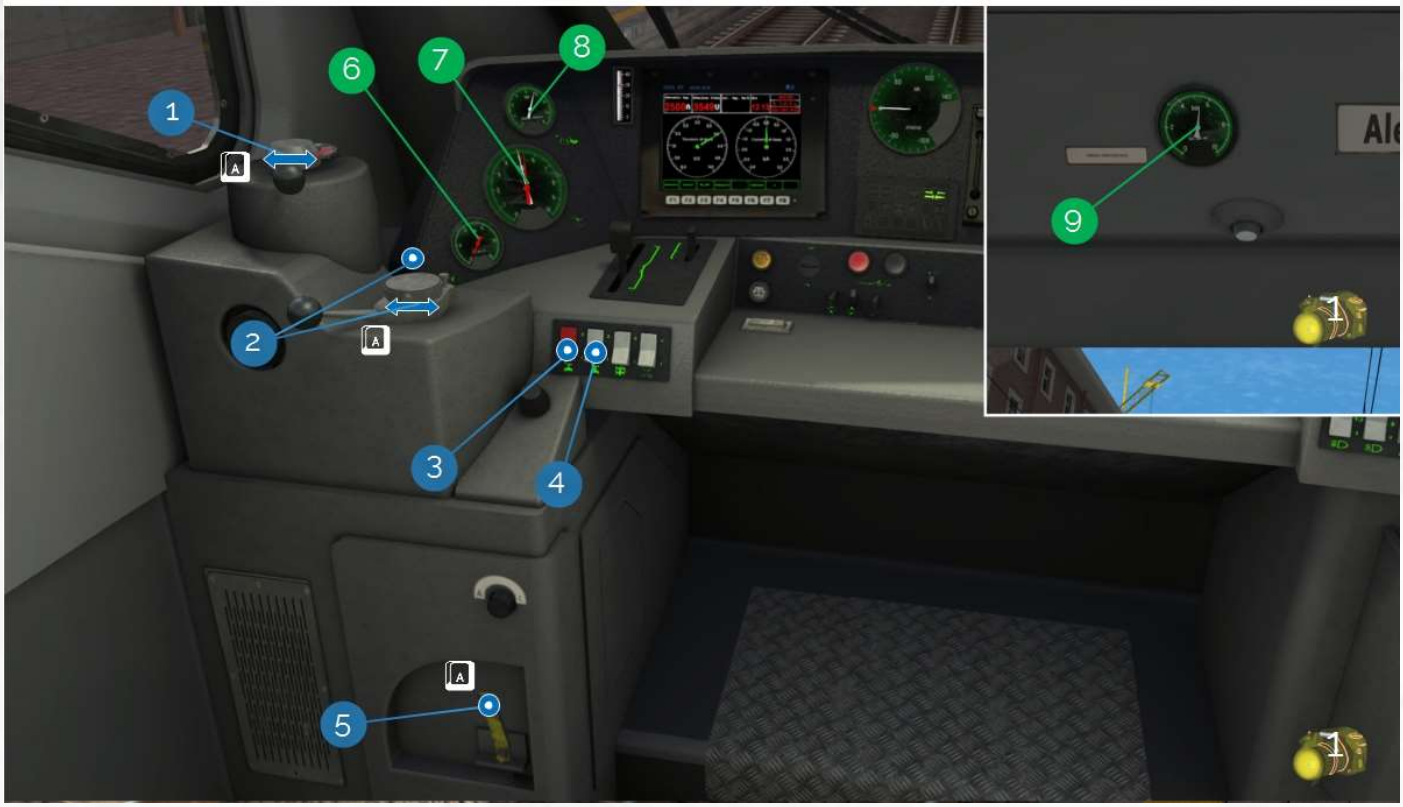
10 SCMT activation command (SCMT plate). Activates the SCMT system and the SCMT dashboard. If SCMT plugin is used, the machine cannot move if the dashboard is switched off or incorrectly set.

11 Bipolar switch closing/opening lever. The bipolar switch must be closed to carry out any operation of the machine.

12 Battery voltmeter. The moving needle indicates the voltage of the low voltage circuit. It indicates 0V when the machine is disabled. With bipolar switch and batteries inserted it normally shows a voltage of 23V. After the static groups (GS) have been inserted, the voltmeter shows a voltage of approx. 29V.

For meaning, see chapter on machine startup.

5.3.2. Brake handling controls



This section describes all controls related to brake handling in the Minuetto.

Minuetto has 3 types of braking:

- Braking of the traction loco only done via the direct brake.
- Braking of the entire train done via the continuous brake.
- Electric (dynamic) braking performed either through the use of the continuous brake, or through the manual torque lever (LCM) decided by the driver, or through the automatic torque lever (LCA) decided by the software, and finally by the SSB-SCMT train control system,

  Dynamic braking (FE) is enabled in the following cases:

  - At train speeds above 35 km/h. Without pneumatic braking for lower speeds FE is disabled.
  - At train speeds above 35 km/h. With pneumatic braking or in case of automatic management by LCA lever or SSB-SCMT, FE is kept active up to about 10 km/h.

1 The direct brake is of the RA-M4 type. It acts only on the bogies of the driven loco, and its usage is only reflected by a change in the pressure gauge of the brake cylinders 6

2 The continuous brake is of the Oerlikon FV3 type. It acts on all bogies in the train and therefore its application is reflected on both the brake cylinder pressure gauge 6 and on the pressure gauge of the main pipe (CG) and brake reservoir 7.

The brake command is of continuous type and has 10 positions:

- Isolation or Neutral
- Charge
- Release
- Dynamic Braking (FE)
- 1° degree of operating braking -0.5 bar in CG
- 2° degree of operating braking -0.8 bar in CG
- 3° degree of operating braking -1.0 bar in CG
- Max degree of operating braking -1.5 bar in CG
- Deep braking -2.1 bar in CG
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- Emergency braking

When stationary and before the machine is enabled, the brake is in the ISOLATION position (NEUTRAL). In this position, the lever is isolated from the rest of the brake circuit, so the pressure values remain constant and equal to the values at the time the lever was placed in isolation.

To release the lever from the ISOLATION position and move it to the first possible operating position (CHARGE), use the left mouse button in the area shown in the figure above the lever.

> Once unlocked, the lever cannot be put into ISOLATION unless it is first brought to the CHARGE position and then again using the left mouse button in the area shown in the figure.

In the CHARGE position, the pipeline is charged to a pressure of approximately 5.35 bar (higher than the working pressure of 5 bar) to ensure that the train brake are fully released. Furthermore, in this position the charging speed rate is higher than the one in the RELEASE position.

The RELEASE position is the normal position to be held when driving. Any pressure overload from a previous charge is slowly dissipated until the working pressure of 5 bar is reached.

