

SQUARE 940 Control System with Frequency Converter According to EN 12453

The SQUARE 940 control system has been developed for the DICTAMAT AC-21 door operators. 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 954-1 cat. 2** 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 allows for a position control by an encoder integrated in the door operator and thus a very exact positioning.

The membrane keys on the lid of the casing serve for setting the adjustments and also for operating the door.



Summary

Motors to be connected	three phase 230/400 VAC, max. 0.75 kW
Main features	position control: encoder or separate limit switches
	integrated frequency converter
	password protected acces to adjustment facility
	deadman, impulse or automatic operation
	emergency service in case of faulty safety equipment
	7 relay contacts, 5 of them adjustable
	Meets the safety demands of EN 12453.



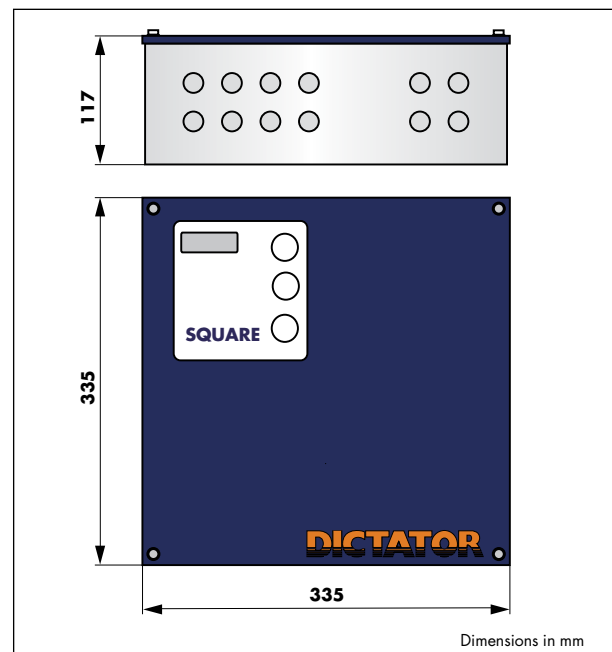


Dimensions / Installation

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

On one side of the casing there are marked holes for in total 12 screw cable inlets (see ill.):
 6 pcs. M16
 4 pcs. M20
 2 pcs. M25.

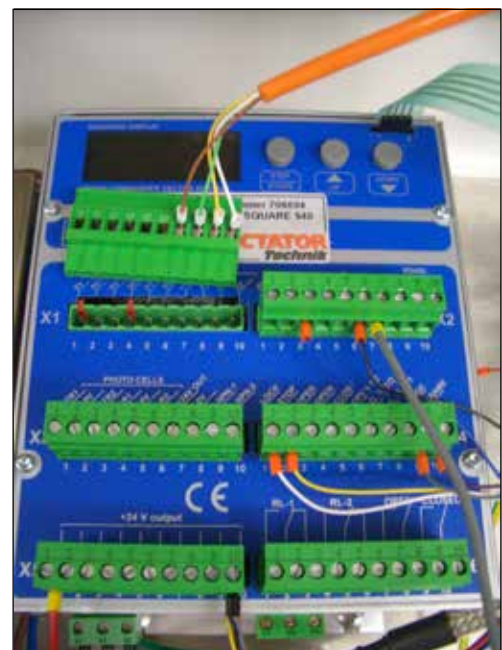


Installation / Electrical Connection of Door Operators

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 screw driver.

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 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 offers a much larger range of adjustments/functions.

Programming and Adjusting

All adjustments are done with the membrane keys on the lid of the casing of the SQUARE 940, the **casing** staying **closed**.

The membrane keys can also serve as operating push buttons.

Operating Options / Safety Features

- *Dead Man or Impulse Function* for the keys OPEN and CLOSE (applies in both directions)
- *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: when this SHE is activated the door stops within the required distance and then reverses during 1 second. This SHE is in function only during closing.
Securing the opening edge (separate connection): when activated the door stops within the required distance. 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 ceased, the door can no longer be operated by motor.
- *Overriding Closing Command*: for special applications (e.g. connection to a fire alarm central) an overriding closing command can be adjusted, during which all other operating elements are without function.

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 position CLOSED (Speed is reduced before reaching the final position, so that no separate final dampers are required.)
- *Acceleration and Deceleration Ramps*: depending on the door weight and its easy movement
- *Fast Stop*: Adjustment of the Stop in closing direction
- *EMERGENCY STOP*: Adjustment of the STOP characteristics upon activation of the safety equipment or by the Emergency Stop push button



Functions (cont.), Technical Data, Order Information

The SQUARE 940 control system permits a great deal of different operating functions. When choosing the operating mode (dead man/impulse/automatic) 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 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 disposes of 7 relay contacts. Two of them are adjusted for the positions "Door Open" and "Door Closed". For all other contacts 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

The SQUARE 940 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.

AC-21 series:	DICTAMAT 900-21
	DICTAMAT 310-21

Technical Data

Voltage	230 VAC, 50 - 60 Hz
Power consumption	8 A
Output voltage (secondary)	24 VDC
Power supply (secondary)	max. 320 mA
Output voltage motor	230/400 VAC three phase
Motor rating	max. 0.75 kW
Dimensions	H x W x D = 335 x 335 x 117 mm
IP rating	IP 54
Recommended fuse protection	16 A

Components Included

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

Order Information

SQUARE 940 control system for the AC-21 door operators part no. 706094