

valid for item numbers:

68153.104

68153.108

68153.118

software version 1.01.0
and higher



Controller for cold runner valve gate systems
with electric drive unit

EDC-PRO CS

Electrical Drive Control

Professional COOLSHOT

Operating manual

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1. General information



NOTE!

Improper operation of the device may result in severe personal injury and considerable material damage! You must carefully read this operating manual and familiarise yourself with the safety installations before installing, commissioning or maintaining the device. Do not operate the device without having received appropriate training.

1.1 Information on this operating manual

This operating manual has been created in accordance with the directive 2006/42/EC to enable the safe and efficient operation of the EDC-PRO CS Electrical Drive Control Professional COOLSHOT controllers (in the following referred to as "EDC-PRO CS controller").

1.2 Manufacturer

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1.3 Formal information on this operating manual

Person in charge of documentation: Horst Balzer

Version: 1.1; date: 07/09/2020

Language: German (original operating manual); English

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1.4 Conventions

1.4.1 Instructions and system responses

Operating steps that have to be carried out by the operator are displayed as a numbered list. The sequence of the steps has to be adhered to.

Example:

1. Operating step 1
2. Operating step 2

1.4.2 Enumerations

Enumerations without mandatory sequence are displayed as a list with bullet points.

Example:

- Point 1
- Point 2

1.4.3 Abbreviations

The following terms and abbreviations are used in the VDC controller manual:

| Abbreviation | Meaning |
|--------------|---|
| PPE | Personal protective equipment |
| EDC-PRO CS | Electrical Drive Control Professional COOLSHOT, controller for cold runner valve gate systems |
| PE | Protective earth conductor |
| EU | European Union |
| LSR | Liquid Silicone Rubber |

Chart 1: Terms and abbreviations

2. Safety instructions

The EDC-PRO CS controller conforms to the Low Voltage Directive 2014/35/EU and the EMC Directive 2014/30/EU. It has been designed, manufactured and checked for safety according to the applicable safety rules and legislation and the state of the art. If the EDC-PRO CS controller is used in any way not specified by EWIKON, the function of the device's protective equipment may be affected.

The EDC-PRO CS controller is delivered in perfect working order.

EDC-PRO CS controllers may pose risks, if they are:

- not operated by professionally trained staff.
- used improperly or not used as intended.
- not in perfect condition regarding safety.

2.1 Safety instructions and symbols used

Signal words introduce the safety instructions and are marked by symbols. They draw the user's attention to possible hazardous situations that may occur during installation, operation and maintenance. Safety instructions must be followed to prevent accidents, personal injury or material damage.

Warnings

- protect against possible personal injury and material damage when followed.
- classify the extent of hazard by the signal word.
- indicate the risk of personal injury by hazard signs.
- indicate the type and source of hazard.
- indicate the risk and possible consequences.
- show measures to prevent hazards and prohibit certain behaviours.



WARNING! = Signal word

Source of hazard

Possible consequences, if ignored

- Measures/prohibitions

The hazard sign marks warnings which warn against personal injuries.

Source of hazard

The source of hazard indicates the cause of hazard.

Possible consequences, if ignored

If the warnings are ignored, possible consequences will be e. g. crushing, burnings or other severe injuries.

Measures/Prohibitions

"Measures/Prohibitions" lists actions that are to be carried out to prevent a hazard (e. g. stop a drive unit) or that are prohibited in order to prevent a hazard.

2.1.1 Signal words for hazard classification



HAZARD!

indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



WARNING!

indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury.



CAUTION!











indicates a potentially hazardous situation which, if not avoided, will result in minor injury or material damage.



NOTE!

indicates useful additional information and tips to promote trouble-free operation and to prevent material damage.

2.1.2 Explanation of pictograms

| | | | |
|---|---------------------------------|---|---|
|  | Read operating manual |  | Caution! Risk of electrocution |
|  | Caution! Hot surface |  | Caution! Oxidising agents |
|  | Caution! Suspended load |  | Caution! Risk of hand injuries / crushing |
|  | Caution! Explosive atmosphere |  | Caution! Risk of hand injuries / snag |
|  | Caution! Systems under pressure |  | Caution! Moving forklift traffic hazard |

2.2 Intended use

EWIKON controllers are exclusively designed for the intended use described in this manual.

Any different and unintended use is excluded and may result in personal injuries and material damage. Warranty expires in this case.

The EDC-PRO CS Electrical Drive Control Professional COOLSHOT controller is only to be used to control valve gate nozzles of EWIKON cold runner systems which are installed in a closed injection moulding machine.

In order to use the device as intended it is essential that all tips and information given in this operating manual are read, understood and followed.

To ensure safe operation of the EDC-PRO CS controller the given maintenance & inspection schedule has to be adhered to.



Use of the EDC-PRO CS Electrical Drive Control Professional COOLSHOT controller

Use the EDC-PRO CS controller exclusively for its intended use and in perfect condition as regards safety!
This is the only way to guarantee a reliable operation of the EDC-PRO CS controller.

2.3 Improper use

Any use deviating from the use defined under "Intended use" or that goes beyond that use is considered improper use.

2.4 Qualification of staff

The staff has to prove that it is qualified to perform assembly, maintenance and repair. Any lack of knowledge has to be eliminated by training and briefing the staff.

2.4.1 Demands on specialised staff

Improper use of EWIKON controllers may result in personal injuries or material damage. Only specialised staff is allowed to carry out any work.

Only specialised staff is allowed to connect and operate EWIKON controllers. Specialised staff is trained, has proven knowledge and experience in operating e. g. injection moulding units or electrical machines and devices as well as knowledge of the relevant regulations and is able to independently identify possible hazards and prevent them by taking protective measures.

2.5 Personal Protective Equipment (PPE)

Wear the necessary protective equipment when working on or near the machine. Special information on the personal protective equipment in the work area has to be observed.

2.5.1 Symbols of the personal protective equipment

Always wear the following when carrying out any work:



Protective clothes: To protect your body wear tight-fitting clothes with low resistance to tearing, without protruding parts and with long sleeves and long trousers. Do not wear rings, chains or any other jewelry.



Safety shoes: To protect yourself against electric shocks, melt splashes, heavy, falling objects and slips and falls on slippery surfaces.

Always wear the following when carrying out special work:



Safety glasses: To protect your eyes against scattering debris, heat and melt splashes.



Ear protection: To protect your ears against loud ambient noises.



Face mask: To protect your face against scattering debris, heat and melt splashes.



Protective helmet: To protect your head against falling objects and sharp edges.



Protective gloves (heat resistant): To protect your hands against extreme heat, abrasions, punctures and more severe injuries.



Heat resistant apron: To protect your body against extreme heat.

2.6 General hazards and safety measures

The company operating the system must comply with the statutory obligations on occupational safety. In addition to the safety instructions of this manual the safety, accident prevention and environment protection provisions applicable for the system's range of use must be adhered to. The operating company must clearly define responsibilities and make sure that all staff operating the system has read and understood this manual. The company also has to inform about hazards at regular intervals. Personal protective equipment has to be made available to the staff. Maintenance intervals have to be respected.



Risk of physical injuries by high pressure or unexpected material leakage

- Unexpected material leakage may result in burns. There is a risk of serious injuries or death and/or damage to the cold runner.
- There is also a risk of burns, if water gets onto heated surfaces. If the water reaches dangerously high temperatures, the metal housing may burst and cause serious injuries due to emerging water vapour or crosslinked silicone.



Safety measures

- Make sure the nozzle tips and/or the gates are not blocked by crosslinked silicone and that there is no humidity on the cold runner system, e.g. caused by a leaky temperature control circuit before heating up the heated separator plate.

**Risk of burns**

- Hot surfaces
Partitions of the cold runner system get very hot and may cause severe skin burns when being touched.
- Hot silicone finished part
The freshly cross-linked finished part must in no way be touched immediately after the end of the injection moulding process. It can be very hot and cause burns.

Safety measures

- Please make sure you wear your personal protective equipment (PPE) when working near or on a cold runner system. Pay special attention to warnings indicating hot surfaces. All components have to be cooled down to ambient temperature before you start working. Exceptions to these rules are explicitly mentioned.

**Risk of electric shocks**

- Danger to life by electric shock.
Touching live surfaces may result in severe or even lethal injuries.
- Always keep water away from live components and the cold runner. There is a risk of short circuits!

Safety measures

- Electrical systems have to be disconnected from the mains and secured against being switched on again before any work is carried out. Only authorised electricians are allowed to carry out any work on electrical systems.
- All components have to be connected to a suitable power source according to the wiring diagrams and in compliance with the applicable local regulations. Injection moulding machine and cold runner systems have to be grounded.

**Risk of physical injuries by suspended/heavy load**

- Only trained staff is authorised to operate lifting devices and forklift trucks. Proceed slowly and with care. Prevent uncontrolled swinging of the load (e. g. the manifold).

Safety measures

- Lifting devices and forklift trucks have to be designed in such a way that they bear the weight and the size of the cold runner system/manifold. Make sure to use the marked lifting points.

**Risk of physical injuries by pressurized connecting lines (compressed air, hydraulic oil, water etc.)**

- All supply lines to the cold runner and/or the cold runner system or the cold half have to be long enough to prevent any stress when the mould halves part. They must not be affected by moving parts of the mould or of the machine. Prevent the hoses from rubbing over the edges of the mould as they may be damaged because this will create the risk of a spontaneous leakage of pressurized process media (pressurised air, hydraulic oil, water).

Safety measures

- Make sure you have depressurized all supply lines before carrying out any work. Only skilled personnel is allowed to carry out work on the supply lines. Please wear your personal protective equipment (PPE).

**Risk of physical injuries by sharp edges and corners**

- Sharp edges and corners pose a risk of injury, possibly resulting in skin abrasions and cut injuries.

Safety measures

- Make sure you wear protective gloves when working near sharp edges and corners. Proceed with care.
- Make sure the system is clean and free of burrs.

**Risk of physical injuries by crushing of extremities**

- There is a risk of injury when lifting heavy loads during assembly operations, possibly resulting in crushing of hand or other parts of the body.

Safety measures

- Wear protective gloves to prevent injuries while working around heavy loads.
- Make sure all body parts are kept away from the hazardous area while setting down heavy loads.

2.7 Electrical equipment

**HAZARD!****Residual voltage after activation**

Risk of death by electric shock and severe injuries caused by live components.

- Check for zero potential before performing any work!