The FE position activates the electric (dynamic) braking if the conditions exist. For this to occur, the speed of the trainset must be greater than 35 km/h.

From the 1st braking position to the full braking position, the corresponding rising pressure drop (and thus rising pressure on the cylinder pressure gauge) is applied. If conditions permit, FE is always activated in these positions.

In emergency braking, the main pipe (CG) is in direct contact with the atmosphere and therefore maximum force is applied to the brake blocks in the shortest possible time. In this position the FE is not active.

> For ease of use with both mouse and keyboard, the continuous brake has a step behaviour that simulates real behaviour, making it easier to position correctly. Only between the 1st degree of braking and full braking the movement is continuous so that the depression that the driver intends to provide can be correctly calibrated.

> The use of the brake with the HUD control is not recommended as it is not very precise and skips the intended lock to and from the isolation position.

3 Handbrake insertion control.

4 Handbrake disengagement control.

> The pressure of the handbrake is indicated on the pressure gauge above the driver 9.

When the handbrake is engaged, the indicators on the outside of the Minuetto show red color. Otherwise they show green color.

5 Opening/closing brake interception lever. With the lever mounted, opening and closing is controlled by clicking the left mouse button in the indicated area of the lever.

6 Brake cylinder pressure gauge. The red pointer is for the front bogie, the white pointer for the rear bogie. Normally more pressure is sent to the front bogie than to the rear bogie.

A brake cylinder pressure value greater than zero forces the warning light in the left indicator panel to light up (par 4.2.4)

7 CG pressure gauge and brake reservoir. The red pointer indicates the pressure in the general pipe (CG). The white pointer indicates the pressure in the tank on which the lever acts.

When the continuous brake lever is in any braking position, the indicators on the outside of the Minuetto show red color. Otherwise, they show green color. These indicators are useful during the real world brake test procedures.

8 Main tank pressure gauge. Indicates the current pressure in the main tank. Normally 10 bar in operation. The minimum pressure of 6.5 bar is required to enable the machine and the pressure is always maintained via a pressure switch between 8 and 10 bar (unless there is a compressor failure),

9 Hand brake pressure gauge. Indicates brake pressure. Zero pressure means hand brake is applied.

5.3.3. Movement handling controls

This section describes the commands used in a normal train movement.

1. The manual torque lever (LCM) is the lever that allows movement of the train when used in manual mode, usually used in shunting. The lever is normally in the neutral position and when pushed forward applies proportional force up to the maximum permissible traction of 100 kN.

   When pushed to the rear, it applies FE proportionally up to the maximum permissible braking of 55 kN when the necessary conditions are met.

   > In order to facilitate maneuvering and avoid jumping between pulling and braking due to the sensitivity of the mouse or keyboard, the lever is locked in the neutral position for approximately one second, where it is possible to release the control while remaining in position or keep it pressed to continue the lever's movement in the desired direction.

2. The reversing lever (LINV) is the control required to set the direction of movement. It is initially in the neutral position.

3. The automatic torque lever (LCA) is the lever that allows the train to move in automatic mode having previously set a target speed via the LV lever.

   The LCA lever applies a tractive force proportional to the lever position up to the maximum permissible traction.

   > When using the LCA, in case of slipping the system reduce or the traction force or the dynamic braking level in order to reduce the slipping effect without using the sander.

4. The speed setting lever (LV) sets the target speed, which is displayed in green in instrument terminal 5. This lever has several operating modes:
   - Dragging the lever upwards increases the set speed (in 1 km/h steps up to 30 km/h and 5 km/h steps thereafter).
   - Dragging the lever down decreases the set speed in the same steps as before.
   - Pressing the lever from top to bottom applies the new set speed.

The set speed must be confirmed by pressing the lever if it is higher than the previously set speed. If not, the set speed is reset to the previous one after approx. 5 seconds.

In the case of speed reduction setting, this is applied immediately and therefore no lever pressure is required.

- Click with the mouse below the lever in the highlighted position to reset the speed setting to 0.

Any movement made with the LCM lever from its neutral position automatically resets any previously set speed.

5 The instrument terminal in the default screen presents a range of information relating to the status of the train.

At the top in order are the setting of the maximum current drawn, the current voltage drawn from the line, the set speed if different from 0 or MM if in manual mode, the current time, the type of machine used (master or slave), the loco active in relation to the total number of train members and the number associated with the train.

In the central part, the line voltage instrument and the instantaneously absorbed current instrument.

At the bottom a series of function keys to access the other screens. Other screens are used in fault management for which please refer to the specific chapters.

6 The dynamometer indicates tractive force for positive values and braking force for negative values. It has two indicators: the red outer one indicates the force set by the torque lever used (LCA or LCM) while the white one indicates the actual torque.

7 The SCMT dashboard is part of the train running control system managed by the WG-SCMT plugin. Please refer to specific section for a draft description of its operation.

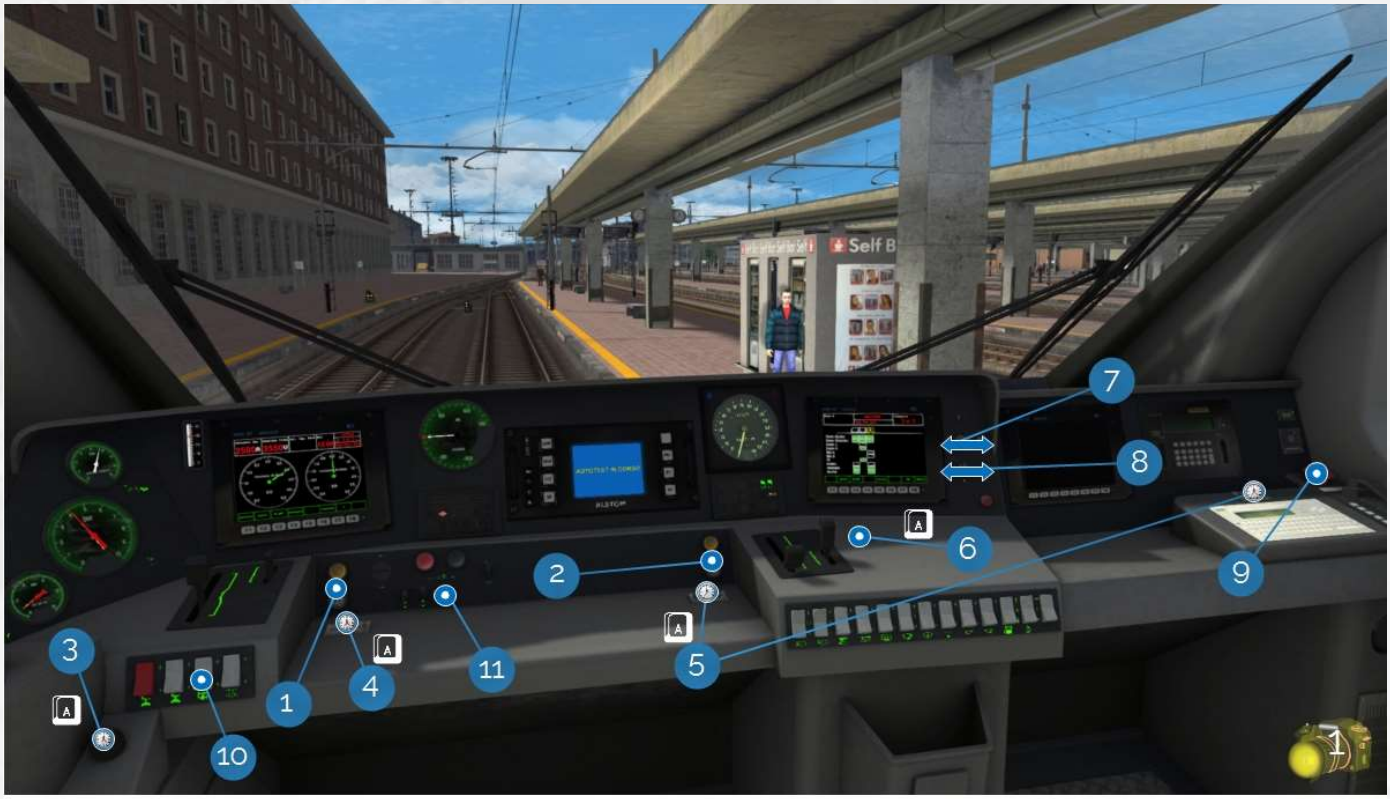
8 Speedometer. Indicates the current speed of the train. As part of the WG-SCMT plugin, please refer to specific section for a description of its operation.

