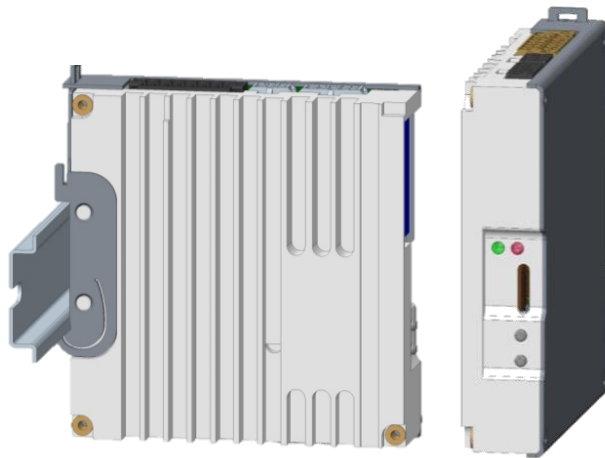


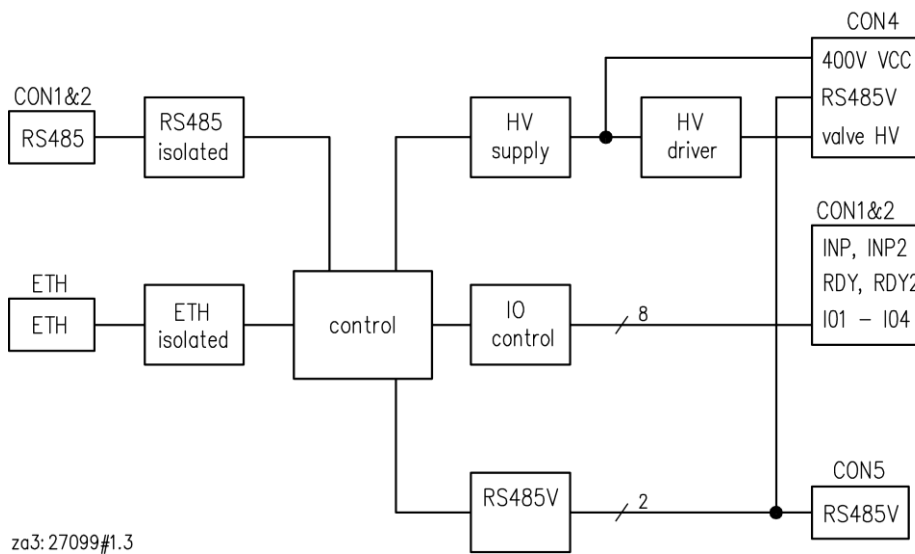
Valve driver and control electronics for modular valves



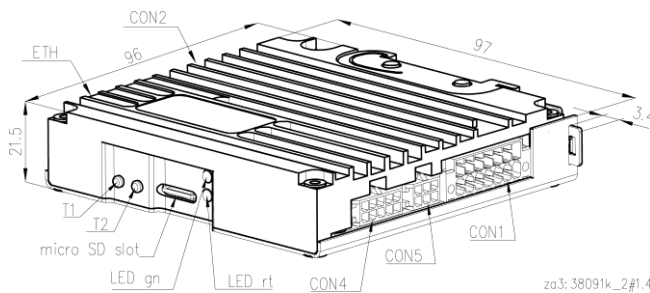
- Top hat rail mounting
- 2 status LEDs
- microSD slot
- 2 buttons for manual operation of functions
- Ethernet connection
- 20-pole digital I/O connection
- 14-pole digital I/O connection
- 10-pole valve drive connection
- 6-pole connection for additional elements

Figure 1: mtv/ehm/b

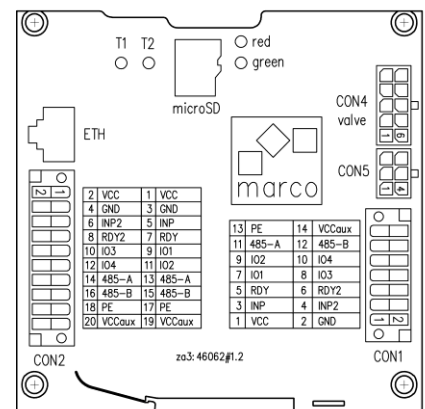
The Ethernet High Voltage Modul *mtv/ehm/b* drives an *mtv/\** modular piezo valve. An industrial PC HMI terminal e.g. type *vis/vt/\** can be used to carry out all required control tasks and provide options for service, parameters and evaluation.



Connectors



Connectors CON1 and CON2 carry identical signals. Depending on how the device is mounted, either CON1 or CON2 can be used for control.



za3: 38091k\_8#1.4

Name	Function	Counterpart
CON1	control / evaluation	Phoenix 1790344 DFMC 1,5/ 7-STF-3,5
CON2	control / evaluation	Phoenix 1790373 DFMC 1,5/ 10-STF-3,5
CON4	marco piezo valve	
CON5	marco peripheral (e.g. heating system)	
ETH	Ethernet	Standard RJ 45



**ATTENTION!** The CON1 - CON2 connecting lines are designed for maximum 50 mA. We strongly recommend using only one of these connectors: CON1 or CON2. Damaged connecting lines are not covered by warranty.