Any work on electrical equipment must be carried out by qualified electricians. Always apply the 5 safety rules when working with electrical components:

- Disconnect from the mains
- Secure against reconnection (by activating the repair switch and installing a safety lock at the same time, if necessary)
- Verify that the installation is dead
- Carry out grounding and short circuiting
- Provide protection against adjacent live parts

Maintenance work must be carried out by qualified and trained staff or maintenance staff in accordance with DIN EN 61010-2-201. Never use the EDC-PRO CS controller with faulty or inoperable electrical connections. In case of energy supply disruptions immediately switch off the EDC-PRO CS controller. The maintenance & inspection schedules regarding electrical components given by the manufacturers have to be adhered to. Check for damaged insulation at regular intervals.

2.8 Spare and wear parts, auxiliary material

The use of non-OEM spare and wear parts as well as auxiliary material may pose risks. Only use original parts or parts approved by EWI KON Heißkanalsysteme GmbH.

2.9 Limitation of liability

All information and instructions given in this manual have been compiled in consideration of the applicable standards and regulations, state of the art as well as our know-how and experience.

EWIKON does not assume liability for any damage caused by:

- Non-observance of this manual
- Improper use
- Use of unskilled staff
- Unauthorised retrofitting or technical modifications
- Use of non-approved spare parts

The technical service provided verbally, in writing or on the basis of tests represents our best knowledge but is not binding and does not release you from carrying out additional tests on the products supplied by us regarding their suitability for the intended use.

The use of the products is beyond our control. Therefore, it is your own responsibility to ensure that the products meet your specific requirements. Nevertheless, should an issue of liability arise, all damage shall be limited to the value of the products supplied by EWIKON and used by you.

We guarantee the perfect quality of our products in accordance with our general terms and conditions of sale and payment as well as the extended warranty conditions.

These are available on our homepage **www.ewikon.com**.

The statutory provisions prevailing at the time of conclusion of the contract shall apply.

We reserve the right of technical alterations to develop our products and enhance their performance properties.

2.10 Warranty terms

For warranty conditions of hot and cold runner systems and components please refer to the terms and conditions of EWIKON.

2.11 Standards and directives

EWIKON cold runner systems conform to the following European directives:

- Machinery Directive 2006/42/EC
- Low Voltage Directive 2014/35/EU
- EN ISO 12100:2010 Safety of machinery -
General principles for design - Risk assessment and risk reduction
- EN 60204-1:2007-06 Safety of machinery -
Electrical equipment of machines - Part 1: General requirements

EWIKON controllers conform to the following European directives:

- Low Voltage Directive 2014/35/EU
- EMC Directive 2014/30/EU
- DIN EN 61010-1: 2011-07 "Safety requirements for electrical equipment for measurement, control, and laboratory use -
part 1: General requirements"
- DIN EN 61010-2-201: 2015-05 (draft standard) "Safety requirements for electrical equipment for measurement, control
and laboratory use - part 2-201: Particular requirements for control equipment"

3. Technical data

3.1 Mechanical data

3.1.1 Main dimensions/Dimensions of the EDC-PRO CS controller

| Size | Description | Qty./size (approx.) | Unit |
|--------------------|-------------------------|---------------------|------|
| 4-zone controller | Dimensions (H x W x D)) | 190 x 355 x 400 | mm |
| | Weight | 9.9 | kg |
| 8-zone controller | Dimensions (H x W x D) | 190 x 465 x 400 | mm |
| | Weight | 13.5 | kg |
| 16-zone controller | Dimensions (H x W x D) | 380 x 465 x 400 | mm |
| | Weight | 27.0 | kg |

Chart 2: Main dimensions/Dimensions of the EDC-PRO CS controller

3.2 Electrical data

3.2.1 Connections/Connector pin assignment

| Description | Qty./size (approx.) | Unit |
|----------------------------|---------------------|------|
| Voltage AC (+10 % / -15 %) | 230 | V |
| Frequency | 50/60 | Hz |
| Power | max. 250 | W |
| Protection class | IP20 | |

Chart 3: Electrical data

3.3 Operating conditions

| Operating conditions | Size (approx.) | Unit |
|---|---|------|
| Ambient temperature (operation) | +5 to +40 | °C |
| Ambient temperature (storage) | -40 to +70 | °C |
| Relative humidity for operation (up to 31 °C) | max. 80 (linearly decreasing to max. 50 % at 40 °C) | % |
| Pollution degree | 2 | |

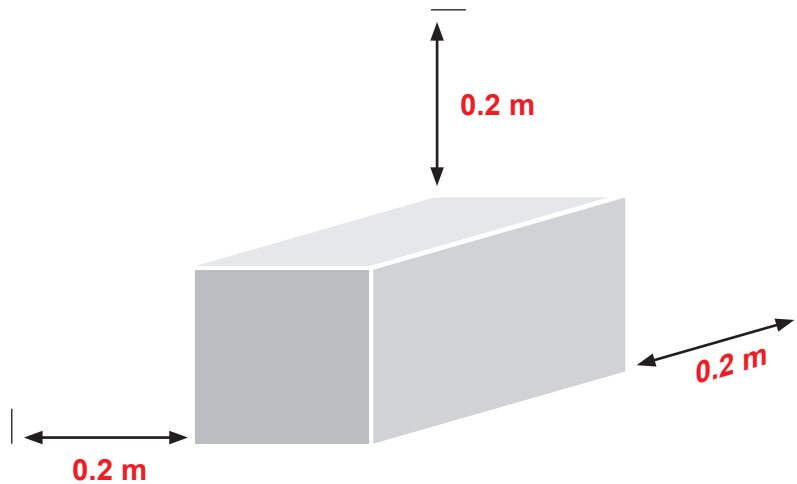
Chart 4: Operating conditions

3.4 Placing the controller

Place the controller on a stable, flat, non-combustible working surface. The display should be at eye level with the user to facilitate reading of the display and operation of the device.

The device includes a built-in fan on the rear side as well as ventilation slots on the underside, protected by a filter. Make sure that the air flow through these openings is not obstructed.

Keep a minimum distance of 0.2 m in all directions around the device to other equipment and parts of buildings.

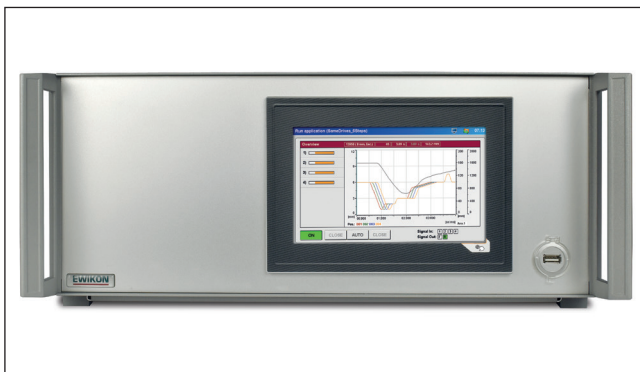


4. Functional description of the EDC-PRO CS controller

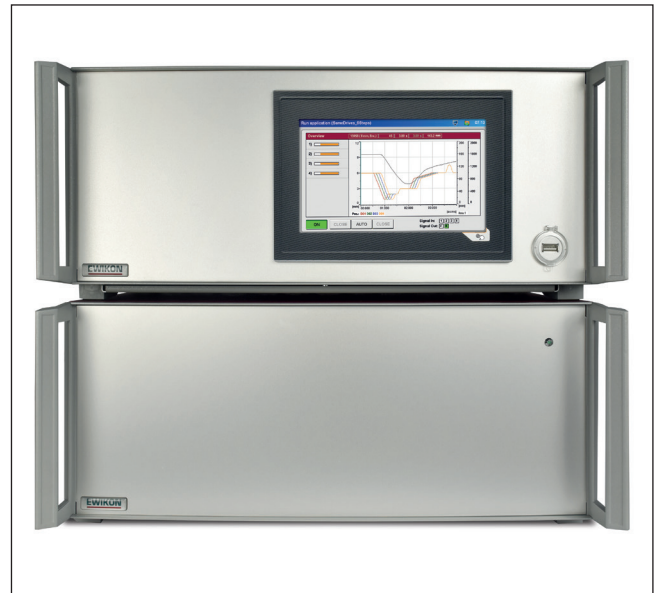
4.1 EDC-PRO CS controller versions



Picture 1: 4-zone device (item no. 68153.104)



Picture 2: 8-zone device (item no. 68153.108)



Picture 3: 16-zone device (item no. 68153.108 as master / item no. 68153.118 as slave)

4.2 Required accessories (connecting cables)

| Qty | item no. | description | remark |
|-------------------------------------|------------------------------|--|--|
| 1 | 60070.043 /-V06 | Signal cable 3/6 m, 6-pin, electric valve gate system | |
| 1 | 60070.031 | Fault registration cable 6 m, electric valve gate system | Recommended for encoder |
| 1 | 60070.024 /-V06 | Motor connection cable 3/6 m, electric valve gate | For 4 drives each |
| 1 | 60070.027 /-V06 | Encoder cable 4-zone, 3/6 m | additionally for encoder, for 4 drives each |
| 1 | 60070.038-V03 /-V06 | Signal cable, analogue, 3/6 m, electric valve gate | Optional |
| Required connecting plug for mould: | | | |
| 1 | 63050.001 or 63050.002 | Motor connection socket flat, electric valve gate Motor connection socket high, electric valve gate | for 4 drives each |
| 1 | 63050.003 | Encoder connection socket 4-zone flat, 4 cables | additionally for encoder, for 4 drives each |

Chart 5: connecting cables required for the EDC-PRO CS controller and connecting plugs required for the mould (not included in delivery!)

4.3 Function

The EDC-PRO CS controllers enables the precise control of the opening and closing movement for electric valve gate drive units, particularly for balancing of the cold runner system when processing silicone. Up to four or eight drive units can be controlled with one EDC-PRO CS controller.

By using the slave devices, item no. 68153.118, the number of drive units to be controlled can be increased by 8 to 16, 24 or 32 per mould.



Application range of the EDC-PRO CS controller

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

5. Operating instructions

5.1 Safety instructions



WARNING!



Residual voltage after activation

Risk of electric shock due to live parts and risk of severe injuries due to moving parts

- Ensure zero potential before performing any work on or inside the EDC-PRO CS controller
- Set the power switch to OFF and disconnect the mains plug
- Connection, repair and maintenance work may only be carried out by qualified specialised staff!



