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Valid for
item number:

68050.001

software version SDC 1.04
and higher

SDC-Servo Drive Control

Precision control for
electric valve gate with
linear servo drive

Operating manual

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Content

Safety Instructions

Before working on or inside the controller, ensure it has been disconnected from the power supply. Set the power switch to OFF and disconnect the mains plug. Connection, repair and maintenance work may only be carried out by qualified skilled personnel.

Before starting up the valve gate system, the plant must be checked in accordance with EN 60204 – 1 or generally accepted standards of engineering practice. The connected components could get hot and there is also crush hazard. Appropriate precautions must be taken for starting up and operation as well as maintenance and repair.

Application range:

This EWIKON control system can be used to operate valve gate nozzles with electrical valve pin drive of EWIKON Heißkanalsysteme GmbH in dry industrial rooms.

Please note:

The servo controller installed in the controller is parameterized for a specific application (see information on the front and rear side of the controller). The settings for power and position values can only be used for the indicated mould or identical moulds with the same servo motor. If used otherwise the connected components may be damaged.

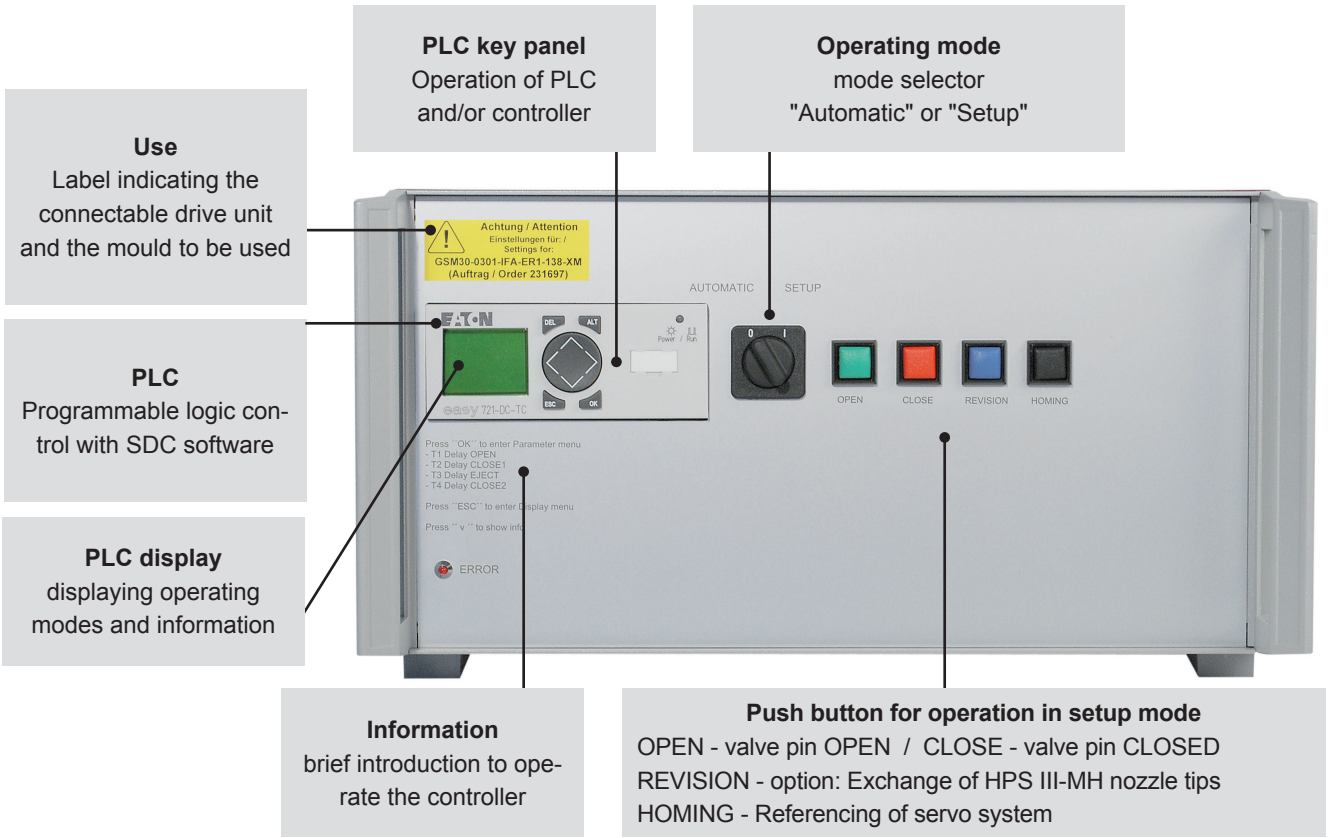
Every time the power supply of the controller is switched on an automatic reference run is done to adjust the position of the servo system. This step should only be carried out when the filled or empty mould is heated up and the necessary safety measures have been taken to avoid any damage to the valve pins or the drive unit. Furthermore, the system must only be run using the protective cover. Otherwise there is crush hazard.

