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Door and Gate Operators

In this register you will find operating solutions for doors and gates. Special operators for fire protection doors/gates you will find in the separate register Fire Door Operators.

For every application we will elaborate a complete solution, considering the relevant standards and your requirements. Please contact our technical department.

We would be happy to send you further information and CAD diagrams of the operators in question. Please just let us know.
DICTATOR Door Operators
for Sliding and Hinged Doors

For decades DICTATOR has been specialising in the design and production of door operators, especially for the commercial and industrial sector.

The tables on the following pages will help you to select the right door operator for your door. In addition we also supply custom-built solutions and a large range of door operators for fire protection doors.

DICTATOR offers
- door operators to automate doors, including cold store doors.
- a large standard range of modular based and therefore very flexible door drives, that can also be adapted to suit special requirements.
- customised door operators (e.g. for multi-media facilities, very large and heavy doors, heavy overhead doors, hazardous areas and so on).
- the use of CAD to facilitate and speed up installation (very important e.g. in case of restricted space: the exact placing of the operator is shown in the door drawing).
- extensive advisory service, installation (on demand), maintenance, service, training seminars.

Technical Data

| DC door operators with integrated encoder |
| DC door operators with limit switches |
| Three-phase-current (AC) door operators with integrated encoder |
| Three-phase-current (AC) door operators with separate limit switches |
| Customised door operators |
DICTATOR Door Operators - Summary

DICTATOR offers you a standard program of different door operators to automate your doors.

In addition we provide customised designs, for example for very large and heavy doors, for multi-media facilities, door or window installations with little space to house the operators, door operators for complex processing requirements. Amongst our customers for the customised designs are the Corte Inglés (shopping centres in Spain), the Madrid Airport, Hermès (Hermès building in Tokio).

1. Door Operators for Sliding Doors

The DICTATOR door operators DICTAMAT for sliding doors are used in very different applications, however mainly in the industrial and commercial sector. To this belong also sliding doors in the plant engineering and machine construction as well as for cold stores.

The DICTATOR product range provides DICTAMAT door operators for different door sizes and weights, normally with integrated position control. The power transmission is effected mostly either by revolving toothed belt or chain. The choice of the appropriate door operator is influenced by the question whether the complete door system has to meet the requirements of the EN 13241-1 and EN 12453.

For hazardous locations DICTATOR offers explosion-proof three-phase-current door operators. In this case we need the required degree of protection and the information where the control system is installed: inside or outside the hazardous area.

On page 04.015.00 you will find an overview of the operators of the DICTAMAT MultiMove range. On page 04.028.00 are given values for the DICTAMAT 900-21 series with three-phase current motors. But the easiest way would be to let us elaborate the appropriate operating solution for your project - of course free of charge.

2. Door Operators for Hinged Doors

The DICTATOR door operators for hinged doors are as well mainly used in the industrial and commercial sector. Some of the door operators open the doors up to 180°.

DICTATOR offers customised solutions also for hinged doors, e.g. for very large and heavy ones.

<table>
<thead>
<tr>
<th>Operator model</th>
<th>Opening</th>
<th>Closing</th>
<th>Door width</th>
<th>Operator power</th>
<th>Opening angle</th>
<th>Special features</th>
</tr>
</thead>
<tbody>
<tr>
<td>DICTAMAT 310 (page 04.041.00)</td>
<td>x</td>
<td>x</td>
<td>1.50 m</td>
<td>max. 200 Nm</td>
<td>180°</td>
<td>SQUARE 940 control system</td>
</tr>
<tr>
<td>DICTAMAT 310 XXL (page 04.041.00)</td>
<td>x</td>
<td>x</td>
<td>2.50 m</td>
<td>max. 700 Nm</td>
<td>180°</td>
<td>SQUARE 940 control system</td>
</tr>
<tr>
<td>DICTAMAT 204 (page 04.045.00)</td>
<td>x</td>
<td>x</td>
<td>1.40 m</td>
<td>50 Nm</td>
<td>110°</td>
<td>control system integrated, also fire protection</td>
</tr>
<tr>
<td>DICTAMAT 204I (page 04.045.00)</td>
<td>x</td>
<td>x</td>
<td>1.40 m</td>
<td>50 Nm</td>
<td>110°</td>
<td>control system integrated, specially smoke evacuation</td>
</tr>
<tr>
<td>Customized operators: three-phase current up to 0.37 kW DC</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>upon request</td>
</tr>
</tbody>
</table>
DICTATOR Door Operators - Compliance with Standards

The Machinery Directive 2006/42/EG and the related standards extremely affect doors and gates. As soon as a door is equipped with an door operator, it becomes a "machine". It is mandatory that the automated door complies with the Machinery Directive. The "manufacturer" of the machine, i.e. the company who mounts the operator on the door, is obliged to issue a CE declaration of conformity for the "machine door". For this reason it is very important that the used door operators comply with the demands of the Machinery Directive respectively facilitate its compliance.

1. Relevant Standards forAutomatised Doors/Gates

   **Machinery Directive 2006/42/EG**
   Machine "Door"
   Doesn’t apply only if the source of the power is just manpower.
   Realisation by corresponding product standards

   **EN 13241-1**
   Product standard DOORS
   Part 1: Products without fire or smoke characteristics

   **EN ISO 13849-1:2008-12**
   Product standard Safety of Machines - Safety-related parts of control systems
   Part 1: General principles for design

   **EN 12604**
   DOORS
   Mechanical aspects for industrial, commercial gates, garage gates, garden gates of width ≥ 2.5 m, and/or of surface area ≥ 6.25 m²

   **EN 12453**
   DOORS
   Safety for users of doors operated by powered drive units
   Requirements for industrial, commercial doors, garage gates, access gates:
   of width ≥ 2.5 m, and/or of surface area ≥ 6.25 m²

2. Definition of "Door" according to EN 13241-1

The standard EN 13241-1 applies to doors..., which are intended to be used by people in access areas and whose main purpose is to allow for a safe access of goods and vehicles being accompanied or conducted by people in industrial, commercial or living areas.

To the following doors/gates the standard EN 13241-1 does not apply:
- Fire protection doors, doors in emergency exits
- Lift doors
- Doors for pedestrians moved horizontally by hand with a surface area of less than 6.25 m²
- Horizontally motor driven doors with a width of less than 2.5 m and a surface area of less than 6.25 m², intended mainly for pedestrians
- Doors used mainly for animals
- Vehicle doors, textile theatre curtains etc.
3. Main Safety Requirements to Motor Operated Doors

a) Preventing the danger (of squeezing, shearing, feeding and collision) by the automated door.

b) Stopping the door within the following distances:
   - Door opened 500 mm at the most slowing-down path ≤ 50 mm
   - Door opened more than 500 mm slowing-down path ≤ 100 mm

c) Limitation of force
The force developing when the door hits a person, has to be reduced within a certain time to a not dangerous dimension (see force diagram).

Key:
- **Fd**: Maximum dynamic force during a period of 0.75 seconds after collision (time = Td); for values see diagram
- **Fs**: Static force 0.75 seconds after collision: max. 150 N
- **Td**: max. 0.75 sec.
  Time during which the measured dynamic force may surpass 150 N.
- **Tt**: max. 5 sec.
  Time after which the measured force may be max. 25 N.

Maximum dynamic force (**Fd**) allowed between both closing edges:
- Opening width 50 - 500 mm: 400 N
- Opening width > 500 mm: 1400 N

d) Single error safety/Redundancy
In case an error occurs in one of the elements of the installation which could cause a dangerous situation, the control system has to recognise this and to shut down the complete system. The fault has to be remedied before the door may be power operated again.
4. Approaches

a) Preventing squeezing, shearing, feeding or collision

Depending on the chosen/allowed mode of operation different minimum protections of the door are necessary.

Possible operation modes:

- **Dead man operation**
  Handling only by instructed persons.
  When moving the door it has to be possible to oversee the complete area.

- **Impulse/Automatic operation**

  **Alternative 1:**
  a) Safeguarding by safety distances at the secondary closing edges.
  b) Protection of the main closing edge (obligatory) and of those secondary closing edges where safety distances cannot be observed by restricting forces (see 3/b).
  c) Safety installation according to EN 954-1 respectively the subsequent standard EN 13849-1.
  d) Additional safety devices in certain dangerous areas.

  **Alternative 2:**
  Use of safety devices preventing anybody to get in the range of the moving door.

<table>
<thead>
<tr>
<th>Door operation mode</th>
<th>Domestic sector only instructed users</th>
<th>Public sector only instructed users</th>
<th>Public sector no restriction of users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dead man operation (only allowed when door can be seen)</td>
<td>A</td>
<td>B</td>
<td>not allowed</td>
</tr>
<tr>
<td>Impulse operation with sight of the door</td>
<td>C or E</td>
<td>C or E</td>
<td>C + D or E</td>
</tr>
<tr>
<td>Impulse operation without sight of the door</td>
<td>C or E</td>
<td>C + D or E</td>
<td>C + D or E</td>
</tr>
<tr>
<td>Automatic operation</td>
<td>C + D or E</td>
<td>C + D or E</td>
<td>C + D or E</td>
</tr>
</tbody>
</table>

**Key:**
A: not holding button
B: not holding key switch
C: Safety device according to EN 954-1, category 2, 3 or 4
D: Safety device (no special requirements)
E: Safety device preventing anybody to get in the range of the moving door (e.g. a light curtain in a sufficient distance to the door)
Door Operators
Compliance with Standards

DICTATOR Door Operators - Compliance with Standards, cont.

According to the Machinery Directive door and operator together form the "machine door". This means that for the whole installation a declaration of conformity has to be handed in. For all doors produced after May 1st, 2005 the manufacturer has to provide the CE sign. In case a door is automated, a CE declaration of conformity has to be handed in also for the whole installation. Depending on whether there exists already an initial test for this unity or whether it has been upgraded, after automating the door there have to be effected several additional tests on site.

4. Approaches - cont.

b) Restriction of the slowing-down path and the maximum force (see point 3/b and 3/c)

DICTATOR door operators according to EN 12453 are designed in a way to stop the doors also without current within the required distances of 100 or 50 mm.

The new DICTAMAT MultiMove operators assure this by using the - in this scope of application - completely novel capacitor technique. Even in case of a power cut the operators are absolutely smooth-running.

Other operating systems usually have to use an electromagnetic clutch or a mechanical cranking device to allow moving the door manually during a power failure.

c) Single error safety / Redundancy

The self-supervision of the control system guarantees that the failure of a component will not result in a dangerous situation. If the control system identifies a mistake, it automatically shuts itself down. Further automatic handling of the gate is not possible. Likewise the safety installations have to be largely self-supervising.

5. Conformity of the Whole Door System

According to the Machinery Directive has to be issued a declaration of conformity for the automatised door confirming that the whole system complies with the relevant standards. Mainly, there exist three different situations:

a) In the simplest case the door (produced after May 1st, 2005) has already been type-tested together with the drive unit. Here issuing a declaration of conformity will be relatively easy.

b) In case the DICTATOR door operator is retrofit to a door for which together with the door operator exists no type-test, there are two possibilities:

- If for the door itself already exists a conformity declaration (door complies with EN 13241-1 and EN 12604), the complete installation has to be tested thoroughly according to EN 12445. These tests also include the door where has to be verified especially if it will withstand the higher strain of automation. Having passed all tests successfully the declaration of conformity will be issued.

- In case of a door having been installed before May 1st, 2005 and not having a CE label firstly you have to verify if the gate meets the requirements of the standards EN 13241-1 and EN 12604. This should normally be executed by door experts. Following this the tests as described above have to be passed.

A door where only an already existing door operator is exchanged will be subject to preservation of the status quo. A declaration of conformity has not to be issued.

IMPORTANT: All relevant documents concerning the conformity have to be kept for ten years (where the declaration of conformity has been issued). The operating company has to be instructed thoroughly in using the "machine door". Regular maintenance of the complete door system is stipulated by law.
The EC Machinery Directive 2006/42/EC
Its Consequences - Questions and Answers

Often the importance of the Machinery Directive is still underestimated!

DICTATOR elaborates together with you not only the appropriate operating system for your door but also accompanies you on the way from the incomplete machine to the complete one. Already when choosing the door operator we attach special importance to providing the basis for an installation in accordance with the Directives by selecting the appropriate door operator and adapting it to the door.

Applying the Machinery Directive? Why?

- The Machinery Directive has legal force.
- Market surveillance controls more and more often if the directive is observed.
- Not observing the directives can have consequences, e.g.:
  - Prohibition of sale of the product line.
  - Complaints of users/customers.
  - Cost-intensive subsequent improvements.
  - Violation of safety and health demands.
  - Criminal penalties in case of personal injuries.

Manufacturer in Terms of the Machinery Directive

Manufacturer is who:

- produces machines for his own use.
- Assembles machines or parts of machines
  (e.g. the door manufacturer or the company who upgrades a door with an operator => door + operator + control system = machine door).
- Imports machines.
- Essentially modifies machines by adding components or retrofitting them.

Meaning of the Machinery Directive to Manufacturers of Automated Sliding Doors

Which meaning has the Machinery Directive to manufacturers of automated sliding doors?

- In terms of the directive a sliding door with a door operator is a machine.
- The door operator and control system on their own are an incomplete machine.
- The manufacturer of a machine is responsible for the conformity to the directives.
- Therefore, these manufacturers are obliged to observe regulated conditions during setting up.

Concrete demands to the manufacturer

- The demands of Annex I of the Machinery Directive have to be met (risk evaluation).
- Technical documents (Annex VII) have to be made available.
- Operating instruction has to be provided.
- Conformity evaluation procedure according to article 12 has to be carried out.
- An EC declaration of conformity according to Annex II has to be issued and enclosed with the "machine door".
- The installation has to be labelled with the CE marking according to article 16.
The EC Machinery Directive 2006/42/EC

DICTAMAT MultiMove: the Problem Solver

The new DICTAMAT MultiMove operating system assists the DICTATOR customers even more than other systems in meeting the demands of the Machinery Directive. Thanks to the following points the basis for an installation conform to the directives is provided already well in advance of the mounting and thus creating the "machine door".