Checks and protective measures before startup

The installation must be checked in accordance with EN 60204-1 or recognised standards of good practice before starting up the valve gate system.

- The connected drive units and cold runner components can get hot
- There is crush hazard due to moving parts (e. g. pistons, cylinders)

Appropriate precautions must be taken for startup and operation.

5.2 Operating requirements

5.2.1 Technical requirements

At least one trigger signal from the injection moulding machine is required to control the drive units. It triggers the stroke movement of the drive units via the control unit. The "start injection" signal is preferably used to open the valve pins, alternatively the "start build-up of clamping force" or "close mould" signal can be used. The "end of holding pressure" signal usually causes the valve pins to close.

When a signal is applied (+24 V), the drive units move and cause the associated valve pins to open and to remain in this position. When the signal is cancelled (0 V), the valve pins close again. If the trigger signal is not made available by the injection moulding machine's controls, an adjustment will have to be made. Further machine signals, e. g. the analogue screw stroke signal, can be used for an individual control of the valve pins or complex movement profiles.

Die EDC-PRO CS controllers are exclusively designed for the drive units mentioned below or the ones that can be selected in the controller.

| Item no. | Description | Flange dimension | Max. force |
|----------|--|------------------|------------|
| 13953 | Electric drive unit Ø1.5 with adaptor | 43 x 43 mm | 350 N |
| 13957 | Electric drive unit Ø2 stroke=8 | 57 x 57 mm | 800 N |
| 13958 | Electric drive unit Ø2 stroke=8 with encoder | | |
| 19857 | Electric drive unit Ø2 stroke=10 | | |
| 19858 | Electric drive unit Ø2 stroke =10 with encoder | | |
| 13987 | Electric drive unit Ø3 stroke=10 | 87 x 87 mm | 1600 N |
| 13988 | Electric drive unit Ø3 stroke =10 with encoder | | |
| 19887 | Electric drive unit Ø3 stroke =10 | | |
| 19888 | Electric drive unit Ø3 stroke =10 with encoder | | |
| 22888 | Electric drive unit Ø4 stroke =15 with encoder | | |

Chart 6: Drive units that can be used with the EDC-PRO CS controller



DANGER!

Insufficient protective conductor connection to injection moulding machine

Fatal electric shock or serious injuries due to live components.

When starting up the system the operator has to make sure that all electrically operated system components are connected to the protective conductor system of the injection moulding machine or are safeguarded by equivalent safety measures before applying any electric voltage.

6. Assembly

The purpose of the following notes is to support the assembly staff during the assembly of the EDC-PRO CS controller. Additionally, the assembly staff has to have the knowledge required to connect a EDC-PRO CS controller.

6.1 Safety instructions



WARNING!

PPE



Cut injuries due to sharp edges and risk of getting jammed

- Cut injuries to body and extremities, mainly to the hands
- Jamming of fingers or hand



Control of live components before installation

The electrical equipment of the EDC-PRO CS controller should be checked, especially those areas which will no longer be accessible after installation. Physical injuries such as an electric shock can be prevented that way.

Please check

- if cables are kinked or squeezed
- if cable insulations are undamaged.

Connected voltage supply during assembly

Risk of electric shock due to live parts

- The EDC-PRO CS controller and all connected components have to be disconnected from the voltage source during installation.

6.2 Checks before installation

The EDC-PRO CS controller is subject to comprehensive testing by the manufacturer before delivery. For safety reasons (transport or storage damage or damage to the device when preparing installation) we recommend that you check the EDC-PRO CS controller for damage just before installing it.

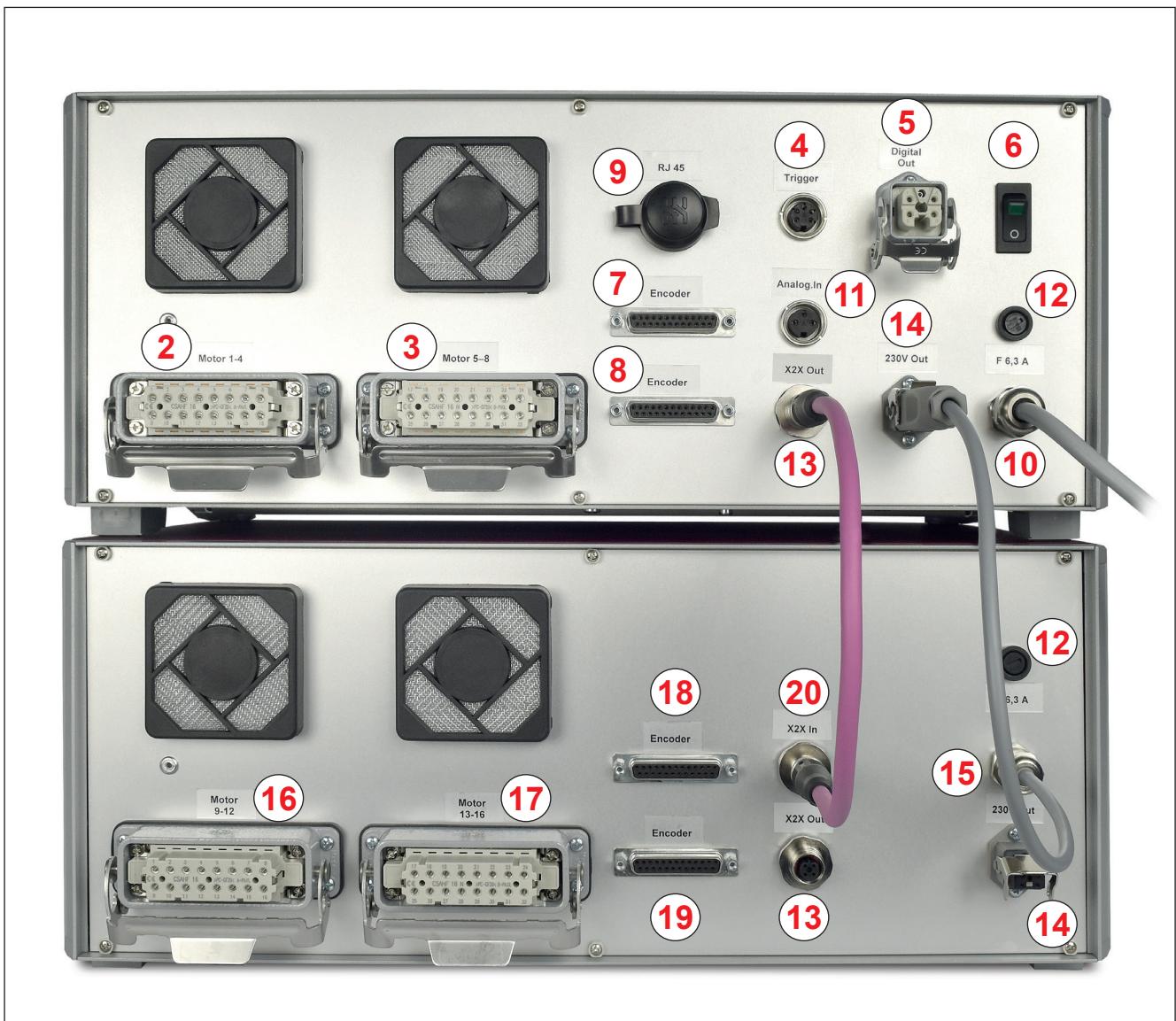
6.3 Installation

6.3.1 Connections and connector assignment of a 16-zone controller

Depending on the model not all connections are available.



Picture 4: Connections on the front side of the EDC-PRO CS controller (here: 4-zone controller)



Picture 5: Connections on the rear side of the EDC-PRO CS controller (16-zone controller)

| No. | Description | Function |
|-----|---------------------------|---|
| 1 | USB socket | USB socket to connect a USB memory stick for data exchange |
| 2 | Motor 1-4 | Connector socket to connect the drive units, 4 drive units per socket |
| 3 | Motor 5-8 | Connector socket to connect the drive units, 4 drive units per socket |
| 4 | Trigger | Digital signal input from the injection moulding machine +24 V (6-pin or 12-pin) |
| 5 | Digital Out | Digital signal output to the control unit of the injection moulding machine (24 V DC) (5-pin or 8-pin) |
| 6 | Mains switch | Switch for power supply |
| 7 | Encoder 1-4 | Connector socket to connect the encoders, 4 drive units per socket |
| 8 | Encoder 5-8 | Connector socket to connect the encoders, 4 drive units per socket |
| 9 | RJ 45 | RJ45 socket, Ethernet for PC monitoring |
| 10 | Mains connection | Mains cable, operating voltage 230V +10/-15%, 50-60 Hz |
| 11 | Analogue In | Analogue signal input for use of screw position for sequential gating (3-pin) |
| 12 | Fuse | Device fuse protection (F 6, 3 A) |
| 13 | X2X Out | Bus output socket used as data connection to slave devices |
| 14 | Mains connection "slave" | Power output socket for voltage supply of slave devices Operating voltage 230 V +10 / -15 % 50-60 Hz |
| 15 | Connecting cable "master" | Mains cable, operating voltage 230 V +10 / -15 % 50-60 Hz |
| 16 | Motor 9-12 | Connector socket to connect the drive units, 4 drive units per socket |
| 17 | Motor 13-16 | Connector socket to connect the drive units, 4 drive units per socket |
| 18 | Encoder 9-12 | Connector socket to connect the encoders, 4 drive units per socket |
| 19 | Encoder 13-16 | Connector socket to connect the encoders, 4 drive units per socket |
| 20 | X2X In | Bus input socket used as data connection to master device |

Chart 7: Connections of the EDC-PRO CS controller

6.3.2 Connecting the EDC-PRO CS controller to the injection moulding machine



CAUTION!

Insulation of unused cores

All unused cores have to be insulated. Failure to do so may result in damage to the device.

Standard connections

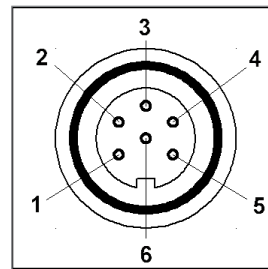
Digital input

The enclosed signal cable (item no. 60070.043, please order separately) is used to make a connection to the control of the machine to provide the trigger signal. Two different versions 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 make contact:
A potential-free make 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.

