

## B61L

**GUIDING RAILWAY TRAFFIC; ENSURING THE SAFETY OF RAILWAY TRAFFIC (power supply lines for electrically-propelled vehicles [B60M](#); vehicle signalling in general [B60Q](#); brakes or auxiliary equipment [B61H](#), [B61K](#); point or crossing construction [E01B](#); insulated rail joints [E01B 11/54](#); optical devices in general [G02](#); controlling in general [G05](#); electric communication technique [H04](#))**

### Definition statement

*This place covers:*

All means for guiding railway vehicles through the railway network in a safe and efficient manner.

In particular it relates to:

- Railway signalling in general, which includes for example traditional light and form signals, cab signalling, communication based train control and special train control systems as e.g. the European Train Control System [ETCS] or the German continuous inductive train control "Linienzugbeeinflussung [LZB]". This section includes intermitted or continuous control of vehicles and means on the trackside along the rails or in control location or onboard railway vehicles.
- Means on vehicles or on the railway track to control the speed and braking according to the signalling rules or information, e.g. braking curve calculation or supervision.
- Optimization of the train running on the vehicle or in track side control centers
- Railway guidance in regard to safe setting and release of routes through the network, e.g. interlocking devices, switch drives and control and all related field elements, also including train stops and means to control the speed of the train. This includes not only electrical elements, but also all mechanical or hydraulic parts to control the switch movements, position or locking.
- Railway form or light signals along the track, also e.g. with details on optical systems or monitoring functions.
- Communication means in the above mentioned context, when it relates to railway safety and guidance, like e.g. radio transmission systems between track and train, structure of radio communication networks if used in the railway signalling and guidance, traditional voice train radio to operators, wifi or bluetooth technologies.
- Communication means onboard a train also for other purposes, like passenger information, e.g. train bus systems, radio, wifi.
- Train and track diagnostics, also including the supervision of the track from the train or trackside with sensors being placed onboard the train on along the track, when related to the safety of railway traffic, e.g. broken rail detection, vibration sensors, brake pipe pressure detection.
- Train data handling onboard a railway vehicle or in track side control centers
- Control and supervision of yards or maintenance areas including hump controls, switching system for wagon classification yards etc.
- Warning devices for warnings about train approach, e.g. at platforms or crossings
- Railway traffic separation, including all blocking means, including fixed block or moving block techniques. It also comprises non-safe procedures like token systems or voice radio control procedures of trains
- Train positioning systems, both on the track or on the train, e.g. GPS navigation used for this purpose, track circuits or axle counters.
- Railway guidance in general, which includes disposition or regulation means, time tables and their generation, supervision or optimization together with all means on the trackside or onboard the vehicles to implement guidance information, also for train crews.
- Driverless train or people mover control or safety, also for maglev and mono-rail vehicles
- Railway crossing safety means, like barriers, warning lights or bells and their control or supervision.

## References

### Limiting references

*This place does not cover:*

Model railways	<a href="#">A63H 19/00</a>
Power supply lines for electrically propelled vehicles	<a href="#">B60M</a>
Arrangement, mounting or supporting of signalling devices for vehicles in general	<a href="#">B60Q</a>
Brakes or auxiliary equipment	<a href="#">B61H</a> , <a href="#">B61K</a>
Derailing or re-railing blocks on the track, and for railway stops, scotch-blocks, track brakes or retarders fixed to the permanent way in general, when not related to the control	<a href="#">B61K</a>
Conveyors	<a href="#">B65G</a>
Elevators, lifts	<a href="#">B66B</a>
Point or crossing constructions in general	<a href="#">E01B</a>
Rail joints in general	<a href="#">E01B 11/00</a>
Electrically insulated rail joints	<a href="#">E01B 11/54</a>
Cattle guards fixed to the permanent way	<a href="#">E01B 17/00</a>
Signal transmission in general, not related to railway signalling	<a href="#">G08</a>
General alarm systems not linked with the railway signalling system	<a href="#">G08B 21/00</a> , <a href="#">G08B 23/00</a>

### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Control of drive units	<a href="#">B60L 15/20</a>
Control of multiple-unit electrically-propelled vehicles	<a href="#">B60L 15/32</a>
Vehicle lighting or signalling	<a href="#">B60Q</a>
Railway vehicle brakes	<a href="#">B60T 17/00</a>
Control or regulation of multiple propelled vehicles within a train	<a href="#">B61C 17/12</a>
Track and train monitoring, hot box detection	<a href="#">B61K</a>
Railway switches in general	<a href="#">E01B 7/00</a>
Mechanical securing means	<a href="#">F16B</a>
Non-portable lighting in general	<a href="#">F21S</a>
Lighting devices specially adapted for vehicles	<a href="#">F21S 41/00</a> , <a href="#">F21S 43/00</a>
Details of lighting devices or systems	<a href="#">F21V</a>
Measuring mechanical vibrations	<a href="#">G01H</a>
Mechanical force measurements	<a href="#">G01L 5/00</a>
Testing in railway vehicles	<a href="#">G01M 17/08</a>
Speed measurements	<a href="#">G01P</a>
Radio navigation	<a href="#">G01S</a>
Error detection or correction by redundancy in hardware	<a href="#">G06F 11/16</a>
Digital computing or data processing	<a href="#">G06F 17/00</a>

Electric signal transmission systems in general	<a href="#">G08C 19/00</a>
Indicating arrangements for variable information	<a href="#">G09F 9/00</a>
Control of indicating devices	<a href="#">G09G</a>
Semi-conductor light sources	<a href="#">H01L 33/00</a>
Power supply	<a href="#">H02J</a>
Data transmission	<a href="#">H04B</a>
Digital data transmission	<a href="#">H04L</a>
Telephone systems	<a href="#">H04M</a>
Communication switching systems	<a href="#">H04Q</a>
Electroluminescent light sources, e.g. LEDs	<a href="#">H05B 33/00</a>
Combination of different illumination sources	<a href="#">H05B 35/00</a>
Circuit arrangements for electric light sources in general	<a href="#">H05B 37/00</a>

### Special rules of classification

#### CLASSIFICATION OF ADDITIONAL INFORMATION.

In many cases the classification of additional information is very useful for retrieving the document, and therefore very desirable in this subclass.

For example:

If a document discloses an ETCS train control system (covered by [B61L 27/0038](#)) as invention information, where trains may use GPS information for localization, in a way which is per se not inventive (but nevertheless interesting for a search) classify:

- the train control system with central control in general (i.e. [B61L 27/0038](#))
- the ETCS as special train control system with breakdown Indexing Code (i.e. [B61L 2027/0044](#)).
- the localization of a train in absolute position (i.e. [B61L 25/025](#))
- the GPS being a satellite navigation system as special localization means with orthogonal Indexing Code (i.e. [B61L 2205/04](#)).

#### SUBGROUPS AND HEAD GROUP.

If a document concerns embodiments which are covered by several subgroups (e.g. [B61L 23/044](#) - [B61L 23/048](#)) dependent on a higher hierarchy group (in this case [B61L 23/042](#)), the following rules apply:

- if the specific technical information relevant for some of the subgroups is disclosed explicitly, then classify in all said relevant subgroups;
- analogously, if generic technical information common to all of the subgroups is disclosed and only schematic embodiments of the specific subgroup embodiments are represented, then the document is classified in the head group.

#### RADIO COMMUNICATION IN RAILWAYS.

Radio communication is only classified in [B61L](#), when related to the application for railway use.

Radio communication in [B61L](#) is classified in different subgroups as follows:

Short range radio transmissions used for train control is classified in [B61L 3/125](#) for intermittent control, when RFID tags, balise transmissions or the like is used.

Long range radio transmission for train control using conductor cables on the track, like wave guides or leaky feeders, can be found under [B61L 3/227](#).

Long range radio transmission between a train and control center, is classified only under [B61L 15/0027](#) for both, speech and continuous train control transmissions, as for example using GSM-R cell communication, when related to onboard systems.

However, long range radio transmission systems between a train and control center, when related to details of the trackside implementation, are covered under [B61L 27/0005](#).

This selection of special Indexing Codes are used in the subclass [B61L](#) in order to specify special railway signalling equipment with high occurrence and incorporating intrinsic features as well as orthogonal used features, which can occur in many different subclasses within [B61L](#).