Display and Operating Elements

The SDC control combines a complete servo drive controller with a programmable logic control (PLC) to realise a simple and independently working unit for the use of a synchronous plate mould with linear servo drive units. The normally required signals are generated internally via the PLC, so just one simple digital signal is necessary to open and close the valve pins.

The SDC control is operated via few switches and push buttons positioned on the front side as well as the buttons of the PLC, the mains switch to switch the operating voltage on and the device fuse (F6.3 A) are positioned on the rear side. The display of the PLC shows error and functional status as well as further information. The software provided can be used to establish a connection to the assembled servo controller via the interface on the rear side of the controller to get further information on troubleshooting, if problems occur (in addition, the parameter setting of the servo controller can be changed, so it can be used with other servo motors as well. However, specific knowledge of the connected motors is necessary, therefore, these changes must only be carried out by skilled personnel to avoid any damage!).

Thanks to the few and clearly arranged operating and display elements a simple and easily-learnable operation of the device is guaranteed. This minimises the risk of a faulty operation.



Please read this operating manual carefully before starting up the control unit and the connected servo motor for the first time to avoid damages to device, motor and mould.

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Connector and Operation, Connector Pin Assignement

The connector plugs of the valve gate control for connecting the injection moulding machine control with the mould (drive motor) are located on the rear side of the device. Mains supply, mains switch and fuse are also located there.

Motor plug "Power"
"Power" connector plug to servo motor

Motor plug "Resolver"
"Position determination" connector plug to servo motor

Signal socket
Trigger signal from the injection moulding machine

Mains switch
Device switch

Mains connection
Mains connection cable, operating voltage 230V +5/-10%, 50-60Hz

Fuse
Device fuse, F6.3A

Use
Label indicating the connectable drive unit and the mould to be used

Failure indication outlet
Failure indication outlet to injection moulding machine

RS232
Interface of the servo controller to read out information (or to set parameters)

Please adhere to the following procedure to connect and start up the control unit in order to avoid possible problems:

Please use the cables provided for power supply and positioning system. Both cables are preassembled ready-to-connect and not interchangeable.

The motors may only be connected when the control unit is switched off!

A trigger signal from the injection moulding machine is required to control the motors: it triggers the lifting motion of the motors through the control unit. The signal "start build-up clamping force" is preferably used to open the valve pins, alternatively the "close mould" or "start injection" signal can be used. If a signal is applied the valve pins open and remain in this position, if the signal is cancelled the valve pins close again.

The trigger signal is electrically connected to the machine's control unit by using the attached signal cable (item number 60070.023). Two different versions of wiring are possible:

1) **The injection moulding machine provides a "+24V DC" output signal:**
The output signal (+ 24V DC) is connected to contact 2 (green core)
The machine's ground (GND) is connected to contact 5 (brown core).

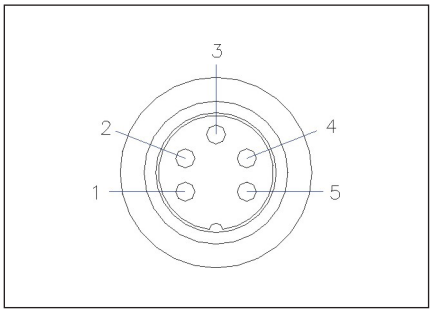
2) **The injection moulding machine provides a potential-free contact:**
The potential-free contact of the injection moulding machine's controls is connected to contact 1 (white core) and contact 2 (green core) of the valve gate control unit.

