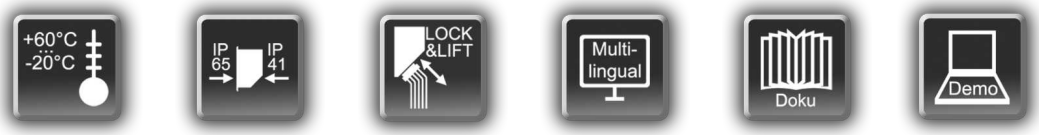
Product information

S7-Panel-PLC

PC1561T

-image of PC1561T-0-02



(valid from PLC-version PC1561T-0-**02**)

Changes to older versions of this document

Rev. 01 → 02: Pin 33 corrected
Rev. 02 → 03: Changes at Push/Pull-outputs and straing gauge inputs, PC1561TD added
Rev. 03 → 04: Standardisation of signal names, new ConfigStage screenshots, hint to wiring of DIO 8-11

Description

S7-Panel-PLC with

- 15,6“ TFT Display (1366x768 Pixel)
- resistive Touch front protection class IP65)

Standard configuration:

RS232 with
- free ASCII-Protokoll

RS485 with
- free ASCII protocol
- Modbus RTU
- with switchable terminate resistors for RS485

2x Ethernet (as switch or separated) with
- S7-connection (Put/Get)
- Send/ Receive via TCP and UDP,
- Modbus TCP

CAN
- protocol compatible to
  - CANopen®
  - Layer2 communication
- with switchable terminate resistors for RS485

Micro-SD-card slot
- for SD-cards up to 8GByte

Run/Stop switch

State LEDs for Power, Battery, Error, Run

Onboard-Periphery
12 digital I/Os
thereof 2 PWM-Outputs
thereof 2 PushPull-Outputs
12 digital Inputs´s
thereof 2 Counters 1kHz
thereof 2 Counters 100kHz
3 analog I/O's
((switchable per channel as input/output and for U / I)
3 analog Inputs
(customizable as RTD/ U/ I/ TC/ DMS)

Inserting stripes
- for Logo and identification (thereby customized adaption possible easy)

Scope of delivery:
- Mounting kit with grounding terminal i
- Technical data sheet

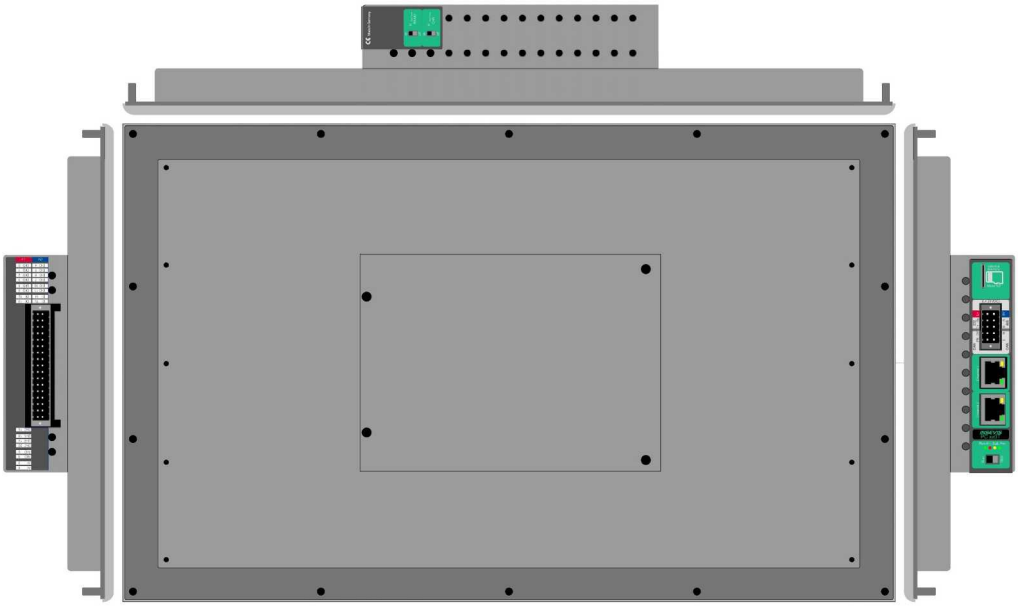


Figure above: View to rear side and connections sides of PC1561T- (horizontal use)