The following special equipment is classified using the additional Indexing Code symbols ("Indexing Code subdivisions"):

The following features are classified using the "orthogonal" Indexing Code symbols:

<a href="#">B61L 2201/00</a>	Control methods
<a href="#">B61L 2201/02</a>	Fuzzy control
<a href="#">B61L 2205/00</a>	Communication or navigation systems for railway traffic
<a href="#">B61L 2205/02</a>	global system for mobile communication - railways [GSM-R]
<a href="#">B61L 2205/04</a>	satellite navigation system e.g. GPS
<a href="#">B61L 2207/00</a>	Communication or navigation systems for railway traffic
<a href="#">B61L 2207/02</a>	using light emission diodes [LEDs]
<a href="#">B61L 2210/00</a>	Vehicle systems
<a href="#">B61L 2210/02</a>	single autonomous vehicles e.g. SST
<a href="#">B61L 2210/04</a>	magnetic elevation vehicles

## Glossary of terms

*In this place, the following terms or expressions are used with the meaning indicated:*

Axle counter	devices at single locations along the railway track which use the presence of vehicle wheels as detection means, e.g. by inductive influence
Balise	transponder
Cold movement detector	detectors for indicating that a movement of the vehicle occurred during shut-down mode
Hot box detector	detectors for indicating the overheating of axle bearings and the like
Railway switch, railway point	mechanical track construction allowing a change of track for running railway vehicles
Track circuit	devices in the railway track with different types of electric current applied to the rails in defined sections of railway track which use the short-circuit by vehicle axles between both rails as detection means

## Synonyms and Keywords

In patent documents, the following abbreviations are often used:

CBTC	Communication based train control
ERTMS	European railway traffic management system
ESTW	"Elektronisches Stellwerk"; electronic interlocking
ETCS	European train control system
FFB	"Funkfahrbetrieb"; radio based operation, field elements are controlled directly by the train via radio
GPS	Global positioning system
GSM-R	Global system for mobile communication - Railway
INDUSI	"Induktive Zugsicherung"; inductive train protection, using permanent magnets with switchable electric coils connected to light signals.
LED	Light emitting diode
LZB	"Linienzugbeeinflussung"; continuous inductive train control, applying double cable with cross-overs as track antenna
PTC	Positive train control
RFID	Radio-frequency identification
SST	"Selbsttätig signalgeführtes Triebfahrzeug"; driver-less signal controlled vehicle

## B61L 1/00

Devices along the route controlled by interaction with the vehicle or vehicle train, {e.g. pedals} (detonators [B61L 5/20](#); operation of points or signals by passage of the vehicle [B61L 11/00](#), [B61L 13/00](#); central traffic control systems controlled by train [B61L 27/04](#); operation of gates, or gates and signals, by approaching vehicle [B61L 29/18](#))

### Definition statement

*This place covers:*

Devices along the track which are influenced by a rail vehicle e.g. to detect the passage or presence and where an action is then performed on the ground equipment.

### References

#### Limiting references

*This place does not cover:*

Devices along the track which influence equipment on the rail vehicle.	<a href="#">B61L 3/00</a>
Detonators	<a href="#">B61L 5/20</a>
Operation of points by passage of the vehicle	<a href="#">B61L 11/00</a>
Operation of signals by passage of the vehicle	<a href="#">B61L 13/00</a>
Operation of gates, or gates and signals, by approaching vehicle	<a href="#">B61L 29/18</a>

### Informative references

Attention is drawn to the following places, which may be of interest for search:

Track circuits with data transmission to trains in general	<a href="#">B61L 3/24</a>
Track circuits used for train separation with track blocks	<a href="#">B61L 23/16</a>

### Special rules of classification

Hot box detectors are not only classified in this group [B61L 1/20](#), but also in [B61K 9/04](#).

Track circuits for influencing devices on the train are classified under [B61L 3/24](#), when related to transmission of data to trains. If otherwise related to braking or train separation techniques for track blocks, then [B61L 23/16](#) takes precedence. Track circuit details and underlying principles have to be classified under [B61L 1/18](#).

## B61L 3/00

**Devices along the route for controlling devices on the vehicle or vehicle train, e.g. to release brake, to operate a warning signal**

### Definition statement

*This place covers:*

Devices along the track which influence equipment present on the rail vehicle. As devices along the track are also understood remote control devices of locomotives with portable equipment, e.g. portable control devices for yard locomotives. Relationship between large subject matter areas

Optimization of train running is classified under [B61L 3/006](#) only if links to signalling system, actual position of the train, braking curves, grades of the track, time tables or the like are present in the disclosure. Otherwise, without said links, general optimization of multi-drive trains are found in [B60L 15/32](#).