Effective Structure for an Easy Risk Analysis

The manufacturer of a machine is obliged to operate a risk analysis to achieve the aims of the Machinery Directive.

That is exactly where the intelligent and effective structure of the DICTAMAT MultiMove comes in useful.

During analysing the risks of our components we always considered the "machine door", too. It was the crucial factor for designing and the cooperation of the single components. This is a big advantage for the manufacturer of a machine door as the DICTAMAT MultiMove operating system allows to exclude from the very beginning certain potential sources of injury and health risks. Of course, this is only possible when the system is used for the intended purpose and the operating instructions are observed.

Optimised Technical Documentation

According to the Machinery Directive an incomplete machine requires "only" a mounting instruction. A complete machine, however, requires a complete operation manual. With regard to a simplified communication between "manufacturer of the incomplete machine" and "manufacturer of the complete machine" DICTATOR offers for the DICTAMAT MultiMove system a complete operation manual. This manual not only directs the assembling without interfering with safety and health but als represents an essential part of the technical documentation of the complete machine.

Conformity

The manufacturer of a machine is obliged to subject the complete machine to a conformity evaluation procedure.

The DICTAMAT MultiMove easily allows to meet this demand. Because relevant standards – as e.g. the EN 12453 – have been the signposts already during development. The "incomplete machine operator" meets these harmonized standards which significantly contributes to achieving the "conformity of the machine door".

Individual Adjusting of the Operating and Controlling Unit

Besides these basic advantages the DICTAMAT MultiMove operating system offers another important advantage with regard to safety and the conformity to standards:
Each operator and each control system have individually been configured according to your requirements. This represents to the manufacturer of the "complete machine door" not only significant time-savings during setting up, but also maximum safety and thus an important basis for meeting the Machinery Directive.
The new operating system DICTAMAT MultiMove revolutionizes the door industry. It newly defines user-friendliness and conformity to standards!
- The modular structure offers **extremely high flexibility** and adaptability to customers’ requirements.
- The door can be moved manually also during a power failure due to the **absolutely smooth-running gearbox**, no need for an expensive electromagnetic clutch.
- For more safety: **integrated recognition of obstacles with power interruption** also with AC motors.
- **Complies with the demands of the Machinery Directive 2006/42/EG.**

The Machinery Directive imposes a very high responsibility on the "manufacturer of the machine door" i.e. the company who installs an operator on a door. The drive system DICTAMAT MultiMove is adjusted already in factory to the respective data of the door. This way the requested stopping distances etc. are met without needing time consuming adjusting on site. This also considerably reduces the laborious approval tests to get the declaration of conformity.

**System Components**

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gearbox</strong></td>
<td>worm gear with best smooth-running qualities, divers, multi-stage gear ratios possible</td>
</tr>
<tr>
<td><strong>Motors</strong></td>
<td>very different motors, DC as well as AC</td>
</tr>
<tr>
<td><strong>Power transmission</strong></td>
<td>toothed belt, chain, rack, operating arms for hinged doors/gates etc.</td>
</tr>
<tr>
<td><strong>Other components</strong></td>
<td>encoder, dampers for fire protection, hold-open, fixing and mounting accessories etc.</td>
</tr>
<tr>
<td><strong>Control system</strong></td>
<td>modular structure with logic unit as basic module, other modules for different motors, fire protection, emergency power supply, special functions etc.</td>
</tr>
</tbody>
</table>
DICTAMAT MultiMove
Modular Drive System

DICTAMAT MultiMove
Flexible, Customer-Oriented, Powerful

Decennies of experience with drive technology and in particular with solving special customer requirements influenced the development of the new drive concept DICTAMAT MultiMove. The aim was to offer our customers a drive system which leaves nothing to be desired:

This includes also that the drive concept DICTAMAT MultiMove meets the partly extremely high demands of the Machinery Directive 2006/42/EG. This facilitates our customers who by mounting a door operator on a door turn it into a "machine", a setting up with the prescribed tests with the least possible effort.

What Moves MultiMove?

The heart of the DICTAMAT MultiMove door operators is the gearbox. It is extremely smooth-running. And nevertheless meets the demands of the EN 12453 regarding the very short stopping distances in case of a power cut, thanks to the - in this scope of application - novel capacitor principle.

This means for the user: without current doors and gates can easily be moved, without needing an expensive additional electromagnetic clutch or having to manually uncouple the door and later to couple it back again.

The gearbox concept allows thanks to its inner modular structure very different, also multi-stage transmissions, all using the same casing. Therefore, an optimum solution for the most different requirements can always be designed – and with standard components! The decisive advantage: Often it is possible to use a less strong motor which consumes less energy because the modular gearbox makes the optimum use of the motor power.

Furthermore, the gearbox can be combined with any type of motor: DC, AC, everything is possible.

Same as the optimised capability the safety of the door user, the protection of man and material, is of highest priority to the DICTAMAT MultiMove system:

- A very easy setting up with automatised teach-in run nearly eliminates any errors during setting-up and adjusting.
- Intelligent detection of obstacles with power interruption for AC and DC door operators.
- Short stopping distances complying with the standards.

The position control is usually realized by an encoder with very high resolution which allows the exact positioning of the door even with long travels.

The power can be transmitted either by toothed belt, chain, rack or in case of hinged doors e.g. an operating arm etc.

All operators of the DICTAMAT MultiMove series are controlled by an also modular structured control system which can be adapted in an optimum way to the respective application.

The control system is based on an uniform logic unit which is suitable for all operators. All the other criteria as DC or AC motor, fire protection, emergency power supply, special functions are realized by additional modules which can freely be combined with the basic module. Each control system is configured in production for the respective door operator so that the "machine door" meets the demands of the Machinery Directive already to a large extent and when setting up the installation only little adjusting work is left. Therefore, adjusting doesn’t take a lot of time and the costs for mounting and setting up are drastically reduced.

Furthermore, this control system offers the possibility to later upgrade the performance and function - without having to replace the complete control system.

The new DICTAMAT MultiMove drive concept offers optimum solutions for very differing applications, assures a simple, uncomplicated mounting and setting up and for many years an operation without problems and disturbances.
DICTAMAT MultiMove - One Gearbox for All

The gearbox constitutes the heart of the DICTAMAT MultiMove drive system. It features extremely smooth-running qualities, i.e. in case of a power cut the doors/gates can manually be moved without having to uncouple the door operator. This also represents the indispensable condition for using this system on fire doors. According to the directives effective in Germany, in case of alarm these doors have to be closed mechanically.

DICTAMAT MultiMove Gearbox

The DICTAMAT MultiMove gearbox is designed as a worm gear transmission with the possibility of multiple ratio. It consists of a casing from cast aluminium which can contain different reduction stages. Beside its flexibility the smooth-running properties are its main feature. This also produces a very high degree of efficiency, i.e. the gearbox transmits the motor force without significant losses. Therefore already low motor power will produce high driving forces.

Technical Data

<table>
<thead>
<tr>
<th>Type of gearbox</th>
<th>worm gear transmission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gear ratio &quot;i&quot;</td>
<td>20, 27, other transmissions possible on request</td>
</tr>
<tr>
<td>Ease of running</td>
<td>example: door weight 800 kg</td>
</tr>
<tr>
<td></td>
<td>force for moving with operator gearbox i = 20: 80 N</td>
</tr>
<tr>
<td>Material casing</td>
<td>cast aluminium</td>
</tr>
<tr>
<td>Possible motors</td>
<td>DC, AC</td>
</tr>
<tr>
<td>Fire protection</td>
<td>during mechanical closing adjustable and controlled closing speed by mounted radial damper LD</td>
</tr>
<tr>
<td>Brake</td>
<td>electromagnetic brake, easy-running without current; in case of power cut short-term power supply by capacitor package</td>
</tr>
<tr>
<td>Other modules</td>
<td>driving wheel for toothed belt, chain, rack etc.; encoder for position control, hold-open system and speed regulator for fire protection</td>
</tr>
</tbody>
</table>
DICTAMAT MultiMove - The System

The modular drive system DICTAMAT MultiMove is made up of the respective door or gate operator and the corresponding control system. Therefore, for an easier identification, the door operators and control systems of the system were assigned a part of the system name:

- Door operator DICTAMAT Move
- Control system Multi Control

Structure of the Name of the DICTAMAT Move Door Operators

Basically there exist four different versions of the door operators:

- **DICTAMAT Move**: Operators which provide a motor-driven opening and closing of the door/window (bidirectional door operators).
- **DICTAMAT Move F**: Operators which only open the door/window. Closing is effected by e.g. a counterweight or a spring. In particular in Germany this is prescribed for fire doors. Therefore an "F" (fire protection) is added to the name of this execution.
  
  Note: If the respective country allows closing by emergency power, it is also possible to use bidirectional door operators on fire doors/gates.
- **DICTAMAT Move H**: Door operators for rotary motions (hinged doors, hinged gates, hinged windows etc.)
- **DICTAMAT Move C**: all customized special solutions.

Other details of the name structure:

<table>
<thead>
<tr>
<th>Voltage</th>
<th>AC or DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical power</td>
<td>e.g. 90 W, 0.37 kW</td>
</tr>
<tr>
<td>Power transmission</td>
<td>e.g. toothed belt (Z), chain (K), etc.</td>
</tr>
<tr>
<td>Dimensioning of the gearbox</td>
<td>With the same motor can be choosen either the model with higher speed (V+) or higher power (P+).</td>
</tr>
<tr>
<td>Example</td>
<td>DICTAMAT Move DC 90 Z V+</td>
</tr>
</tbody>
</table>

  Bidirectional door operator with direct current motor (DC) with 90 W, power transmission by toothed belt (Z), max. 0.37 m/s (V+), power on the belt max. 400 N (see next page)

Structure of the Name of the Control Systems Multi Control

The control systems of the DICTAMAT MultiMove system have a modular structure. Basically there are three different versions (independent of the used motor and whether it is a bidirectional or fire protection model):

- **Multi Control Economy**: Model with basic functions
- **Multi Control Comfort**: Model with comfort functions
- **Multi Control Custom**: Model with customized functions that have to be determined in every individual case

Other details of the name structure:

<table>
<thead>
<tr>
<th>Addition for special functions</th>
<th>F (fire protection), N (emergency power)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>AC or DC</td>
</tr>
<tr>
<td>Example</td>
<td>Multi Control Comfort N DC</td>
</tr>
</tbody>
</table>

Comfortable control system for DC motor, with emergency power function including battery pack.
DICTAMAT Move - Summary
Operators for Sliding Motions, Bidirectional

On the following pages you will find the Standard models of the DICTAMAT Move door operators for bidirectional sliding motions. By default they use a revolving toothed belt for power transmission. However, it is also possible to use a chain etc.

The values given in the following table are just for orientation. To meet the demands of the Machinery Directive you should always take advantage of our advisory service and get a detailed offer of the appropriate solution for your application.

Technical Data

<table>
<thead>
<tr>
<th>Name of DICTAMAT Move</th>
<th>DC 90 Z V+</th>
<th>DC 90 Z P+</th>
<th>DC 200 Z P+</th>
<th>AC 0.18 Z V+</th>
<th>AC 0.18 Z P+</th>
<th>AC 0.37 Z P+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor / Gear ratio / Driving wheel</td>
<td>motor DC 90 W, i = 20, Z28</td>
<td>motor DC 90 W, i = 27, Z28</td>
<td>motor DC 200 W, i = 27, Z28</td>
<td>motor AC 0.18 kW, i = 20, Z28</td>
<td>motor AC 0.18 kW, i = 27, Z28</td>
<td>motor AC 0.37 kW, i = 27, Z36</td>
</tr>
<tr>
<td>Nominal revolutions/min</td>
<td>1987</td>
<td>1987</td>
<td>2083</td>
<td>1350</td>
<td>1350</td>
<td>1390</td>
</tr>
<tr>
<td>(Starting and) / nominal current A</td>
<td>4.72</td>
<td>4.72</td>
<td>11.05</td>
<td>1/0.6</td>
<td>1/0.6</td>
<td>1.8/1.0</td>
</tr>
<tr>
<td>Turning moment on the output shaft Nm</td>
<td>8.8</td>
<td>11.9</td>
<td>24.8</td>
<td>25.2</td>
<td>34.0</td>
<td>69.0</td>
</tr>
<tr>
<td>Power rating W</td>
<td>92</td>
<td>92</td>
<td>200</td>
<td>180</td>
<td>180</td>
<td>370</td>
</tr>
<tr>
<td>Max. starting power on the belt N</td>
<td>400</td>
<td>600</td>
<td>1000</td>
<td>800</td>
<td>1000</td>
<td>1400</td>
</tr>
<tr>
<td>Rated speed m/sec</td>
<td>0.37</td>
<td>0.27</td>
<td>0.29</td>
<td>0.25</td>
<td>0.19</td>
<td>0.27</td>
</tr>
</tbody>
</table>

Components

1. Door operator with U-bracket (standard)
2. Idler pulley with U-bracket (standard)
3. Belt fixing device (standard)
4. Wall bracket for door operator (optional)
5. Wall bracket (optional)
6. Toothed belt (to be ordered separately in the required length and size)
7. Supporting roller with U-bracket (optional)
8. Belt fixing device for second door leaf (optional)

Components Included

DICTAMAT Move Z bidirectional

- Motor with gearbox and mounting U-bracket, 2 m of connection cable to control system, driving wheel for toothed belt of 20 or 30 mm width, protective guard
- Idler pulley for toothed belt with integrated tensioning device and U-bracket
- Belt fixing device with clamping plate for toothed belt
**DICTAMAT Move**

**Dimensions of DICTAMAT Move DC Z (bidirectional)**

In the following you will find the dimensions of the standard DC models (bidirectional) for toothed belt. By default, the driving wheel is designed for toothed belt of 20 or 30 mm width. Which toothed belt to choose depends on the dimensions of the door, the speed and the working load.