9 The diagnostic terminal has different train control functions. Only the train composition page and its active components are simulated. The diagnostic terminal is only visible when the train is stopped.

The machine is equipped with what is normally called a “travcion cut”. When the traction cut is active, the traction input that the LCM or LCA torque levers control in their position is set to zero.

Traction cut-off occurs when pneumatic braking is applied, when the pressure in the general pipeline is < 3.5 bar, when braking is controlled by the emergency button and in various situations managed by the SSB-SCMT system. In any case, traction torque, if required, is not applied without first resetting the traction cut-off. For this to happen, the torque levers must both be in the neutral position.

5.3.4. Driving support control



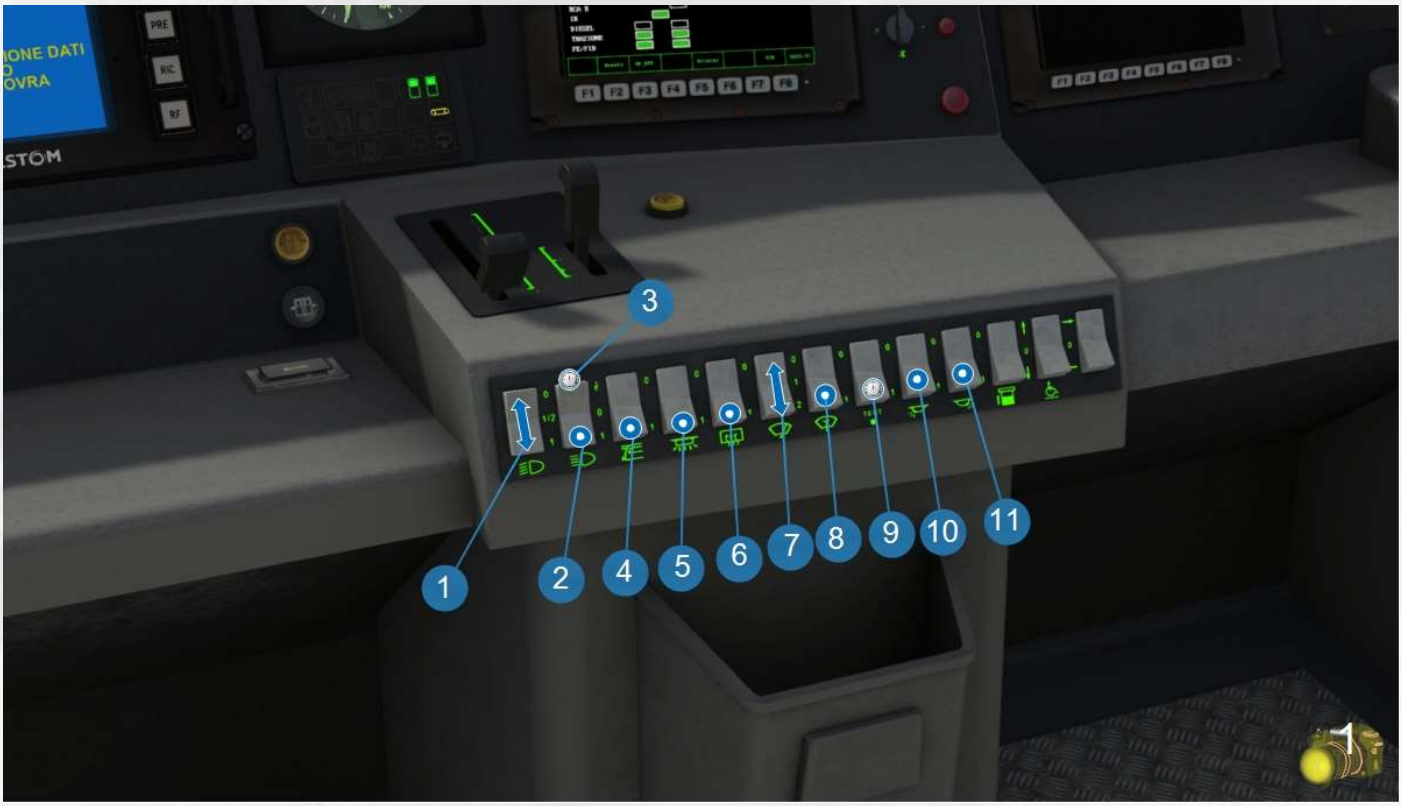
1. Consensus control and left-hand door opening/closing.
2. Consensus control and right-hand door opening/closing.

   > Due to certain limitations of TSC, please see the specific section where the correct operation is explained for door opening and closing management.

3. Whistler control.
4. Sander control.
5. Bell controls.
6. Parking control.
7. Temperature control. Set the level of the selected clima control.
8. Clima control. It cycles between the positions climate off - heating on - air conditioning on - emergency ventilation. Switching on a type light up the corresponding green light.
9. Emergency control. Causes immediate emergency braking of the train.