The connection of the other signals is described below in "Chart 8: Pin assignment of the standard trigger connection (4)".

| Contact / core | Description | Use |
|----------------|-------------|--|
| 1 / white | +24 V DC | Operating voltage +24 V (supply for signal inputs) |
| 2 / green | S1 (+24 V) | Signal 1 input, start cycle |
| 3 / yellow | S2 (+24 V) | Signal 2 input |
| 4 / grey | S3 (+24 V) | Signal 3 input |
| 5 / brown | GND | Ground (operating voltage 0 V) |
| 6 / pink | S4 (+24 V) | Signal 4 input, release |



Picture 6: Trigger connection (4)

Chart 8: Pin assignment of the standard trigger connection (4)

The signal 4 input has a special function. It receives a release signal from the injection moulding machine when all operating conditions allow a movement of the valve pin (see chapter „7.2.4 Setting up application“ Extended).

Analogue input 1

When the analogue input of the control unit is used to obtain information about screw position, screw volume or other analogue signals (e.g. cavity pressure) for sequential moulding, there are two options:

1. Directly connect a signal, the analogue value of which is in linear relation to the screw position, to input (contact 2), 0-10V DC and the ground (contact 3).
2. Connect a linear position transducer with $R = 5 \text{ k}\Omega$. The potentiometer is supplied with the analogue current output (contact 1) and the measured voltage (contacts 2 and 3) is in relation to the screw position.

For connection EWIKON offers an analogue signal cable in lengths of 3 m and 6 m: Item.No. 60070.038-V03 /-V06.

| Contact | Use |
|---------|-----------------------------------|
| 1 | Analogue current output, 0-2.5 mA |
| 2 | Analogue current input, 0-10 V |
| 3 | Ground (reference voltage 0 V) |

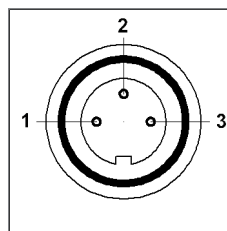


Abbildung 7: 3-pin plug (11)

Chart 9: Analogue In pin assignment (11)

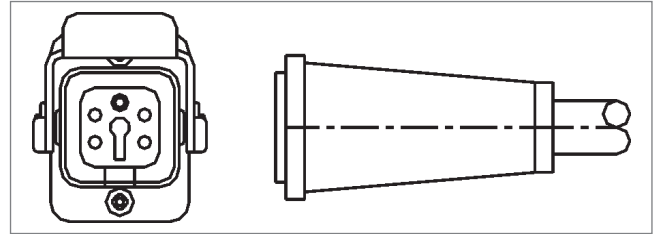
The input needs to be adjusted to the injection moulding machine in the control unit (see chapter „7.2.4 Setting up application“ Analogue IN).

Digital output

If you use the encoder version we recommend that you connect the digital signal output of the EDC-PRO CS controllers to the injection moulding machine to identify when the control is "ready" for the next cycle or when there is an error. Each signal output delivers +24 V DC; maximum admissible load on the output 0.1 A (EWIKON recommends the fault registration cable, item no. 60070.031).

| Contact | Description | Use |
|--------------|---------------|--------------------------------|
| 1 / black 1 | +24 V DC | Operating voltage +24 V |
| 2 / black 2 | Out 1 (+24 V) | "Error" |
| 3 / black 3 | Out 2 (+24 V) | "Ready" |
| 4 / black 4 | GND | GND (operating voltage 0 V) |
| PE / gr / ge | PE | Protective earth conductor |

Chart 10: Digital Out pin assignment (5)



Picture 8: Digital Out signal output (5)

Extended connections of the controllers (option -V01)

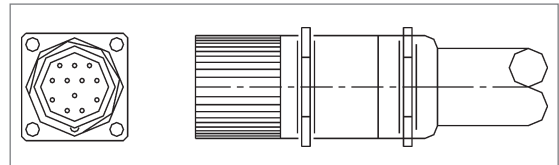
Digital input

Some applications will require more than the 3 standard signals, e.g. if the mould is equipped with pressure or temperature sensors to identify the flow front.

If apart from the "READY" signal a confirmation of the "OPEN" position of at least one valve pin or all valve pins regarding the control of the filling sequences is required, a controller version (-V01) will be equipped with additional 4 digital inputs, 2 digital outputs and 1 analogue input.

The inputs are connected to the injection moulding machine via the signal cable (item no. 60070.019) according to "Chart 11: Pin assignment of the 12-pin trigger connection (4)""

| Contact | Description | Use |
|---------------|-------------|--------------------------------|
| 1 / black 1 | S1 (+24 V) | Signal 1 input, start cycle |
| 2 / black 2 | S2 (+24 V) | Signal 2 input |
| 3 / black 3 | S3 (+24 V) | Signal 3 input |
| 4 / black 4 | S4 (+24 V) | Signal 4 input, release |
| 5 / black 5 | S5 (+24 V) | Signal 5 input |
| 6 / black 6 | S6 (+24 V) | Signal 6 input |
| 7 / black 7 | S7 (+24 V) | Signal 7 input |
| 8 / black 8 | S8 (+24 V) | Signal 8 input |
| 9 / black 9 | +24 V DC | Operating voltage +24 V |
| 10 / black 10 | GND | Ground (operating voltage 0 V) |
| 11 / black 11 | --- | Not used |
| 12 / gr / ge | PE | Protective conductor |



Picture 9: 12-pin trigger connection (4)

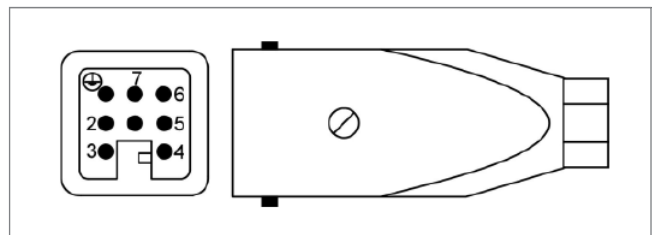
Signal 4 input cannot be chosen in the software but is used as input for a release signal.

Chart 11: Pin assignment of the 12-pin trigger connection (4)

Digital output

"Picture 10: Digital Out signal output 8-pin (5)"" and "Chart 12: Digital Out pin assignment 8-pin (5)"" show the plug for 4 digital outputs. The fault registration cable, item no. 60070.031-V01, is required.

| Contact | Description | Use |
|--------------|---------------|--------------------------------|
| 1 / black 1 | +24 V DC | Operating voltage +24 V |
| 2 / black 2 | Out 1 (+24 V) | Output "ERROR" |
| 3 / black 3 | Out 2 (+24 V) | Output "READY" |
| 4 / black 4 | Out 3 (+24 V) | Output "ALL OPEN" |
| 5 / black 5 | Out 4 (+24 V) | Output "min. 1 OPEN" |
| 6 / black 6 | --- | Not used |
| 7 / black 7 | GND | Ground (operating voltage 0 V) |
| PE / gr / ge | PE | Protective conductor |



Picture 10: Digital Out signal output 8-pin (5)

Chart 12: Digital Out pin assignment 8-pin (5)

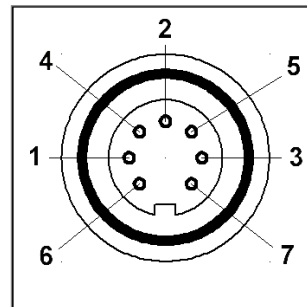
Analogue input 2

The second analogue input can be used in a similar way to the first analogue input, but in addition also other sensors, e.g. cavity pressure, force and universal input 0-10 V, can be connected. Therefore this input also features an operating voltage +24 V DC for sensor supply.

Contacts 1-3 are plug-compatible with contacts 1-3 of analogue input 1 and can be connected and used in the same way. Please see the following chart for further assignment of the plug.

| Contact | Use |
|---------|-----------------------------------|
| 1 | Analogue current output, 0-2.5 mA |
| 2 | Analogue voltage input, 0-10 V |
| 3 | Ground (analogue) |
| 4 | Analogue voltage output, 0-10 V |
| 5 | Analogue current input, 0-20 mA |
| 6 | +24 V DC |
| 7 | GND (operating voltage 0 V) |

Chart 13: Analogue In 2 pin assignment (11)



Picture 11: Analogue In (7-pin plug)

Please contact EWIKON, if you want to use further options, e.g. current input 0-20 mA.

6.3.3 Connecting the EDC-PRO CS controller to the mould



CAUTION!

Switch power off before connecting or disconnecting

Please make sure you have switched off the control units when connecting or disconnecting the drive units as otherwise the output modules may be damaged.

The drive units are supplied with electricity even when they are stopped to generate the necessary retention forces.

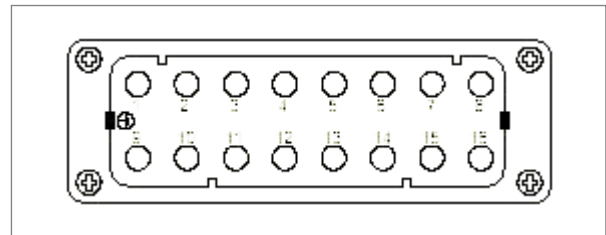
Do not switch on valve gate control until mould has reached set temperature

The valve gate control should not be switched on until the cold runner mould has reached its set temperature and the thermal expansion of the mould is completed. Before inserting the mains connector or connecting the mains connection cable make sure that the supply voltage corresponds with the data given on the type plate. Failure to do so may result in damage to the device.

The EDC-PRO CS controller is connected to the mould via the motor connecting cable, item no. 60070.024 (3 m) or item no. 60070.024-V06 (6m). The ready-to-use shielded cable is especially designed to suit this application and can be used to connect up to 4 drive units. For multi-cavity moulds several cables are required.

| Contact | Use | Motor connection assignment |
|----------------|--------------|------------------------------------|
| 1, 2, 3, 4 | Drive unit 1 | red, red-white, green, green-white |
| 5, 6, 7, 8 | Drive unit 2 | red, red-white, green, green-white |
| 9, 10, 11, 12 | Drive unit 3 | red, red-white, green, green-white |
| 13, 14, 15, 16 | Drive unit 4 | red, red-white, green, green-white |

Chart 14: Pin assignment of motor connection



Picture 12: Motor connection (2, 3, 16, 17)

The connection sockets, item no. 63050.001 (flat) or item no. 63050.002 (high), are required for the mould (please order separately).

If controllers equipped with encoders are used, the drive units used will have to be equipped accordingly. For each motor connecting cable an encoder cable, item no. 60070.027 (3m) or item no. 60070.027-V06 (6m), is required.