### Signal description CON1 and CON2

Signal	Default function	Description
VCC	supply voltage	24 V nominal
VCCaux	auxiliary voltage 5-24V	HV emergency supply
GND	reference potential	
INP	input: pulse trigger	triggers rising edge
INP2	input: heater starter	for hot melt systems
RDY	output: ready for operations and at target temperature	for hot melt systems
RDY2	output: error state	active low indicates errors
IO1	output : valve temperature OK	active high indicates OK
IO2	input: ConfActivate trigger	triggers rising edge
IO3	<i>reserved</i>	
IO4	<i>reserved</i>	
RS485-A (P)	RS485 slave line A	galvanically isolated
RS485-B (N)	RS485 slave line B	galvanically isolated
PE	Protective Earth	housing potential isolated from GND to be connected in the system

### Pin assignments

Front view of the device connector.

#### CON1



za3: 38091k\_3#1.4

Pin	Signal	Pin	Signal
1	VCC	8	IO3
2	GND	9	IO2
3	INP	10	IO4
4	INP2	11	RS485-A (P)
5	RDY	12	RS485-B (N)
6	RDY2	13	PE
7	IO1	14	VCCaux

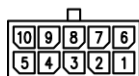
#### CON2



za3: 38091k\_4#1.4

Pin	Signal	Pin	Signal
1	VCC	11	IO2
2	VCC	12	IO4
3	GND	13	RS485-A (P)
4	GND	14	RS485-A (P)
5	INP	15	RS485-B (N)
6	INP2	16	RS485-B (N)
7	RDY	17	PE
8	RDY2	18	PE
9	IO1	19	VCCaux
10	IO3	20	VCCaux

## CON4



za3: 38091k\_5#1.4

Pin	Signal	Pin	Signal
1	400V VCC	6	RS485-A (P)
2	Ventil-HV	7	GND
3	GND	8	RS485-B (N)
4	VCC enabled	9	heater
5	PE	10	24V VCC

## CON5



za3: 38091k\_6#1.4

Pin	Signal	Pin	Signal
1	24V VCC	4	RS485-A (P)
2	GND	5	GND
3	PE	6	RS485-B (N)

For descriptions of signals on CON4 and CON5 please refer to the data sheet of the connected device.

## ETH

Standard 100BASE-T 802.3 Ethernet suitable for auto 10/100MBit, auto MDI-X and PPT.

## IO options

Electrical characteristics of the input/output lines

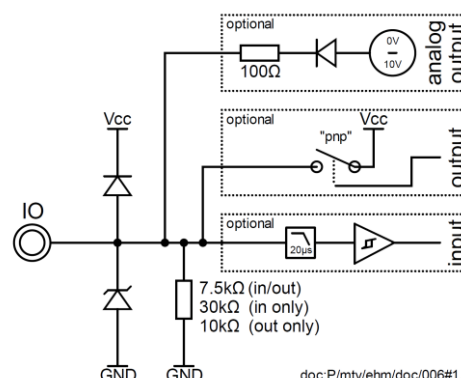
Logic	
input low	max. 4.5 V
input high	min. 9.0 V
input hysteresis	typ. 3.0 V
input frequency	max. 14 kHz
input resistance	typ. 30 kΩ
output type	PNP
output current per channel	max. 0,25 A

Analogue	
analogue input	min. 0 - max. 14.5 V
analogue output	min. 0 - max. 10.2 V
output current	max. 10 mA
output resistance	100 Ω
output type	PNP, 30 kΩ load

The inputs and outputs of the component assembly can take on different IO functions as required by the customer. The following tables provide an overview of the possible IO options of the individual pins. This is only possible in combination with a vis/vt\* HMI terminal.

Function Signal	24V out	24V in	ANA out	ANA in
INP		x		x
INP2		x		x
RDY	x			
RDY2	x	x		
IO1	x	x		
IO2	x	x		x
IO3	x *	x	x	
IO4	x *	x	x	

\*Additional outputs available from rel. 2.0 on.



doc:P/mtv/ehm/doc/006#1.3

## Controls

mtv/ehm/b has two operating buttons for simple tasks and two status indicator LEDs.

## LEDs

LEDs	Description
red & green	blinks alternately
red	blinks
green	blinks
green	flashes

## Buttons

The mtv/ehm has 2 physical push buttons T1 and T2. The buttons can be assigned to one of several actions via IOMapping if required.

Optionally the green LED can be assigned to a different action via IOMapping.

Please see HMI VisTwo documentation.