   > In the case of emergency braking driven by this button, it remains locked until the train comes to a complete stop. Once unlocked, all torque levers (LCM and LCA) must be returned to the neutral position before travel can resume.

10. Passenger alarm neutralization button. See section on faults for function description.
11. Direct compressor on/off lever.



1. Low light beam button. Has 3 positions: Off-Mid-Full,
2. High light beam button in stable position.
3. High light beam button in instable position.
4. Central Headlight light button.
5. Main cab light button.
6. Glass heater button.

> Note that in winter and autumn seasons, the front and lateral glass start to fog up and if the glass heater is not switched on, in a certain time it will not be possible to see through the glass.

7. Windscreen washer button.

> The windscreen could get dirty randomly during a scenario (if wipers are not active) or via a specific custom signal placed in the scenario by the creator. Pushing on this command activate the spray and a cycle of wipers to clean it.

8. Wipers button with 2 positions: slow and fast.
9. Dashboard warning light and alarm test button.
10. Passenger-side ceiling light button.
11. Driver-side ceiling light button..

1 Front light switch.

In automatic position, the correct headlight set-up is activated (white-white light at the front and red-red light at the rear).

2 Rear light switch.

> The selector switch controls the rear lights if and only if the front light selector switch is not in the Automatic position".

3 Cab delta temperature switch.

1. General fault warning light. Lit when there is a general fault. Remains lit if the IR is open.
2. Lubrication failure
3. Compressor failure
4. Multiple train light. Lit if the train consists of several ALe501-Le220-ALe502 combination (2 or 3).
5. Hand brake warning light. On if handbrake is active.
6. Brake cylinder pressure warning light. On if any pneumatic braking is applied.
7. Wait lamp. Lit at certain times when a wait is required before issuing new commands.
8. Light. On when high beam or headlight is on.
9. Glass heater warning light. On when active.
10. Door closed light. On when doors are closed.
11. Dynamic suspension warning light. On when active (always).
12. Passenger alarm warning light.
13. Passenger alarm neutralization warning light.
14. Slip warning light. On when the traction control system verify a slipping situation.
15. Drive failure warning light.
16. Battery failure warning light.

Some simulated warning lights also have behaviour to warn about possible faults, usually represented by a flashing of the light itself. For managed anomalies see the specific part.

Other indicators not listed represent situations not simulated in the Minuetto.

6. Startup

6.1. Enabling types

The Minuetto startup consists in 2 steps:

- Startup of loco and bench (BM)
- Startup of the SSB-SCMT

Startup can be performed in 3 different ways:

- **manual**

  is performed manually by the player and is the default mode. It has an average duration of about 3 min depending on the player.

  > At the end of the procedure, the SSB-SCMT (managed by the plugin or the default one) must also be activated manually (additional 2 min).

- **automatic**

  The BM enabling procedure is automatically executed following the correct sequence and intervals of commands. It has an average duration of about 3 min and is activated with a specific key combination. At the end of the procedure, the SSB-SCMT is activated, the setup sequence of which lasts approximately 2 min if the plugin is used, or immediately available if the default one is used.

- **rapid**

  Allows the startup procedure to be skipped. The procedure is activated with a specific key combination. At the end of the procedure, the SSB-SCMT is activated; the setup sequence of SSB-SCMT lasts approximately 2 min if the plugin is used, or immediately available if the default one is used.

At the initial setting level after the startup, the only parameter to be set, if any, concerns the maximum current that can be absorbed by the train, to be set via the instrument terminal. The initial current setting is 700 A. To change the current, simply use the F5 ('-') and F7 (+) buttons in steps of 50A. By pressing the F6 ('Confirm') button, the value is set and appears on the same screen in the top left-hand corner. In the case of a convoy consisting of several Minuetto, the set value is divided between the various units.

> In this release, current level do not have any impacts in the usage (is not simulated)

6.2. Manual startup of the BM

The procedure consists of the following steps:

> During the startup and use of the BM, the Wait lamp on the right-hand control panel may light up. No further commands are to be given when the Wait lamp is lit.

- Bipolar switch on
- Battery insertion with start of diagnostic procedure in both the terminals
- BM key insertion with illumination of the instruments and switching on of the general fault light, hand brake engaged and dynamic suspension. The inserted key unlocks the pantograph and direct compressor controls.

  The key insertion switches also on the pantograph first lift compressor (CPA) if there is insufficient pressure to drive the pantograph up (min 5.5 bar).

  > Depending on the state of the machine when the key was inserted, the lights on or off may be different from the one indicated when the train was initially started up.

- Rear pantograph lift T2.

  If the pressure for the first lift is sufficient, the pantograph will rise and, when in contact with the overhead line, the instrument terminal will show the line voltage rising to a value of approximately 3.5kV.

- Close the rapid switch IR.

  The IR can only be closed if there is sufficient energy in the batteries, if the torque levers are all at zero and if the Wait light is off.

  If the IR closure is successful, the general fault light goes out, the diagnostic monitor presents the detected composition of the convoy and indicates the cabin currently in use.

  Static units (compressors) start, bringing the voltmeter needle to about 29V.

  The compressors begin to charge the system. It is necessary at this stage to wait until the main tank has reached a pressure of 6.5 bar.

- Braking with direct brake.

  This action ensures that the machine remain stooped for subsequent operations. The pressure of the brake cylinders increases in proportion to the level of braking.

- Insert the brake interception lever (this can also be done previously)
- Release the continuous brake by using the locking pin to move the lever from “ISOLATION” to “CHARGE” and then move it to the “RELEASE” position
- Open the brake interception lever by turning it to the vertical position. The CG's central pressure gauge will read the current pressure.
- Exclude the handbrake. The parking brake pressure gauge above the driver will show 6.5 bar and the warning light goes off.
- Activate the SCMT and wait for the power-up sequence to continue and finally enter the required data if the plugin is used.

The startup procedure can now be considered complete.

Once the BM key or the brake interception lever are inserted, the corresponding duplicate inside the other driver's cabs will be hidden and will not be visible until the inserted ones will be again extracted.

6.3. Usage without SCMT

The Minuetto does not provide a simplified guide. However, given the complexity of the SCMT plugin system for players who are not experts in the subject and the driving issues, a procedure has been exceptionally provided for disabling SCMT even if the plugin itself is installed on the player's PC. In this case, as well as when the SCMT plugin is not installed, Minuetto manages a default dashboard with only the RSC portion.

If the plugin is not installed, there is no need to do anything as the simplified management is automatically activated. If the plugin is installed, to proceed with the default instrument, the first action required is to press CTRL+SHIFT+A as soon as the scenario is started and you enter the cab. You will see that the SCMT dashboard provided by the plugin will be replaced by an alternative version. From this point on, the SCMT is disabled and you can proceed with starting the loco and driving in the standard mode without controls (if the default dashboard is kept off) or with RSC controls (if the default dashboard is activated by pressing the RSC button).