### References

#### Limiting references

*This place does not cover:*

Devices along the track influenced by the passage of the rail vehicle which do not influence equipment on the rail vehicle.	<a href="#">B61L 1/00</a>
Optimisation where the calculations are not performed on board the train	<a href="#">B61L 27/0027</a>

### Informative references

Attention is drawn to the following places, which may be of interest for search:

Track circuits details	<a href="#">B61L 1/18</a>
Signals along the track giving instruction to the driver	<a href="#">B61L 5/12</a> - <a href="#">B61L 5/24</a>
Track circuits used for train separation with track blocks	<a href="#">B61L 23/16</a>
Remote control of locomotives within a train consist from another locomotive in general	<b>B61C17/20</b> , <a href="#">B60L 15/32</a> (for electric vehicles)

## Special rules of classification

The subgroups [B61L 3/002](#), [B61L 3/004](#), [B61L 3/006](#) and [B61L 3/008](#) comprise also devices located only on board despite the group title.

Intermittent control ([B61L 3/02](#) - [B61L 3/14](#)) comprises not only beacons or the like, but also short loops at dedicated locations, whereas continuous control ([B61L 3/16](#)) comprises long loops along the whole track.

Radio used for train control, is only classified in [B61L 3/125](#), if short range transmission for a single track using RFID tags, balise transmissions or the like is applied. Long range radio transmission for train control using conductor cables on the track, like wave guides or leaky feeders, can be found under [B61L 3/227](#).

Track circuits for influencing devices on the train are classified under [B61L 3/24](#), when related to transmission of data to trains. If otherwise related to braking or train separation techniques for track blocks, then [B61L 23/16](#) takes precedence. Track circuit details and underlying principles have to be classified under [B61L 1/18](#).

## B61L 5/00

**Local operating mechanisms for points or track-mounted scotch-blocks (track-mounted scotch-blocks per se [B61K](#)); Visible or audible signals; Local operating mechanisms for visible or audible signals ([B61L 11/00](#) takes precedence)**

### Definition statement

*This place covers:*

The equipment adjacent to the track which is actuating track equipment, especially railway switches, derailleurs or scotch blocks. In particular it covers all parts in order to move or control rails or scotch blocks, as well as detect their proper positions. In this regard, [B61L 5/10](#) "Means for indicating the setting of points" has to be understood as means for the detection of the setting of the points.

This group further covers signals adjacent to the track giving indications for the driver of the rail vehicle, e.g. day light signals.

### Relationships with other classification places

Signals along the railway track are classified in this group under [B61L 5/18](#) only, but traffic lights for road traffic are found in [G08G 1/095](#).

### References

#### Limiting references

*This place does not cover:*

Derailleurs and scotch blocks in general	<a href="#">B61K 5/06</a>
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#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Points/switches in general without reference to operation or control	<a href="#">E01B 7/00</a>
Light signals in general (non railroad)	<a href="#">F21W 2111/00</a>
Road traffic lights	<a href="#">G08G 1/095</a>
Light Emitting Diodes (LED) as such	<a href="#">H05B 33/00</a>

Control of light sources in general	<a href="#">H05B 37/00</a>
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### Special rules of classification

For all control of switches and signals, which are actuated from the vehicle, [B61L 11/00](#) takes precedence.

The indication of the actual switch positions to the train operator should be classified in [B61L 9/00](#).

[B61L 5/02](#) should be used for all documents exclusively related to mechanical details of switch machines, even if they do not explicitly stated a manual operation and said switch machines could theoretically operated electrically or hydraulically.

### B61L 7/00

**Remote control of local operating means for points, signals, or trackmounted scotch-blocks ([B61L 11/00](#) takes precedence; interlocking arrangements [B61L 19/00](#); transmission per se, see the relevant classes)**

### Definition statement

*This place covers:*

The transmission of control commands from the signal box or the like to the field equipment on the track to be operated.

### References

#### Limiting references

*This place does not cover:*

Interlocking arrangements	<a href="#">B61L 19/00</a>
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### Special rules of classification

For all operation of local operating means from the vehicle or by the passage of the vehicle, **B61L5/11** takes precedence.

For all railway point locks drives, control and monitoring, [B61L 5/10](#) takes precedence.

### B61L 9/00

**Illumination specially adapted for points, form signals, or gates (lighting in general [F21](#))**

### Definition statement

*This place covers:*

The illumination of field elements on the track for the train operator.

### References

#### Limiting references

*This place does not cover:*

Indication panels for route settings	<a href="#">B61L 25/06</a>
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**Informative references**

Attention is drawn to the following places, which may be of interest for search:

Lighting in general	<a href="#">F21S</a> , <a href="#">F21V</a>
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**Special rules of classification**

For all railway signals as such, [B61L 5/18](#) takes precedence.

