



Operating Manual
Ti600
Application Control

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Introduction

First of all, we would like to congratulate you on your purchase of the UES®-pattern control system series "Ti600".

UES®-Hotmelt equipment are of the highest standard with reference to quality, work and production safety, as well as maintenance and operation friendliness. Using modern up to date control and regulation technology as well as a comfortable and complete selection of accessories, we are able to tailor the units for optimum usage for your requirements. The use of a very „compact“ construction and modular extension capability, allows you excellent variable and multiple functions.

The UES®-pattern control system series 'Ti600' is manufactured using carefully selected components of the highest quality, so ensuring a long and unrestricted appliance life when used according to the operation manual.

As well as a complete program for standard operations in the area of gluing techniques with tank system, pipe and application guns. we offer individual solutions and system components for special operations in diverse industrial areas.

The manufacturer also reserves the right to make changes to this manual/handbook at any time.

UES AG

Krefeld, June 2013

Safety instructions

Please mind the following!



Attention: Before installation- and adjustment work is carried out, the appliance must be disconnected from the mains!

The 4-channel glue timer Ti600 is manufactured according to all recommended and required safety aspects. Only personnel 18 years old or over, can install and work with this appliance unsupervised. This appliance should only be operated by personnel who have the relevant know-how and qualifications for operating this or similar types of machine and who have full knowledge of all safety and accident procedures. So as to have the knowledge to deal with any safety problems or accidents that may occur. Before starting this appliance the operators manual must be read and fully understood, so as to guarantee a safe start up operation and problem free operation.

Safety precautions relating to the production machine

The recommended safety procedures when dealing with production- and or packing machines are to be taken from the manual delivered with these machines.

When installing, operating and maintaining the unit the safety measures referring to the main machine which the unit is built into must be taken into consideration.

Safety symbols

The safety symbols shown below indicate operations where increased is called for.

The safety procedures should be followed to at all times.



Attention, general safety instructions:

Regards to safety instructions when working with glues and other machines.

Additional (special) safety instructions can follow



Caution hot surface:

Danger of burning. Appliance parts have a high operating temperature.



Caution high voltage:

This type of work is only to be carried out by qualified personal.

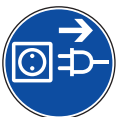


Caution hand injury:

Risk of entrapment if incautiously operated.



Caution, possible danger of uncontrolled release/leakage of hot liquids!



Disconnect power plug before opening!



Wear full suit!



Disconnect power supplier!



Use safety glasses!



Wear safety gloves!



Use face shield!

Technical Description

Function

The microprocessor timer Ti600 is for universal employment in high running machines. This unit is capable of time, direction or quantity dependent controlling of up to a maximum of 4 UES® bead or point gluing pattern valves. Each valve can produce the required glue pattern on a cut with a maximum length of 9999.9 mm independently of each other. And up to 64 glue patterns per valve can be stored indefinitely in the controller.

The glue pattern of all the nozzles are stored and collected as a glue pattern programme. The programme remains intact, even after the appliance has been separated from the mains. When required a programme can be easily called up, by entering the appropriate programme number. This results in a relatively short time period needed for the adjustment of the machine when changing gluing programmes.

When the machine is turned off it retains the appliance' s programme and nozzle selection, so that upon restarting, the production can be carried on from where it left off.

Encoder operation

After recognising the substrates interface heads using an initiator, the registered direction information is evaluated by an encoder and when the entered glue pattern in the gluing position is reached the valve is then activated and controlled. Whereby the gap between initiator and valve and the delay between the control signal and gluing pattern is compensated for automatically, so that the gluing pattern is positioned, independent of the speed of the machine, in the programmed position.

With high operating speeds a distortion of the glue pattern can happen. This is normally due to the change over times of the nozzles. This can be compensated for by using the programmable speed corrector. Compensation is carried out separately for each exit channel.

The encoder used for registering the gluing position is to be coupled to the machine so that a displacement of 1 mm per impulse is reached. A deviated encoder definition can be compensated for using an electronic encoder compensator.

