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Description



Panel and method of controlling the panel

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The invention relates to a panel and a method of controlling the panel according to the introductory part of claim 1 and claim 5.

There is known from the specification US-5975247 a lift panel which has different buttons for input of a storey call. The buttons are distributed over the entire area of the panel. The buttons for the upper storeys are arranged higher than the buttons for the lower-storeys. A passenger who wants to travel to storey 60 has to actuate the buttons arranged higher. This process will be difficult for a handicapped person with a wheelchair, since these buttons are placed too high. This panel is not suitable for handicapped persons.

The invention has the object of proposing a panel and a method of the kind stated in the introduction which do not have the aforesaid disadvantages and which enable problem-free operation of the panel for all passengers.

This object is met by the features of claim 1 and claim 5.

An advantage is to be seen in the fact that, with a single panel, all lift passengers can place all possible commands comfortably and without limitation. The panel can be operated not only in conventional manner, but also with a part number of the storey buttons. A special keyboard for handicapped persons is not needed. The structure of the inner side of the cage does not have to be changed. The costs of the lift installation are reduced.

Advantageous developments and improvements of the panel indicated in claim 1 and the method indicated in claim 5 are possible by the measures expressed in the dependent claims.

In a preferred embodiment, the part number of storey buttons forms a decade keyboard. A wide selection of commands is thereby made available with the help of the numerals '0' to '9'.

In a further embodiment the panel has a converter button producing the signal. This has the advantage that the converting over of the panel can be carried out manually by direct contact.

In a further embodiment the panel has a sensor producing the signal. This allows automatic conversion of the panel without direct contact.

Moreover, the invention also has the following advantages:

With a small amount of restructuring of an already installed panel, an old panel can also take over the functions according to the invention. This means that the teaching according to the invention can find use not only on an old, already installed panel, but also on a new panel to be installed.

Not only can all commands of the standard panel be placed by the decade keyboard, but also additional commands or functions.

All explained features are usable not only in the respectively indicated combination, but also in other combinations or by themselves without departing from the scope of the invention.

Different embodiments of the invention are illustrated in the schematic drawings and explained in more detail in the following description, wherein:

Fig. 1 shows the inner side of a lift cage with a panel according to the invention,

Fig. 2 shows a panel according to a first embodiment of the invention,

Fig. 3 shows a part of the panel of Fig. 1, which is operable as a decade keyboard.

Fig. 4 shows a panel according to a second embodiment of the invention,

Fig. 5 shows a panel according to a third embodiment of the invention and

Figs. 6, 7 and 8 show flow charts of the operating process of a panel.

Figure 1 shows the inner side of a lift cage 2 which has, near a lift door T, a panel 1 for the input of lift commands. This panel is an entirely normal, standard panel which is operable on the basis of all buttons which are present. The panel 1 can be disposed on a storey of a building.

One embodiment of the panel 1 is illustrated in more detail by Figure 2. The panel 1 extends in vertical direction, i.e. the width B is smaller than the height D, and has several buttons 3 on the lower part of the panel 1 and a display device 4 on the upper part. The buttons 3 comprise a door opening button DT-O and a door closing button DT-S, as well as storey buttons or cage call buttons CCB, wherein a storey button CCB is provided for each storey. In this example, 27 storey buttons CCB are shown, the actuation of which allows servicing of the storeys 0 to 26. Obviously the panel can have more or less storey buttons CCB. The storey buttons CCB are continuously numbered from the bottom to the top, which means the storey buttons with for the higher storeys are arranged higher on the panel 1 than the storey buttons for the lower storeys. In this example the storey buttons CCB are distributed in three columns. The panel 1 further comprises a converter button H which is arranged below the button 3. The actuation of the converter button H allows all possible commands, which can usually be placed set down by the standard panel 1, to be able to be carried out with only a part number of all the storey buttons CCB of the panel 1 which are present. In one embodiment, the panel 1 is converted over by actuation/pressing the converter button H in a decade keyboard Z. This means that the storey buttons CCB '0' to '9' of the panel 1 are used as decade keyboard Z, by means of which, for example, all storeys can be selected or all cage calls or travel commands can be actuated. This means that even the higher storeys are selectable by means of the decade keyboard Z.