The encoder connecting socket (item no. 63050.003) is required for the wiring inside the mould. This socket also contains the encoder cables from the connecting socket to the drive units. The enclosed crimp contacts are used for assembly; a special pair of pliers (e.g. Harting item no. 09 99 000 0021) is necessary. Information about the pin assignment is delivered together with the set of cables.

6.4 Checks after assembly

- Check that all connectors are firmly seated and properly assigned
- Please check whether the injection moulding machine is sending the required trigger signals

7. Startup



WARNING!

Insufficient protective conductor connection, Risk of injury due to moving parts

Risk of electric shock due to live parts

- When starting up the system the operator has to make sure that all electrically operated system components are connected to the protective conductor system of the injection moulding machine or are safeguarded by equivalent safety measures before applying any electric voltage. When applying electric voltage to systems or system components beyond their intended use the operator has to make sure that a sufficient protective conductor connection has been made or equivalent protective measures for each component have been taken.

Risk of severe injuries due to moving parts

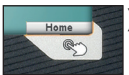
- Keep hands away from the operating area of the drive units during operation, otherwise cut injuries or crushing injuries of fingers and hands are possible. To prevent injuries disconnect the controller from the power supply (disconnect mains plug!) before carrying out any necessary work.

7.1 Basic settings and operation



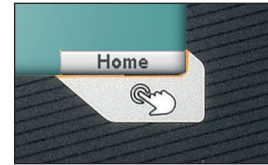
Picture 13: Front view of the EDC-PRO CS 4-zone controller

The EDC-PRO CS controller for electric valve gate systems for use with EWIKON cold runner systems has got a coloured touch screen display via which all settings can be performed.

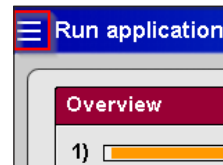
After system startup the start page appears: Use the different submenu icons which are displayed there to operate and set the system. By touching the button in the bottom right corner outside the display area you will return to the start page from all menus. ().

7.2 Description of the menus

7.2.1 Start page



The button in the bottom right corner (picture above) opens the start page. The screen (see picture 12) appears.



If the device is operated remotely via VNC, the three stripes top left ("hamburger button") will open the start page.

Picture 14: Start page of the EDC-PRO CS controller

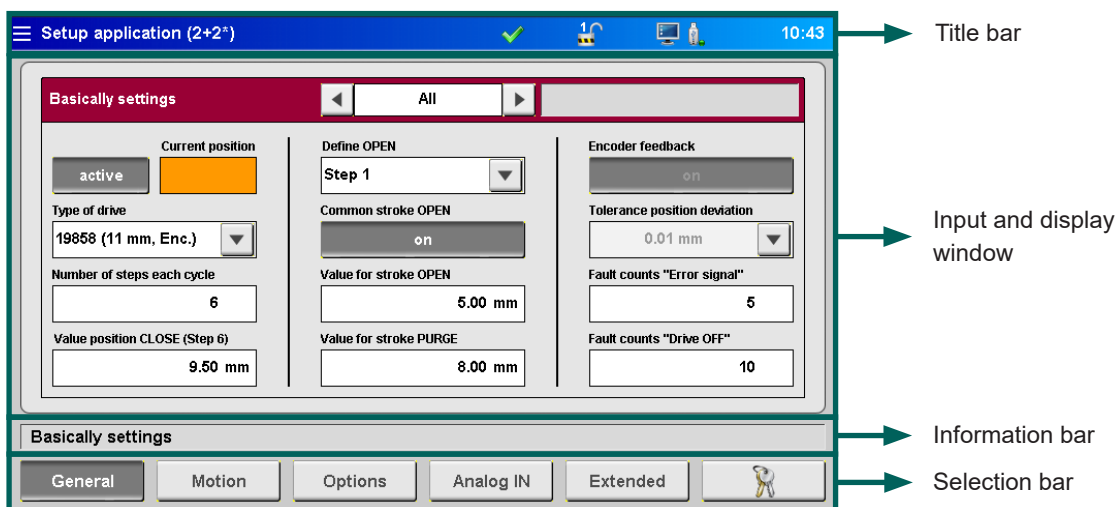
Menu selection:

- Run application
- Setup application
- Diagnostics and troubleshooting
- Setup display and keyword
- File manager

Touch the icons on the screen to open the menu items.

The menus are described as follows:

7.2.2 Screen layout



Picture 15: Screen layout of the EDC-PRO CS controller

The **title bar** includes the name of the menu on the left side and the stored settings („*” indicates changed settings that have not been stored yet). Time is displayed on the right side.

The following additional information is shown by icons:



White cross on red octagon:
Process/temperature has not been released yet.



Gear:
Process release only for manual operation.



Green checkmark:
Process/temperature has been released.



Alarm clock:
Release signal no longer available, elapsing timer signalises how much time is left until the process release is reset.



Note pad:
The HTML file of the recipe file is being generated.



Access level:
Opened keylock and figure indicate the currently open access level.



Data output:
A printer symbol is shown when requested data are output.



Floppy disc:
A disc icon indicates a saving process on the internal drive or an available USB stick.



Screenshot:
Screen symbol flashes when a screen shot is generated and saved. In some menus a button with this symbol triggers the described feature. The current display is saved as a file on the internal drive and an available USB stick.



USB stick:
This icon indicates that a USB stick is available and recognised correctly.



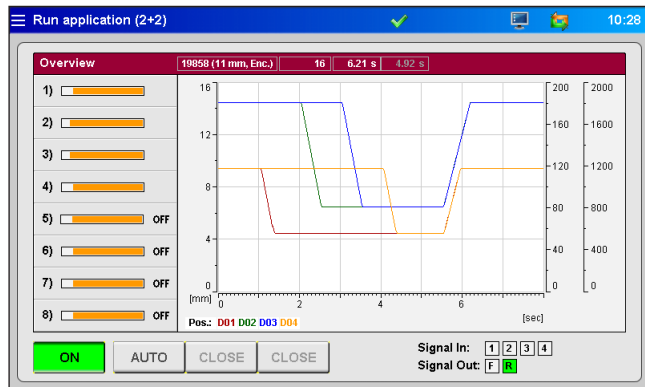
Encoder:
The green and the orange arrow will be displayed, if the encoder feedback is active. If only the green arrow is displayed, the drive unit will be operated without position monitoring.



Warning:
A warning or malfunction is indicated.

7.2.3 Normal operation of application

Chart view



Picture 16: Diagram view of normal operation of application

The **red overview bar** shows the following values:

- Item number of the selected drive unit type
- Shot number
- Opening time of the current cycle (time since the trigger signal "start cycle" has been identified)
- Opening time of the previous cycle
- When analogue input 1+2 is used: Current screw position, screw volume or cavity pressure

Process chart:

The process chart displays the position history and the measured value for each active drive unit at the analogue inputs of the EDC-PRO CS controller. Scaling of the 4 axes (2 x analogue, position and time) can be adapted by clicking on the top/bottom end of the scale (hidden buttons).

Recording automatically starts with every start of cycle (signal 1 = 24 V) of the EDC-PRO CS controller and ends after the end of the time scale has been reached.

Orange bars in the left column of the overview show the actual position of each drive unit. The bars are scaled to the maximum stroke of the selected drive unit.

- Bar on the right = Valve pin in rear position (open)
- Bar on the left = Valve pin in front position (closed)

Symbols shown on the process display and their meaning:

| | |
|----|--|
| 1: | = Drive unit switched off |
| 1: | = Drive unit on standby |
| 1: | = Setup mode activated |
| 1: | = Homing or adjusting position "CLOSE" |
| 1: | = Position warning |
| 1: | = Position error |

Buttons positioned below the overview:

- Switch power supply of the valve pins on or off
- Select operating modes "AUTO" or "SETUP"
("SETUP" operating mode: Use the key <CLOSE/FORWARD> or <CLOSE/PURGE> to move the valve pins forward, to open or close or purge them manually. The keys are interlocked.)

Right side of the control bar: shows information about the digital input and output:

- The input "signal 1" (S1) is the main trigger to start a cycle.
- The other inputs are for free use to trigger different events, e. g. some drives open or close separately from the others.
Exception: "signal 4 (S4)" cannot be selected for triggering but is only used for process / valve pin movement release.
- Pending signals: allocated square flashes orange

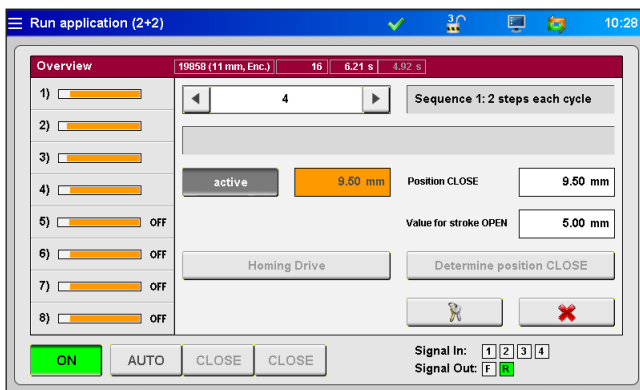
Up to 8 input signals are possible (extended controller version -V01).

- Digital output 1 sends a signal to the injection moulding machine that there is an error in the EDC-PRO CS system.
- Output 2 can be configured in menu "General system settings", if necessary (default setting: "READY for next cycle") and is normally used to release the machine.

Additional features in extended controller version -V01:

- Output 3 indicates that all valve pins are open
- Output 4 indicates that at least one valve pin is open

Individual view



= Access level can be entered here

Picture 17: Individual view of normal operation of application

Select the requested drive unit to access this view.

All drive units can be switched **<active>** or **<inactive>**. The current valve pin position is displayed in the orange field (only when a single drive unit is selected, not in view "ALL").

Further information:

- Selected sequence
- Status of each drive unit
- Determining position CLOSE
- Value for stroke OPEN
- Perform homing procedure in setup mode
- Determine CLOSE position in setup mode
- Entering access code
- "X" = back to chart view

Due to the conical valve pin shape the determination of the best possible "CLOSED" position in silicone moulds is very time-consuming in many cases. In order to simplify this procedure a function for the automatic determination of the "CLOSED" position is integrated. After pressing the button "Determine position CLOSE" the referencing of the system starts. After that the forward mechanical stop of the valve pin is determined in three cycles. During each cycle the valve pin is retracted until it reaches the "PURGE" position in order to clean the flow channel from potentially existing silicone residues. Finally the determined value is set as "Position CLOSE" and the valve pin is moved to this position.