The dimensions of the accessories included in the delivery can be found on page 04.018.00, those of the optional accessories beginning on page 04.019.00.

---

**DICTAMAT Move DC Z**

**Dimensions**

**DICTAMAT Move DC 90 Z**

- part no. 740000 or
- part no. 740005

**Dimensions**

**DICTAMAT Move DC 200 Z**

- part no. 740010
DICTAMAT Move
Dimensions of DICTAMAT Move AC Z (bidirectional)

In the following you will find the dimensions of the standard AC models (bidirectional) for toothed belt. By default, the driving wheel is designed for toothed belt of 20 or 30 mm width. Which toothed belt to choose depends on the dimensions of the door, the speed and the working load.

The dimensions of the accessories included in the delivery can be found on page 04.018.00, those of the optional accessories beginning on page 04.019.00.

DICTAMAT Move AC Z

Dimensions
DICTAMAT Move AC 0.18 Z

Dimensions
DICTAMAT Move AC 0.37 Z
**DICTAMAT Move**

Dimensions of Standard Accessories

By default, the door operator DICTAMAT Move includes an idler pulley and a belt fixing device for toothed belt.

Of the idler pulley exist two versions:
- for DICTAMAT Move DC Z and DICTAMAT Move AC 0.18 Z
- for DICTAMAT Move AC 0.37 Z

---

**Dimensions**

**Idler Pulley with Tensioning Device for Toothed Belt**

Idler pulley Ø 64 for DICTAMAT Move DC Z and DICTAMAT Move AC 0.18 Z
part no. 790600*

Idler pulley Ø 100 for DICTAMAT Move AC 0.37 Z
part no. 790601*

---

**Dimensions**

**Belt Fixing Device**

part no. 790620*

*The part numbers are given only in case spare parts are needed. Idler pulley and belt fixing device are included in the delivery of a door operator and have not to be ordered separately!
DICTAMAT Move
Dimensions of Optional Accessories

For reasons of stability door operators for heavy doors are usually fixed to the wall. For this purpose special wall brackets are available which are designed especially to match the U-brackets of the operators and to withstand the high forces in case the brake springs into action.

The wall must be sturdy enough to absorb the pull and shear forces. Furthermore special dowels for dynamic loads have to be used.

Wall Bracket DC and AC 0.18 kW

Wall Bracket 0.37 kW

Range of application of wall bracket DC and AC 0.18 kW:
- DICTAMAT Move DC door operator and DICTAMAT Move AC 0.18 door operator
- Idler pulley with tensioning device for DICTAMAT Move DC and AC 0.18
- Idler pulley with tensioning device for DICTAMAT Move AC 0.37 Z
- Supporting roller for DICTAMAT Move Z

Range of application of wall bracket 0.37 kW:
- DICTAMAT Move AC 0.37 kW
The supporting roller as well as the belt fixing device for the second door leaf are the same for all DICTAMAT Move Z door operators. Supporting rollers prevent the sagging of the toothed belt. They have to be used whenever the toothed belt would run unsupported for more than four meters. The rollers are generally furnished together with an U-bracket. An additional wall bracket is available (see previous page).

In case of double-door doors an additional belt fixing device is required. To this device is always fixed the upper part of the belt.

Supporting Roller for 20/30 mm Toothed Belt

Belt Fixing Device for Second Leaf with Double-Leaf Doors (20/30 mm Toothed Belt)
With the DICTAMAT Move door operators, by default, the power is transmitted by toothed belt. Depending on the size, weight and speed of the door is used a toothed belt of 20 or 30 mm width. With customized models the power can also be transmitted e.g. by chain. Usually then a chain 1/2 x 3/16" is used.

**Toothed Belt**

<table>
<thead>
<tr>
<th>Type</th>
<th>Toothed belt</th>
<th>HTD 8M</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>8 mm</td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>5.6 mm</td>
<td></td>
</tr>
<tr>
<td>H₁</td>
<td>3.4 mm</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Material</th>
<th>PU (Polyurethan)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile material</td>
<td>steel cord</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-30° to +80 °C</td>
</tr>
<tr>
<td>Resistant against</td>
<td>UV, ozone, oil und grease</td>
</tr>
<tr>
<td>Tension load</td>
<td>- HTD 8M toothed belt, 20 mm wide 2680 N part no. 710490</td>
</tr>
<tr>
<td></td>
<td>- HTD 8M toothed belt, 30 mm wide 4030 N part no. 710491</td>
</tr>
</tbody>
</table>
DICTAMAT MultiMove
Modular Drive System

DICTAMAT MultiMove - Multi Control Control System

The control system of the DICTAMAT MultiMove drive system is composed of modules - same as the operators. The basic module is a logic unit with uniform hardware for all operators (including fire protection). This logic unit is upgraded by modules corresponding to the application, the used motor, the desired functions etc.

Always with the same operation and unchanging dimensions of the casing the control system offers the user an extremely wide range of functions. Usually there can be realized later modifications even without having to replace the control system.

Multi Control Control Systems

When developing the control system Multi Control of the DICTAMAT MultiMove drive system we payed highest attention to reduce the mounting and programming work on site as much as possible and to considerably facilitate meeting the demands of the Machinery Directive.

The control systems are, as far as possible, adapted to the respective applications already in production. Furthermore, the control system nearly automatically "learns" the final positions, the required stopping distances etc. during the programmed teach-in run on site. If at all, only some small adjustments will be needed.

The Multi Control control system meets the high safety demands of the EN 13241 part 1 and subordinated ones like the EN 12453. One of them being that the door stops after an extremely short distance when recognising an obstacle. In case of a power cut when the door is moving the short-term power supply of the electromagnetic brake is backed up by supervised capacitors. As an additional safety feature all DICTAMAT MultiMove control systems are equipped with an integrated load breaking which functions as well with DC as with AC operators.

Summary of Performance

<table>
<thead>
<tr>
<th>Motors that can be connected</th>
<th>230/400 VAC (three-phase) up to 0.37 kW or 24 VDC up to 240 W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position control</td>
<td>encoder (accuracy of positioning about 1 mm)</td>
</tr>
<tr>
<td>Motor control</td>
<td>integrated frequency converter for 230/400 VAC-motors or DC controller</td>
</tr>
<tr>
<td>Password protection</td>
<td>for security relevant adjustments</td>
</tr>
<tr>
<td>Operation modes</td>
<td>dead man, impulsion, automatic operation can be chosen, emergency service with defect safety installation. Fire protection with mechanical closing or with emergency power supply</td>
</tr>
<tr>
<td>Inputs</td>
<td>10 inputs, configuration depending on control system</td>
</tr>
<tr>
<td>Outputs</td>
<td>10 outputs 24 V, configuration depending on controller</td>
</tr>
<tr>
<td>Standards</td>
<td>mainly EN 13241-1, EN 12453, EN 13849-1</td>
</tr>
</tbody>
</table>

Technical Data

<table>
<thead>
<tr>
<th>Rated voltage</th>
<th>230 VAC, 50 - 60 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power consumption</td>
<td>max. 10 A</td>
</tr>
<tr>
<td>Output voltage secondary</td>
<td>24 VDC</td>
</tr>
<tr>
<td>Total load secondary</td>
<td>max. 1 A per output, total max. 2 A</td>
</tr>
<tr>
<td>Rating emergency power</td>
<td>24 V, 7 Ah</td>
</tr>
<tr>
<td>Output voltage motor</td>
<td>230/400 VAC (three-phase) or 24 VDC</td>
</tr>
<tr>
<td>Motor rating</td>
<td>max. 0.37 kW AC / 240 W DC</td>
</tr>
<tr>
<td>IP rating</td>
<td>IP 54</td>
</tr>
<tr>
<td>Dimensions</td>
<td>607 x 133.5 x 190 mm (w x h x d)</td>
</tr>
<tr>
<td>Recommended fuse protection</td>
<td>B16 A</td>
</tr>
</tbody>
</table>
**Multi Control Control System - Dimensions, Structure**

The DICTAMAT Multi Control control system has a modular structure. Depending on the door operator and the desired functions the corresponding modules are combined and programmed.

The casing of the control system is the same for all versions.

### Dimensions

**Multi Control Control System**

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casing</td>
<td>powder-coated steel</td>
</tr>
<tr>
<td>Display</td>
<td>display with programming and adjusting keys</td>
</tr>
<tr>
<td>Logic unit</td>
<td>basic module with uniform programming for all door operators</td>
</tr>
<tr>
<td>Connection board</td>
<td>predetermined configuration of clamps with ECONOMY and COMFORT versions, configuration according to customer’s specification with CUSTOM version</td>
</tr>
<tr>
<td>Power element</td>
<td>DC or AC, depending on the connected door operator (with an AC version the frequency converter is included)</td>
</tr>
<tr>
<td>Fire protection module</td>
<td>version for motor-driven opening and mechanical closing</td>
</tr>
<tr>
<td>Emergency power module</td>
<td>battery pack with loading unit and surveillance of the state of charge</td>
</tr>
</tbody>
</table>

### Structure

**Multi Control Control System**

![Diagram of Multi Control Control System](image)
DICTAMAT Multi Move
Modular Drive System

DICTAMAT Multi Control Control System - Functions

Basically there exist three different versions of the Multi Control control system, each with a different range of functions - see below.

However, it is possible to upgrade the control functions, also subsequently when the control system is already mounted! You can input the corresponding module simply by using a laptop.

This way the Multi Control control system offers the highest possible flexibility and can easily be adapted to changed requirements.

Features

Multi Control

All versions of the Multi Control control system offer the following features:

- Teach-in run: "Intelligent", software assisted learning of the door parameters.
- Dynamical run: The teach-in run is followed by an automated dynamical run. Here the driving system determines during the complete run the running characteristics of the door. These values are the basis on which the control system calculates the necessary values for the acceleration and deceleration of the door taking into account its smooth/rough operation.
- Intelligent recognition of obstacles: Based on the values determined during the dynamical run, the control system is able to promptly detect any change of the performance of the door due to an obstacle. In this case the control system triggers an immediate Emergency-STOP followed by a reversion of the door movement.
- Extensive diagnostic function: Information retrieval and indication of all operating states and of errors/error indications by a double-spaced full text display.
- USB interface: Possibility to connect a computer for changing parameters of the control system on site.
- EN ISO 13849-1: Multi Control has been designed to use safety systems corresponding to the newest directives.

Functions of the Different Versions

Multi Control ECONOMY

- Dead-man operation
- Used inputs: Open, Close, Emergency-STOP
- Used outputs: none

Multi Control COMFORT

- Impulse operation, automatic closing
- Used inputs: Open, Stop, Close, Emergency-STOP, safety device in opening direction, safety device in closing direction, partial opening for people
- Used outputs: signal final Open position, signal final Closed position, motion warning with optional lead time, signal Emergency-STOP actuated, signal error

Multi Control COMFORT emergency power supply

Same as Multi Control Comfort, however, additionally used output: signal battery low

Multi Control CUSTOM

Completely customized programming and using of the inputs and outputs
DICTAMAT MultiMove
Modular Drive System

DICTAMAT MultiMove
Order Information

Below you will find an overview of the part numbers of the bidirectional door operators and control systems of the DICTAMAT MultiMove drive system.

In case you need a concrete offer, please contact our technical service. We gladly will provide advice and elaborate a free of charge, detailed offer which takes into consideration your specific requirements and all relevant safety aspects.

Order Information
DICTAMAT MultiMove - bidirectional

<table>
<thead>
<tr>
<th>Version of the door operator</th>
<th>Appropriate Multi Control control system</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Part no.</td>
</tr>
<tr>
<td>DICTAMAT Move DC 90 Z V+</td>
<td>740000</td>
</tr>
<tr>
<td>DICTAMAT Move DC 90 Z P+</td>
<td>740005</td>
</tr>
<tr>
<td>DICTAMAT Move DC 200 Z P+</td>
<td>740010</td>
</tr>
<tr>
<td>DICTAMAT Move AC 0.18 Z V+</td>
<td>740050</td>
</tr>
<tr>
<td>DICTAMAT Move AC 0.18 Z P+</td>
<td>740055</td>
</tr>
<tr>
<td>DICTAMAT Move AC 0.37 Z P+</td>
<td>740060</td>
</tr>
</tbody>
</table>

For all DICTAMAT Move door operators also the Multi Control Custom control system is available. Its configuration is customized and adapted to your requirements.

General information on the DICTAMAT Move operators: beginning on page 04.015.00
Information on the Multi Control control systems: beginning on page 04.022.00

Standard Components
Included
DICTAMAT Move Z - bidirectional

- Motor with gearbox and mounting U-bracket, 2 m of connection cable to the control system, driving wheel for 20 or 30 mm toothed belt, protective guard
- Idler pulley for toothed belt with integrated tensioning device and U-bracket
- Belt fixing device with clamp plates for toothed belt

Order Information
DICTAMAT MultiMove - Accessories

- Wall bracket for DICTAMAT Move DC and AC 0.18 KW and for idler pulleys and supporting roller part no. 790400
- Wall bracket for DICTAMAT Move AC 0.37 KW part no. 790401
- Supporting roller for 20 and 30 mm toothed belt part no. 790410
- Belt fixing device for toothed belt for second door leaf part no. 790420
- Toothed belt HTD 8M, 20 mm wide (per meter) part no. 710490
- Toothed belt HTD 8M, 30 mm wide (per meter) part no. 710491

For information on safety and operating equipment see separate pages.
AC-21 Sliding Door Operators
DICTAMAT 900-21

The DICTATOR DICTAMAT 900-21 door operator series in combination with the SQUARE 940 control system complies with the demands of the EN 12453 for the "Safety in use of power operated doors".