**B61L 11/00****Operation of points from the vehicle or by the passage of the vehicle****Definition statement**

*This place covers:*

The local operation of switches by actuation from the vehicle or by the vehicle. It comprises systems like the radio based train operation (FFB), where field elements are controlled directly by the train via radio. It also comprises local operating mechanism like pedals and the like. It further covers trailable point locks for railway switches.

**Relationships with other classification places**

Railway switches in general	<a href="#">E01B 7/00</a>
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**References****Limiting references**

*This place does not cover:*

Non-trailable point locks for railway switches	<a href="#">B61L 5/10</a>
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**Informative references**

Attention is drawn to the following places, which may be of interest for search:

Operation of signals from the vehicle or by the passage of the vehicle	<a href="#">B61L 13/00</a>
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**Special rules of classification**

For all railway point locks drives, control and monitoring, [B61L 5/10](#) takes precedence.

**B61L 13/00****Operation of signals from the vehicle or by the passage of the vehicle****Definition statement**

*This place covers:*

The local operation of signals by actuation from the vehicle or by the vehicle. It comprises local operating mechanism like pedals and the like.

## References

### Limiting references

*This place does not cover:*

Operation of signals and gates at level crossings	<a href="#">B61L 29/08</a>
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### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Operation of points from the vehicle or by the passage of the vehicle	<a href="#">B61L 11/00</a>
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## B61L 15/00

### Indicators provided on the vehicle or vehicle train for signalling purposes {; On-board control or communication systems}

#### Definition statement

*This place covers:*

This group comprises systems onboard the train for indication, communication and data handling. In particular it comprises:

start- and stop signals provided in the cab for the driver, e.g. including forced emergency braking signals

communication links on the train from one vehicle to the other by cable, radio, optical or other links.

communication from the trackside control center to the train, when transmitted over long distances, including both, speech and control data.

Indicators in or on the train, which display further information for passengers, like e.g. train number and destination

End-of-Train (EOT) detection devices, which ensure the completeness and integrity of the train

multiple systems on board, which include redundant or fault tolerant systems or subsystems, e.g. 2-out-of-3 processors or multiple signalling equipment for migration or multi-national use.

train data handling and diagnosis onboard the train, which manage all necessary data on the train to operate the train properly. This includes also operator identification and log-in functionalities for security reasons on the locomotive or train

display devices onboard the train for e.g. giving the train operator in the cab information on safety and train routing issues, speed indications etc. on a screen or giving passengers further information about the actual position of the train, delays, etc. in passenger vehicles

head and end tail lights provided at the front or rear end of the train or vehicle for indicating the moving direction of the train or vehicle

## References

### Limiting references

*This place does not cover:*

Remote control of locomotives from track-side devices	<a href="#">B61L 3/127</a>
Horns and bells on board the vehicles	<a href="#">B61L 23/00</a>

Multiple systems on track side implementations, which include redundant or fault tolerant systems or subsystems, e.g. 2-out-of-3 processors or multiple signalling equipment for migration or multi-national use	<a href="#">B61L 27/0061</a>
Dead man devices	<a href="#">B60L 3/02</a>
Remote control of locomotives within a train consist from another locomotive in general	<a href="#">B60L 15/32</a> (for electric vehicles) <b>B61C17/20</b>
Warning concerning the opening and closing of doors	<a href="#">B61D 19/026</a>
Indicators on platforms in stations for indicating departure times, destinations or the like	<a href="#">G09F</a>

### **Informative references**

Attention is drawn to the following places, which may be of interest for search:

Recorders on the vehicle	<a href="#">B61L 3/002</a>
Memory means reproducing during the running of the vehicle	<a href="#">B61L 3/004</a>
On-board optimisation of vehicle operation	<a href="#">B61L 3/006</a>
On board target speed calculation or supervision	<a href="#">B61L 3/008</a>
Head and tail lights for vehicles other than railway vehicles	<a href="#">B60Q 1/26</a>

### **Special rules of classification**

The devices for [B61L 3/002](#), **B61L3/00B**, **B61L3/00C** and **B61L3/00D** are classified in [B61L 3/00](#) although they comprise equipment purely mounted on board.

Radio communication in [B61L](#) is classified in different subgroups as follows:

Short range radio transmissions used for train control is classified in [B61L 3/125](#) for intermittent control, when RFID tags, balise transmissions or the like is applied.