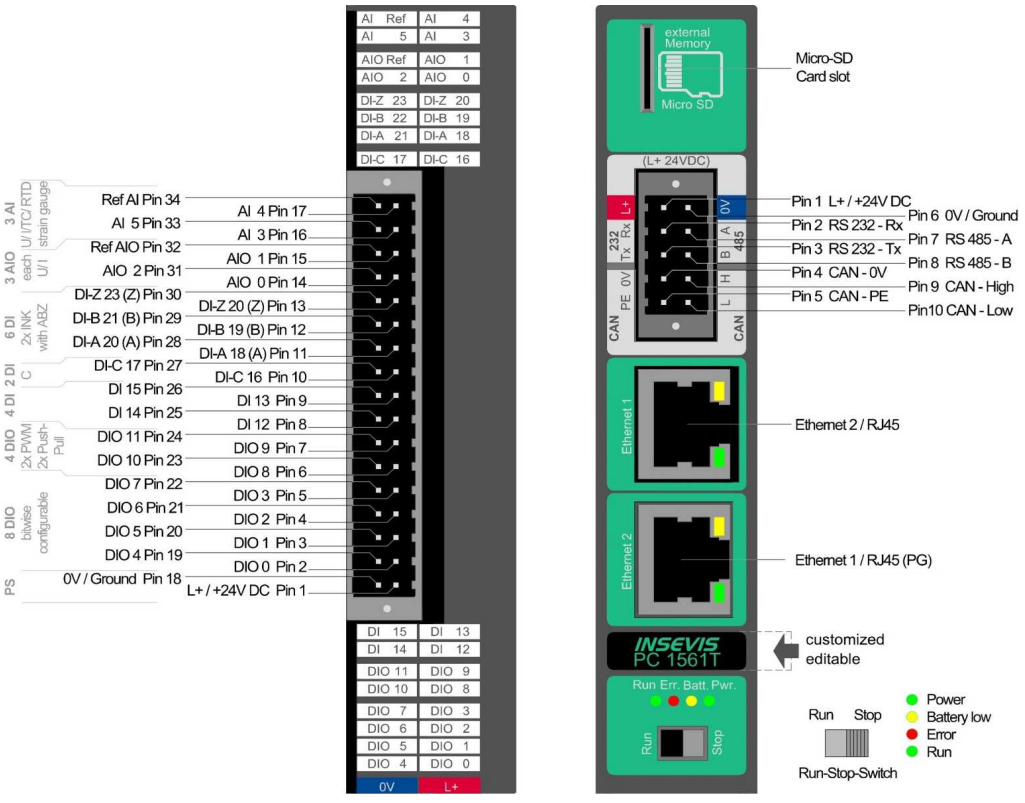


Figure Above: CPU and Periphery connectors of Panel-PLC PC1561T

Technical data	
Dimensions W x H x D (mm) Cut out W x H (mm) / Weight	420 x 260x 59 387 x 228 ca. 1400 g
Operating temperature range Storage temperature range	-20°C ... +60°C (without condensation) -30°C ... +80°C
IP-protection class front panel rear side	 IP65 IP41
Connection technology	Detachable plug connector with 2 lateral screw flanges, Tension clamp contact for cross-sections max. 1.5mm2, maximum cable length 30m
Load voltage L+	24V DC (11 V ... 30V DC)
Current consumption Power dissipation	400mA
Start-up current	< 3A
Diagonal of display (inch) Display resolution (pixel)	10,1“ (258mm) 1024x600 Pixel (16:9)
Display unit Operating unit	TFT display with 16-bit colours analog resistive Touchscreen
Visualization tool unit to reference there	VisuStage PC156xT