All door operators are equipped with a mechanical brake that assures the stop of the door within the required distance even without current. An integrated thermal cutout protects the operator from too high loads.

The position control is done either with separate limit switches or an encoder, integrated in the motor, that permits a very precise positioning.

Due to the mechanical brake the motor is blocked without current. If the door has to be moved by hand in case of a power failure an additional mechanical cranking device can be supplied.

DICTATOR gladly will offer you a solution taking into account the requirements of your individual application. Please ask for a detailed offer and if necessary, CAD-drawings.

Selection Criteria

- For doors up to 10 m (standard)
- Pulling forces from 370 N to 2200 N
- For doors up to max. 4000 kg
- For up to 300 cycles per day (depending on the weight of the door and the speed)
- Position control: integrated encoder or separate limit switches
- Motor blocked without current
- Control system: SQUARE 940
- Complies with the demands of EN 12453
**AC-21 Sliding Door Operators**

**DICTAMAT 900-21**

---

**Summary**

The new AC-21 series is a consequent application of the modular system already used with the DC-21 series. The AC-21 series offers the possibility of powered operation also of extremely large and/or heavy doors according to the requirements of the EN 12453. The modular system permits individual, customised solutions for every door. All door operators are based on similar modules and are operated with the same control system.

The values in the table below are just for orientation and a preselection. They may differ considerably depending on the type and design of the door, additional standards and legal requirements valid for the respective site. Please ask for our technical support and our customised offer.

---

**Technical Data**

<table>
<thead>
<tr>
<th>Type / Motor Rating</th>
<th>0.18 kW</th>
<th>0.18 kW</th>
<th>0.37 kW</th>
<th>0.55 kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Force of the motor</td>
<td>370 N</td>
<td>630 N</td>
<td>1200 N</td>
<td>2200 N</td>
</tr>
<tr>
<td>Opening and closing speed</td>
<td>separately adjustable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>max. m/sec.</td>
<td>0.4</td>
<td>0.2</td>
<td>0.2</td>
<td>0.15</td>
</tr>
<tr>
<td>Voltage</td>
<td>230/400 VAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal current of the control system</td>
<td>8 A</td>
<td>8 A</td>
<td>8 A</td>
<td>8 A</td>
</tr>
<tr>
<td>Driving torque (at the axle of the operator)</td>
<td>14 Nm</td>
<td>24 Nm</td>
<td>61 Nm</td>
<td>150 Nm</td>
</tr>
<tr>
<td>Braking moment (mechanical brake)</td>
<td>4 Nm</td>
<td>4 Nm</td>
<td>5 Nm</td>
<td>10 Nm</td>
</tr>
<tr>
<td>Duty cycle</td>
<td></td>
<td></td>
<td>40 % ED</td>
<td></td>
</tr>
<tr>
<td>Weight (without accessories)</td>
<td>10 kg</td>
<td>10 kg</td>
<td>21 kg</td>
<td>40 kg</td>
</tr>
<tr>
<td>Doors up to*</td>
<td>600 kg*</td>
<td>1000 kg*</td>
<td>1500 kg*</td>
<td>4000 kg*</td>
</tr>
<tr>
<td>Travel</td>
<td>6 m</td>
<td>6 m</td>
<td>10 m</td>
<td>10 m</td>
</tr>
</tbody>
</table>

* The given weights are just reference values. The determining point is how easily the door moves.

---

**Options**

- **Position control**
  
The standard operator is designed for separate limit switches. The control system however identifies an additional Open position (partial opening) without an extra limit switch. The control system calculates this position - if adjusted once - from the final positions and the memorised travel.

  The AC-21 door operators are also furnished with an integrated encoder.

- **Mechanical brake**
  
The standard AC-21 operators are equipped with a mechanical brake making sure that even in case of a power failure the door is stopped within the required distances. In case of doors to which the EN 12453 standard does not apply, the door operators can also be furnished without the mechanical brake.

- **Mechanical cranking device** (not possible with the 0.55 kW operators)
  
  All door operators with integrated mechanical brake impede moving the door without current. If the doors have to be moved manually in case of a power failure, the following options are available: additional mechanical cranking device or electromagnetic clutch.

- **Accessories**
  
  Due to the extremely high forces that occur upon the actuation of the mechanical brake extremely sturdy fixing brackets are required. As the door operator therefore normally cannot be fixed to the rail, we supply special brackets for fixing the door operator to the wall.
The AC-21 door operators transmit the power to the door with the help of a revolving toothed belt. They are normally fixed to the wall, as the rails cannot take up the forces resulting from the action of the mechanical brake.

The following picture shows the components of a AC-21 door operator system for sliding doors.

**Components**

**Components Included**

- Door operator: worm gear transmission with a 230/400 VAC three-phase motor and integrated mechanical brake, integrated thermal cutout, 2 m connection cable to the control system, driving wheel for toothed belt
- U-bracket for the door operator*
- Idler pulley for toothed belt with integrated tensioning device and U-bracket*
- Belt fixing device for the door
- Belt fixing device for the door operator*
- Idler pulley with U-bracket*
- Belt fixing device for the idler pulley
- Toothed belt
- Supporting roller with U-bracket
- Additional belt fixing device for second door leaf

* The 0.55 kW series is delivered without U-brackets for door operator and idler pulley.

**Additional Components**

- Integrated encoder
- Mechanical cranking device
- Electromagnetic clutch

**Separate Accessories**

- Toothed belt (type depends on the motor)
- Wall bracket for the door operator
- Wall bracket for the idler pulley
- Supporting roller with U-bracket for the toothed belt
- Wall bracket for the supporting roller
- Additional belt fixing device for sliding doors with two leaves
**DICTAMAT 900-21, 0.18 kW**

The standard components of the DICTAMAT 900-21, 0.18 kW are besides the door operator with U-bracket the idler pulley for toothed belt with integrated tensioning device as well as the belt fixing device. The 0.18 kW door operator uses the HTD 8 toothed belt. The width (either 20 or 30 mm) depends on the weight of the door and the required speed.

The 0.18 kW door operator needs an especially designed idler pulley. The belt fixing device is used both for the 0.18 and 0.37 kW door operator.

Wall brackets for the door operator and the idler pulley are to be found on page 04.033.00.
**DICTAMAT 900-21, 0.37 kW**

The standard components of the DICTAMAT 900-21, 0.37 kW are besides the door operator with U-bracket the idler pulley for toothed belt with integrated tensioning device and U-bracket as well as the belt fixing device.

The 0.37 kW door operator uses the 30 mm wide HTD 8 toothed belt.

The 0.37 kW door operator needs an especially for this type designed idler pulley. The belt fixing device is used both for the 0.18 and 0.37 kW door operator.

Wall brackets for the door operator and the idler pulley are to be found on page 04.033.00.
AC-21 Sliding Door Operators

DICTAMAT 900-21

DICTAMAT 900-21, 0.55 kW

The standard components of the DICTAMAT 900-21, 0.55 kW are besides the door operator the idler pulley for toothed belt with integrated tensioning device as well as the belt fixing device. Due to the extremely high forces acting in case of the mechanical Emergency-Stop fixing brackets have to be designed individually for each application.

The 0.55 kW door operator uses a 55 mm wide toothed belt.
Accessories

In order to assure the necessary stability the DICTAMAT 900-21 door operators are normally fixed to the wall. There are special wall brackets available that are designed especially for the U-brackets delivered with the door drives and that withstand the high forces in case of an Emergency-Stop.

The wall must be sturdy enough to absorb the pull and shear forces. Furthermore special dowels for dynamic loads have to be used.

Wall Bracket 0.18 kW

Wall bracket 0.18 kW
(790400)

Use of the wall bracket 0.18 kW:
- DICTAMAT 900-21, 0.18 kW door operator
- Idler pulley with tensioning device for DICTAMAT 900-21 0.18 kW
- Idler pulley with tensioning device for DICTAMAT 900-21 0.37 kW
- Supporting roller for DICTAMAT 900-21 0.18 and 0.37 kW

Wall Bracket 0.37 kW

Wall bracket 0.37 kW
(790401)

Use of the wall bracket 0.37 kW:
- DICTAMAT 900-21, 0.37 kW door operator
**Accessories - continued**

Some of the accessories can be used both for the 0.18 kW and 0.37 kW series. Among those are the supporting roller for the toothed belt and the additional belt fixing device for doors with two leaves.

The supporting rollers prevent the sagging of the belt. They have to be used whenever the toothed belt would run unsupported for more than four meters. The rollers are generally furnished together with an U-bracket. An additional wall bracket is available (see preceding page).

In case of doors with two leaves an additional belt fixing device is required. It is always the upper part of the belt that is fixed to this device.

**Supporting Roller for 20/30 mm Toothed Belt**

**Belt Fixing Device for Doors with Two Leaves (20/30 mm Toothed Belt)**
Accessories - continued

The power transmission of the AC-21 door operators is done with a toothed belt. There are different types, depending on the size of the door and the forces. The EN 12453 standard requirements result in a rather strong toothed belt for larger doors.

Toothed Belt

Technical Data

<table>
<thead>
<tr>
<th>Type</th>
<th>HTD 8M</th>
<th>HTD 14M</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>H</td>
<td>5.6</td>
<td>10.6</td>
</tr>
<tr>
<td>H₁</td>
<td>3.4</td>
<td>6.1</td>
</tr>
</tbody>
</table>

Material: PU (polyurethane)
Tensile material: steel cord
Operating temperature: -30° to +80 °C
Resistant against: UV, ozone, oil and grease
Tension load:
- HTD 8M toothed belt, 20 mm wide: 2680 N
- HTD 8M toothed belt, 30 mm wide: 4030 N
- HTD 14M toothed belt, 55 mm wide: 10930 N
AC-21 Sliding Door Operators
DICTAMAT 900-21

Order Information

Below are listed the part numbers of the most common door operators. There is a much larger range of door operators available, e.g. with mechanical cranking device etc. Please contact us and ask for an offer for your application.

The components included in the delivery are listed on page 04.029.00. The meaning of the different letters and numbers is explained below.

Information on the SQUARE 940 control system and further components of a powered door installation as push buttons, safety equipment and limit switches are to be found lateron in this chapter.

Order Information
Door Operators

<table>
<thead>
<tr>
<th>Model</th>
<th>Power Range</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DICTAMAT 900-21 ZEB 0.18 - 0.4</td>
<td>part no. 790000</td>
<td></td>
</tr>
<tr>
<td>DICTAMAT 900-21 ZEB 0.18 - 0.2</td>
<td>part no. 790050</td>
<td></td>
</tr>
<tr>
<td>DICTAMAT 900-21 ZEB 0.37 - 0.2</td>
<td>part no. 790200</td>
<td></td>
</tr>
<tr>
<td>DICTAMAT 900-21 ZLB 0.18 - 0.4</td>
<td>part no. 790100</td>
<td></td>
</tr>
<tr>
<td>DICTAMAT 900-21 ZLB 0.18 - 0.2</td>
<td>part no. 790150</td>
<td></td>
</tr>
<tr>
<td>DICTAMAT 900-21 ZLB 0.37 - 0.2</td>
<td>part no. 790250</td>
<td></td>
</tr>
<tr>
<td>DICTAMAT 900-21 ZEB 0.55 - 0.15</td>
<td>part no. 790300</td>
<td></td>
</tr>
<tr>
<td>DICTAMAT 900-21 ZLB 0.55 - 0.15</td>
<td>part no. 790350</td>
<td></td>
</tr>
</tbody>
</table>

Order Information
Accessories

<table>
<thead>
<tr>
<th>Description</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wall bracket 0.18 kW</td>
<td>790400</td>
</tr>
<tr>
<td>Wall bracket 0.37 kW</td>
<td>790401</td>
</tr>
<tr>
<td>Supporting roller for 20/30mm toothed belt</td>
<td>790410</td>
</tr>
<tr>
<td>Belt fixing device for doors with 2 leaves (20/30 mm toothed belt)</td>
<td>790420</td>
</tr>
<tr>
<td>HTD 8M toothed belt, 20 mm wide</td>
<td>710490</td>
</tr>
<tr>
<td>HTD 8M toothed belt, 30 mm wide</td>
<td>710491</td>
</tr>
<tr>
<td>HTD 14M toothed belt, 55 mm wide</td>
<td>710485</td>
</tr>
</tbody>
</table>

Order Information
Control System

<table>
<thead>
<tr>
<th>Model</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQUARE 940 Control system</td>
<td>706094</td>
</tr>
</tbody>
</table>

Information about the control system can be found beginning on page 04.037.00.

Legend:

Z  Power transmission by toothed belt
E  Position control with separate limit switches
L  Position control with integrated encoder
B  Mechanical brake
0.18 - 0.4 Motor 0.18 kW, speed 0.4 m/s
SQUARE 940-2 Control System
with Frequency Converter According to EN 12453

The SQUARE 940-2 control system has been developed for the DICTAMAT AC-21 door operators (sliding door operator DICTAMAT 900-21 and hinged door operator DICTAMAT 310-21). It meets the demands of the EN 12453 concerning the safety of powered doors.

Its main advantages are:

- **Autocontrol**, i.e. it shuts itself down automatically upon detecting an error that might lead to a dangerous situation.
- Direct connection of safety equipment according to the EN 13849-1 without additional evaluation device.
- Different "Stops" of the door adjustable. This protects door and door operator during normal operation from unnecessary wear and tear due to an abrupt Stop. In case of danger the maximum stopping distance according to the EN 12453 is observed.
- Connection possibility for a mechanical braking device.
- The SQUARE 940-2 allows for a position control by an encoder and thus a very exact positioning.
- Graphic display on the casing lid with status and error indication.
- The membrane keys on the lid of the casing serve for operating the door.