Long range radio transmission for train control using conductor cables on the track, like wave guides or leaky feeders, can be found under [B61L 3/227](#).

Long range radio transmission between a train and control center, is classified only under [B61L 15/0027](#) for both, speech and continuous train control transmissions, as for example using GSM-R cell communication, when related to onboard systems.

However, long range radio transmission systems between a train and control center, when related to details of the trackside implementation, is covered under [B61L 27/0005](#).

## **B61L 17/00**

### **Switching systems for classification yards (rail brakes [B61K](#))**

#### **Definition statement**

*This place covers:*

The systems classified here are railway installations used for forming new trains in yards or maintenance areas, possibly also including at least one classification hump.

## References

### Limiting references

*This place does not cover:*

Indicating panels for route settings	<a href="#">B61L 25/06</a>
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### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Marshalling systems	<a href="#">B61B 1/005</a>
Details on track brakes	<a href="#">B61K 7/02</a>

## Special rules of classification

Many different techniques are covered here. This classification has to be given, when ever the invention is related to activities in yards or maintenance areas. As a consequence, only in very rare cases a document will be given a single classification in the main group only. Typically, also other classifications regarding localisation, serialisation or data handling of trains have to be assigned to documents additionally.

## Synonyms and Keywords

*In patent documents, the following words/expressions are often used as synonyms:*

- "classification yard", and "marshalling yard"

## B61L 19/00

**Arrangements for interlocking between points and signals by means of a single interlocking device {, e.g. central control (remote control [B61L 7/00](#); station block arrangements [B61L 21/00](#))}**

### Definition statement

*This place covers:*

All systems and field elements for setting the routes through the network, including local or central interlocking equipment.

## References

### Limiting references

*This place does not cover:*

Railway switch operation and control	<a href="#">B61L 5/02- B61L 5/10</a>
Railway light signal operation and control	<a href="#">B61L 5/18</a>
Remote control of local operating means for points, signals or track mounted scotch-blocks	<a href="#">B61L 7/00</a>
Systems specially adapted for classification/marshalling yards	<a href="#">B61L 17/00</a>
Blocking arrangements	<a href="#">B61L 21/00</a> , <a href="#">B61L 23/08</a> , <b>B61L21/22</b>
Mechanical route setting and release	<a href="#">B61L 21/02</a>
Electrical route setting and release	<a href="#">B61L 21/04</a>

Transmission of train numbers	<a href="#">B61L 25/04</a>
Indicating panels for route settings	<a href="#">B61L 25/06</a>

### Informative references

Attention is drawn to the following places, which may be of interest for search:

Blocking arrangements	<a href="#">B61L 21/00</a> , <a href="#">B61L 23/08</a> , <b>B61L21/22</b>
Displaying of information in general	<a href="#">G09F</a>

### Special rules of classification

While this main group deals more with the devices and systems of interlocking equipment, [B61L 21/00](#) relates more to the functional aspects like route setting or departure signal authorizations, etc.

For modern central interlockings, which comprise electronic interlocking equipment, additionally the Indexing Code-code [B61L 2019/065](#) "electronic central interlocking" should be assigned to relevant documents.

### Synonyms and Keywords

In patent documents, the following abbreviations are often used:

ESTW	"Elektronisches Stellwerk"; electronic interlocking
PRCI	"Poste d'aiguillage à relais à commande informatique"; electronic interlocking
RSTW	"Relaisstellwerk"; relay interlocking

In patent documents, the following words/expressions are often used as synonyms:

- "central interlocking" and "signal box"

## B61L 21/00

**Station blocking between signal boxes in one yard (interlocking between points and signals by means of a single interlocking device [B61L 19/00](#))**

### Definition statement

This place covers:

Setting of routes within a signal box, communication between different signal boxes for route setting and release, departure order transmission and moving block systems.

### References

#### Limiting references

This place does not cover:

Railway switch operation and control	<a href="#">B61L 5/02- B61L 5/10</a>
Railway light signal operation and control	<b>B61L5/18/00</b>
Systems specially adapted for classification/marshalling yards	<a href="#">B61L 17/00</a>
Interlocking systems and devices	<a href="#">B61L 19/00</a>
Track block length adaption	<a href="#">B61L 23/18</a>

Controlling the distance between trains	<a href="#">B61L 23/34</a>
Transmission of train numbers	<a href="#">B61L 25/04</a>
Indicating panels for route settings	<a href="#">B61L 25/06</a>

### **Informative references**

Attention is drawn to the following places, which may be of interest for search:

Interlocking systems and devices	<a href="#">B61L 19/00</a>
Displaying track settings	<a href="#">B61L 25/06</a>
Displaying of information in general	<a href="#">G09F</a>

### **Special rules of classification**

While this main group deals more with the functional aspects like route setting or departure signal authorizations, etc, [B61L 19/00](#) relates more to the devices and systems of interlocking equipment.