This has the advantage that even a handicapped person seated on a wheelchair can select the higher storeys without problems. This is possible because the decade keyboard Z is at a height which can be easily reached even by seated persons. All storeys are thus selectable by everyone without limitation. A special keyboard or additional devices for handicapped persons are not needed.

The detail A from Figure 1 is illustrated more closely in Figure 3. The storey buttons CCB '0' to '9' form the decade keyboard Z. On actuation of the converter button H of the panel 1 the decade keyboard Z is activated. Constant illumination or flashing of the storey buttons '0' to '9' confirms activation of the decade keyboard Z. The storey buttons '0' to '9' can preferably also be provided with Braille characters so that they can be actuated even by blind persons.

After the converter button H is actuated, the storey '18', for example, can be selected by successive actuation of the storey buttons '1' and '8'. At the same time this selection is preferably confirmed by automatic illumination of the corresponding storey button CCB, in our example the storey button '18'. A tone confirms the actuation of any one of the buttons 3.

Figure 4 shows a further embodiment of the panel 1, when basically the same panel 1 as in Figure 1 is illustrated. The conversion function here is not actuated by a converter button H, but with the help of a sensor S which detects a signal and for its part transmits a further signal to the control device of the panel 1. This means that the decade keyboard Z can also be activated without direct contact of the panel 1, for example at a local spacing therefrom. Through the sensor S, for example, a specific handicapped person can be identified and an automatic conversion to the decade keyboard Z carried out. The identification can take place, for example, with the help of a transmitter carried by the handicapped person. This can happen, for example, in accordance with the transponder principle. The user carries, for example, a chip card with an identification code which is detected by the sensor S as a signal. The sensor S can be arranged anywhere on the panel. It is important that the sensor S is disposed where all passengers in the cage 1 or in the corridor can be detected by it. The arrangement of the sensor S on the lower part of the panel 1 would be a preferred variant.

The decade keyboard Z remains activated until one of the following situations occurs:

- The door closing switch DT-S is actuated
- The decade keyboard Z remains unactuated for more than a predetermined time, for example 5 seconds.

If the decade keyboard Z is no longer activated, then the buttons '0' to '9' are no longer lit or no longer flash. The panel 1 can then be operated again in the usual manner.

Figure 5 shows a further variant of the panel 1 according to the invention, which is usable for buildings with basements. The panel 1 has three minus buttons 5 which are arranged below the storey buttons CCB for the upper floors. The minus buttons 5 are therefore mounted at a height which is also easily reachable even by seated handicapped persons. Preferably the three minus buttons 5 lie above the door closing button DT-S, the door opening button DT-O and the converter button H. The basements can thus be selected by actuation of one of the minus buttons 5 and, in a given case, one of the buttons '0' to '9' without the converter button H having to be actuated. The converter button H is only actuated in order to select higher floors, for example storey '18' with the help of the storey buttons '0' to '9', i.e. with the decade keyboard Z.

The decade keyboard Z can also be used for other functions. In certain buildings, access to certain storeys is possible only for authorised persons. In order to give access to these specific storeys the authorised person must firstly be identified by the lift. This can take place, for example, through input of a code RC. Part of the storey buttons CCB of the panel 1, for example the above-mentioned decade keyboard Z, can be used for this purpose. The authorised person initially has to convert the panel 1 to the decade keyboard Z by the converter button H, then input the code RC via the decade keyboard Z and finally select the storey by the decade keyboard Z or by direct actuation of the corresponding storey button CCB. Subsequently, the door closing button DT-S can be actuated, which can also serve as an input button ('enter' button). An acoustic signal confirms input of the correct code RC. An incorrect code RC is ascertained by suitable software and automatically converts the decade keyboard Z back to the conventional panel 1. Without input of the code RC, specific storeys cannot be serviced by direct actuation of the corresponding storey buttons CCB.