Summary

<table>
<thead>
<tr>
<th>Motors to be connected</th>
<th>three phase 230/400 VAC, max. 0.75 kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main features</td>
<td>position control: encoder or separate limit switches</td>
</tr>
<tr>
<td></td>
<td>integrated frequency converter</td>
</tr>
<tr>
<td></td>
<td>password protected access to adjustment facility</td>
</tr>
<tr>
<td></td>
<td>deadman, impulse or automatic operation</td>
</tr>
<tr>
<td></td>
<td>emergency service in case of faulty safety equipment</td>
</tr>
<tr>
<td></td>
<td>5 adjustable relay contacts</td>
</tr>
<tr>
<td></td>
<td>Meets the safety demands of EN 12453.</td>
</tr>
</tbody>
</table>
Dimensions / Installation

The casing of the SQUARE control systems has been designed with as small as possible outer dimensions, in order to fit also into limited space. The interior of the casing, however, offers sufficient space to house - if necessary - additional devices or batteries. The carrier board is provided with threaded holes for standard top hat rails. This saves the expenses for additional casings, their installation and connection.

Dimensions of the Casing

Installation / Electrical Connection of Door Operators

The installation of the control system is very easy, as the electronics are fixed on a board that can be removed completely from the casing. The lid of the casing can also be taken off, as the flat cable connection to the display in the lid just has to be unplugged. The now very light casing can be fixed to the wall, without the danger of damaging the electronics by chance with e.g. a screwdriver.

The control system should be placed not farther than 30 m from the door operator.

Door operator, operating elements and safety equipments are connected to the removable binders. The blocks of binders are coded and therefore cannot be plugged into a wrong position.
**Functions, Programming and Adjusting**

The SQUARE 940-2 control system permits to adjust the DICTATOR DICTAMAT door operator exactly to each door. This is a vital condition for the safety at powered doors. The increased demands concerning the safety of the "machine door" due to the EN 12453 standard require a control and putting into operation by a trained and authorised technician. Therefore all safety relevant parameters are only accessible through a password. The below mentioned functions and parameters only give a general idea as the SQUARE 940-2 offers a much larger range of adjustments/functions.

---

**Programming and Adjusting**

All adjustments are done with the three adjustment keys on the control module.

**Operating Options / Safety Features**

- **Dead Man or Impulse Function** for the keys OPEN and CLOSE (can be choosen separately for both directions, e.g. impulse OPEN, dead man CLOSE)
- **Automatic Closing**: As soon as the position OPEN has been reached the door closes automatically after a preset time (adjustable between 1 - 999 seconds)
- **Alternating Impulse OPEN/CLOSE, also in combination with automatic closing**
- **Partial Opening**: The door opens only partially after pressing a separate push button (additional Open position for persons) (separately adjustable hold-open-time for this position)
- **STOP (Normal Stop when opening, Fast Stop when closing)**
- **EMERGENCY STOP**: This works the same way as the safety equipment on the closing edge. Stopping distance according to EN 12453.
- **Safety Equipment (SHE)**: Different safety equipment can be connected to meet the EN 12453. The function of the safety equipment is cancelled in the final positions. After the safety equipment has been activated a new operating command is necessary to get the door moving again.
  - Securing the closing edge (direction CLOSE): When this SHE is activated, the door stops within the required distance and then reverses until it is again completely open. This SHE is in function only during closing.
  - Securing the opening edge (separate connection): When activated, the door reverses until it is again completely closed. SHE in function only during opening.
  - Additional safety type D, e.g. by a light barrier in closing direction (see table on page 04.007.00): Door stops with a Fast Stop (see below).
  - If the safety equipment should fail, an emergency service for the door can be adjusted (dead man operation). The door moves at creep speed only. As long as the emergency service has not been adjusted, the door can no longer be operated by motor.

**Motor Parameters**

In order to achieve an **optimum adjustment of the door drive to the door** different motor parameters can be adjusted. Amongst them are e.g.:

- **Motor Rating** (adaption to the connected motor)
- **OPENING Speed** / **CLOSING Speed** (separately adjustable)
- **Creep Speed** before reaching the positions OPEN and CLOSED (speed is reduced before reaching the final position, so that no separate final dampers are required, separately adjustable)
- **Acceleration and Deceleration Ramps**: Depending on the door weight and its easy movement
- **Fast Stop**: Adjustment of the Stop in closing and opening direction (separately adjustable)
- **EMERGENCY STOP**: Adjustment of the STOP characteristics upon activation of the safety equipment or by the Emergency Stop push button
SQUARE 940-2 Control System
for AC-21 Door Drives

Functions (cont.), Technical Data, Order Information

The SQUARE 940-2 control system permits a great deal of different operating functions. When choosing the operating mode the required safety equipment has to be provided. See also the summary on the requirements of the EN 12453 on page 04.007.00. A change to a "more dangerous" operating mode (e.g. from dead man to impulse operation) is only permitted when providing the required safety equipment.

The control system offers a high operating standard due to additional adjustment and connection possibilities.

Position Control

The SQUARE 940-2 control system is designed for a position control via encoder, integrated in the door operator. This permits a very precise positioning of the door (depending on the travel and the power transmission: max. 2 mm). However it is also possible to use separate limit switches (4 pcs. required).

Relay Contacts

The SQUARE 940-2 disposes of 5 relay contacts for controlling signalling and warning devices. There exists a large variety of adjusting possibilities. This permits e.g. the connection of signals, warning sirens, the connection to a building surveying central, a floor conveyor system etc.

Diagnostics

The display on the lid of the casing indicates error codes or different diagnostic codes for the input and output terminals. This helps also to locate a problem, even by telephone.

Application Range

SQUARE 940-2

The SQUARE 940-2 control system with integrated frequency converter is designed for door drives for sliding doors (beginning on page 04.027.00) and for hinged doors (beginning on page 04.041.00) with a three phase current motor. It can control motors up to 0.75 kW.

<table>
<thead>
<tr>
<th>AC-21 series</th>
<th>DICTAMAT 900-21</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DICTAMAT 310-21</td>
</tr>
</tbody>
</table>

Technical Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>230 VAC, 50 - 60 Hz</td>
</tr>
<tr>
<td>Power consumption</td>
<td>8 A</td>
</tr>
<tr>
<td>Output voltage (secondary)</td>
<td>24 VDC</td>
</tr>
<tr>
<td>Power supply (secondary)</td>
<td>max. 500 mA</td>
</tr>
<tr>
<td>Output voltage motor</td>
<td>230/400 VAC (three phase)</td>
</tr>
<tr>
<td>Motor rating</td>
<td>max. 0.75 kW</td>
</tr>
<tr>
<td>Dimensions</td>
<td>H x W x D = 335 x 335 x 118 mm</td>
</tr>
<tr>
<td>IP rating</td>
<td>IP 54</td>
</tr>
<tr>
<td>Recommended fuse protection</td>
<td>16 A</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-10 °C to +40 °C</td>
</tr>
</tbody>
</table>

Components Included

Control system in casing IP 54 with membrane keys and display on the casing

Order Information

SQUARE 940-2 control system for the AC-21 door operators part no. 706094-2
Hinged Door Operators AC-21
DICTAMAT 310-21

The DICTAMAT AC-21 hinged door operators fulfil in combination with the SQUARE 940 control system (see page 04.037.00 and the following) the demands of the EN 12453 for the "Safety in use of power operated doors".

The DICTAMAT 310-21 has been designed for large and/or heavy hinged doors. These door operators are equipped with a mechanical brake that assures the stop of the door within the required distance even without current. An integrated thermal cutout protects the operators from too high loads.

The position control is done with an encoder, integrated in the motor, that permits a very precise positioning.

Due to the mechanical brake the motor is blocked without current. If the door has to be moved by hand in case of a power failure, the operators are provided with an electromagnetic clutch.

DICTATOR will gladly offer you a solution taking into account the requirements of your individual application.

**Selection Criteria**

- For hinged doors up to 2.5 m width
- Force of the door operator max. 700 Nm
- For doors up to max. 600 kg
- For up to 300 cycles per day (depending on the weight and speed of the door)
- Position control: integrated encoder or separate limit switches (on demand)
- Motor blocked without current
- Control system: SQUARE 940
- Meets the demands of the EN 12453
Hinged Door Operator AC-21
DICTAMAT 310-21

Summary

The AC-21 series offers the possibility of powered operation of extremely large and/or heavy doors according to the demands of the EN 12453. The modular system permits individual, customised solutions for each door. All door operators are based on similar modules and are operated by the same control system.

The values in the table below are just for orientation and a preselection. They may differ depending on the type and design of the door, additional standards and legal demands valid for the respective site.

For hinged doors there are basically two different door operators. But if necessary, further types are possible. Please ask for our technical support and a customised offer.

Technical Data

<table>
<thead>
<tr>
<th>Type</th>
<th>Standard</th>
<th>XXL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor rating</td>
<td>0.18 kW</td>
<td>0.18 kW</td>
</tr>
<tr>
<td>Force of the motor max.</td>
<td>200 Nm</td>
<td>700 Nm</td>
</tr>
<tr>
<td>Opening and closing speed</td>
<td>separately adjustable</td>
<td></td>
</tr>
<tr>
<td>at 50 Hz about s /90°</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Voltage</td>
<td>230/400 VAC</td>
<td></td>
</tr>
<tr>
<td>Nominal current (control system)</td>
<td>8 A</td>
<td></td>
</tr>
<tr>
<td>Braking moment (mechanical brake)</td>
<td>4 Nm</td>
<td>4 Nm</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>30 % ED</td>
<td></td>
</tr>
<tr>
<td>IP rating</td>
<td>IP 54</td>
<td></td>
</tr>
<tr>
<td>Opening angle max.</td>
<td>180°</td>
<td></td>
</tr>
<tr>
<td>Position control</td>
<td>Encoder</td>
<td></td>
</tr>
<tr>
<td>Weight (without accessories)</td>
<td>30 kg</td>
<td>55 kg</td>
</tr>
<tr>
<td>Weight of the door max.</td>
<td>1.5 m</td>
<td>2.5 m</td>
</tr>
<tr>
<td>Weight of the door max.</td>
<td>300 kg</td>
<td>600 kg</td>
</tr>
</tbody>
</table>

Options

- **Position Control**
  Die AC-21 swing door operators are generally equipped with an integrated encoder. This assures an extremely precise positioning of the door. As an option the DICTAMAT 310-21 door operators can also be furnished for the use with separate limit switches.

- **Mechanical brake**
  The standard AC-21 operators are equipped with a mechanical brake making sure that even in case of a power failure the door is stopped within the required distances. In case of doors to which the EN 12453 standard does not apply, the door operators can be furnished also without the mechanical brake.

- **Electromagnetic clutch**
  All door operators with integrated mechanical brake impede moving the door without current. If the doors have to be moved manually in case of a power failure, the door operator can be furnished with an electromagnetic clutch.

- **Accessories**
  Special accessories for customised specifications are available on demand.

- **Forces**
  On demand the DICTAMAT 310-21 series is also available with other forces.
The AC-21 swing door operators transmit the power to the door with the help of a specially designed lever. They are normally fixed to the lintel or the door frame. It is very important to assure a safe and solid fixing of the door operator as there result very high forces when the mechanical brake enters into action.

The following picture shows the components of an AC-21 door operator system for swing doors.

### Components

- Door operator: worm gear transmission with a 230/400 VAC three-phase motor and integrated mechanical brake, thermal cutout, 2 m connection cable to the control system
- Lever with roller
- Two-piece slide channel

### Components Included

- Door operator
- Lever with roller
- Two-piece slide channel

### Additional Components

- Electromagnetic clutch
DICTAMAT 310-21

The DICTAMAT 310-21 is available in two executions: the standard type and the XXL type for very large doors. The XXL-type uses the same motor as the standard type, however with a much stronger gear transmission. Therefore, the XXL type is considerably longer than the standard type.

Dimensions

DICTAMAT 310-21

DICTAMAT 310-21 XXL

Order Information

Door Operators

DICTAMAT 310-21 part no. 790800
DICTAMAT 310-21 XXL part no. 790820

Order Information

Control System

SQUARE 940 control system part no. 706094

Information about the control system can be found beginning on page 04.037.00.
Selection Criteria

<table>
<thead>
<tr>
<th>Item</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width of door leaf</td>
<td>max. 1.4 m (with a door weight of 100 kg)</td>
</tr>
<tr>
<td>Door weight</td>
<td>depending on door width, see diagram on the following page</td>
</tr>
<tr>
<td>Motor force</td>
<td>50 Nm</td>
</tr>
<tr>
<td>Suitable for continuous operation</td>
<td></td>
</tr>
<tr>
<td>Opening angle</td>
<td>adjustable between 70° and 115°</td>
</tr>
<tr>
<td>Position control</td>
<td>memorising of positions during teach-in run</td>
</tr>
<tr>
<td>Motor without current</td>
<td>easy to move, operates like normal door closer</td>
</tr>
<tr>
<td>Basic functions</td>
<td>OPEN, automatic closing, reverse function, Further functions adjustable with a separate control panel</td>
</tr>
</tbody>
</table>
Applications, Dimensions

The diagram below indicates the maximum door weight - depending on the width of the door - up to which the DICTAMAT 204 door operator can be used.

There are two different sets of lever arms available for the DICTAMAT 204 door operator: standard and sliding lever arm.

Ex works the DICTAMAT 204 is set for a sliding arm (pull-type). If the DICTAMAT 204 is to be used with the standard arm, this has to be programmed with the BDE-D control panel.

The door operator is either fixed to the lintel above the door or to the door itself. For an installation on the door a flexible cable for the power supply of the door drive is available.