Alternatively, two impulse signals can be used to open and close the valve pins. In this case connect contact 3 (yellow core) just like contact 2. The following chapter describes the setting of the control unit for this operating mode with two signals.

The signal "RELEASE" has to be connected to the third signal input (contact 4, grey core) in any case as the servo motor only moves when the signal is applied. This avoids damages to valve pins or the drive unit due to overloading, should the hotrunner not be heated up properly. The hotrunner controller or the injection moulding machine have to provide the necessary signal.

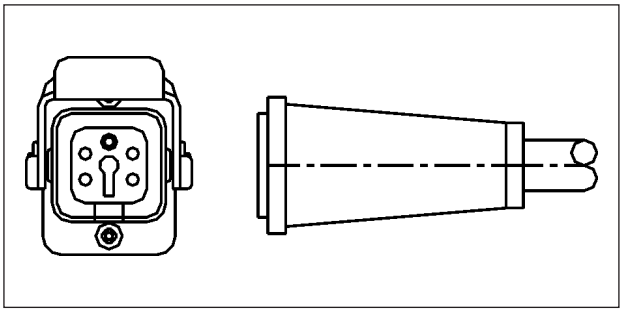
Insulate unused cores of the signal cable 60070.023!

Contact / Core	Description	Use
1 / white	+24V DC	Operating voltage +24V
2 / green	"OPEN" (+24V)	Signal input VP "OPEN"
3 / yellow	"CLOSE" (+24V)	Impulse input VP "CLOSE"
4 / grey	"RELEASE" (+24V)	Temperature release
5 / brown	GND	Ground controller



If necessary the failure indication outlet of the controller can be connected to the injection moulding machine to report failures to the higher-level control unit and to cause an operator reaction. The controller provides a potential-free make contact which can be loaded with 6 A / 250 V.

Contact	Use
1	Failure indication contact (Schließer)
2	Failure indication contact (Schließer)
3	Message "Valve pin CLOSED" (Schließer)
4	Message "Valve pin CLOSED" (Schließer)
PE	Protective earth conductor

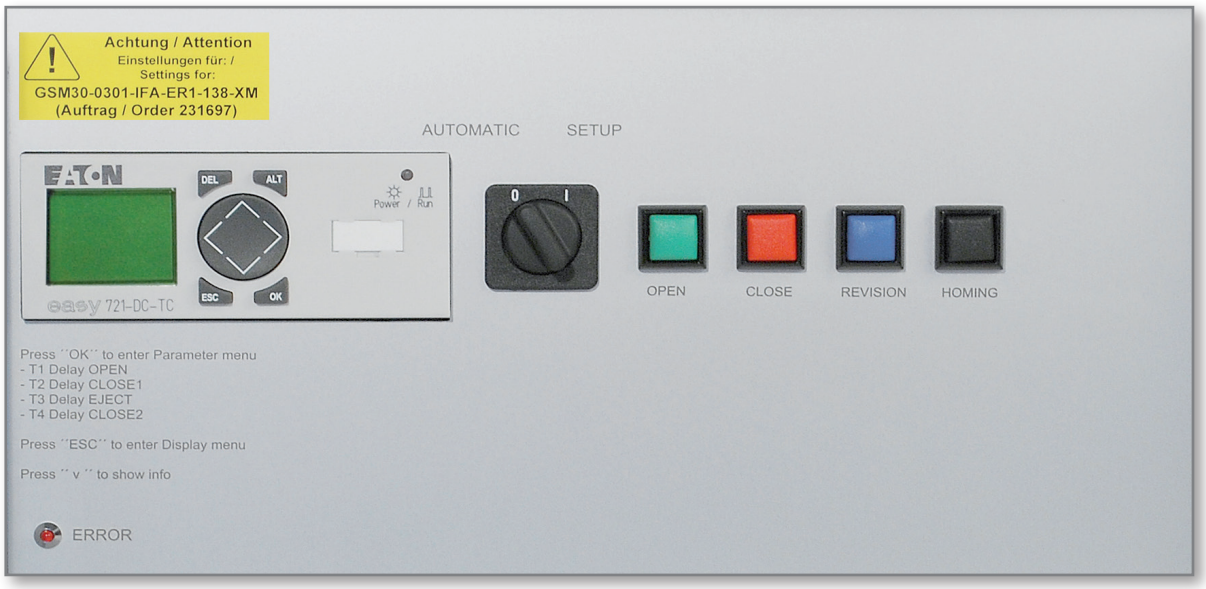


Before inserting the mains plug and/or connecting the power supply cable please make sure that the nominal voltage indicated on the type plate corresponds with the mains supply.