In similar manner the lift can be booked with special functions by input of further codes SFC. For example, there can be input via the decade keyboard Z in each instance a further code SFC for reservation of the lift with or without parking, for switching on and controlling the light or a ventilator of the lift cage, for special journeys, etc. The acknowledgement that the control of the lift has registered a special function is carried out by a temporary indication, for example of a letter on the display device 4 of the panel 1.

Due to the presence of the panel 1 with the converter button H according to the invention no special buttons or keys in the lift cage or in the corridor are therefore necessary, everything being able to be undertaken via the panel 1.

Figures 6, 7 and 8 show flow charts / algorithms indicating the operating process of the panel.

Figure 6 shows the main flow chart of the function of the panel 1. If the converter button H is actuated (step P2), then the decade keyboard Z is switched on (step P4). Without actuation of the converter button H, the panel 1 is used in conventional manner as a standard panel (step P3).

Figures 7 and 8 show a possible sequence when the decade keyboard Z is switched on. This sequence can be summarised in the following terms:

On actuation of the converter button H, all already existing cage calls ECC are detected in the lift control and the lamps of the associated storey buttons extinguished. The acknowledgement lamp of the converter button H lights up (step S3). A timer switches on and the storey buttons '0' to '9' of the panel 1, which form the decade keyboard Z, begin to flash at a frequency of preferably 2 Hz (S5). If the decade keyboard Z remains unactuated within a time of, for example, five seconds (S9) or if the door closing button DT-S is pressed (S8), then the lamp of the converter button H switches off (S83) and the flashing of the decade keyboard Z stops (S84). The decade keyboard Z is switched off and the panel 1 can again be used as a standard panel (S86). The lamps of the storey buttons which correspond with the already registered cage calls ECC light up again (S85). If the decade keyboard Z is actuated after actuation of the changeover button H, then a valid cage call can be input, which is stored in a central memory for calls MCC. This central memory MCC is then picked up in the already registered cage calls ECC. In this manner a code can also be input by means of the decade keyboard. As soon as a button of the decade keyboard Z is actuated, the timer is newly started so that there is still time for actuation of further buttons of the decade keyboard. Depending on the respective case, cage calls and different codes can thus be input. As soon as the door closing button DT-S is actuated or the set time of the time transmitter elapses or commands are input which

are not acceptable by the system, the decade keyboard is switched off and the panel 1 may be operable again as a standard panel.

A valid cage call is the call which is actually served by the lift. This means that if the lift serves, for example, the storeys 0 - 31, the valid cage calls go from 0 to 31. The cage calls 32, 33 would therefore not be valid.

The individual steps of the charts are indicated in detail in the following:

Figure 6:

- P1: State of the converter button H is read
- P2: Has the converter button H been actuated?
- If yes, then continue with P4, otherwise continue with step P3.
- P3: Panel is used as standard panel
- P4: Decade keyboard is activated

Figures 7 and 8:

- S1: All already existing cage calls ECC are detected
- S2: All acknowledgement lamps of the cage calls ECC of S1 are switched off
- S3: Acknowledgement lamp of the converter button H lights up
- S4: Timer for converter button H or decade keyboard Z starts, i.e. on actuation of the converter button for the decade keyboard a predetermined time of, for example, 5 seconds starts.
- S5: The storey buttons '0' to '9' of the decade keyboard Z flash at a frequency of preferably 2 Hz
- S6: State of the storey buttons '0' to '9' is read
- S7: Has one of the storey buttons '0' to '9' been actuated?
- If yes, then continue with S10, otherwise continue with step S8.
- S8: Has the door closing button DT-S been actuated?
- If yes, then continue with S83, otherwise continue with step S9.
- S9: Has the predetermined time of the timer elapsed?
- If yes, then continue with S83, otherwise continue with step S6.
- S10: The actuated storey button in S7 is detected in a first memory M1
- S11: Timer restarts
- S12: State of the storey buttons '0' to '9' is read

S13: Has one of the storey buttons '0' to '9' been actuated?