A message popup informing the driver that the SCMT is disabled for debug purpose.

This simplified workaround can also be used to test a scenario without having to fill the requested SCMT information and without to stick to the SCMT requirements, making the test easier if the target is to check timetable, signals and playability.

7. Test procedure after startup

Even if once enabled the machine can be moved immediately, some tests are normally carried out to verify correct operation.

These tests are normally as follows:

- Safety equipment test (not simulated)
- No-load test (not simulated)
- Insertion test in traction (simulated with both manual and automatic traction)
- Brake test (simulated)

Due to certain limitations of TSC and the handling of such tests during normal operation, simulated procedures can only be implemented in guided mode and activated with specific key sequences.

It is not simulated the failure for these procedures caused by potential technical issues.

Every steps is guided by a popup asking for the next action to be done.

A time limit of 15 sec is set for each "guided" maneuver; if it fails, the procedure fails and the player is informed. This strategy is necessary in order not to leave an unfinished procedure open indefinitely.

All planned procedures can only be carried out with the machine enabled and only when the SSB-SCMT has completed the diagnosis phase.

7.1. Insertion test in traction with LCM

The sequence required for the test is as follows:

- Braking the loco with the direct brake
- Bring the continuous brake lever in the RELEASE position
- Set the reverser (LINV) in forward position
- Set the LCM lever forward by setting a torque corresponding to approx. 20 kN
- Set the LCM lever back to NEUTRAL (required after approx. 3 seconds)
- The system verifies that the speed remains around zero and finishes the test

7.2. Insertion test in traction with LCA

The sequence required for the test is as follows:

- Braking the loco with the direct brake
- Bring the continuous brake lever in the RELEASE position
- Set the reverser (LINV) in forward position
- Set a speed of 5 km/h using the speed lever LV
- Bring the LCA lever forward
- Bring the LCA lever back to NEUTRAL position (required after approx. 3 seconds)
- The system verifies that the speed remains around zero and finishes the test

7.3. Brake Test

Normally the brake test is carried out with the machine enabled, but before the brake interception lever is closed and the continuous brake LEVER is moved from the ISOLATION position. In the case of a fast or automatic enable where this situation is not met or in the case of manual enable where the player has already moved the control to the RELEASE position, the brake test procedure does not force the brake interception lever to be closed and the continuous brake lever to be placed in ISOLATION, which would be an unnecessary repetition, and starts the guided procedure directly from the right step of the sequence described below.

For the test to begin, the direct brake must be in the release position.

- Place the continuous brake valve in the RELEASE position

  Start of braking procedure
- Set the continuous brake lever at a braking degree corresponding to a pressure drop between 0.6-0.8 bar
- Close the brake interception lever
- Place the continuous brake valve in the ISOLATION position
- Wait for the simulated verification of external visual indicators

  Start of release procedure
- Open the brake interception lever
- Place the continuous brake lever in the RELEASE position
- Wait for the simulated verification of external visual indicators

8. Procedure for BM change (Parking)

The bench (BM) change is provided through the Parking In and Parking Out procedures. These procedures are provided in guided mode with the same characteristics as the testing procedures with regard to response times, in non-guided mode, in which case there are no time limits and finally in rapid mode activated via a single shortcut.

To avoid problems once one of the two procedures has been started in an unguided manner, it is strongly recommended to complete them, especially after pressing the parking button.

In the case of guided procedures, failure to respect the command times (15 seconds each) causes the procedure to fail, as in testing procedures, but in this specific case the failure causes the pantograph to lower and the IR to open).

8.1. Parking In procedure

The Parking In procedure requires a series of pre-conditions in the absence of which the procedure fails and causes the rapid switch to open and the pantograph to lower.

Pre-conditions are:

- Loco startup completed
- Reverser (LINV) in NEUTRAL position
- Torque lever (LCM and LCA) in NEUTRAL position
- Loco stopped

In the case of a guided procedure, the pre-conditions are checked at launch using the provided key combination.

If the conditions are met, the sequence of commands is as follows:

- Set the continuous brake lever in EMERGENCY position
- Wait until the main pipeline is completely discharged (red CG needle at zero)
- Set the engine brake lever in RELEASE position
- Close the brake interception lever
- Set the continuous brake lever in ISOLATION position
- Push the Parking button, that remain pressed. Both the parking button and the external front signal start flashing.
- Lower the pantograph
- Extract the bench (BM) key
- Release the Parking button (both the parking button and the front external signal remain on) to end the procedure
- At the end of the procedure, you are asked to remove the brake interception lever, even if it is not part of the procedure.

In the Parking In procedure the pantograph is not physically lowered (which would lead to the opening of the IR). The pantograph will be lowered following the Parking Out procedure on another cabin, if it is opposite to the one that will be raised).

8.2. Parking Out procedure

The parking out procedure involves the following sequence of commands:

- Press the Parking button (which remains pressed)
- Insert the brake interception lever
- Insert the bench (BM) key

- Raise the pantograph (both the parking button and the external front signal start flashing)
- Release the Parking button (both the parking button and the external front light turn off) ending the procedure

9. Switching off

Switching off machine is the procedure to be used when the loco, at the end of the service, should be switched off.

Even in this case the procedure can be either guided or manual. In the case of a guided procedure, the same constraint remains to perform each requested command within 15 seconds, otherwise the procedure will fail..

9.1. Switching off procedure

La procedura comporta la sequenza seguente:

- Insert handbrake
- Set the continuous brake lever in EMERGENCY position
- Wait until the main pipeline is completely discharged (red CG needle at zero)
- Set the direct brake lever at max braking position
- Close the brake interception lever
- Set the continuous brake lever in ISOLATION position
- Set reverser (LINV) and torque levers (LCM e LCA) in NEUTRAL position
- Open the rapid switch (IR)
- Lower the pantograph
- Extract the bench (BM) key
- Switch off SCMT
- Switch off battery
- Open bipolar switch to end the procedure
- At the end of the procedure, a popup will remember to remove the brake interception lever.

10. Door management

10.1. Via TSC command

TSC manages the doors in a particular way and always in combination with a passenger loading operation by pressing the “T” button.

For this reason, using the default keyboard shortcut provided in TSC manages the doors to be opened automatically, closing them after a time managed by the game engine.

If you open the doors with this system, the door consent button on the opening side lights up and the Doors Closed light in the right-hand indicator panel goes off..

When the doors close, the consent button turns off and the Doors Closed light comes on, indicating to the driver that it is possible to restart..

If you use this mode, do not use the manual opening and closing control of the buttons.

10.2. Via manual command

Alternatively, pressing the door enable button for the chosen side causes the doors to open and the subsequent pressing of the close button causes them to close..