Further operation of the control unit, adjustment of the drive units for the application and modification of the features to the control of the injection moulding machine are carried out in accordance with the following chapter. Before using the electric valve gate control unit for the first time, it is therefore recommended to read the complete instruction manual in order to achieve best operational performance and to avoid problems.

Operating the Controller

The controller is operated via few keys and switches positioned on the front side, so a quick familiarisation with and correct operation of the controller are guaranteed. Two operating modes, "AUTOMATIC" and "SETUP", are available. The display of the PLC helps the operator to reproduce all operating steps and identify errors.



"SETUP" operating mode

In this operating mode the drive system is operated manually; the 4 buttons positioned on the front side are available.

"**OPEN**": Valve pins open manually, f. ex. to rinse the hotrunner system or for test purposes

"**CLOSE**": Valve pins close manually, f. ex. to rinse the hotrunner system or for test purposes

"**REVISION**": Option for hotrunner systems with HPS III-MH nozzles, the nozzle tips can be exchanged in this position.

"**HOMING**": Position adjustment of the servo system is triggered manually, f. ex. after having changed the settings for the zero point offset or other parameters for the referencing method of the servo controller

"AUTOMATIC" operating mode

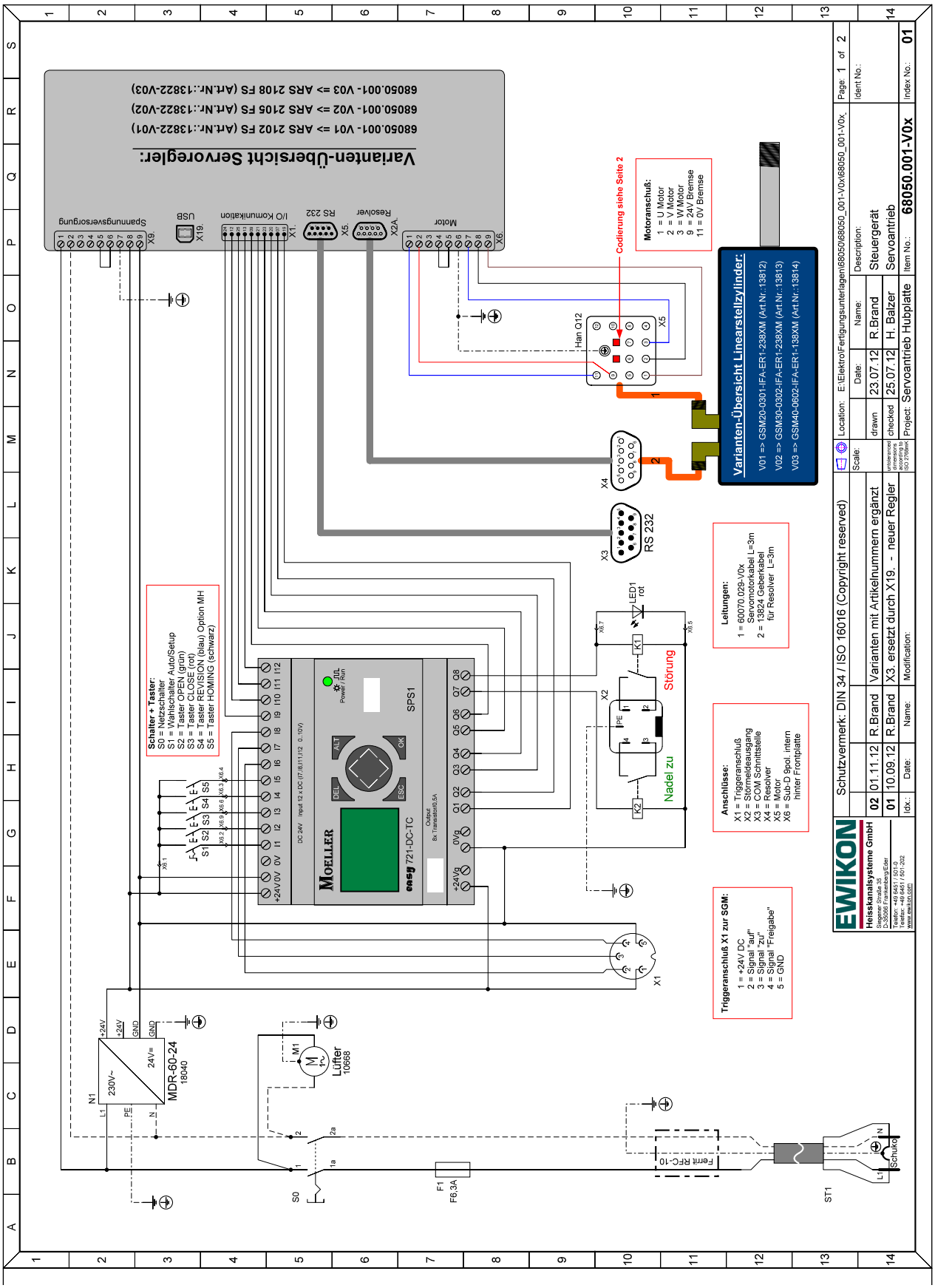
The control unit is in production mode, triggering is done via the signal inputs of the device.