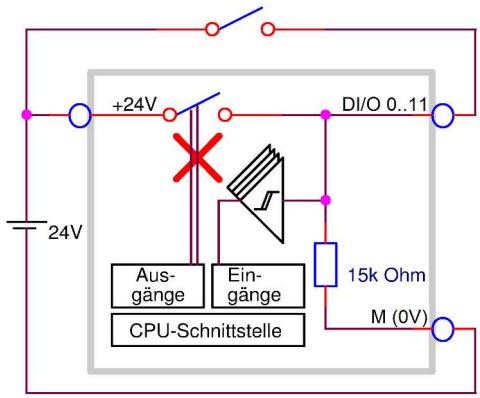
Technical data	CPU
CPU-Type	**Type T** (PC1561**T**)
Working memory = battery backed load memory Diagnostic buffer	1MB 512 kByte remanent 8MB 100 entries (all remanent)
Flash internal - for visualization external memory	 48 MByte Micro SD, up to max. 8 GByte (not necessary for S7-program, only for archiving)
OB, FC, FB, DB Lokal data Number of in- and outputs Process image Number of Merkerbytes Number of Taktmerker Number of timer, counter Depth of nesting	each 2.048 32kByte (2kByte per block) in each case 4.096 Byte (32.769 Bit) addressable in each case 4.096 Byte (default set is 128 Byte) 4.096 (remanence adjustable, default set is 0..15) 8 (1 Merkerbyte) in each case 512 (each remanence adjustable, default set is 0) up to 16 code blocks
Real-time clock elapsed hour counter	yes (accumulator-backed hardware clock) 1 (32Bit, resolution 1h)
Program language Program system	STEP 7® - AWL, KOP, FUP, S7-SCL, S7-Graph from Siemens SIMATIC® Manager from Siemens or products compatible to it
Operating system Program unit to reference	compatible to S7-300® from Siemens CPU 315-2DP/PN (6ES7 315-2EH14-0AB0 and firmware V3.1 Siemens)
Serial interfaces (protocols)	COM1: RS 232 (free ASCII) COM2: RS 485 (free ASCII, Modbus-RTU)
Ethernet (protocols)	2x Ethernet: (switch or separated ports): 10/100 MBit with parts of CP343 functionality (RFC1006, TCP, UDP, Modbus-TCP)
CAN (protocols)	CAN-telegrams (Layer 2), compatible to CANopen® master 10 kBaud ... 1 MBaud

Onboard periphery - PC1561T - PC1561TD (digital IOs only)	 12 dI/O, 12 dI (counting), 3 a/I/O (U/ I), 3 aI (U/ I/ RTD/ TC/ strain gauge) 12 dI/O, 12 dI (counting)
Decentral periphery	- INSEVIS- periphery (with automatic configuration via „ConfigStage“) - diverse external periphery families (Modbus RTU/TCP, CAN) - all CANopen® slaves according to DS401 - all Profinet IO devices

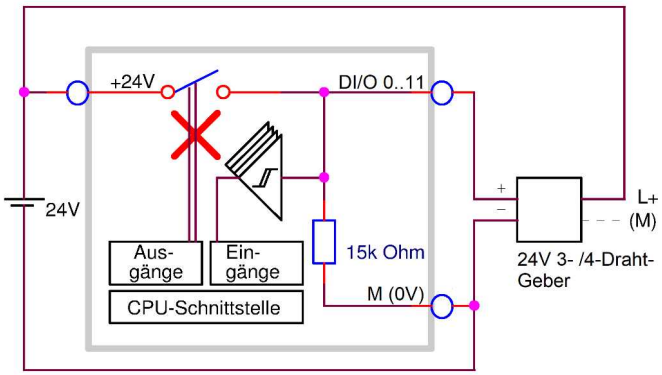
Technical data	digital Inputs/ Outputs (DIO 0...11 and DI 12...23)		
Load voltage L+ Current consumption Power loss Diagnostic LEDs	10 V ... 30 V DC 10 mA (without load) internally limited none	Cable length - unshielded (max.) - shielded (max.)	 30 m 100 m
Digital inputs/outputs	8 outputs (DIO 0...7) (each with read-back input) 2x2 push-pull outputs (DIO 8...11) (can be switched off in pairs) **(each with read-back input: * → do not apply +24VDC here! ***	Outputs: Switch-on delay Switch-off delay Function of the push-pull outputs Number format PWM uni 0 … 100% PWM bidir -100%..0%..100%	 50 µs (type.) 30 µs (typ., without load) output PWM (0..100%) PWM + direction bit (0 .. +/- 100% 0000...6C00 (hex) 9400 … 0000 ... 6C00 (hex)
Output current for signal 0 for signal 1 Input current for signal 1	 0,5 mA (max.) 0,5 A (max. up to 60°C) 1 mA (type)	Max. switching frequency of the outputs	100 Hz (with resistive load)
Signal level of the outputs for signal 0 for signal 1 Input voltage for signal 0 for signal 1	 1,0 V at 500 Ω (max.) L+ - 1,0 V at 0,5 A load (min.) 0V ... +5 V +10,5V ... +30 V	Max. switching frequency of the push/pull PWM outputs	50 kHz (with resistive load)
Digital inputs	4 inputs (DI 12...15)	Inputs: Switch-on delay Switch-off delay	 1,5 ms 4,5 ms
Function slower counter	2 up counters (DI-C 16...17) 16 bit optionally as counter value or frequency [Hz]	Function fast counters	2 counters (DI-A/B/Z 18...22) 16 bit Incremental encoder 4-fold or up-counter Optionally with zero-track reference function
max. frequency slow counter	1 kHz	max. frequency at input pins high-speed counters	100 kHz
Open-circuit monitoring, fault diagnosis Potential isolation to the PLC DO 8...11: Short-circuit protection against 0V	 no no no*	Total current	2 A (max. up to 60°C)