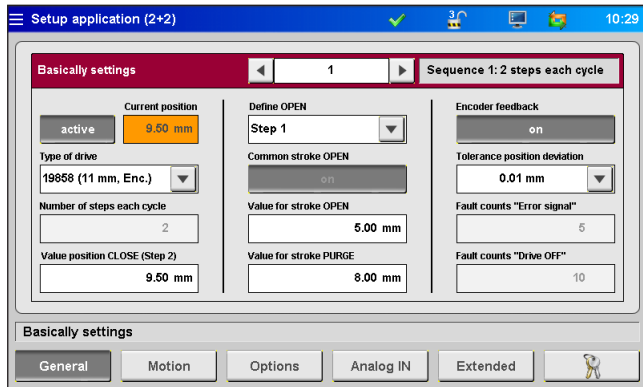
Attention: The determined values must be saved as recipe file!

7.2.4 Setting up application

You can navigate through the settings in the selection bar.

Changes to most settings are only possible after having entered a higher access level (compare chapter „7.2.6 Configuring the display & Keyword“)

General (basic settings)



Picture 18: "Basic settings"

Basic settings

- Use **< + >** in the main bar to choose the drive unit the settings of which are to be changed. "All" is possible as well. Some options can only be set if a separate drive is selected others are only selectable for all drives. (grey field = not available).
- The display field on the right side of the main bar shows the current status of the drive unit in written form.
- **active / inactive** determines whether the drive unit is to follow the motion profile or not.

Actual position

Displays the actual position of the drive unit (hidden when "all" is selected).

Drive unit type

The drive unit to be controlled is selected by the item no. As long as the use of different drive unit types is not permitted, this selection is only possible in the view "ALL". The item no. can be found on the type plate of the cold half. **Attention!** Adhere to the notes ¹⁾ and ²⁾ in chapter „5.2.1 Technical requirements“ on page Seite 20).

Number of steps per cycle

The number of movements per cycle (2–6).

Value of CLOSED position (assignment of steps)

Determination of CLOSED position in mm.

Define OPEN

Necessary to determine the position which is to be approached in setup mode.

Common stroke OPEN

Uniform stroke for "All" <on / off>.

Value for stroke OPEN

Determination of the path in the event of a joint stroke for "All" in mm.

Value for stroke PURGE

Setting of a larger stroke for purging of the cold runner system.

Encoder feedback

Position monitoring <on / off>
(device and drive unit have to be equipped appropriately).

Tolerance position deviation

The limit value for the deviation can be increased to compensate for measuring tolerances of the encoder system, particularly if larger drive units are used.

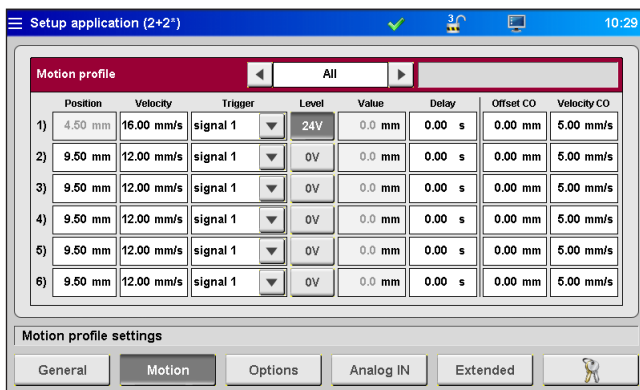
Fault counts "Error signal"

Number of position errors in a row after which an error is reported to the injection moulding machine.

Fault counts "Drive OFF"

Number of position errors in a row after which a drive unit is switched off to prevent damage.

Motion (setting movement profile)



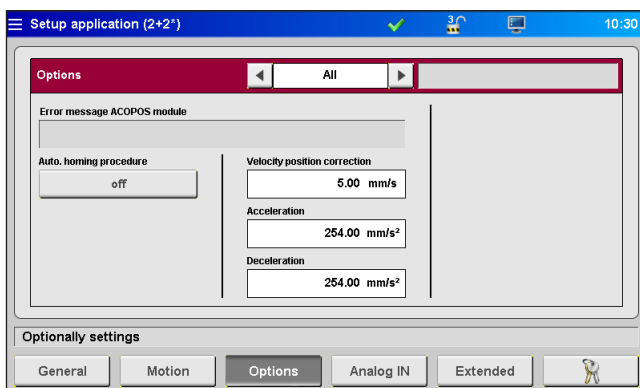
Picture 19: "Movement profile settings"

The settings for the trigger events can be entered here.

The following parameters can be set and selected for each step:

- The position as numerical value in mm. Position OPEN (here: step 1) cannot be set as the value is calculated via the joint stroke (compare chapter 7.2.4, section "General (basic settings)").
- The speed set to reach the position
- The trigger source from one of the digital signals or the analogue signal
- Depending on the selected trigger source either the signal level, "24 V", "0V" or the comparative value applies.
- A delay time can be added to each trigger event to cause a time-shifted reaction of the drives.
- Additionally, a switchover point can be defined from which the speed is reduced to the set value. This may help to reduce e.g. abrasion by fast valve pin movement in the gate area.

Options (optional settings)



Picture 20: "Optional settings" view

ACOPOS module: error message Display panel for error messages of the power module

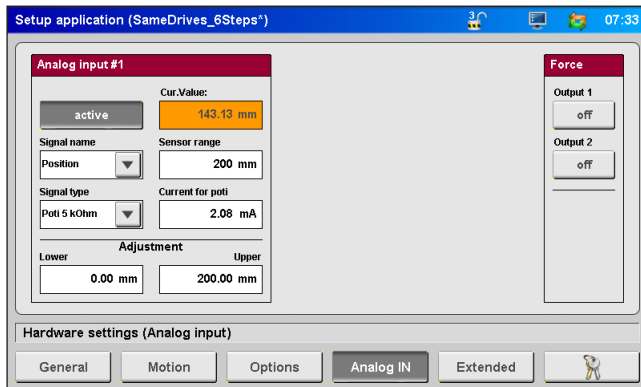
Automatic homing procedure Determines whether the drives do a homing procedure every time the device is switched on (material shrinkage when cooling down) <on / off>

Speed:position correction If a drive does not reach its preset positions, the control will try to correct this with the speed set here.

Acceleration Value to reach setpoint speed.
This value is dependent on the selected drive.

Braking deceleration Value to come to a standstill from the setpoint speed.
This value is dependent on the selected drive.

Analogue IN (hardware settings (analogue input))



Picture 21: "Hardware settings (analogue input)" view

On this side the analogue inputs 1 + 2 (if present) are adapted to the application.

Signal name (changes the unit of the analogue value):

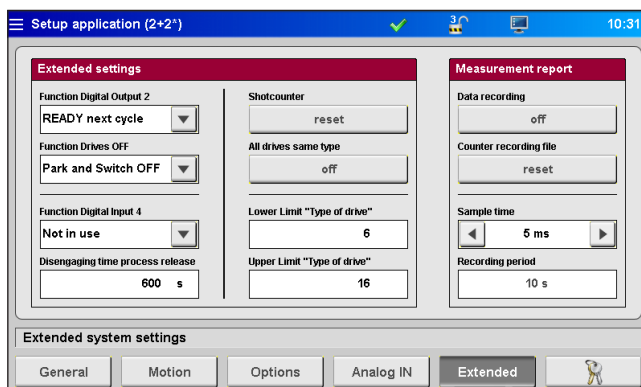
- "Position" in "mm"
- "Volume" in "ccm"
- "Pressure" in "bar"
- "Force" in "N"
- "Voltage" in "V"

Signal type (sensor type):

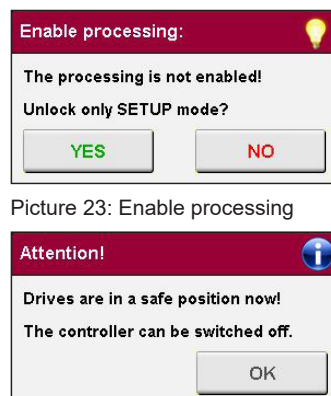
- Signal 0-10 V DC
- Linear encoder (R = 5 kΩ)
- The measurement range of the sensors is entered as a numerical value.
- The measurement current for potentiometers can be set to offset tolerances of the encoder 5 kΩ and to use the entire measurement range of the analogue input.
- The settings may make it necessary to align the sensor. If necessary, the measurement values of the controller can be scaled to the machine values. For this purpose an adjustment is made at the beginning and at the end of the selected sensor measurement range.

The digital outputs can be switched on manually for testing purposes (access level 2) to test the connection to the injection moulding machine control.

Extended (extended system settings)