The operator has the possibility to set a minimum speed, by which the glue nozzles are released when this is exceeded. This makes it possible to use the machine in the form of a slow process, without a gluing pattern.

The timer contains 4 inputs for the initiators. Each valve can be assigned to one of the four initiators at the start of the programme.

When employing bead modules, the glue pressure must be proportionally increased to obtain a continuous pattern quantity with each increase in machine speeds. The timer is available with a pressure control output, which can be connected to I-P-transformers, whose P-v-characteristics can be set by entering these into the machine data.

Timer operation

After the substrate interface has been recognised by using the initiator, the process of the programmed time values of the valve are controlled. This type of machine operation is at a constant machine speed.

Installation

Main power supply connection, switching on/off



The timer is connected to the main power supply using the cable delivered.

The required electrical supply is 230 V/50 Hz. Delivery of customer appliances with specific electrical supply requirements can be arranged upon request.

The power supply within the appliance is arranged using an internal mains filter, where the effective containment of disturbances are held in check. If for some reason a disturbance in the mains supply function should happen, further procedures such as separate power supplies, activating a magnetic voltage stabiliser or using a uninterruptable power supply (UPS) should be considered.

The main power supply of the appliance is protected against short circuits using two 6 AT fuses. The main-board is protected using a separate fuse.

Encoder

After the encoder has been installed according to the installation instruction (only by directional dependent controlling) is it then connected to the socket ENC (refer to the rear panel) using the cable supplied. For test purposes the encoder can be moved by hand. In the „speed“ display the speed is displayed in m/min. A frequently changing speed display by constant machine speeds, indicates a lack of mechanical connections or electrical power supply problem to the transmission cable. The cable should not be positioned over long distances parallel to high voltage transmitting cable.