**** Warning of risk of damage when using DIO 8...11 as input/output***
→ If DIO 8...11 is in PWM uni, PWM bidir or input/output mode, +24VDC must NOT be applied!

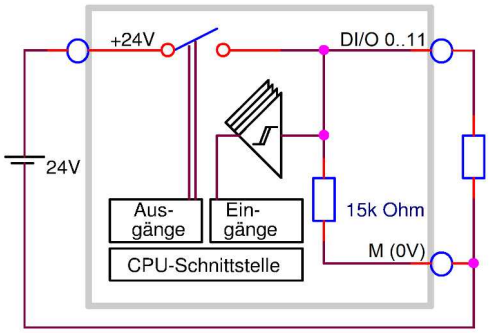
Block diagrams digital inputs/outputs (DIO 0...7)



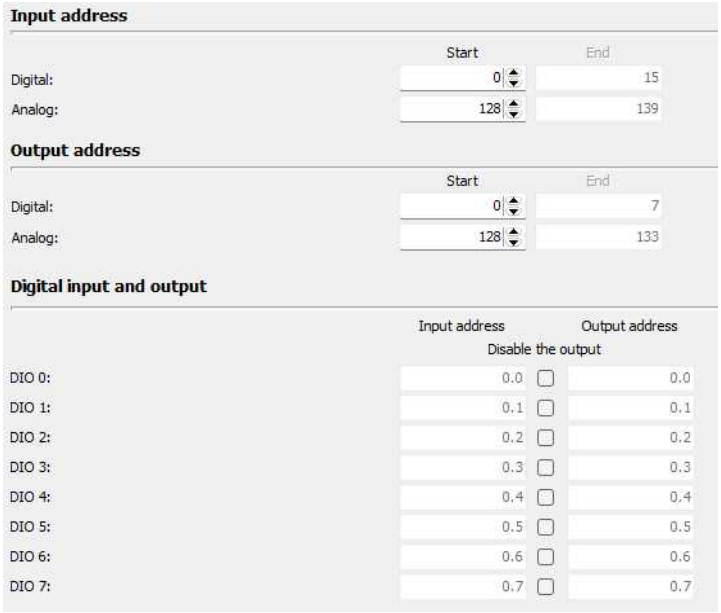
Block diagram of the DIOs only as input for 2-wire encoders



Block diagram of the DIOs for 3-/4-wire encoders



Block diagram of the DIOs as read-back output



Configuration block start/end addresses (in bytes) and I/O assignment in the ConfigStage

Configuration of the PWM outputs (DIO 8...11)