Moving block systems shall be classified under [B61L 21/10](#) and not in [B61L 23/18](#) nor [B61L 23/34](#). The latter subgroup shall only be used, when a train is following closely the preceding train by direct distance measurement, e.g. like a joined, virtually coupled train. [B61L 23/18](#) is used, when fixed blocks are subdivided or shortened. Instead, when a kind of control center is controlling the follower train even in relative braking distance, [B61L 21/10](#) shall be used.

Displays for indication track settings, routes, vehicle positions or numbers are likewise classified under [B61L 21/06](#) and [B61L 25/06](#), since the different information is usually displayed together and because the used techniques are normally the same. The latter shall take precedence for newer documents.

## **B61L 23/00**

### **Control, warning, or like safety means along the route or between vehicles or vehicle trains**

#### **Definition statement**

*This place covers:*

Warning devices of different kinds related to safety as well as track blocking or train separation.

In particular it covers:

monitoring of the track, including broken rail detection, track movements or the like

detection of obstacles on or near the track, also on platforms or in tunnels

warning systems of working men on the track

track block techniques for separation train traffic, also with integration of track circuits

token systems for controlling railway traffic

systems for virtually coupled trains and train joining and splitting in relation to distance measurements between trains.

#### **Relationships with other classification places**

The monitoring of the track would preferably be classified in [B61L 23/04](#), when it has a link to the railway signalling system or when mainly trackside elements are used. Otherwise, thus mainly onboard systems without a link to the railway signalling system, also [B61K 9/08](#) can be given. In

practice, often both groups [B61L 23/04](#) and [B61K 9/08](#) were given simultaneously to the same document.

## References

### Limiting references

*This place does not cover:*

Crossings of railway tracks with road traffic	<a href="#">B61L 29/00</a>
Equipment mounted on board of vehicles for surveying the track	<a href="#">B61K 9/08</a>

### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Track circuits details	<a href="#">B61L 1/18</a>
Track circuits with data transmission to trains in general	<a href="#">B61L 3/24</a>
Arrangements for trains closely following each other	<a href="#">B61L 21/10</a>

## Special rules of classification

[B61L 23/007](#) relates only to crossings of two different railway tracks. For crossings with road traffic, [B61L 29/00](#) takes precedence.

[B61L 23/041](#) comprises also the monitoring of platforms to detect whether there is a person or obstacle is too close to the track or even on the track.

[B61L 23/24](#) comprises also systems with "electronic tokens".

Track circuits for influencing devices on the train are classified under [B61L 3/24](#), when related to transmission of data to trains. If otherwise related to braking or train separation techniques for track blocks, then [B61L 23/16](#) takes precedence. Track circuit details and underlying principles have to be classified under [B61L 1/18](#).

Moving block systems shall be classified under [B61L 21/10](#) and not in [B61L 23/18](#) nor [B61L 23/34](#). The latter subgroup shall only be used, when a train is following closely the preceding train by direct distance measurement, e.g. like a joined, virtually coupled train. [B61L 23/18](#) is used, when fixed blocks are subdivided or shortened. Instead, when a kind of control center is controlling the follower train even in relative braking distance, [B61L 21/10](#) shall be used.

## B61L 25/00

### Recording or indicating positions or identities of vehicles or vehicle trains or setting of track apparatus

#### Definition statement

*This place covers:*

- vehicle localization systems which provide position information in absolute values, like geographic coordinates by GPS receivers
- vehicle localization systems which provide position information in relative values, like distance from fixed points or distance travelled from odometer
- vehicle speed and acceleration measurements
- vehicle identification and numbering
- display panels for indication of train routes, positions and track element status

## Relationships with other classification places

General measurement techniques are found in many different other classes, but all applications concerning railway technology should preferably be classified under [B61L](#).