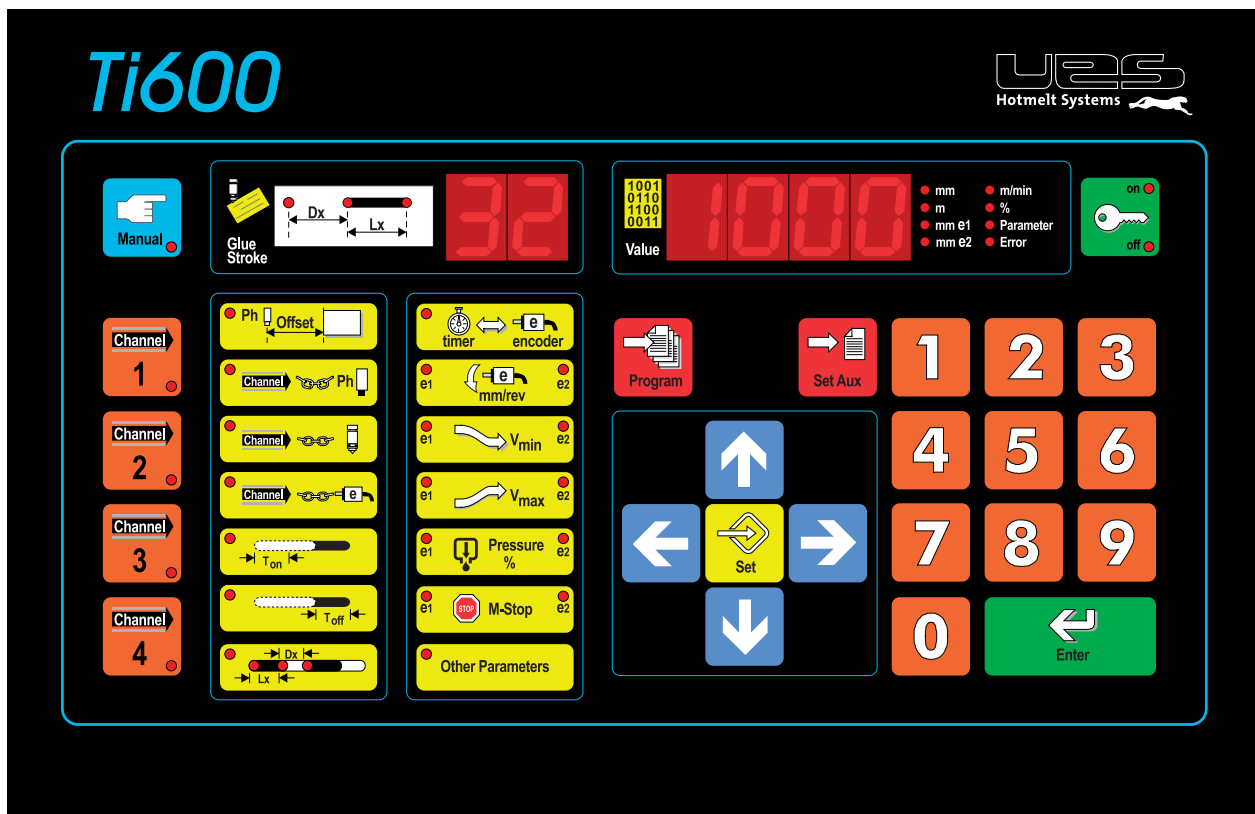
Initiator

The initiators (photo cells) required to start the programme operation are to be connected to the sockets Start 1 4 (refer to the control box). The initiators are to be inserted anti clockwise before the nozzles.


Solenoid valve

The solenoid valve controls the opening and closing of the glue application guns. The magnetic valve cable is to be connected on to the start exit socket 1 - 4 (refer to the control box). Only magnetic valves with a voltage acceptance of 24 VDC and maximal 20W are to be used.

Operation panel




Appliance








By pressing the button  you will receive access to the basic parameters. A glowing LED indicates the chosen parameter.

Choose the desired parameter by use of these buttons:  .

Press  and afterwards up or down   to change the setting of the selected parameter.

Confirm the new value by pressing .

Parameter adjustment

Symbol	Description	Value	Factory
	Timer/Encoder Choose between timer and encoder operation	En -ti	En
	Encoder mm/rev Distance per encoder revolution in mm	200 - 9999	1000
	Vmin Minimum speed	0 - 9999	10
	Vmax Maximum speed	0 - 9999	60
	Pressure Percentage reduction of the analogue output	0 - 100%	100%
	M-Stop Reset when machine stops (speed < Vmin)	Res/no res	Res
	Other Parameters Change the start signals (opened, close)	Ph.n.o./Ph.n.c.	Ph.n.o.

Timer/Encoder

The type of operation is set using this parameter. In encoder mode all glue pattern parameters are displayed in millimetres (mm), and in timer mode in milliseconds (ms).

Encoder mm/rev

So that all the direction and speed entries are correct, an impulse of at least 1 mm must be entered into the encoder when a belt direction is deposited. If a mechanical assignment of the encoder resolution of 1 mm/Impulse is not possible or too time consuming, an electronic assignment can be carried out using these parameters. To ascertain the real encoder resolution, it is suggested that the following programme be used .

Ermitteln der realen Encoderauflösung:

- ▶ A gluing programme with two short gluing patterns and a interval of 100 mm (e.g. Dx1 = 20, Lx1 = 40, Dx = 120, Lx2 = 40) between both starting points should be entered and carried out.
- ▶ The interval between the starting points of both gluing patterns are calculated and measured in real encoder resolution (e.g. interval = 85 mm means an encoder resolution of 0,85 mm/Imp., required entry 850)
- ▶ With repeated gluing patterns, check the volume durability of the generated gluing patterns.

Vmin

Set the minimum speed in meters per minute. The gluing pattern begins only when the speed entered has been reached.