Door Sizes

Dimensions

<table>
<thead>
<tr>
<th>Width of the door leaf in m</th>
<th>Weight of the door leaf (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.6 - 0.7</td>
<td>600 - 400</td>
</tr>
<tr>
<td>0.8 - 0.9</td>
<td>400 - 300</td>
</tr>
<tr>
<td>1.0 - 1.2</td>
<td>300 - 200</td>
</tr>
<tr>
<td>1.3 - 1.4</td>
<td>200 - 100</td>
</tr>
</tbody>
</table>

Recommended width of the door for door closer size according to EN 4, EN 5, EN 6

<table>
<thead>
<tr>
<th>Standard arm SG</th>
<th>Depth of the lintel X</th>
</tr>
</thead>
<tbody>
<tr>
<td>SG 1</td>
<td>0 - 120 mm</td>
</tr>
<tr>
<td>SG 2</td>
<td>100 - 220 mm</td>
</tr>
<tr>
<td>SG 3</td>
<td>210 - 330 mm</td>
</tr>
</tbody>
</table>

* Dimensions of the standard type. Larger distances are possible with different extensions for the axle (+45, +60).

DICTAMAT 204 with sliding arm pulling (GLG)

DICTAMAT 204 with standard arm (SG)
Technical Data, Operating Functions

The DICTAMAT 204 door operator offers basic operating functions that can be adjusted with switches integrated into the lateral part of the casing. By using the separate, electronic BDE-D control unit, additional functions can be activated and adjusted. The door positions OPEN and CLOSED are automatically determined during a calibration run. Separate limit switches are not required. A further adjustment is possible with the BDE-D control unit.

Technical Data

**DICTAMAT 204**

- **Force of the motor:** driving torque 50 Nm maximum
- **Closing force spring** (force according to EN): EN4 to EN6, adjustable
- **Opening speed:** adjustable from 3 to 20 sec./ 90° (16)
- **Closing speed:** adjustable from 5 to 20 sec./ 90° (7)
- **Opening angle:** 70 - 115°
- **Hold-open time:** adjustable between 0 and 60 sec. (2)
- **Voltage / Nominal current:** 230 VAC, 50/60 Hz
- **Output voltage/Power supply** (secondary): 24 VDC / max. 1 A
- **Motor rating:** 67 W (Standby: consumption 13 W)
- **Duty cycle:** 100% ED
- **IP rating:** IP 40 / max. 85% rel. humidity, not bedewing
- **Noise level:** max. 18 db
- **Operating temperature:** -15° to +50 °C
- **Weight** (without accessories): 12 kg

(The values in brackets represent the standard values set in production.)

Basic Operating Functions

The following basic functions are adjusted directly on the DICTAMAT 204 door operator:

- **Automatic:** an OPEN-command opens the door; automatic closing after the preset time (standard time 2 seconds).
- **Continuously open:** door opens automatically and stays in the OPEN position.
- **Manual operation:** door operator works just like a normal door closer, manual opening, closing by the integrated spring.

For the OPEN-command there are various possibilities: motion detector, push button, remote control etc. They must be equipped with a potential-free contact (NO).

Additional Options with the Electronic BDE-D Control Panel

The electronic control unit BDE-D allows the adjustment of further operating functions. The following options can be programmed with a mobile BDE-D unit:

- **Adjustment of the opening and closing speed, the hold-open time, the reverse level, the closing force and the opening angle.**
- **Push-and-Go:** triggering the operator by pushing the door lightly (response after 0.5 - 1°); door closes after the pre-set time. No operating equipment necessary.
- **One-way/night operation:** door only opens from inside (to leave the building).
- **Locking of the door:** connection possibility for an electric door lock (24 VDC).
- **Different levels of manual operation** (e.g.: door normally opened by hand; using a remote control the door opens automatically).
- **Doors with two leaves:** closing sequence control.

A **permanently installed BDE-D control unit** allows the realization of an interlock function for two doors with one leaf each.
DICTAMAT 204
For Single and Double-Leaved Hinged Doors

The DICTAMAT 204 is also used on doors with two leaves or interlocks with two single-leaved doors. Both door operators are then linked with a CAN isolator. A BDE-D control unit is required for the adjustments. Both opening and closing speed as well as hold-open time are identical for both door operators. The opening angle and the response level for the automatic reverse can be adjusted separately. Furthermore it can be chosen whether just one or generally both leaves open on an OPEN impulse.

If the DICTAMAT 204 is used on doors that have to open in case of an emergency, even without current (e.g. doors in smoke vent installations), the DICTAMAT 204 INVERS has to be used: its integrated spring opens the door, the motor closes the door.

Safety

The DICTAMAT 204 has an integrated load control that guarantees the safety of persons and material. Obstacles within the opening/closing range of the door are recognised immediately: while opening the door operator stops and when starting the next opening movement it is done at a very slow speed. During the closing the door operator reverses upon hitting an obstacle and opens the door again completely. The response level for the detection of an obstacle can be adjusted with the BDE-D control panel.

For applications where a lot of the people using the door are either of advanced age or of slower reaction possibilities (e.g. hospitals, old-people and nursing homes) the force of the door operator can be reduced.

In any case it is recommended to install additional safety equipments.

Components Included

DICTAMAT 204
Door operator with 24 VDC motor and closing/opening spring, control system

Order Information

DICTAMAT 204 for standard* and sliding arm (pulling) part no. 710100
DICTAMAT 204GG for sliding arm, pulling or pushing* part no. 710101
DICTAMAT 204IN, opening with spring, closing with motor part no. 710102
* BDE-D control panel required for the adjustment

Accessories Required

Standard arm SG 1, depth of lintel 0 - 120 mm part no. 710115
Standard arm SG 2, depth of lintel 100 - 220 mm part no. 710116
Standard arm SG 3, depth of lintel 210 - 330 mm part no. 710117
Sliding arm GLG part no. 710118
Flexible cable (required for installation on the door) part no. 710276

Further Accessories

Electronic BDE-D control unit, mobile or surface installation part no. 710119
Electronic BDE-D control unit, for flush mounting part no. 710121
CAN-Isolator, for doors with two leaves part no. 710123
Extension for standard arm 65 (see page 04.046.00;*+ 45 mm) part no. 710126
Extension for standard arm 80 (see page 04.046.00;*+ 60 mm) part no. 710127
Radar motion detector "Eagle One" part no. 700389
Finger guard blind (L = 1,95 m) part no. 710132
Safety contact bar 4 Safe in different lengths**

** See information on the safety and operating elements starting on page 04.049.00
Depending on the application of the DICTATOR DICTAMAT door operator there are needed different operating elements. These can be simple hand switches, key switches, pulling switches but also remote control or motion detectors.

In addition usually appropriate safety equipment is required, either to protect people and/or material from damage.

On the following pages you will find a choice of operating and safety equipment. In case of special requirements please ask us. In choosing the safety equipment the requirements of the applying safety standards have to be kept in mind, e.g. EN 12453.

Please observe the maximum capacity of the binders in the control system. The power consumption of the connected devices must not exceed this value. An additional power pack should be ordered if necessary. (Please see the chapter Fire Door Control Solutions in the DICTATOR catalogue).

### Summary

<table>
<thead>
<tr>
<th>Component</th>
<th>Page</th>
</tr>
</thead>
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<td>04.050.00</td>
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<tr>
<td>Light barriers</td>
<td>04.051.00</td>
</tr>
<tr>
<td>Contact switches / safety contact switches</td>
<td>04.054.00</td>
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<td>Motion detectors</td>
<td>04.058.00</td>
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<td>Remote control</td>
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<td>04.060.00</td>
</tr>
<tr>
<td>Ex-proof operating and safety elements</td>
<td>04.065.00</td>
</tr>
</tbody>
</table>
Warning Flashlight with Integrated Siren

Description

The warning flashlight is used to caution people against the movement of automatic doors. Almost all control systems are provided with a relay contact indicating the movements of the door, some even with the possibility to start the flash light before the delayed movement of the door.

The LED Flashlight also features a siren. You can choose between 32 different warning tones. The volume can be adjusted by means of a potentiometer. If required, it is possible to completely shut off the siren.

Dimensions

![Diagram of flashlight with siren](image)

- Cable glands to be bored up for cable inlets M20
- Flashlight with siren part no. 700171

Technical Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage</td>
<td>17 - 60 VDC</td>
</tr>
<tr>
<td>Power consumption</td>
<td>flashlight: 5 mA</td>
</tr>
<tr>
<td></td>
<td>siren: 4 - 45 mA (depending on the volume, the chosen sound and the input voltage)</td>
</tr>
<tr>
<td>IP rating</td>
<td>IP 65</td>
</tr>
<tr>
<td>Cable inlet</td>
<td>two laterally in the base and one in the bottom, intended for M20 cable inlets</td>
</tr>
<tr>
<td>Flashing frequency</td>
<td>1 Hz</td>
</tr>
<tr>
<td>Volume</td>
<td>94 - 106 dBA in 1 m distance, can be reduced by the integrated potentiometer or completely shut off</td>
</tr>
<tr>
<td>Warning tone</td>
<td>32 different tones adjustable by DIP switches</td>
</tr>
<tr>
<td>Material / Colour</td>
<td>impact resistant polycarbonate / red</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-25 °C to +70 °C</td>
</tr>
</tbody>
</table>

Order Information

Flashlight with integrated siren, red part no. 700171
Photoelectric Barriers: Reflecting Photocell up to 10 m

Description

Photoelectric barriers help to detect obstacles in the immediate door surroundings. Whenever the photoelectric barrier is actuated the door will either stop or reverse the direction of movement. In order to increase safety you should install several photoelectric barriers on a door at different heights above the floor. Please observe the relevant safety regulations.

For normal industrial doors with an opening width up to 10 m we recommend our reflecting photoelectric barrier part no. 700116. Only the emitter of the light beam requires electrical connection. The fixing bracket allows for an adaption of the angle of the light beam up to 30°, permitting to adjust it perfectly to the reflector. This photoelectric barrier is suitable for a very large range of different voltages.

Dimensions

![Diagram of photoelectric barrier and reflector]

Technical Data

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>10.8 - 264 VDC / 21.6 - 264 VAC (45-65 Hz)</td>
</tr>
<tr>
<td>Power consumption</td>
<td>≤1.5 W (60 mA) / 2.0 VA</td>
</tr>
<tr>
<td>IP rating</td>
<td>IP 67</td>
</tr>
<tr>
<td>Cable inlet</td>
<td>PG 13,5</td>
</tr>
<tr>
<td>Potential-free relay contact (make-break)</td>
<td>3 A / 30 VDC</td>
</tr>
<tr>
<td></td>
<td>2 A / 250 VAC</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-25 °C to +55 °C</td>
</tr>
<tr>
<td>Maximum range</td>
<td>10 m</td>
</tr>
<tr>
<td>Light source / Beam spot diameter</td>
<td>880 nm / 280 mm at 4 m</td>
</tr>
<tr>
<td>Type of light</td>
<td>infrared</td>
</tr>
<tr>
<td>Material of the casing / Colour</td>
<td>reinforced PC/ grey-black</td>
</tr>
<tr>
<td>Classification as per EN 12453</td>
<td>&quot;C&quot;</td>
</tr>
</tbody>
</table>

Order Information

Photoelectric barrier with reflector ø 80, up to 10 m part no. 700116
**Photoelectric Barriers:**

**One-Way Light Barrier up to 30 m**

### Description

For large doors DICTATOR furnishes a one-way photoelectric barrier up to 30 m range. It consists of a transmitter and receiver to be installed at the opposite sides of the door opening. Whenever the light beam is shattered the electrical contact of the receiver is switched over (make or break).

In order to achieve a faultless operation it is imperative that both transmitter and receiver are properly aligned (detection angle +/-4°). If two photoelectric barriers are installed on the same door the two transmitters should be placed one on each side, in order to avoid any interference of the photoelectric barriers.

### Dimensions

![Photoelectric barrier diagram]

### Technical Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>24 VDC (19 - 35 VDC)</td>
</tr>
<tr>
<td></td>
<td>24 VAC (21.5 - 25.5 VAC)</td>
</tr>
<tr>
<td>Power consumption</td>
<td>transmitter 20 mA, receiver 30 mA</td>
</tr>
<tr>
<td>IP rating</td>
<td>IP 54</td>
</tr>
<tr>
<td>Cable inlet</td>
<td>at the back and the side, ø 22 mm</td>
</tr>
<tr>
<td>Relay contact</td>
<td>make/break contact</td>
</tr>
<tr>
<td></td>
<td>100 mA / 24 VDC</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-20 °C to +55 °C</td>
</tr>
<tr>
<td>Maximum range</td>
<td>30 m</td>
</tr>
<tr>
<td>Type of light</td>
<td>infrared</td>
</tr>
<tr>
<td>Material of the casing</td>
<td>plastics / dark blue</td>
</tr>
<tr>
<td>Classification as per EN 12453</td>
<td>&quot;C&quot;</td>
</tr>
</tbody>
</table>

### Order Information

| Order Information | Photoelectric barrier, up to 30 m | part no. 700360 |
Photoelectric Barriers: Ex-proof photocell up to 30 m

Description
In hazardous areas only devices tested according to the ATEX standard may be used. The ex-proof photoelectric barrier is made up of a transmitter and a receiver. Furthermore a safety relay with a potential-free contact is required to pass on signal to the control system of the door drive.

Both transmitter and receiver are provided with a 10 m cable. The safety relay has to be installed outside the hazardous area.

The status of the photoelectric barrier is indicated by LEDs on the receiver.