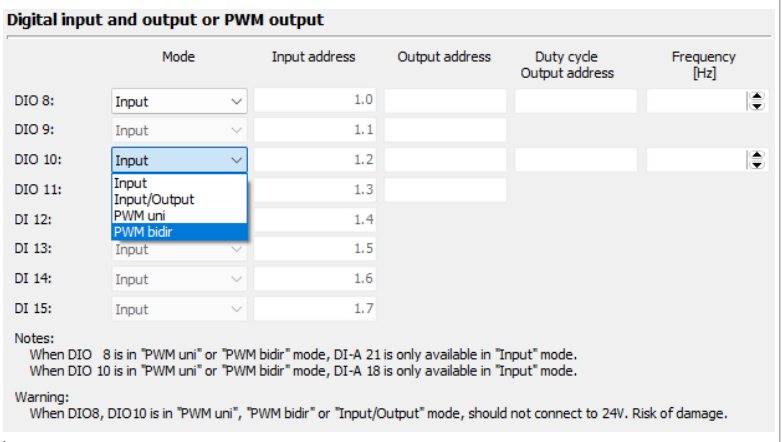
Push-pull outputs or PWM (setting via ConfigStage)
Channel 1.0/1.1 and 1.2/1.3 in pairs

Configuration **"Input"**
→ both outputs deactivated

Configuration "**Input/Output**"
→ 2 read-back outputs
(active high AND low switching !)

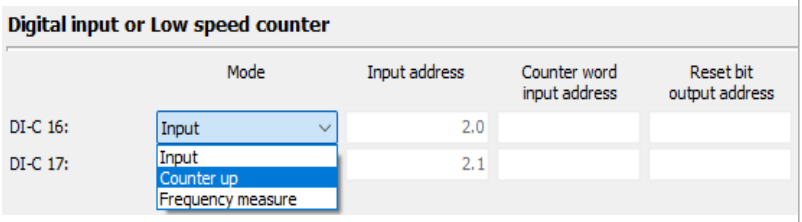
Configuration **"PWM uni"**
→ DIO 8 resp. DIO 10 deactivated as bit
Set value of the PWM duty cycle
in the specified output word,
Specification of the frequency constant
→ DIO 9 resp. DIO 11 as output (can be read back)

Configuration **„PWM bidir“**
→ DIO 8 resp. DIO 10 as uni, but setpoint with sign
→ DIO 9 resp. DIO 11 as direction bit (= sign)



Configuration of the counter inputs (DI-C 16/17 and DI-A/B/Z 18..23)

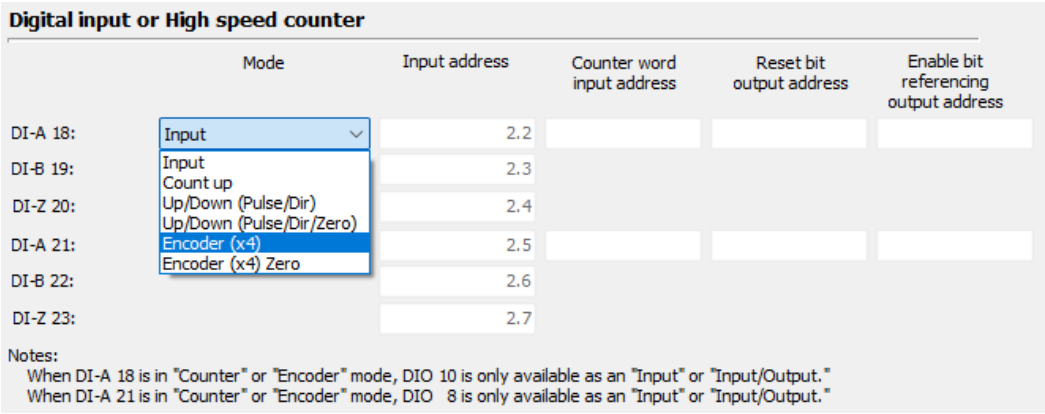
Slow counters
(setting via ConfigStage)



Configuration **"Input"**
→ DI-C 16 resp DI-C 17 are normal inputs,
Counter is switched off
Configuration **"counting up"**
→ On DI-C 16 resp DI-C 17, rising edges are counted
Address of the counter word and the reset bit are displayed (input bit switched off)

"**Frequency measurement**" configuration
→ The frequency [Hz] is output instead of the counter value

Fast counters
(setting via ConfigStage)



Configuration **„Input“**
→ DI-A 18, DI-B 19, DI-Z 20 resp. DI-A 21, DI-B 22, DI-Z 23 are normal Inputs,
Counter is switched off