If yes, then continue with S21, otherwise continue with step S14.

S14: Has the door closing button DT-S been actuated?

If yes, then continue with S16, otherwise continue with step S15.

S15: Has the predetermined time of the timer elapsed?

If yes, then continue with S16, otherwise continue with step S12.

S16: The storey button detected in the first memory M1 applies as call input

S17: Is the call input in step S16 valid?

If yes, then continue with S18, otherwise continue with step S83.

S18: Acknowledgement lamp of the storey button corresponding with the call input of S16 lights up

S19: Call input of S16 is stored in central memory MCC

S20: Central memory MCC is detected in cage calls ECC

S21: The actuated storey button in S13 is detected in a second memory M2

S22: The combination of the actuated storey buttons which are detected in memories M1 and M2 applies as call input

S23: Is the call input in S22 valid?

If yes, then continue with S24, otherwise continue with S27

S24: The acknowledgement lamp or lamps of the storey button or buttons corresponding with the call input in S22 lights or light up

S25: Call input in S22 is stored in central memory MCC

S26: Central memory MCC is detected in cage calls ECC

S27: Timer restarts

S28: State of the storey buttons '0' to '9' is read

S29: Has one of the storey buttons '0' to '9' been actuated?

If yes, then continue with S32, otherwise continue with S30.

S30: Has the door closing button DT-S been actuated?

If yes, then continue with S83, otherwise continue with S31.

S31: Has the predetermined time of the timer elapsed?

If yes, then continue with S83, otherwise continue with S28.

S32: The actuated storey button in S29 is detected in a third memory M3

S33: The acknowledgement lamp or lamps of the storey button or buttons corresponding with the call input in S32 switches or switch off

S34: Central memory MCC is cancelled

S35: Does the combination of actuated storey buttons which are detected in the memories M1 to M3 correspond with a part of the code RC or a part of the code SFC?

If yes, then continue with S36, otherwise continue with step S83.

S36: Timer restarts

S37: State of the storey buttons '0' to '9' is read

S38: Has one of the storey buttons '0' to '9' been actuated?

If yes, then continue with S41, otherwise continue with S39.

S39: Has the door closing button DT-S been actuated?

If yes, then continue with S83, otherwise continue with S40.

S40: Has the predetermined time of the timer elapsed?

If yes, then continue with S83, otherwise continue with step S37.

S41: The actuated storey button in step S38 is detected in a fourth memory M4

S42: Does the combination of actuated storey buttons which are detected in the memories M1 to M4 correspond with the code for restricted control RC?

If yes, then continue with S61, otherwise continue with S43.

S43: Does the combination of the actuated storey buttons which are detected in the memories M1 to M4 correspond with a part of the code RC or a part of the code SFC?

If yes, then continue with S44, otherwise continue with S83.

S44: Timer restarts

S45: State of the storey buttons '0' to '9' is read

S46: Has one of the storey buttons '0' to '9' been actuated?

If yes, then continue with S49, otherwise continue with S47.

S47: Has the door closing button DT-S been actuated?

If yes, then continue with S83, otherwise continue with S48.

S48: Has the predetermined time of the timer elapsed?

If yes, then continue with S83, otherwise continue with step S45.

S49: The actuated storey button in step S46 is detected in a fifth memory M5

S50: Does the combination of the actuated storey buttons which are detected in the memories M1 to M5 correspond with a part of the code RC or a part of the code SFC?

If yes, then continue with S51, otherwise continue with S83.

S51: Timer restarts

S52: State of the storey buttons '0' to '9' is read

S53: Has one of the storey buttons '0' to '9' been actuated?

If yes, then continue with S56, otherwise continue with S54.

S54: Has the door closing button DT-S been actuated?

If yes, then continue with S83, otherwise continue with S55.

S55: Has the set time of the timer elapsed?

