Claims

1. Modular furniture system having at least two furniture modules ~~(2)~~ which can be moved electrically and independently of one another in an inhabited room having a floor, wherein each furniture module ~~(2)~~ comprises its own motor ~~(8)~~ controlled by a control computer ~~(10)~~ of the furniture system ~~(1)~~, and wherein for the modular furniture system ~~(1)~~, an electric linear drive is provided with a first drive element ~~(3a)~~ fixed along a wall ~~(15a)~~ of the room and a second drive element ~~(3b)~~ fixed to each furniture module ~~(2)~~, the first drive element ~~(3a)~~ cooperating with the second drive element ~~(3b)~~ of each furniture module so that each furniture module ~~(2)~~ is individually movable by means of the electric linear drive in cooperation with its own motor ~~(8)~~,

further comprising a rail system ~~(4a)~~ for supporting the furniture modules ~~(2)~~, wherein the rail system ~~(4a)~~ is arranged on the~~a~~ wall of the room and wherein, when each~~a~~ furniture module ~~(2)~~ is moved, a supporting element ~~(4b)~~ of the each furniture module ~~(2)~~ rests on the rail system ~~(4a)~~.

2. Modular furniture system according to claim 1,

wherein the first drive element is a toothed rack ~~(3a)~~ and the second drive element ~~(3b)~~ of each furniture module is a pinion ~~(3b)~~ engaged with the toothed rack ~~(3a)~~, wherein for moving each~~the~~ furniture module ~~(2)~~, the pinion ~~(3b)~~ is coupled to the motor of each furniture module, or

wherein the electric linear drive is a spindle drive with a spindle mounted along the wall ~~(15a)~~, or

wherein the electric linear drive is a direct drive.

3. Modular furniture system according to claim 1 or 2, wherein a gear ~~(5)~~, in particular a planetary gear, is provided between electric linear drive and the motor of each furniture module.

4. Modular furniture system according to one of the preceding claims, wherein a~~the~~ rail ~~(4a)~~ of the rail system is designed as a linear roller bearing and is substantially parallel to the ~~room~~ floor of the room ~~(7b)~~.

5. Modular furniture system according to one of the preceding claims, wherein each~~the~~ furniture module ~~(2)~~ is supported on the floor ~~(7b)~~ of the room by means of at least one roller ~~(8b)~~, in particular which is arranged on each~~the~~ furniture module ~~(2)~~ opposite the rail system ~~(4a)~~.

6. Modular furniture system according to one of the preceding claims, wherein a mechanical force limiter, in particular a torque limiter, in particular a slip clutch, is interposed between the motor of each furniture module and the electric linear drive, which is designed in such a way that it disconnects the connection between the motor of each furniture module and the electric linear drive as soon as a predefined torque is present, wherein the disconnection of the connection is detected by the control computer and the motor of each furniture module is thereupon switched off by the control computer.

7. Modular furniture system according to one ~~one~~ of the preceding claims, wherein the control computer for controlling a speed of each furniture module comprises a

motor controller and a first encoder coupled to the motor of each furniture module for regulating a speed of the motor of each furniture module, in particular wherein the motor controller ~~(12)~~ is electrically connected to the first encoder,

wherein the control computer further comprises a module for processing user data received from a user interface.

8. Modular furniture system according to one ~~one~~ of the preceding claims, further comprising an absolute displacement measurement system for position detection, wherein a cable tension sensor system comprises a cable fixed to a fixed reference point and, on each furniture module, a cable tension sensor cooperating with the cable and having a second encoder for outputting a position signal.

9. Modular furniture system according to claim~~s 6 to~~ 8, wherein the control computer for detecting a disconnection of the connection between the electric linear drive and the motor of each furniture module by means of the mechanical force limitation is designed in such a way that it compares the speed of the motor of each furniture module with the position signal of the second encoder continuously or at predefined time intervals and checks whether a deviation is above a predefined threshold value.

10. Modular furniture system according to one one of the preceding claims, wherein each furniture module comprises an optoelectronic sensor, in particular a light grid, for detecting an obstacle during movement of each~~the~~

furniture module, wherein the optoelectronic sensor comprises a light source and a receiver and is designed to cover the entire width of each~~the~~ furniture module, wherein the light source and the receiver project away from a front or rear side of each~~the~~ furniture module and are each held by means of a spring, so that they can be pressed into a niche provided for this purpose against the spring force when colliding with an object and no longer project out of each~~the~~ furniture module, whereby a detection is triggered.

11. Modular furniture system according to one of the preceding claims, wherein a mechanical crank can be coupled to each furniture module, by means of which each~~the~~ furniture module is manually movable by turning the mechanical crank of each furniture module.

12. Modular furniture system according to one of the preceding claims, wherein at least one spacer is provided on each furniture module in order to ensure a safety distance when adjacent ones of the at least two modules abut against each other.

13. Modular furniture system according to one ~~one~~ of the preceding claims,

wherein two furniture modules are provided, wherein a first furniture module is a bed module and a second furniture module is a closet module, or

wherein three furniture modules are provided, wherein a first furniture module is an office module, a second furniture module is a bed module with, in particular, a fold-down bed, and a third furniture module is a closet module.

14. Modular furniture system according to one of the preceding claims, wherein each furniture module comprises at least one pressure sensor ~~(13c)~~, in particular a push button or pressure switch, wherein the at least one pressure sensor ~~(13c)~~ is arranged in the region of one, in particular the two, front edges of a~~the~~ support base ~~(16a)~~of each furniture module as viewed in the back and forth direction of travel, in particular wherein a plurality of pressure sensors are distributed along the edge or edges of the support base of each furniture module, so that a detection can be triggered by means of the at least one pressure sensor or the pressure sensors when each~~the~~ furniture module ~~(2)~~ collides with an object close to the ground.