ATEX-certificate: DMT 99 ATEX 056/N1

Dimensions

Technical Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>24 VDC (20 - 28 VDC)</td>
</tr>
<tr>
<td>Power consumption</td>
<td>transmitter 30 mA, receiver 50 mA</td>
</tr>
<tr>
<td></td>
<td>safety relay 200 mA</td>
</tr>
<tr>
<td>Ex-rating / IP rating</td>
<td>EEx d IIC T6, zones 1, 2, 20/21, 22 / IP 67</td>
</tr>
<tr>
<td>Connection cable (pre-wired)</td>
<td>10 m (on demand up to 100 m)</td>
</tr>
<tr>
<td>Relay contact (of the safety relay)</td>
<td>break contact, max. 750 VA/3 A at 250 VAC</td>
</tr>
<tr>
<td></td>
<td>max. 100 W/3 A at 30 VDC</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-20 °C to +60 °C</td>
</tr>
<tr>
<td>Maximum range</td>
<td>0.5 m to max. 30 m</td>
</tr>
<tr>
<td>Type of light / Beam spot diameter</td>
<td>infrared 880 nm</td>
</tr>
<tr>
<td>Material of the casing / Colour</td>
<td>M30 brass, nickel plated</td>
</tr>
<tr>
<td>Classification as per EN 12453</td>
<td>&quot;C&quot;</td>
</tr>
</tbody>
</table>

Order Information

<table>
<thead>
<tr>
<th>Component</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Photoelectric barrier IGD-30-S/E</td>
<td>700370</td>
</tr>
<tr>
<td>Safety relay GX-SR 2/3</td>
<td>700373</td>
</tr>
</tbody>
</table>
Safety and Operating Equipment

Safety Contact Edge

Description

Contact edges on doors protect persons and material. As soon as the contact edge is actuated, the door either stops or opens again.

The safety contact edge consists of an aluminium C-profile and a rubber profile with integrated switching element. It is delivered in the required dimension. If two contact edges are installed on a door, one of them has to be a so-called transit strip without final resistor. It is provided with a 2.5 m cable on both sides. The current from the evaluation device passes through this strip to the final strip. The evaluation device controls whether the contact is closed or whether the safety circuit has been interrupted, i.e. the contact edge has been actuated. A conductor rail that is either situated on top of the door or near the rail of the door, supplies the contact edge with current. For the electrical connection two connection boxes are required: one on the wall and one on the door.

Dimensions

Technical Data

Voltage evaluation device 230 VAC ±10 %, 50 Hz, 24 AC/DC ±10 %
Power consumption evaluation device 3.5 VA/230 V, 1.5W 24VDC, 1.2VA 24VAC
Relay contact evaluation device make contact (NO)
IP rating of contact edge IP 65
Operating temperature -10 °C to +55 °C
Actuation force / Switching angle 44 N (at 0.1 m/s) / 2 x 45°
Material contact edge TPE

Order Information

SKL 35-55, end strip incl. aluminium profile, base price part no. 700785
SKL 35-55, transit strip incl. aluminium profile, base price part no. 700786
Safety contact edge SKL 35-55, price per cm of contact rail part no. 700787
Evaluation device for SKL 35-55, 230 V / 24 V AC/DC part no. 700788
Casing CI-K, 100 x 160 x 145 mm (wxhxd), IP 65 part no. 040585
Conductor rail KLS 77 V2, base price total length L <6m part no. 700795
Conductor rail KLS 77 V2, base price total length L >6m part no. 700795
Conductor rail KLS 77 V2, price per cm of travel part no. 700797

Order Information

EU type-examination certificate (registration no. 44 205 13031820) according to EN ISO 13849-1 for safety contact edge with evaluation device: category 3
Safety Sensor for Industrial Doors

Description

The LZR safety sensor is the optimum solution to ensure safety in the danger areas of doors. As a type E protection device according to EN 12453 it represents the highest possible safety level that makes sure nobody can get into the area of the moving door. Therefore, no other safety devices are needed.

The safety sensor offers the possibility to adjust two separate detection areas during opening and closing and in front of the door four planes of detection with variable depth.

The mounting is very easy as there is only one device to install. The detection ranges are set with an infrared remote control. Three visible laser points make the alignment of the sensor very simple.

LEDs of different colours indicate the state of operation, errors and the states of the relay exits.

Technical Data

<table>
<thead>
<tr>
<th>Part no.</th>
<th>Max. detection range</th>
<th>Power supply</th>
<th>Power consumption</th>
<th>Response time</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>700384</td>
<td>5 x 5 m</td>
<td>10 - 35 VDC at the sensor terminal</td>
<td>&lt; 5 W</td>
<td>typ. 20 ms; max. 80 ms</td>
<td>2 electronic relays (polarity free)</td>
</tr>
<tr>
<td>700385</td>
<td>10 x 10 m</td>
<td>65 (not directly with a high-pressure cleaner)</td>
<td>max. switching voltage 35 VDC/24 VAC</td>
<td>max. switching current 80 mA (resistive)</td>
<td></td>
</tr>
</tbody>
</table>

Dimensions

125 mm (w) x 93 mm (d) x 70 mm (h)

Material of casing: PC/ASA

Safety categories inter alia:

- EN 954-1: category 2
- EN 13849-1:2008: Performance level "c"
- EN 12454: type E

Components Included

- Safety sensor with mounting bracket and 10 m cable
- The infrared remote control has to be ordered separately when needed.

Order Information

- LZR-i110 safety sensor, max. detection range 5 x 5 m part no. 700384
- LZR-i100 safety sensor, max. detection range 10 x 10 m part no. 700385
- Infrared remote control for setting the safety sensor part no. 700366
Safety Contact Edge

Description

Safety contact edges are used to secure the movement of hinged doors. They are installed directly on the door leaf. The type depends on the width of the door and the height at which the contact edge is mounted.

The safety contact edge 4 Safe meets the requirements of the standard DIN 18650, when being dimensioned and mounted correctly. It not only secures the moving range of the door leaf but also the squeezing and shearing edges. To provide safety during both opening and closing of the door you need two safety contact edges per door.

Configuration

The safety contact edge is made from two components: the mounting profile and the sensor modules. The number of sensor modules needed depends on the height of mounting and the width of the door. When the door is not wider than 1100 mm and the safety contact edge installed at 1900 mm height on the door, two modules are sufficient to ensure the complete moving range of the door. In case the safety contact edge has to be mounted at less than 1900 mm height, please contact our technical department.

The names of the types indicate the width of the door the safety contact edge is designed for - always presumed the installation will be at a minimum height of 1900 mm. The mounting profile of the safety contact edge 700 - 1100 mm is, if necessary, shortened on site to match the door width. Doors being 700 to 1100 mm wide need the same amount of sensor modules. The mounting profiles are delivered with the sensor modules already installed.

The safety contact edge includes an integrated monitoring thus enabling a connected door drive control system to check whether the safety contact edge is working or defect.

Technical Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>12 - 30 VDC / 12 - 24 VAC (50 - 60 Hz)</td>
</tr>
<tr>
<td>Power consumption</td>
<td>65 mA at 24 VDC, 120 mA at 24 VAC</td>
</tr>
<tr>
<td>IP rating</td>
<td>IP 53</td>
</tr>
<tr>
<td>Relay contact</td>
<td>2 potential-free contacts (relay)</td>
</tr>
<tr>
<td></td>
<td>max. 42 VAC/DC; max. 1 A (switching current)</td>
</tr>
<tr>
<td></td>
<td>30 W(DC) / 60 VA(AC) (max. switching capacity)</td>
</tr>
<tr>
<td>Input</td>
<td>1 potential-free optocoupler</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-25 °C to +55 °C</td>
</tr>
<tr>
<td>Detection range</td>
<td>depending on mounting height/number of modules</td>
</tr>
<tr>
<td>Material of casing / Colour</td>
<td>ABS and aluminium / anodized alu, black</td>
</tr>
</tbody>
</table>

Order Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety contact edge 4Safe L 700 - 1100 mm</td>
<td>part no. 710133</td>
</tr>
<tr>
<td>Safety contact edge 4Safe L 1200 mm</td>
<td>part no. 710134</td>
</tr>
<tr>
<td>Safety contact edge 4Safe L 1300 mm</td>
<td>part no. 710135</td>
</tr>
<tr>
<td>Safety contact edge 4Safe L 1400 mm</td>
<td>part no. 710136</td>
</tr>
<tr>
<td>Safety contact edge 4Safe L 1500 mm</td>
<td>part no. 710137</td>
</tr>
<tr>
<td>Flexible cable guide</td>
<td>part no. 710276</td>
</tr>
</tbody>
</table>
Finger Guard Blind

Description
The finger guard blind is designed to secure the secondary closing edge of hinged doors. It prevents fingers to become squeezed between door and frame.

The finger guard blind is fixed to the door and the frame. An integrated spring tightens it constantly. As soon as the door is opened the blind is extended and covers the secondary closing edge. The maximum extension is 260 mm.

The blind is made from washable black coated linen.

The total length of the blind is 1925 mm. It is not possible to shorten it.

Technical Data

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard length</td>
<td>1925 mm</td>
</tr>
<tr>
<td>Maximum extension of blind</td>
<td>260 mm</td>
</tr>
<tr>
<td>Material of casing</td>
<td>aluminium AlMgSi 0,5 F22, natural</td>
</tr>
<tr>
<td>Material of blind</td>
<td>coated linen, washable, black</td>
</tr>
</tbody>
</table>

Order Information
Finger guard blind for hinged doors to secure the secondary closing edge part no. 710132
Motion Sensors - Eagle One Radar Motion Sensor

**Description**

Motion sensors are ideal to set off an OPEN-impulse on highly frequented doors, combined with an automatic closing. As soon as a moving object enters the detection range of the motion sensor, the DICTAMAT door drive will open the door. After the preset hold-open time has expired, the door closes automatically.

The Eagle One radar motion sensor has a very large detection range, also of laterally approaching movements. It only realizes approaching movements and ignores withdrawing ones. The maximum mounting height is 4 m. It can be mounted on the wall as well as to the ceiling. When mounting the motion sensor on the side of the hinges (of a hinged door) it is mounted on the rotation axis.

With the help of a separately available infrared remote control the adjustments can be done quickly and very precisely. As accessories we provide a mounting bracket and a rain cap.

**Technical Data**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>12 V to 24 VDC +30 % / -10 %</td>
</tr>
<tr>
<td></td>
<td>12 V to 24 VAC ±10 % (50 - 60 Hz)</td>
</tr>
<tr>
<td>Power consumption</td>
<td>&lt; 2 W (VA)</td>
</tr>
<tr>
<td>Cable inlet</td>
<td>with 2.5 m connection cable</td>
</tr>
<tr>
<td>Potential-free relay contact</td>
<td>make-break contact</td>
</tr>
<tr>
<td></td>
<td>max. 30 W (DC) / max. 60 VA (AC)</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-20 °C to +55 °C</td>
</tr>
<tr>
<td>Detection range</td>
<td>4 m (w) x 2 m (d) at 2.2 m installation height or</td>
</tr>
<tr>
<td></td>
<td>2 m (w) x 2.5 m (d) at 2.2 m installation height</td>
</tr>
<tr>
<td>Material of casing / Colour</td>
<td>ABS / black</td>
</tr>
<tr>
<td>Dimensions (w x h x d)</td>
<td>120 x 80 x 50 mm</td>
</tr>
</tbody>
</table>

**Order Information**

<table>
<thead>
<tr>
<th>Product</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagle One radar motion sensor</td>
<td>700389</td>
</tr>
<tr>
<td>Remote control to adjust the sensor</td>
<td>700366</td>
</tr>
<tr>
<td>Mounting bracket EBA</td>
<td>700389EBA</td>
</tr>
<tr>
<td>Rain cap ORA</td>
<td>700389ORA</td>
</tr>
</tbody>
</table>
Remote Control - with 2 Channels

Description
A remote control is recommended to operate doors with a DICTAMAT door operator e.g. when the door is mainly passed by vehicles. The basic and most economic solution is the remote control 868. It is made up by the radio receiver and one or several hand transmitters.

The antenna for receiving the radio signals is fitted into the casing of the receiver.

Dimensions

Technical Data

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>24 VDC</td>
</tr>
<tr>
<td>Power consumption</td>
<td>100 mA</td>
</tr>
<tr>
<td>IP rating receiver</td>
<td>IP 44</td>
</tr>
<tr>
<td>Relay output</td>
<td>2 pieces, contact NO (1 x pulse circuit, 1 x pulse or dedicated (adjustable))</td>
</tr>
<tr>
<td>Frequency</td>
<td>868.35 MHz +/- 2</td>
</tr>
<tr>
<td>Number of codes</td>
<td>250 can be stored</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-20 °C to +55 °C</td>
</tr>
<tr>
<td>Range (effective radius) (max.)</td>
<td>50 m (in unobstructed areas)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>receiver 70 x 105 x 32.5 mm</td>
</tr>
</tbody>
</table>

Order Information

<table>
<thead>
<tr>
<th>Item</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radio receiver, two channel, XR2 868C</td>
<td>part no. 700386</td>
</tr>
<tr>
<td>Hand transmitter XT2 868 SLH LR white (two channel)</td>
<td>part no. 700387</td>
</tr>
<tr>
<td>Hand transmitter XT2 868 SLH LR black (two channel)</td>
<td>part no. 700388</td>
</tr>
</tbody>
</table>
Push Button Switches

Description

DICTATOR furnishes a range of different push button switches to operate the DICTAMAT door operators. Normally a switch with two or three push buttons is used (OPEN/CLOSE or OPEN/STOP/CLOSE). The hand switches shown on this page are provided with the following contacts:

- OPEN, CLOSE make contact (NO)
- STOP break contact (NC) or make contact (NO) (depending on the type of the used control system)

Dimensions of the Push Button Switches

![Diagram of push button switches]

Technical Data

- IP rating: IP 67
- Operating temperature: -25 °C to +70 °C

Order Information

- Push button switch OPEN (make contact, NO) part no. 700185
- Push button switch OPEN - CLOSE, (2 make contacts, NO) part no. 700117
- Push button switch OPEN-STOP-CLOSE (STOP = break contact, NC) part no. 700142
- Push button switch OPEN-STOP-CLOSE (STOP = make contact, NO) part no. 700147
Key Switch

Description
A key switch is used whenever the use or the operation of the door is restricted to certain persons. The key switches offer only two operating possibilities: OPEN and CLOSE. If the key switch part of a complete locking system the key switches can be furnished with a half profile cylinder, to be replaced with one belonging to the locking system.