## References

### Informative references

Attention is drawn to the following places, which may be of interest for search:

Displaying vehicle positions or routes	<a href="#">B61L 21/06</a>
General measurement techniques of e.g. position, distance, velocity, speed	<a href="#">G01S</a> , <a href="#">G01C</a>

## Special rules of classification

All cameras based systems for detecting of trains identities are classified under [B61L 25/041](#) even when there is no special reflective tag on the train.

For absolute localization by satellite navigation systems, additionally the Indexing Code [B61L 2205/04](#) shall be given.

Displays for indication track settings, routes, vehicle positions or numbers were likewise classified under [B61L 21/06](#) and [B61L 25/06](#), since the different information is usually displayed together and because the used techniques are normally the same. Thus, a search for these technologies should cover these subgroups. However, [B61L 25/06](#) shall take precedence for classification from January 2011 on for classification.

## Synonyms and Keywords

In patent documents, the following abbreviations are often used:

Gps	global positioning system
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In patent documents, the following words/expressions are often used as synonyms:

- "wheel sensor", "wheel tachomete" and "odometer"

## B61L 27/00

### Central traffic control systems {; Track-side control or specific communication systems}

#### Definition statement

This place covers:

- trackside details of communication systems used in railways, e.g. network arrangements, handover from radio block centers and the like
- dispatching and regulation systems for generating, monitoring and optimizing train schedules and time tables, or supervising the railway traffic in areas
- support systems for organizing crew changes
- train control systems using a control center
- test and simulation systems in the context of railway safety and guidance
- multiple systems on trackside implementations, which include redundant or fault tolerant systems or subsystems, e.g. 2-out-of-3 processors or multiple signalling equipment for migration or multi-national use.



- data handling and diagnosis of vehicles or trains, which manage all necessary data on the train to operate the train properly, when implemented on trackside. This includes also the collection of position reports if vehicles or trains
- trackside implementations for diagnosis of vehicle or trains as well as field elements, interlockings or the like
- automatic driverless systems for guiding trains or autonomous vehicles through the railway network.

## References

### Limiting references

*This place does not cover:*

Optimisation where the calculations are performed only on board the train	<a href="#">B61L 3/006</a>
Multiple systems on board, which include redundant or fault tolerant systems or subsystems, e.g. 2-out-of-3 processors or multiple signalling equipment for migration or multi-national use	<a href="#">B61L 15/0063</a>
Onboard equipment for collecting and managing vehicle data	<a href="#">B61L 15/0072</a>
Onboard equipment for diagnosis	<a href="#">B61L 15/0081</a>
Localization means for railway	<a href="#">B61L 25/02</a>

### Special rules of classification

Test and simulation systems for railway signalling equipment or operation are also classified under [B61L 27/0055](#) in addition to other groups of [B61L](#), when local, portable devices or onboard systems are disclosed without necessarily using a control center.

"Automatic systems" in [B61L 27/04](#) not only means driverless systems, but also where the operator purely monitors the system functioning and health as for example on maglev trains.

### Synonyms and Keywords

*In patent documents, the following abbreviations are often used:*

Maglev	magnetic elevation trains
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*In patent documents, the following words/expressions are often used as synonyms:*

- "dispatching" and "scheduling"
- "time table", "mission plan" and "schedule"

## B61L 29/00

### Safety means for rail/road crossing traffic

#### Definition statement

*This place covers:*

All safety equipment for ensuring the safety of crossings between road or pedestrian and rail traffic.

#### References

##### Limiting references

*This place does not cover:*

Crossings between railway tracks	<a href="#">B61L 23/007</a>
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**Informative references**

Attention is drawn to the following places, which may be of interest for search:

Camera monitoring also of level crossings	<a href="#">B61L 23/041</a>
Barriers as such not particularly for rail/road crossings	<a href="#">E01F 13/00</a>

**Special rules of classification**

[B61L 29/08](#) - [B61L 29/228](#) describe the operation of barriers whereas [B61L 29/24](#) - [B61L 29/32](#) describe the aspect for warning the road users.

The detection of trains independent of the activation of level crossing should be classified under [B61L 1/16](#) or [B61L 1/18](#) respectively.

Although gates ([B61L 29/04](#)) can be seen as guards ([B61L 29/02](#)) in a broader sense, the gates are classified exclusively under [B61L 29/04](#).

**B61L 99/00****Subject matter not provided for in other groups of this subclass****Definition statement**

*This place covers:*

This group covers subject-matter containing additional information other than technical, e.g. management decisions, politics etc. in regard to railway signalling, control and guiding, which cannot be used for search.