Picture 22: "Extended system settings" view



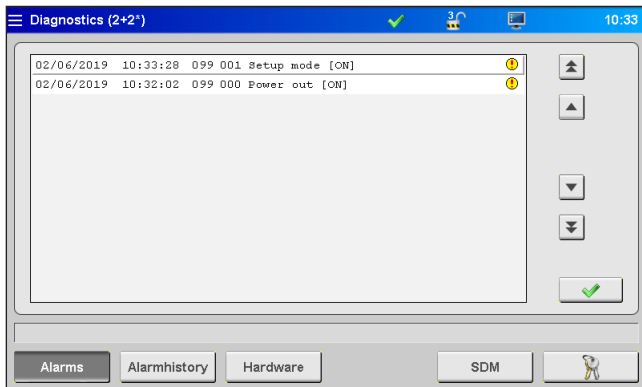
Picture 23: Enable processing

Picture 24: Safe position

| | |
|--|--|
| Function "Digital output 2" | <p>Selection of function of the "Digital output 2" for adaption to the process:0</p> <ul style="list-style-type: none"> • "Ready for cycle" condition: Device is in automatic mode, all valve pins are closed and there is no error. • "All valve pins open" condition: all valve pins are open • "At least 1 valve pin open" condition: at least 1 valve pin is open |
| Function "Drives OFF" | <p>Since in silicone moulds mainly conical valve pins are used it is advantageous that the valve pins do not remain in the gate when the controller is switched off. Thus the valve pins are moved into the "PURGE" position when the controller is switched off. At the same time the operator is informed that it is now safe to switch off the controller (see „Picture 24: Safe position“). If this is not required, the function "SWITCH OFF" can be selected.</p> |
| Function "Digital input 4" | <p>The following functions for digital input 4 are available:</p> <ul style="list-style-type: none"> • "Not in use" The EDC-PRO CS controller does not evaluate the input, the movement of the drive units and the production process are always released. • "Enable Motion" The drive units can only be moved when the signal +24V DC is applied at input 4. The motors do no longer work without the release, e.g. if a safety door is open. Active movements are finished to avoid non-defined intermediate positions. After that any further movement is blocked. The process can always be released. • "Enable Process" This input is used to indicate the controls that the system is ready for the production process, e.g. "heater ON" or "temperature reached". If there is no process release, the movement of the drives can only be released for manual mode. This requires at least access level 1. After resetting the access level of the EDC-PRO CS controller (5 min. without input on the touch screen) also the drive release for manual mode is reset. If release has been granted (+24V DC at input 4), the operator will have to confirm manually that the device is ready for production. After that, the controller is released for all operating modes (automatic / manual). If the production release is reset during operation, the set disengaging time during which the drive units can still be moved will remain. If the release signal is set again during this time, production can continue without interruption. Otherwise the drive units move to the PURGE or CLOSE position, depending on the setting of function „Drives OFF“, and any further operation is blocked. The actual movement of the drive units is always released according to the selection made. |
| Disengaging time of process release | Input in seconds for disengaging time. |
| Shot counter | Pressing the "reset" button resets the counter to zero |
| All drives of the same type | In rare cases different drive units are installed in one mould. Here the control of different types of drive units can be enabled. |
| Lower limit "Type of drive" | A lower limit for the "drive unit type" select list in the "General" menu can be determined here to limit the selection options. |
| Upper limit "Type of drive" | Determines the upper limit for the "drive type" select list |
| Test record / Data recording | <p>With this function the process data (valve pin position, analogue inputs) can be recorded during the cycle and saved as a csv file. These can be read and analysed using a chart programme, e.g. Excel. Up to 100 cycles are saved in a circular buffer, old data are overwritten afterwards.</p> <p>Please contact EWIKON for further information if this function is required.</p> |

7.2.5 Diagnostics and fault finding

Alarms



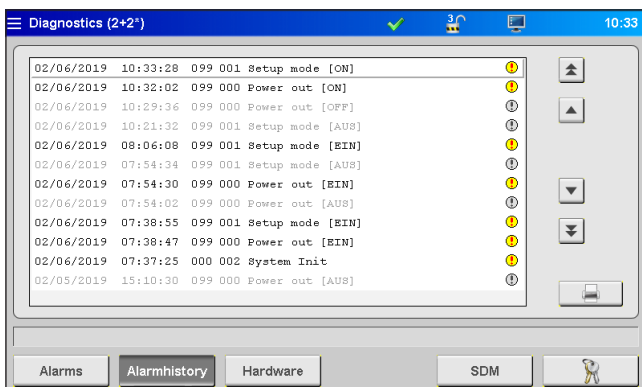
Picture 25: "Alarms" view

Detailed view of the alarm with date, time, outlet, alarm type and alarm text for a more detailed analysis.

Use the arrow keys on the right side to scroll up and down.

The green check mark is used to acknowledge an error, if necessary.

Alarm history



Picture 26: "Alarm history" view

Alarm history (the last 200 events).

How to save the list on the device:

Press printer icon on the right side of the list. The following instructions appear:

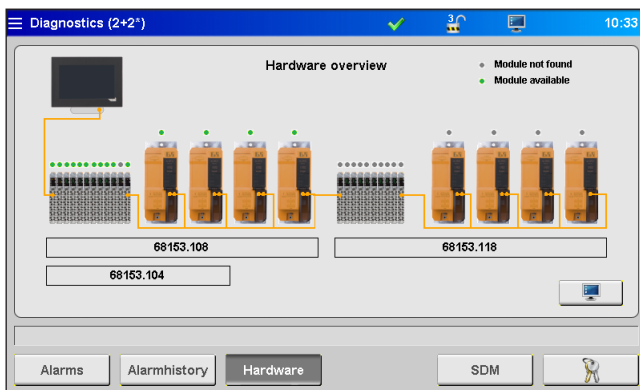
- Read alarm history of the application...
- Save on internal drive...
- Completed!

This procedure may take some time depending on the length of the list.

The file "Alarmlist.csv" is created on (F:)/Alarms and can be evaluated using a tabulation programme.

If a USB stick is connected, the alarm list is also copied to the corresponding directory on the stick (also see chapter "7.2.7 File management").

Hardware



Picture 27: "Hardware overview"

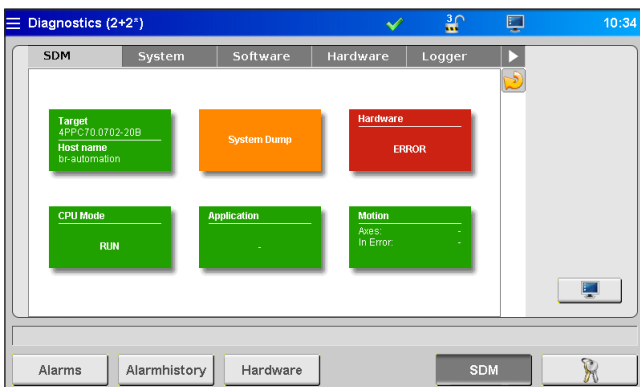
On this page all device modules which can be used are shown.

Green dot: active, perfectly working module.

Grey dot: module not available (defective or not existing).

The type and/or the number of drive units for which the system is designed determine which modules are installed in the device.

System Diagnostics Manager (SDM)

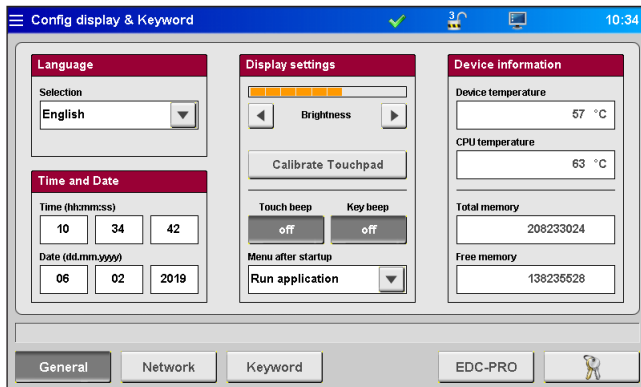


Picture 28: "System Diagnostics Manager" view

When troubleshooting EWIKON uses this menu for internal analyses. A higher access level is required to release this menu.

7.2.6 Configuring the display & Keyword

General



Picture 29: "Configuring display & Keyword - general"

In this menu the following settings can be made:

- Display language
- Time and date
- Display brightness
- Beep Touch
- Beep key "start menu"
- Menu after switch-on:

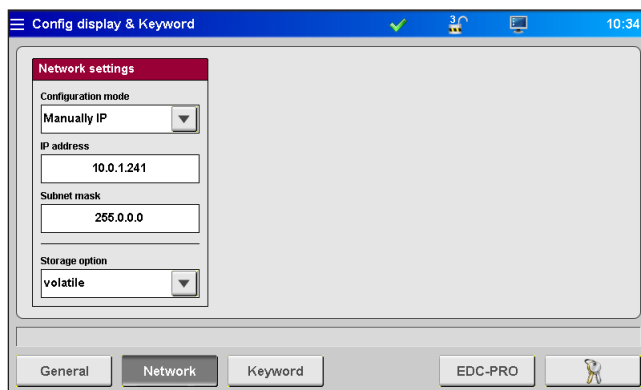
Determine whether the device is to start with the context menu or with the normal operation display.

All settings remain saved even after the device has been switched off.

The touch screen can be recalibrated here if it does no longer react properly to your entries.

The "device information" field displays values of the internal processing unit.

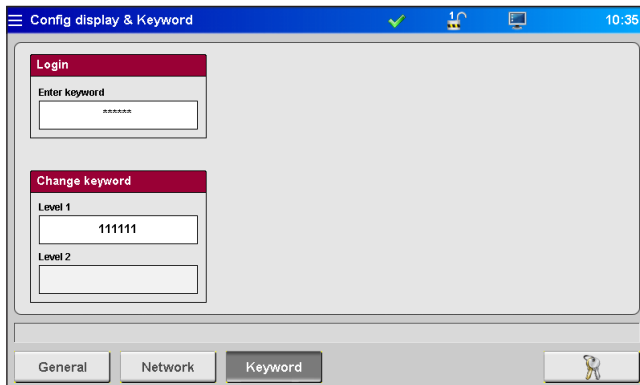
Network



Picture 30: "Configuring display & Keyword - network"

If the device is to be incorporated into a network or connected to a PC, the necessary network settings can be made here (also see chapter „7.2.7 File management“).

Keyword



In menus showing this symbol you can enter the password directly by choosing the field.

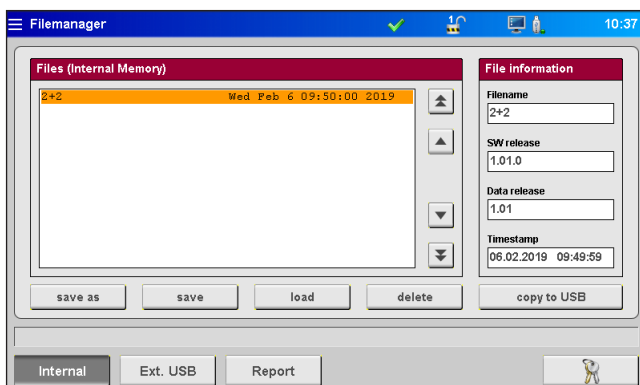
Picture 31: "Configuring display & Keyword - Keyword" view

Some settings can only be made in higher access levels.

Depending on the menu locked fields will be released or further pages will be added, if the access level is increased. A higher access level includes all setting options of the lower ones. The keyword for the levels 1 and 2 can be changed, if the respective level is released.

7.2.7 File management

Internal memory



Picture 32: "File management - internal memory" view

In this menu it is possible to save the settings for up to 50 different moulds in the storage of the display or to upload them from there (drive (F:) on the internal memory). This drive can contain the file folder "Backup" as well as alarm lists, screen shots and record files.