If yes, then continue with S83, otherwise continue with step S52.

S56: The actuated storey button in step S53 is detected in a sixth memory M6

S57: Does the combination of the actuated storey buttons which are detected in the memories M1 to M6 correspond with a part of the code RC or a part of the code SFC?

If yes, then continue with S58, otherwise continue with step S83.

S58: Association of the code with a function (for example, special function)

S59: Function is activated (for example, special function)

S60: Function is indicated on display device 4

S61: Timer restarts

S62: State of the storey buttons '0' to '9' is read

S63: Has one of the storey buttons '0' to '9' been actuated?

If yes, then continue with S71, otherwise continue with S64.

S64: Has the door closing button DT-S been actuated?

If yes, then continue with S83, otherwise continue with S65.

S65: Has the set time of the timer elapsed?

If yes, then continue with S83, otherwise continue with S62.

S66: The storey button detected in the fifth memory M5 applies as call input

S67: Is the call input of step S66 valid?

If yes, then continue with S68, otherwise continue with S83.

S68: Acknowledgement lamp of the storey button corresponding with the call input of S66 lights up

S69: Call input of S66 is stored in the central memory MCC

S70: Central memory MCC is detected in cage calls ECC

S71: The actuated storey button in step S63 is detected in a fifth memory M5

S72: Timer restarts

S73: State of the storey buttons '0' to '9' is read

S74: Has one of the storey buttons '0' to '9' been actuated?

If yes, then continue with S77, otherwise continue with S75.

S75: Has the door closing button DT-S been actuated?

If yes, then continue with S66, otherwise continue with S76.

S76: Has the set time of the timer elapsed?

If yes, then continue with S66, otherwise continue with S73.

S77: The actuated storey button in step S74 is detected in a sixth memory M6

S78: The combination of the actuated storey buttons which are detected in memories M5 and M6 applies as call input

S79: Is the call input of step S78 valid?

If yes, then continue with S80, otherwise continue with S83.

S80: The acknowledgement lamp or lamps of the storey button or buttons corresponding with the call input of S78 lights or light up

S81: Call input of S78 is stored in the central memory MCC

S82: Central memory MCC is detected in the cage calls ECC

S83: Acknowledgement lamp of the converter button H switches off

S84: Acknowledgement lamps of the storey buttons '0' to '9' switch off

S85: Acknowledgement lamps of the cage call ECC light up

S86: The panel 1 is used as a standard panel.

Patent Claims

1. Panel for a lift installation, which has a specific number of storey buttons (CCB) for generating storey calls or travel commands, wherein a respective storey button (CCB) or storey button combination is provided for each storey, characterised in that panel (1) can be converted over on the basis of a signal so that all storeys are also selectable by a part number of all the storey buttons (CCB) present.
2. Panel according to claim 1, characterised in that the part number of the storey buttons forms a decade keyboard (Z).
3. Panel according to claim 1 or 2, characterised in that the panel (1) has a converter button (H) producing the signal.
4. Panel according to claim 1 or 2, characterised in that the panel (1) has a sensor (S) producing the signal.
5. Method of operating a panel in a lift installation, wherein the panel (1) has a specific number of storey buttons (CCB) for generating storey calls or travel commands and wherein a respective storey button (CCB) or storey button combination is provided for each storey, characterised in that the panel (1) can be converted over on the basis of a signal so that all storeys are selectable also by a part number of all the storey buttons (CCB) present.
6. Method according to claim 5, characterised in that the part number of the storey buttons forms a decade keyboard (Z).
7. Method according to claim 5 or 6, characterised in that the signal is produced by actuation of a converter button (H).
8. Method according to claim 5 or 6, characterised in that the signal is produced by response of a sensor (S).
9. Method according to one of claims 5 to 8, characterised in that a code (RC, SFC) is input by the part number of the storey buttons.

10. Method according to one of claims 5 to 9, characterised in that a door closing button (DT-S) is provided which is also used as an enter button.