This manual activation does not proceed with the loading/unloading of passengers and therefore the closing of the doors is not automatic but can be managed manually..

The manual procedure should therefore only be used if you want to open and close the doors without unloading passengers even if you are not near a platform..

If you use this mode, you must not use the TSC shortcut for loading and unloading passengers.

11. Failure and failure handling

The Minuet manages some anomalies and procedures for managing them. The faults can be either caused by incorrect use or by random events managed by the scenario creator. Random events can be triggered by a specific signal to be placed on the track, as described in the chapter on scenario tools.

11.1. Battery failure

A battery charger failure is not simulated. However, a voltage loss is simulated with the batteries inserted and the IR open (therefore in the absence of activation of the static groups). Below a certain voltage threshold, the battery failure light comes on. The light 16 goes off as soon as the static groups are activated (automatically when the IR is closed).

11.2. Suspension failure

If requested by the scenario, the failure is signaled by the flashing of the warning light 11. In the event of a failure, the journey can continue at a maximum speed of 60 km/h. If managed by the scenario, failure to comply with the limit causes the event management to fail.

11.3. Drive failure

If requested by the scenario, the failure is signaled by the warning light coming on 15, indicates a failure of one of the component (electrical part that manages the motor trolley), which therefore causes a reduction in performance.

The failure can be of 3 types: permanent managed automatically, permanent managed manually or temporary managed in semi-automatic mode. The warning light does not indicate what type of failure it is. Whatever the type of failure set among the 3 possible, when the warning light comes on the IR will be immediately opened with consequent impossibility of going into traction, and the waiting warning light comes on. When the waiting warning light is on, you must not intervene on the controls except on the pneumatic brake.

The management procedure involves an initial attempt by the system to exclude the drive on the problematic trolley. Depending on the type of failure, the steps are then as follows:

- Permanent failure managed automatically

  In this case the exclusion of the motor trolley occurs automatically. Performance will be reduced. Once exclusion has occurred, the waiting light goes off and you can continue driving by closing the IR. An attempt to manually re-include the drive will cause a new block..

- Permanent failure managed manually

  In this case, the automatic exclusion of the motor bogie has a negative outcome. The waiting light remains on. In this case, the train must be stopped and the motor indicated on the instrument monitor synoptic must be manually excluded.

  The synoptic can only be activated when the train is stopped with the F6 “Train” key. The element to be excluded must be selected with the F4 (“Prec”) and F5 (“Succ”) keys. A blue icon moves accordingly. Once the correct motor bogie to be excluded has been selected, press the F6 (“Commuta”) key. Once the correct motor bogie has been excluded, the waiting light turns off, allowing the IR to close and restart.

  By pressing the F2 key (“Master”) you return to the main screen, which you can also return to if the train is moving..

  > Although the exclusion of a motor bogie is possible with the train stationary in any condition, the correct procedure would involve opening the IR and lowering the pantograph before operating.

	Currently the F6 key is only active when the selection is on a bogie. The other positions are not simulated. Failures on motor bogies of other units of the same convoy are not simulated..
	If the wrong motor is excluded, the procedure is unsuccessful. In this case only, it is possible to re-include the incorrectly excluded motor trolley and exclude the other one..
	It is not possible to exclude more than one motor trolley.
	The synoptic automatically highlights the active (green color) or inactive (red color) branches

- Temporary failure managed semi-automatically

  Also in this case the exclusion of the motor bogie occurs automatically. The performance will be reduced. Once the exclusion has occurred, the waiting light goes out and the train can continue to travel by closing the IR. Unlike the first case, an attempt to manually re-include the drive is successful and the fault is cancelled. However, the re-inclusion must be carried out with a specific procedure which consists of stopping the train, bringing the torque levers to zero, bringing the reverser lever to the neutral position and holding down the IR closing button for 10 seconds.

	In any situation, with the drive failure warning light on, traction performance is reduced.

If managed by the scenario, failure to follow the procedure causes the event management to fail.

11.4. Compressor failure

Compressor failure signalled by the warning light 3, occurs in two cases.

The first case is related to the use of direct compressors in parallel with the regular operation of the machine compressor for a prolonged period of time (5 minutes). In this case the light turns on and off, deactivating the direct compressors.

The second case, decided by the creator of the scenario, involves the malfunction of the machine's compressor. In this case, the main tank is no longer loaded and, little by little, with each release of the brake, the pressure of the main tank drops. To maintain it at the correct pressure, it is therefore necessary to enable the direct compressors.

Activation does not cause the warning light to go off, which remains to indicate the failure, but only the correct loading of the system.

11.5. Gearbox lubrication failure

If provided for by the scenario, the gearbox lubrication failure is signalled by the lighting of the appropriate warning light 2, Since this is a potentially serious failure, the train must be stopped with emergency braking. Failure to stop the train within 60 seconds causes the scenario to fail.

Failure management involves excluding the motor bogie (in traction and braking) that has the problem. The exclusion occurs in the same manner as described in the case of drive failure via the synoptic. Once the correct motor has been successfully excluded, travel can be resumed for a further 300 km at a maximum speed of 60 km/h.

Se gestito dallo scenario, il mancato rispetto del limite di velocità e della procedura provoca il fallimento della gestione dell'evento

11.6. Electric (dynamic) braking failure

If foreseen by the scenario, an electric braking failure occurs with the opening of the IR in conjunction with an electric braking. The procedure involves exclusion through the appropriate button located in the rear electrical panel.

Once the exclusion has been made, the journey can be resumed after closing the IR. Electric braking will therefore no longer be available until the end of the scenario.

If handled by the scenario, failure to exclude causes the event handling to fail.

11.7. Passenger alarm

If provided for by the scenario, a passenger alarm causes the specific warning light to flash and the audible alarm to sound in the cabin..

The passenger alarm and the related management procedure are different depending on whether the train is in the station or on the line..

- Station area

  The station area is defined as the area that goes from the position of the stationary train up to 100 meters away. The door closing procedure is used to identify the starting point.

  If a passenger alarm is triggered within the station area, emergency braking is automatically triggered. The warning light remains on with a fixed light and the audible alarm is activated..

  The operator must in any case move the continuous brake lever to the emergency braking position to confirm the automatic system is in place. Once braking has taken place, the audible alarm is disabled..

  With the train stopped, after about 30 seconds the situation is resolved at a simulation level through a message that simulates the intervention of the staff, the light is turned off and the journey can continue as soon as the problem is resolved..

- Full line area without neutralization

  In all other cases, the alarm is managed in semi-automatic mode. The driver has ten seconds to perform rapid braking. If he does so, the warning light remains on with a fixed light and the audible alarm is deactivated..

  If it does not, emergency braking intervenes and the rest of the management occurs similarly to the case of the station area (manual braking in any case by the operator, stop, check and resolution).