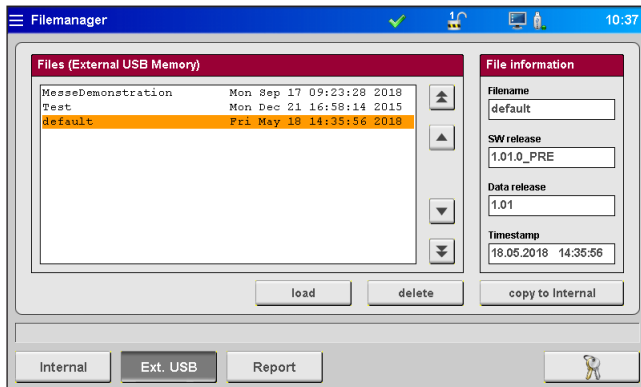
- **save as** saves new mould settings after the file name has been entered.
- **save** incorporates changes by overwriting the selected old file.

Use the arrow keys to select a file (file shaded in orange appears) in order to **save**, **load** or **delete** saved settings (access level 1). You have to confirm the selected process by responding to a prompt message.

If a USB stick is available, the function **copy to USB** will be released. The files stored on the device can be copied to the stick for data exchange with other devices or for data backup.

Created mould files are stored in the "Backup" folder, a file "file name.html" is stored in the subfolder "Print". If necessary, the saved values can be viewed and printed using a web browser. A successful saving process is shown in the information bar.

External USB memory



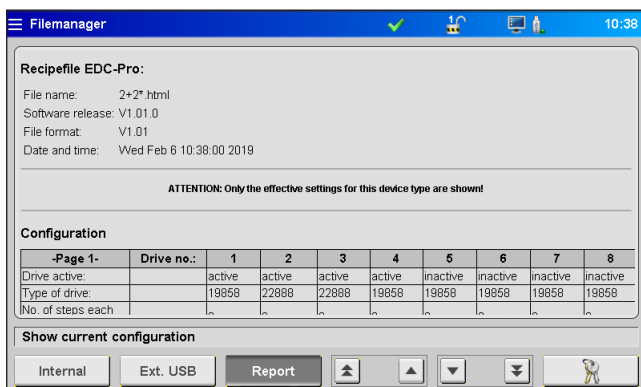
Picture 33: "File management - External USB memory" view

This page deals with the data exchange with an external USB stick. It can only be selected, if a stick has been connected to the device and the icon in the title bar displays the availability.

When you copy a file to a USB stick for the first time the system creates the folder "Backup" in the "EDC_Pro" directory on the USB stick and saves the selected file there. The html file mentioned above under "Internal memory" is copied to the subfolder "Print" as well.

The buttons **load**, **delete** and **copy to internal** work in the same way as the comparable buttons for the internal memory do.

Display



Picture 34: "File management - display" view

This overview displays currently effective settings in the device. Use the arrow keys to scroll through the document.

The respective stored file has to be loaded to display saved settings.

The current settings will get lost during this process, so please make sure to save them beforehand!

With an FTP client programme it is possible to gain access to the system storage in a computer network using the rear RJ45 connection and an Ethernet cable. You need a so-called CrossOver Ethernet cable to establish a direct connection. If you want to make use of this option, please ask EWIKON for the terminal settings and login details).

7.3 Help in the event of malfunctions

7.3.1 Fault finding

| Fault | Measure to be taken |
|--|--|
| Display remains dark / Controller does not switch on | <ul style="list-style-type: none"> Check mains voltage and device fuse, replace with fuse of the same type (F 6.3 A), if necessary. |
| Drive unit type error | <ul style="list-style-type: none"> Check if all connections are properly connected |
| Positioning error | <ul style="list-style-type: none"> Check if valve pin can move freely or if encoder connection to device has been interrupted |

Chart 15: Faults/Measures to be taken

7.3.2 Spare parts list

| Item no. | Description |
|----------|---|
| 13654 | Acopos drive module (orange) |
| 18346 | Filter pad for 4-zone controller (bottom) |
| 18418 | Filter pad for 8-zone controller (bottom) |
| 18121 | Fuse F6.3 A 6.3 x 32 mm |
| 18207 | Front handle, large |
| 18217 | Fan |
| 18218 | Fan cover |
| 18233 | Filter pad 60x60 mm (rear side) |

Chart 16: Spare parts list

7.3.3 EWIKON service departments

Please have the item no. and the current software version of your controller (main menu) as well as the order no. (even the one of your cold runner system) ready, if you have a service request.

- Service control technology/electronic technology**

phone: (+49) 6451 501-0

fax: (+49) 6451 501-693

e-mail: elektro@ewikon.com

8. Quick Start Guide



CAUTION!

Faulty settings may result in incorrect function or even damage to the system!

The operation of the EDC-PRO CS controllers is subdivided into several access levels.

- **Level 0 Operator** (start level)
- **Level 1 Fitter** (PIN: 111111)
- **Level 2 EWIKON** (for PIN see envelope on the back cover of this manual))

Select menu "Configuring application" to make settings.

Use  to log in as a fitter.

How to proceed when setting a new system for the first time:

Connect controller, mould and injection moulding machine according to this operating manual. Then switch the controller on and make settings according to the following list.

| | | |
|------------------------|--------------------|--|
| General | Basic settings: | <ul style="list-style-type: none"> • Select drive unit type • Select steps per cycle • Set stroke • Activate all drive units used in the mould • Set position CLOSED for each drive |
| Analogue IN | Input #1: | <ul style="list-style-type: none"> • Configure analogue input, if necessary |
| Movement | Movement settings: | <ul style="list-style-type: none"> • Set positions and speeds • Set trigger signals according to the application |
| File management | | <ul style="list-style-type: none"> • Save settings to be able to use them again later, if need be |

1. Switch on the heating of the cold runner mould and heat up to set temperature
2. Check signal outputs of the machine for correct connection and function
3. Switch on motor power, the motors are now doing their homing procedure
4. System is operational, observe AUTO/SETUP mode of the controller!



NOTE!

Further operation of the control, setup of valve pin movements for the application and adjustment of functions to the control of the injection moulding machine are performed according to the previous chapters 5-7. Therefore, we recommend that you read this instruction manual in its entirety prior to using the electrical valve control to achieve best operational performance.

9. Maintenance

9.1 Maintenance instructions



NOTE!

Incomplete or improper maintenance or failure to carry out maintenance will increase abrasion of individual components of the EDC-PRO CS controller.

- Maintenance work has to be carried out completely and according to the maintenance schedule within the given time intervals.
- Only qualified electricians are allowed to maintain the device.

Apart from being operated correctly the EDC-PRO CS controller needs care and maintenance to guarantee a long service life and trouble-free operation. In addition to inspection and overhaul maintenance is a preventive measure to maintain the EDC-PRO CS controller.

We recommend that you document all maintenance work carried out.

9.2 Safety instructions for maintenance



DANGER!

Maintenance and repair with activated voltage supply

Risk of death by electric shock and severe injuries caused by live components.

- Disconnect the EDC-PRO CS controller and connected components from mains voltage before performing any work.

9.3 Maintenance work

Carry out the following maintenance work at regular intervals:

9.3.1 Changing the filter

The filters are positioned on the underside and rear side of the EDC-PRO CS controller; they have to be checked at regular intervals and replaced, if necessary.

9.3.2 Cleaning the EDC-PRO CS controller



CAUTION!

Make sure you have switched off the EDC-PRO CS controller before you start cleaning to avoid unwanted functions being triggered when touching the screen or pushing the buttons.

Only use water with suitable additives. Clean the housing with a soft, humid cloth. Clean the inside with compressed air (low pressure) and a brush only.

Clean the touch screen with rinsing agents or a screen cleaner. Do not spray the cleaner directly onto the touch screen but onto the cloth and then wipe the screen.

**NOTE!**

Never use easily flammable or combusting substances, aggressive solvents, chemicals, scouring agents or steam cleaners.

9.3.3 Checking fan or fan grille with filter

Fan and fan grille with filter (on the rear side) have to be checked at regular intervals and cleaned, if necessary.

9.4 Service and repair instructions

- Please always use replacement fuses of the same type.
- Only use original spare parts when replacing components (see Chapter „7.3.2 Spare parts list“).

**NOTE!**

LCD- or TFT-type screens are sensible to the so-called burn-in effect which may occur, if static patterns are displayed over a longer period of time. These static patterns cause parasitic capacitances inside the LCD components preventing the liquid crystal molecules from returning to their original state.

To reduce this effect we recommend that you switch off the EDC-PRO CS controller when not in use.

10. Decommissioning

10.1 Returning the EDC-PRO CS controller

After end of its service life the device can be returned to the manufacturer for disposal.

10.2 Safety instructions for dismantling



DANGER!

Connected voltage supply

Risk of death by electric shock or severe injuries caused by live components

- Please make sure that you have disconnected the EDC-PRO CS controller from the voltage supply before dismantling it. At first remove the power cable to prevent any connection to the power supply, then all plug-in connections to mould or machine have to be removed from the device.

10.3 Disposal instructions



NOTE!

- All operating supplies are to be drained, collected and disposed of according to the local regulations
- Only trained staff is authorised to perform disassembly
- Disposed components must not be reused. EWIKON declines all responsibility for personal injury or material damage in connection with the reuse of the components
- After appropriate disassembly the components are to be recycled:
- Scrap metal material residues
- Recycle plastic elements
- Dispose of the other components sorted by material characteristics
- Electronic scrap and electronic components are subject to hazardous waste treatment; only specialised companies are authorised to dispose of them
- National regulations on disposal regarding an environmentally appropriate disposal of the disassembled EDC-PRO CS controller must be adhered to

We hereby confirm that the product described below conforms to the essential protection requirements of the following European Directives

2014/35/EU "Low Voltage Directive"

and

2014/30/EU "EMC Directive"

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

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

Manufacturer: EWIKON Heißkanalsysteme GmbH
Siegener Straße 35
35066 Frankenberg / Germany
phone: +49 (0) 6451 / 501-0

Product: **EDC-PRO CS E-Drive-Control step motor control COOLSHOT**
for the operation of linear actuators in cold runner valve gate systems

Type: **68153.104** ; EDC-PRO CS controller, 4-zone
68153.108 ; EDC-PRO CS controller, 8-zone
68153.118 ; EDC-PRO CS controller, 8-zone

Applied harmonised standards:

| | |
|--|--|
| DIN EN 61010-1: 2011-07 | "Safety requirements for electrical equipment for measurement, control, and laboratory use - part 1: General requirements" |
| DIN EN 61010-2-201: 2015-05 (draft standard) | "Safety requirements for electrical equipment for measurement, control and laboratory use - part 2-201: Particular requirements for control equipment" |

Note: It is necessary to use original connecting cables outside the device to meet the requirements!

Frankenberg, 07/09/2020



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