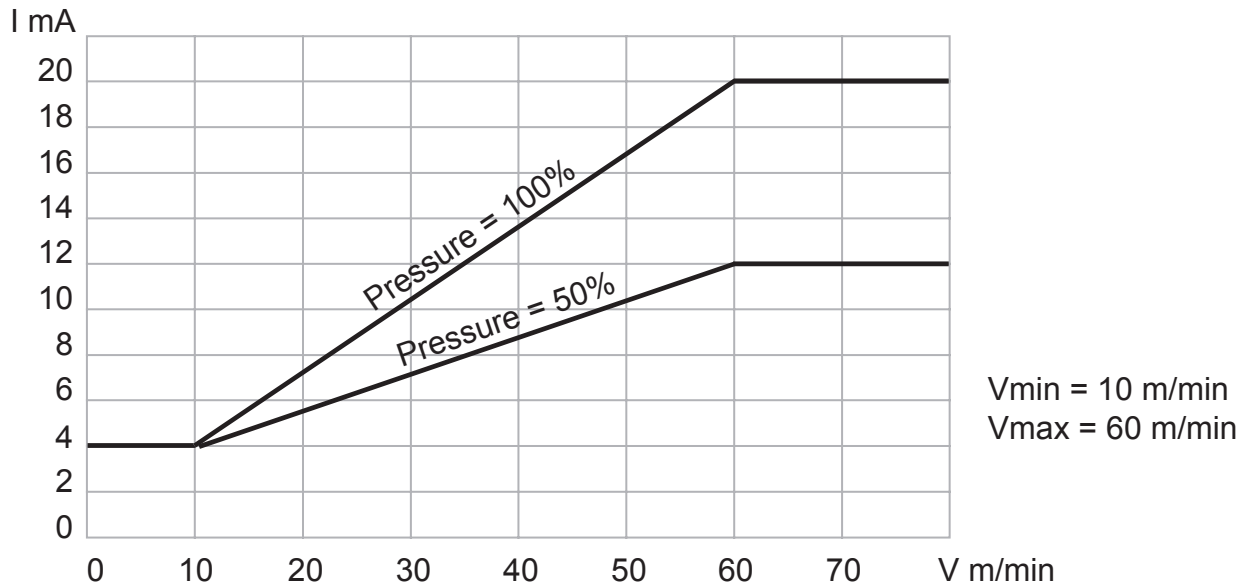
Vmax

Set the maximum speed in meters per minute.

Pressure

Proportional to the machines speed an analogue electrical value (4 - 20 mA) is deposited in the output 4 - 20 mA. Whereby Vmin has the value 4 mA and Vmax has the value 20 mA (Factory setting = 100%). With parameter 5 the electrical value for V min can be changed percentaged above the 4 mA of the electrical value V max.

The following formula should help to explain this: $(IV_{max} - 4) - (IV_{max} - 4 \times \text{pressure \%} : 100) + 4 = IV_{min}$
 IV_{max} = Electrical value for maximum speed set
 IV_{min} = Electrical value for minimum speed set



With the output 4-20 mA a piston pump can be controlled using an I-P transformer (this changes electrical values into pressure values), whereby the volume of gluing patterns remains constant with the increase in band speed.

M-Stop

Reset or do not reset after the machine stopped

Res = the program starts anew when restarting the machine.

No res = the program continues when restarting the machine.

This function can only be used, when the parent machine is connected to the machine stop contact of the Ti600, using a special cable. If this function is not used, the provided reset plug must be inserted. Otherwise no gluing programme can be processed.

Other Parameters

The type of photo cell operation can be set here.

F.n.o. = The connected photo cells function as a closed circuit breaker.

F.n.c. = The connected photo cells function as open circuit breaker.

Glue application in encoder mode

Basic setting



Switch to „Enc“ by pressing „Set Aux“ (Encoder mode).

When no button is pressed within the next 30 seconds, the display will show the speed in m/min (meters per minute).

Programme selection

By pressing the key sequence „Programme - Set - desired programme number - Enter“ you may load one out of 64 programs.

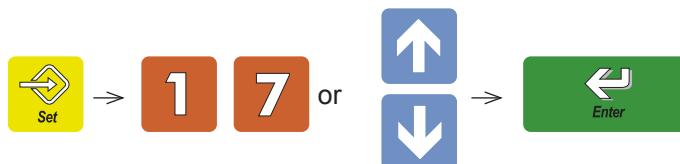


Programming

Press one of the channel keys to load and edit a channel of the programme. Use the arrow keys right/left to reach the different parameters.