By using the "**OK**" button you enter the parameter menu of the PLC where values can be changed, by using the **"ESC"** button you return to the normal information display. By using the " **v** " button either the shot counter or the operating hour counter is displayed alternately. Use the parameter menu to set additional delays regarding the opening (T1) or closing (T2) of the valve pins, if an adjustment to the signal of the injection moulding machine is necessary.

Change between operation with 1 signal or with 2 signals by simultaneously pressing the "^" key on the operating panel of the PLC and the front key **"OPEN"** in automatic mode. The display shows the selected setting for a short time. When operated with 1 signal the valve pins remain open as long as the signal at the input of the control unit is available. When operated with 2 signals the valve pins open when receiving an impulse (> 100 ms) at signal input 1 and remain in this position until a futher impulse at signal input 2 of the control unit triggers the closing movement.

In SETUP mode and in the event of other errors, f.ex. reference run of the systems or missing temperature release, the failure indication outlet of the controller is set. By evaluating the control unit of the injection moulding machine improper operation can be avoided when there are problems in the servo systems.

Wiring diagram



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EC Declaration of Conformity

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We hereby confirm that the products described below conform to the essential protection requirements of the following European Directives

2006/95/EC „Low Voltage Directive“

and

2004/108/EC „EMC Directive“

with respect to their design type. This requires that the products are used for their intended purpose and that the assembly and operating instructions are observed.

Alterations made to the product will void the declaration of conformity.

Producer:

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Product:

EDC E-Drive-Control step motor control
for the operation of linear actuators in hotrunner valve gate systems

SDC Servo-Drive-Control servo motor control
for the operation of linear drives in hotrunner valve gate systems

Type:

68050.001 ; SDC controller, 1-zone

68051.004 ; EDC controller, 4-zone
68051.104 ; EDC controller, 4-zone
68051.008 ; EDC controller, 8-zone
68051.108 ; EDC controller, 8-zone
68051.018 ; EDC controller, 8-zone
68051.118 ; EDC controller, 8-zone

Applied standards:

DIN EN 61010-1: 2011-07	“Safety requirements for electrical equipment for measurement, control, and laboratory use - part 1”
DIN EN 61000-6-2: 2006-03	“Immunity for industrial environments”
DIN EN 61000-6-4: 2007-09	“Emission for industrial environments”

Note: It is necessary to use genuine connecting cables outside the device to meet the requirements according to DIN EN 61000-6-2 and DIN EN 61000-6-4.

Frankenberg, 02 April 2012

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