- Full line area with neutralization

  If for particular reasons the passenger alarm goes off in a particularly dangerous place (tunnels, viaducts, etc.) the driver has the possibility, within the ten seconds granted, to temporarily neutralise the alarm by means of the appropriate button. In this case the specific green light comes on, the passenger alarm warning light remains on with a fixed light and the audible alarm is deactivated..

Once the critical point has been passed, the operator must apply emergency braking, and from this point the procedure continues as in other cases. The green neutralization light goes out together with the red passenger alarm light when the problem is resolved by the staff..

If managed by the scenario, failure to handle the procedure causes the event handling to fail..

11.8. Fire alarm

If the scenario requires, a fire alarm will cause the specific warning light to come on and the cabin to sound an alarm. The fire management system will be activated.

The driver must perform the emergency braking. When the train is stopped, the audible alarm is deactivated, the doors are opened and a simulated verification procedure is started by the driving staff, after which the problem is solved, the light goes off and the train can continue. During the verification, simulated smoke is visible from one of the doors.

If handled by the scenario, failure to handle the procedure causes the event handling to fail.

12. Destination panel

The destination panels located on the sides of the train display, when the train startup procedure is finished, the message “Treno Pronto”.

The insertion of a new destination or other messages can take place either from inside the cabin or by means of a specific, suitably coded signal to be inserted on the track as explained in the chapter dedicated to the scenario instruments.

The display consists of 3 lines. The lines can optionally be left empty. Each line is self-centering.

12.1. Destination insertion from keyboard

The keyboard is active when batteries are inserted. Non-simulated keys are not active. All alphabetic characters, numbers, periods and colons can be used.

The functional keys are the backspace to delete the last character entered, the slash to separate the lines, the Enter to confirm sending to the display and the F2 function key to go to the input screen or return to the Home screen.

The insertion must be done line by line separated by “slashes”. As a practical example, if you want to write “NOVARA” in the second line and “H 14:30” in the third line leaving the first line empty, the text to write is /N/NOVARA/H 14:30 (figure). When you press the Enter key, the new text is shown on the display.

If a string in a row has more than 27 chars, and is not possible to reduce it, is recommended to insert some space char to split the end of the row from the begin of the next one.

13.SCMT (sistema controllo marcia treno)

The SCMT is a system designed to control the train's movement. It consists of an SST and an SSB. The SST includes pairs of buoys attached to the track sleepers that transmit information on the line equipment, appearance of the signals, characteristics of the line and slowdowns. The data received when passing over the buoys are processed by the SCMT equipment installed on board, called SSB–SCMT, which applies the appropriate protections. The simulated Minuetto uses the SSB–SCMT (available as an independent additional module that can be imported into any rolling stock) of the DLC WG – FS SCMT. For the operation and use of the SSB–SCMT, please refer entirely to the manual of the DLC just mentioned, which must be read for driving the locomotive.

As regards the Minuet, we limit ourselves to describing the specificities relating to the Vigilante.

The Minuetto has a PRAP (departure act recognition button). This button can be used via the corresponding keyboard combination or with the mouse clicking in the central and lower part of the dashboard (the real command is under the feet of the driver), and must be pressed both when the train starts moving and periodically when requested by the SSB-SCMT. The frequency of this request can be extended if other commands are used in the meantime. These commands are called reiteration commands and for the Minuetto they are the following:

- Torque levers (LCM or LCA)
- Reverser (LINV)
- Continuous brake lever
- Direct brake lever
- Bell
- Speed set lever (LV)

14.RSC

If you don't have an SCMT plugin installed, or prefer not to use it, the Minuetto features a default dashboard, similar in appearance but which handles only the RSC (Cab Signal Repetition) related activities.

For the system's meaning and use, please refer to the documentation available online or directly in the SCMT plugin manual.

15.Tool for scenario creator

15.1. Destinations panel

The management of the destinations to be represented in the external panel can also be managed by a specific signal to be positioned in the scenario. This mode makes the destinations panel dynamic and easier to set than the standard mode.

The signal is included in the Cast0213 Common Library and can therefore also be used on different routes as long as the Common Library is installed and enabled.

> The signal should not affect the signal system, but it is recommended to perform specific tests depending on the system used.

15.1.1. Signal placement

Signal is called “Cast-Destinazione”.

It is a 1-link signal that must be positioned in the direction of travel of the train at a point before the point where you want the change of destination to be represented.

The change occurs when the train passes the signal link, for example after the stopping point at the station so that when the train restarts the display will show the next destination for the entire journey until the next stop, or just before the stopping point to update it while the train is still moving..

Due to a limitation of the script management, it is not possible for the first setting (at the beginning of the scenario) to insert the signal under the train in the starting position. It will therefore have to be positioned a few meters later. In this case, at the start the convoy will only show the message "Train Ready" and will update after the first movement by passing over the signal link.

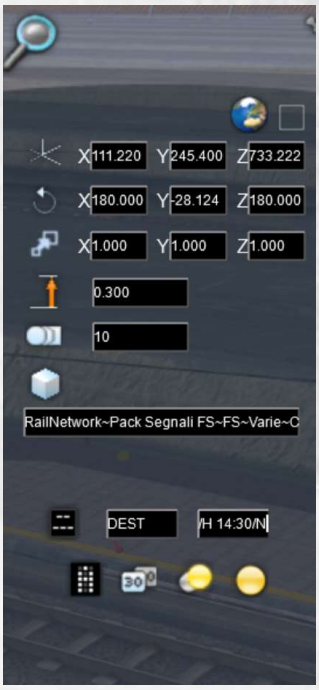
The figure shows an example of positioning starting from Torino P.N.

15.1.2. Signal setting

Double clicking on the signal opens the properties window which must be filled in by inserting the keyword “DMIN” followed by the text sequence line by line separated by “/” in the second field. If you want an empty line, the text to write is “/N”.

As a practical example, if you want to write “NOVARA” in the second line and “H 14:30” in the third line, leaving the first line empty, the text to write in the field is DMIN/N/NOVARA/H 14:30

In the figure the corresponding setting and the result once the train passes the signal.



If a string of more than 16 characters is entered for each line, the text is made scrollable. As a tip to avoid scrolling for 1 or 2 characters, try to shorten the text if you reach 17 or 18 characters. If it is useful to have the text scrollable because the message is longer than 16 chars, the script add automatically a set of spaces at the end to have a better split.

Due to a problem with TSC management of the modification of a scenario by inserting the destination signal, for which a solution has not yet been found, **you must not in any way**, after having saved the scenario (and possibly tried) **return to the editor**.

By doing so and trying to exit the editor or to return to the main menu or to replay the scenario, TSC requires **saving the route**, which leads to the unwanted modification of the same, suffering the saving times that in some cases can be very long, with the risk of finally corrupting the route in the event of saving without a successful outcome.