Key	Display	Function
	Dx1	Interval between programme start and first application
	Lx1	Lenght of the first application
	Dx2	Interval between programme start and second application
	Lx2	Lenght of the second application
etc.		

To change a value press „Set“, then enter the value by either the number keys or the arrow keys up and down. Finally confirm with „Enter“.










Important information!

If the parameter **DX = 0** is set at desired position within the glue pattern programming, the programme will end at this position. If this parameter is set at the beginning of the gluing pattern, the channel is deactivated and no gluing programme is processed.

If the parameter **LX = 0** is set, the glue application ends once the speed falls below the desired minimum speed.

Channel adjustment

After the 8 programmes for glue patterns, you may adjust the basic settings for the corresponding channel. Please refer to the symbols displayed in the left column.

Symbol	Description	Value	Factory setting
	Ph Offset Distance photocell	0 - 9999	0
	Channel Photocell Assignment of channel to photocell	1 - 4	1
	Channel Valve Assignment of channel to valve	1 - 4	chx
	not assigned		
	T on Valve turn on delay time	0 - 25,5 ms	0
	T off Valve turn off delay time	0 - 25,5 ms	0
	Dx Lx Dx - Separation of patterns in length (glue application) Lx - Separation of patterns in length (pauses)	0 - 99	0

Ph Offset

Use this function to specify the distance between photocell and nozzle. This is only possible, when the photocell is installed downstream in front of the nozzle. There has to be a gap between photocelle and nozzle to compensate the delay of the valve (only possible in encoder mode).

Channel Photocell

Assign the chosen channel to a certain photocell.

Channel Output

Assign the chosen channel to a certain output (1-4, see real panel)

Parameter T on

When increasing speed during a stroke-dependent application, a displacement occurs because of a longer distance covered at the same time. To avoid this, specify the compensation of the valve turn on delay time (Precompensation).

Parameter T off

Specify the compensation of the valve turn off delay time.

Dx Lx (Stitching)

To save material large glue beads can be avoided. Set Dx to adjust the gap and Lx to adjust the length of the partitions. The overall length will not be affected.

Glue application in timer mode

Basic Setting



Switch to „ti“ by pressing „Set Aux“ (timer mode).

Programming

Programming in timer mode is done the same way as in encoder mode (see page 11). The parameter T on and T off are disabled. All values are displayed in milliseconds (ms).

Manual mode

Release a solenoid valve manually by pressing „Manual - Enter - corresponding channel button“ one after the other.



Access code

After pressing the key sequence „Key - 6771“ the Ti600 will be locked. The LED „Key on“ will glow. You can't change any parameter then but check the values.

Pressing again „Key - 6771“ unlocks the controller. The LED „Key off“ will glow.



Fitting and Options

Standard inputs and outputs:

- 1 x Power supply 230V/50Hz
- 4 x Output 24V/20W
- 4 x Photocell input 24V supply voltage
- 1 x Encoder input 15V
- 1 x I-P converter 4-20 mA
- 1 x Machine stop contact

An optional I-P converter converts the current value into the corresponding pressure value.

Accessories required for different operation modes:

Timer mode

- 1 - 4 x Photocell
- 1 - 4 x Extension cable for photocell
- 1 - 4 x Photocell mounting support
- 1 - 4 x Solenoid valve
- 1 - 4 x Cable for solenoid valve

Encoder mode (stroke-dependent)

- 1 - 4 x Photocell
- 1 - 4 x Extension cable for photocell
- 1 - 4 x Photocell mounting support
- 1 - 4 x Solenoid valve
- 1 - 4 x Cable for solenoid valve
- 1 x Rotary pulse encoder (KIT)
- 1 x Extension cable for rotary pulse encoder

Encoder mode (stroke-dependent & quantity-dependent)

- 1 - 4 x Photocell
- 1 - 4 x Extension cable for photocell
- 1 - 4 x Photocell mounting support
- 1 - 4 x Solenoid valve
- 1 - 4 x Cable for solenoid valve
- 1 x Rotary pulse encoder (KIT)
- 1 x Extension cable for rotary pulse encoder
- 1 x I-P converter

Technical Appendix

Digital inputs

The digital inputs can process impulses from 1 msec upwards. The impulses may be released by a micro switch either as opener or closer.