Contacts:

| OPEN, CLOSE | make contact (NO) |

Dimensions Key Switch

![Key Switch Dimensions](chart)

Dimensions Key Switch with Half Profile Cylinder

![Key Switch with Half Profile Cylinder](chart)

Technical Data

<table>
<thead>
<tr>
<th>Description</th>
<th>IP rating</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key switch</td>
<td>IP 67</td>
<td>-25 °C to +70 °C</td>
</tr>
<tr>
<td>Key switch with half profile cylinder</td>
<td>IP 54</td>
<td></td>
</tr>
</tbody>
</table>

Order Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key switch OPEN - CLOSE, surface type</td>
<td>700113</td>
</tr>
<tr>
<td>Key switch OPEN - CLOSE with half profile cylinder, surface type</td>
<td>700114</td>
</tr>
<tr>
<td>Key switch OPEN - CLOSE with half profile cylinder, flush mounting</td>
<td>700115</td>
</tr>
</tbody>
</table>
Large Surface Switch, Pulling Switch

Description

Large surface switches are recommended when the persons using the door either do not have empty hands and should be able to operate the switch with their elbow, or to facilitate the operating to handicapped persons. Especially for this purpose we furnish the non-contact large surface switch. By changing the colour it indicates if it has been actuated.

The pulling switch is mainly used in combination with the automatic closing when fork lift trucks frequently use the doors.

Contact: make contact (NO)

Dimensions

Large Surface Switch

![Large Surface Switches](image)

Large surface switch 700194

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>84 mm</td>
</tr>
<tr>
<td>Height</td>
<td>100 mm</td>
</tr>
<tr>
<td>Depth</td>
<td>223 mm</td>
</tr>
</tbody>
</table>

Large surface switch 700188

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>84 mm</td>
</tr>
<tr>
<td>Height</td>
<td>10 mm</td>
</tr>
<tr>
<td>Depth</td>
<td>33 mm</td>
</tr>
</tbody>
</table>

Pulling Switch

![Pulling Switch](image)

Technical Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP rating large surface switch</td>
<td>IP 30</td>
</tr>
<tr>
<td>Operating temperature large surface switch</td>
<td>-20 °C to +50 °C</td>
</tr>
<tr>
<td>Power consumption/Voltage 700188</td>
<td>50 mA / 24 VDC</td>
</tr>
<tr>
<td>Detection range 700188 (adjustable)</td>
<td>50 - 1500 mm</td>
</tr>
<tr>
<td>IP rating pulling switch</td>
<td>IP 65</td>
</tr>
</tbody>
</table>

Order Information

- Large surface switch, flush mounting, stainless steel appearance part no. 700194
- Large surface switch, flush mounting, non-contact part no. 700188
- Pulling switch (for alternating impulse OPEN-CLOSE) part no. 700164
Switches Especially for Fire Protection Doors

**Description**

Fire protection doors have to close automatically in case of alarm. The alarm can be triggered by a smoke detector or by a hand release switch. In case of the semi-automatic door operators DICTAMAT 560, 570 and 650 a push-to-lock key is required. For the fully automatic door operators the standard hand release switch, part no. 040005 or 040053 (see chapter Fire Door Control Solutions) is sufficient.

Every alarm requires afterwards a **RESET** command for the control system to resume normal operation.

For the **DICTAMAT 6000** a special hand switch with 2 make contacts (OPEN and RESET command at the same time) is necessary.

**Contacts:**

| OPEN   | 2 x make contact (NO) |
| CLOSE  | break contact (NC)    |
| STOP   | make contact (NO)     |

**Dimensions**

**Push-to-lock Hand Switch**

![Diagram of Push-to-lock Hand Switch]

**Dimensions RESET**

![Diagram of RESET]

**Technical Data**

| IP rating | IP 67 |
| Operating temperature | -25 °C to +70 °C |

**Order Information**

- Push-to lock hand switch (break contact - NC) part no. 700132
- RESET switch (make contact - NO) part no. 700112
- Push button switch OPEN - CLOSE for DICTAMAT 6000* part no. 780640
- Push button switch OPEN-STOP-CLOSE for DICTAMAT 6000** part no. 780641

* For dimensions see push button switch 700117, page 04.060.00
** For dimensions see push button switch 700147, page 04.060.00
Safety and Operating Equipment

Other Switches: Emergency-STOP, Limit Switch, Main Switch

Description
For large sliding doors an Emergency-STOP switch should be provided for safety reasons. Limit switches are necessary for all door drives without integrated position control system. In order to be able to completely cut off the power supply, a main switch should be installed directly in the power supply of the control system.

Dimensions
Emergency-STOP Switch

Limit Switch

Main Switch

Technical Data
IP rating
limit switch IP 65
Operating temperature
-25 °C to +70 °C

Order Information
Emergency-STOP switch (push-to-lock) (break contact - NC) part no. 700198
Limit switch (break contact - NC) part no. 700156
Lockable main switch (for padlock) part no. 700179
DICTATOR furnishes special door operators for the use in hazardous areas - along with the required operating elements. The push button switches are available as simple, two and 3-keys switches: OPEN, CLOSE, STOP, RESET, hand release switch for fire protection doors.

**Contact**: All keys can be connected either as make or as break contact. Below are marked the contacts that have to be used together with the DICTATOR door drives. The STOP key has to be connected either as a make or a break contact, depending on the control system.

**ATEX-certificate**: PTB 01 ATEX 1105

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### Explosion-Proof Hand Switches

**Description**

DICTATOR furnishes special door operators for the use in hazardous areas - along with the required operating elements. The push button switches are available as simple, two and 3-keys switches: OPEN, CLOSE, STOP, RESET, hand release switch for fire protection doors.

**Contact**: All keys can be connected either as make or as break contact. Below are marked the contacts that have to be used together with the DICTATOR door drives. The STOP key has to be connected either as a make or a break contact, depending on the control system.

**ATEX-certificate**: PTB 01 ATEX 1105

### Dimensions

**Push Button Switches**

- Simple push button switch OPEN or CLOSE
- Hand release push button for fire protection

### Technical Data

- **IP rating**: Ex II 2 G Ex de IIC T6 (zone 1 and 2), IP 66
- **Casing**: glass fibre reinforced polyester resin

### Order Information

- Ex-proof push button OPEN or CLOSE (make contact, NO) part no. 700219
- Ex-proof push button OPEN - CLOSE (2 make contacts, NO) part no. 700217
- Ex-proof push button OPEN - STOP - CLOSE part no. 700247
- Ex-proof push button RESET (make contact, NO) (blue key) part no. 700212
- Ex-proof hand release push button (fire protection) (break contact, NC) part no. 700232
Further Explosion-Proof Switches:  
Pull Switch

**Description**

The **pull switch** is mainly used in combination with the automatic closing when fork lift trucks frequently use the door.

**Type of contact:** The pull switch is provided with both a make and a break contact as all the other ex-proof switches. Normally the break contact is used.

**ATEX-certificate:** TÜV 03 ATEX 2043X

**Dimensions**

![Diagram of Pull Switch]

**Technical Data**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ex-rating, IP rating</strong></td>
<td>Ex II 2 G EEx d IIC T6, IP 66/67</td>
</tr>
<tr>
<td><strong>Casing / Lid</strong></td>
<td>aluminium diecasted / aluminium sheet metal</td>
</tr>
<tr>
<td><strong>Operating temperature</strong></td>
<td>-20 °C to +70 °C</td>
</tr>
</tbody>
</table>

**Order Information**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ex-rated pull switch (make contact, NO)</strong></td>
<td>part no. 700239</td>
</tr>
</tbody>
</table>
Further Explosion-Proof Switches: Emergency-STOP Switch, Limit Switch

Description
For safety reasons an Emergency-STOP switch should be provided for large sliding doors.

Contact: The Emergency-STOP switch is furnished with both a make and a break contact as all the other ex-proof switches. Normally the break contact is used.

The explosion-proof door drives generally require ex-proof limit switches for the position control.

Dimensions

Emergency-Stop Switch
In order to unlock the switch turn the key to the right.

Limit Switch

Dimensions

Technical Data
Protection rating Emergency-STOP  Ex II 2 G EEx dem IIC T6 (zone 1 and 2), IP 66
Protection rating limit switch  Ex II 2 G EEx ed IIC T6 (zone 1 and 2), IP 65
Casing  Glass fiber reinforced polyester resin

Order Information
Ex-proof Emergency-STOP switch (push-to-lock switch) (NO, NC)  part no. 700254
Ex-proof limit switch (NO / NC)  part no. 700223
DICTATOR offers a wide range of DIC-TAMAT door operators, from semi-automatic operators (opening by hand, controlled closing by the DIC-TAMAT operator) up to the fully automatic door operator with microprocessor control system (for hinged and sliding doors and also for fire protection doors).

But even this comprehensive product range provides not a suitable standard operator for all applications. Often doors, windows and multimedia facilities not only have to be moved, they must also conform to aesthetic requirements and architectural considerations.

Many years of experience enable DICTATOR to design and develop bespoke door operators for the most unusual applications and demanding specifications. Either by modifying a standard unit or by manufacturing a completely bespoke unit a suitable operator can be produced using our widely flexible manufacturing facilities.

On the following pages you will find some examples of our customised designs.

### Technical Data

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Door sizes</td>
<td>0.5 m - 93 m (largest door at the moment)</td>
</tr>
<tr>
<td>Moving elements</td>
<td>hinged, folding, sliding, telescopic doors, windows, wall/façade elements, multi-media facilities</td>
</tr>
<tr>
<td>Motors</td>
<td>direct current, three-phase current, explosion-proof</td>
</tr>
<tr>
<td>Control systems</td>
<td>simple electric control systems up to SPS-control systems with frequency converter, also with battery back-up</td>
</tr>
<tr>
<td>Components included</td>
<td>complete door operator with fixing accessories, control system (including installation, if necessary)</td>
</tr>
</tbody>
</table>
Examples of Customised Door Operators

60 m, 80 m, 93 m Telescopic Fire Sliding Doors

The special design of telescopic fire protection sliding doors has proved to be beneficial on four occasions in Spain. The fire protection doors have been installed in Madrid Airport and in shopping centres of Corte Inglés and Pryca. The doors are opened in the morning and closed at night. By using these doors it is unnecessary to have fire walls that restrict access during the day. Clients and airport visitors can wander freely through malls and concourses without hindrance from fire walls.

93 m Door in the Corte Inglés in Santander/Spain

Customer’s Specification

The sliding fire protection doors open from the centre. Each side of the door consists of up to six variable span wings, each with a width of up to 10 m. The whole door system extends from rails on the ceiling. On the floor there is only an approx. 30x30 mm wide guiding slot for one door wing. The door is opened in the morning and closed in the evening. It is operated by impulse with OPEN/STOP/CLOSE functions. As safety devices a contact edge is connected and a warning siren when the door closes. When the safety device is triggered, the door must stop within 10 cm. In the event of fire the door closes immediately (controlled via a central alarm). However, even in the event of alarm the door must stop immediately after a signal from the safety device. After the safety device having been released the door must continue to close by itself (time is adjustable).

Solution

Each side of the door is moved by a three-phase motor. The force is transferred via a tensioned chain, guided in special fittings that prevent sagging. Both sides of the variable span wings are synchronised with each other. Both motors are managed by an SPS control system with a frequency converter. This enables adjusting the functions to correspond to individual customer requirements. Further adjustments which may be required later can without difficulty be realised by the SPS control system.

The fire protection function is guaranteed by a battery back-up. In two cases this was set up by the customer and in the other two DICTATOR supplied the battery back-up together with the control system.
Examples of Customised Door Operators

Horizontal Sectional Door with Sharp Bend

The Hermès building in Tokio has a façade that is made of single, flexibly suspended glass blocks, that have been designed to give the impression that the whole building is moving like bamboo in the wind. This idea of architect Renzo Piano (Centre Pompidou/Paris, Daimler City/Berlin) applied also to the garage entrance door. It is made of the same glass blocks and from the exterior cannot be distinguished as a door.

Customer’s Specification

The horizontal sectional door is made of 8 elements, total weight about 2 tons. These 8 elements have to round a 90° bend within a distance of 300 mm. Such a heavy door can only be operated with a chain, that has to be guided as well around this bend. As the object is very far away from production and the time to develop this special solution was very short, a very close cooperation with the manufacturer of the door was required. It was realized by exchanging CAD drawings.

Solution

The 8 elements of the door are operated by a three-phase current motor with frequency converter. The power transmission is effected by a chain. The chain is guided in a special aluminium rail with plastic lining. In the bend the chain is guided over special plastic rollers. The fixing bracket to connect the chain to the door has a flexible fixing in order to compensate for any differences of distance. The elements of the doors are moved by special hangers (one hanger per element). DICTATOR supplied the door drive with the chain guide system and the hangers.
Examples of Customised Door Operators

Further Examples of Customised Solutions

You will find more and more DICTATOR customised solutions in the most different sectors. Please ask for detailed information or the solution of your special application/problem.

Sliding Door Made of 6 Glass Elements in Dubai (weight per element approx. 1 ton)

Multimedia Wall in the Training Centre of the AKV (Assurance Company) in Mainz/Germany

Technics, optics and acoustics become more and more important in training centres. Additionally these facilities have to be flexible. In the shown property (training hall of the AKV in Mainz) the company Haase & Co., Mainz/Germany installed a customised multimedia wall, which normally is concealed but can be used at the push of a button.

Automatic Hinged Doors operated by a logic control for 26 doors integrated in an automatic transport system with Automated Guided Vehicles in a pharmaceutical plant.