## Technical data

Supply voltage	24V $\pm$ 10%	nominal
Current consumption	75mA + 250 mA max. + 2.5 A max. + 2.5 A max.	idle current via IOs, each via CON4 via CON5
Power failure HV emergency supply	approx. 10 mins	valve stays closed
Dimensions	97 mm 96 mm 21 mm	length width height
Weight	0.37 kg	
Operating temperature	+5 °C to +50 °C	
Storage temperature	-20 °C to +70 °C	
Degree of protection	IP30	

## Compatibility with ase/pcs/4/gb\*

mtv/ehm/b can be used as a compatible replacement for control units type ase/pcs/4/gb\*. The assignment of the signals to the 15-pole D-Sub connector pins can be seen in the table below:

Pin	Designation	Direction	Value range	Description	Signal on mtv/ehm/b
1	Tsoll	ANA in	0..10V	target temperature 10 V ==> 200°C	
2	Agnd				GND
3	Usoll	In	0/24V	trigger input; resistance approx. 35 kOhm	INP
4	Gnd				GND
5	Tok	SPS out	0 /24V	temperature	RDY
6	Grundst	SPS in	24 V für >200 ms	error reset	
7	PwrOk		24V 50 mA	active, if supply voltage available	
8	reserved			pin not connected	
9	DAC1	ANA out	0 .. 10 V	menu item can be set if available (e.g. fine adjustment of pressure)	
10	Agnd				GND
11	Temp_out	ANA out	0 .. 10 V	10 V ==> 200 °C , if parameter TempOut=1, otherwise as DAC1 menu item can be set	
12	HZDis	SPS in	0/24 V	24 V switches heater off	
13	err	SPS out	0/24 V	0V==> malfunction	RDY2
14	dosOK	SPS out			
15	extern 24 V			additional power supply	

Further compatibility assignment possible on request.

## Technical drawing

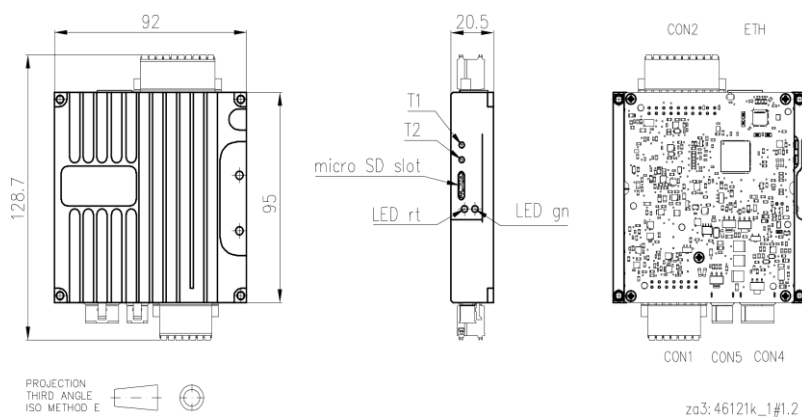


Figure 2: mtv/ehm/a, built-in version

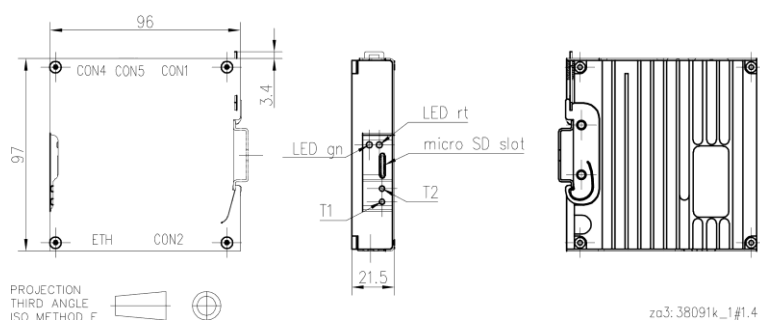
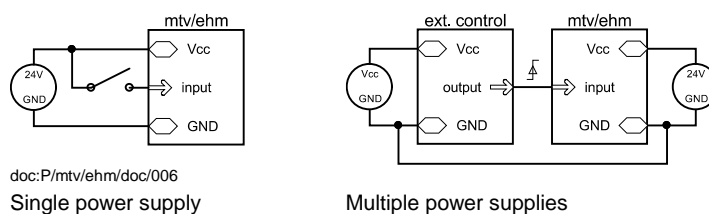


Figure 3: mtv/ehm/b, stand-alone version

## Connection examples for inputs

Two example circuits for connecting an *mtv/ehm/b* using a single power supply and using multiple isolated power supplies.



When supplying power to *mtv/ehm/b* and an external control from different power supplies, the respective grounds have to be connected.

<b>Order number</b>	<b>Description</b>
mtv/ehm/a-1	Valve driver and control electronics for modular valves, built-in version
mtv/ehm/b-1	Valve driver and control electronics for modular valves, stand-alone version
mtv/ds*	Modular valve drive with one actuator
mtv/dd*	Modular valve drive with two actuators