Connect a make contact to the M-Stop input to stop the application in case of failures at the host machine. The encoder input may process impulses up to 30 kHz.

Analogue output 4-20 mA

The analogue output provides current values proportional to the machine speed. By use of an I-P converter, the output may control a piston pump. Thus the glue application remains constant even when increasing the machine speed.

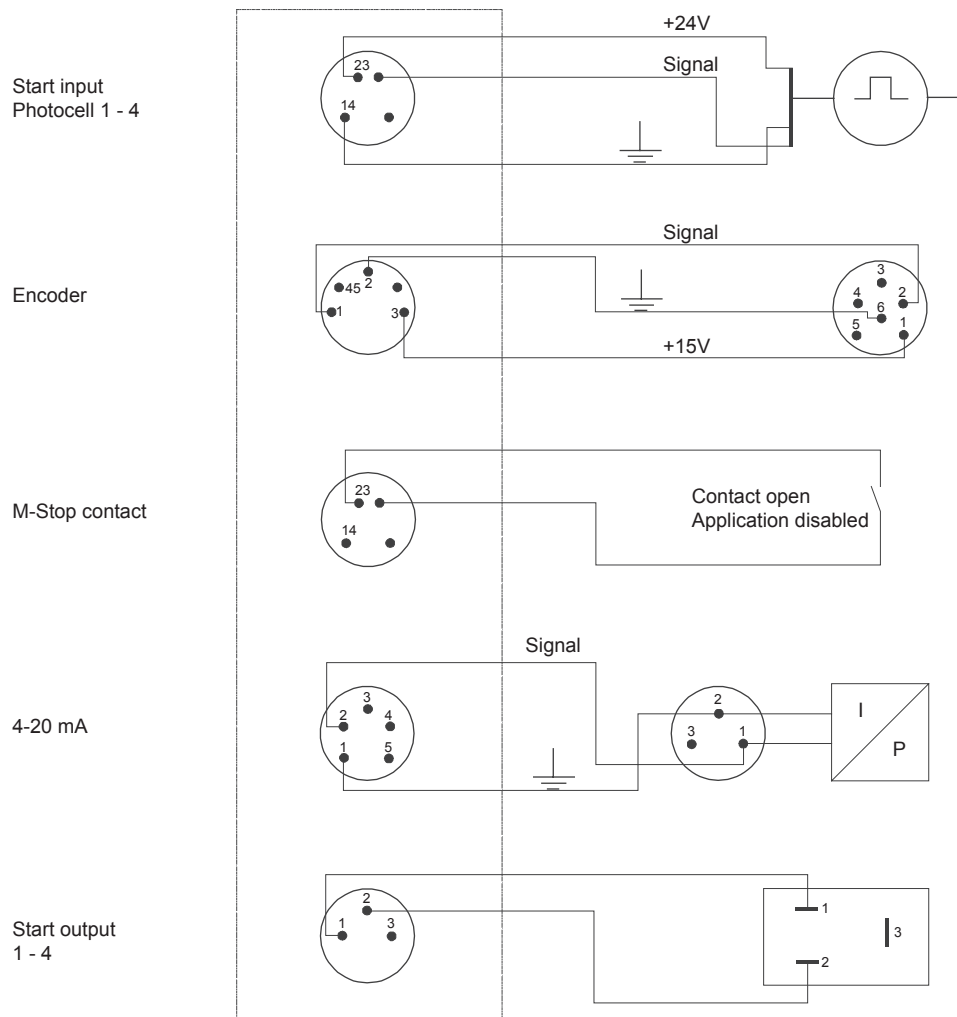
Start input

Each start inputs 1 - 4 provides a 24 VDC power supply and a signal line for a photocell.