It is therefore mandatory, once the scenario has been saved and possibly tested, to exit directly to the main menu and then re-enter. In this way, saving is no longer required unless a new signal is placed.

15.3. Test procedure

Procedures are normally managed by keyboard shortcuts (guided ones) or by a series of actions that are recognized equally (unguided ones).

However, it is possible to launch the scenario wizards by intervening in the script on the following controls (set to 1).

- ProvaFreno
- ProvaTrazioneMan
- ProvaTrazioneAuto
- ProceduraStazionamento
- ProceduraParkingIn
- ProceduraParkingOut

Whatever the launch procedure is, success or failure are managed through a series of checks set to 1 (success) or 0 (failure). These checks can then be used in the scenario scripting. The outcome checks are the following, self-explanatory for each individual procedure.

- EsitoProvaFreno
- EsitoProvaTrazioneMan
- EsitoProvaTrazioneAuto
- EsitoProceduraStazionamento
- EsitoProceduraParkingIn
- EsitoProceduraParkingOut

15.4. Failure

All failure procedures (with the exception of the battery failure and the compressor failure in parallel with the correct behavior of the machine's compressor which depend on the correct use of the machine) are managed by placing the specific signal in the scenario.

15.4.1. Signal placement

The signal is included in the Cast0213 Common Library and can therefore also be used on different routes as long as it is installed and enabled.

Signal is called “Cast-Failure”.

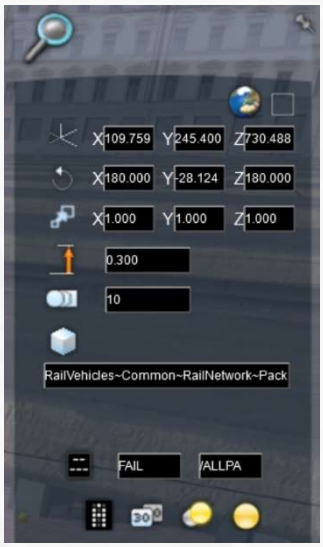
It is a 1-link signal that must be positioned in the direction of travel of the train at the point where the fault is to be triggered, when the train passes over the link..

The figure shows an example of positioning starting from Torino P.N.

15.4.2. Signal setting

Double-clicking on the signal opens the properties window which must be filled in by inserting the keyword “FAIL” in the first field and the appropriate string preceded by “/” in the second field.

As a practical example, the figure shows the case of a passenger alarm..



Strings are the following:

- Passenger alarm: “ALLPA”
- Permanent drive failure automatically managed: “AZAUT”
- Permanent drive failure managed manually: “AZDEF”
- Temporary drive failure managed in semi-automatic mode: “AZTMP”
- Compressor failure: “COMPR”
- Suspension failure: “SOSPE”
- Gearbox lubrication failure: “LUBRI”
- Fire alarm: “INCEN”
- Electric (dynamic) brake failure: “AVFRE”

- Due to a problem with TSC management of the modification of a scenario by inserting the destination signal, for which a solution has not yet been found, **you must not in any way**, after having saved the scenario (and possibly tried) **return to the editor**.
- By doing so and trying to exit the editor or to return to the main menu or to replay the scenario, TSC requires **saving the route**, which leads to the unwanted modification of the same, suffering the saving times that in some cases can be very long, with the risk of finally corrupting the route in the event of saving without a successful outcome.
- It is therefore mandatory, once the scenario has been saved and possibly tested, to exit directly to the main menu and then re-enter. In this way, saving is no longer required unless a new signal is placed.

16. Keyboard shortcuts

Switch-on type	Rapid loco switch-on	CONTROL X	
	Automatic loco switch-on	CONTROL Z	
Procedures	Brake test	CONTROL 1	
	Traction test (manual lever)	CONTROL 2	
	Traction test (automatic lever)	CONTROL 3	
	Stationing	CONTROL 4	
	Parking In (change cab procedure)	CONTROL 5	
	Parking In rapid procedure	CONTROL 7	
	Parking Out (change cab procedure)	CONTROL 6	
	Parking Out rapid procedure	CONTROL 8	
	Parking push button	Q	
Switch-on controls	Main switch	CONTROL B	
	Batteries On	SHIFT B	
	Batteries Off	CONTROL SHIFT B	
	Bench key insertion and extraction	SHIFT C	
	Front pantograph T1 up/down	SHIFT P	
	Rear pantograph T2 up/down	P	
	Close Rapid switch	I	
	Open Rapid switch	SHIFT I	
Brake	Continuous brake (train brake)	`	;
	Direct brake (engine brake)	[	]
	Brake interception lever (open/close)	CONTROL I	
	Brake interception lever (insertiorn/extraction)	CONTROL SHIFT I	
Movement	Reverser	W	S
	Automatic traction lever LCA	Y	U
	Manual traction lever LCM	A	D
	Speed setting lever LV for LCA (speed setting)	,	.

	Speed setting lever LV for LCA (speed confirmation)	CONTROL ,	
	Speed setting lever LV for LCA (speed reset)	CONTROL .	
	PRAP (button for recognition of starting action)	R	
	PRAP (button for recognition of starting action) 2	RETURN	
Driving support controls	Windscreen heater	CONTROL R	
	Wipers	V	SHIFT V
	Sander	X	
	Bell	Space	
	Whistle	B	
	Open/close left doors (manual procedure not performing load and unload operations)	CONTROL T	
	Open/close right doors (manual procedure not performing load and unload operations)	CONTROL SHIFT T	
Lights	Left cab spot	CONTROL L	
	Right cab spot	SHIFT L	
	Cab light	L	
	Standard front and rear light	H	
	Front headlights	SHIFT H	
	Additional front central headlights	J	
	Selector for special configuration front lights	K	SHIFT K
	Selector for special configuration rear lights	CONTROL K	CONTROL SHIFT K
SCMT	SCMT Switch	CONTROL A	
	SCMT “DATI” button	Z	
	SCMT “SU” button (Up)	N	
	SCMT GIU’ button (Down)	M	
	SCMT OK button (Ok)	SHIFT RETURN	
	SCMT MAN button (Manouvre)	del	
	SCMT RSC button (RSC)	p·up	
	SCMT SR button (Passing red signal)	p·down	
	SCMT PRE button (Pre recognition button)	home	

	SCMT RIC button (Recognition button)		
	SCMT RF button (Re-arm after emergency braking)		

17.Changelog

17.1. Rel 1.0.1

Initial release

17.2. Rel 1.0.2

Change manual for the addition of specific chapter related to the SCMT plugin.

Change manual in shortcut table for English descriptions (were Italian).

Fix initialization issue blocking it in specific case of missing scmt plugin