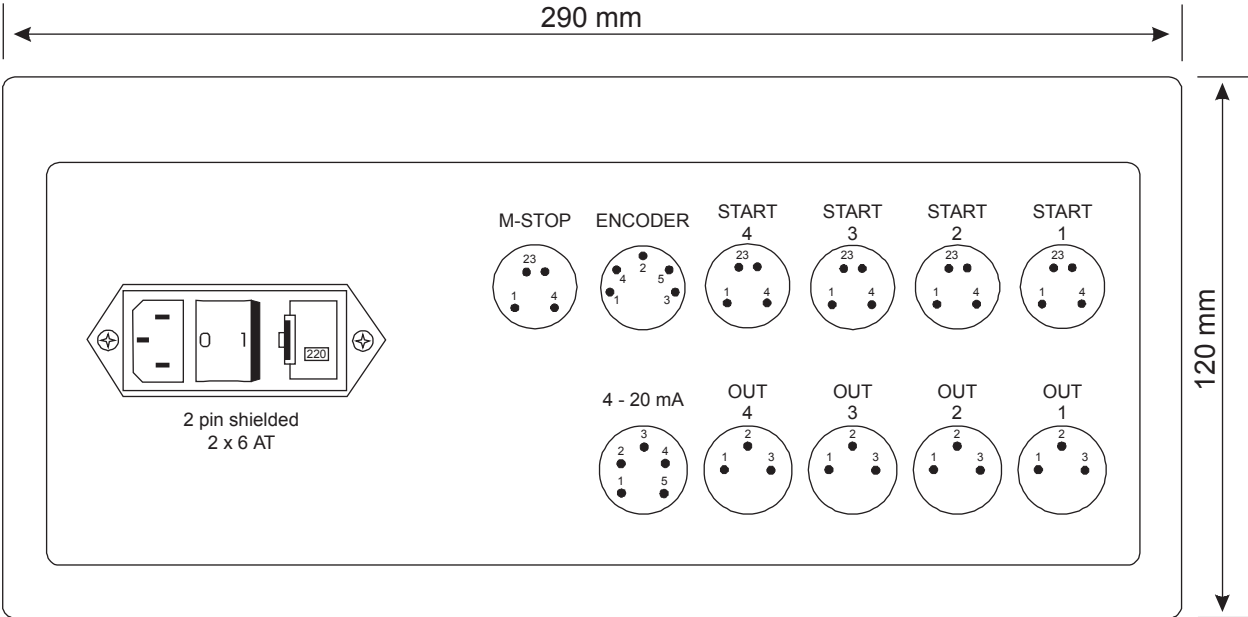
Start output

Connect a solenoid valve of a start output 1 - 4. Each start output may be loaded with max. 20W.

Pin Assignment



Rear Panel



EC Declaration Of Conformity/**EG-Konformitätserklärung**

to the directive 2006/95/EEC Low Voltage and EMC 2004/108/CEE
gemäß der Richtlinie 2006/95/EWG Niederspannungsrichtlinie und EMV 2004/108/CEE

Product/**Produkt**

Ti600 (UC185000)

We, the company, declare herewith on our own responsibility that the above-mentioned product meets the requirements of the "Low voltage" directive for what concerns engineering and construction and EMC. Conformity has been controlled with the aid of the following Harmonized Standards:

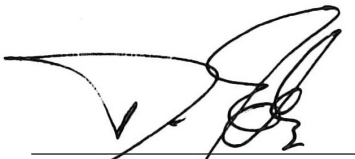
Hiermit bestätigt die Firma unter eigener Verantwortung, daß das o.a. Produkt in Bezug auf Entwurf und Fertigung den Anforderungen der "Niederspannungsrichtlinie" und EMV entspricht. Die Konformität wurde auf Grundlage u.a. Harmonisierten Normen geprüft:

Standards used/**Angewandte Normen**

EN 60335-1

EN 61000-6-3

EN 61000-6-1



i.A. Dirk Roth
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