Configuration **"counting up"**
→ Rising edges are counted on DI-A 18 resp. DI-A 21 ,
→ the other signals (B and Z) are inputs

Configuration **"counting up/down"**
→ rising edges are counted on channel DI-A 18 resp. DI-A 21 and
→ Channel DI-B 19 resp. DI-B 22 serves as a direction bit (0=backwards, 1=forwards)
→ Z is input

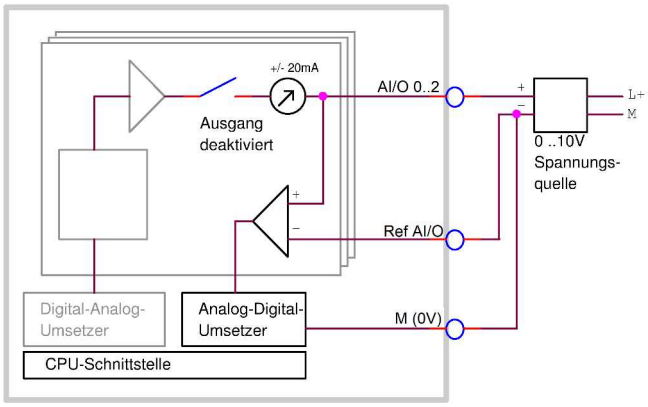
Configuration **"Encoder x4"**
→ DI-A 18/DI-B 19 resp. DI-A 21/DI-B 22 form an encoder input with quadruple evaluation
→ Z is input
Configuration **"counting up/down zero" "Encoder x4 zero"**
→ In addition, the Z input can be activated via the "enable reference" bit:
On a rising edge at the Z bit, the counter is reset to 0 and the enable reference bit is deleted.
Notes on using the counter inputs

Notes on using the counter inputs (DI-C 16/17 and DI-A/B/Z 18..23)

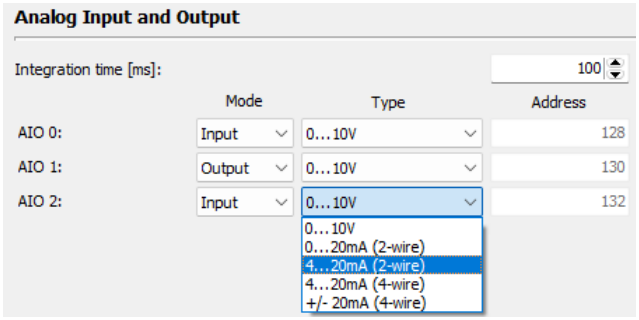
- Counters can only be set (and held) to zero by setting the reset bit (static)
- the configuration cannot be changed at runtime under Step7:
- all addresses are specified as an offset in relation to the configured start address

Technical data	analog Inputs/Outputs U/I (AIO 0...2)		
Load voltage L+	- (internal supply)	Cable length - unshielded (max.) - shielded (max.)	 30 m 100m
Analogue inputs Input ranges	3 (alternatively configurable to outputs via software) 0...20 mA, 4...20 mA, +/- 20mA 0..10 V	Permissible voltage between inputs and A-GND (max.)	-1 V ... + 24 V DC
Diagnostic LEDs	none	Error message if range is exceeded	Parameterizable diagnostic and limit value alarms on request
Number format +/- 20mA: -20 mA ..0..20 mA otherwise	 9400 ... 0000 … 6C00 (hex) 0000 ... 6C00 (hex)	Wire break monitoring	by exceeding or falling below the measuring range (for 4..20 mA)
Overload range	20 mA ... 22 mA 10V … 11,3 V	Signal transmitter connection type	unbalanced to A-GND (single ended)
Input resistance	0Ω (typ.) for measuring range current 1MΩ (typ.) for voltage measuring range	Measuring principle/ Conversion principle Resolution	successive approximation 12 Bit
Abtastzykluszeit = IntegrationszeitSampling cycle time = Integration time	parameterizable 1ms ... 35767 ms default: 100 ms (= mains frequency filter 50Hz and 60Hz)	Accuracy (related to measuring range)	< 1%
Analog outputs Output ranges	3 (alternatively to inputs configurable via software) 0(4)...20mA , 0...10V	Number format	0000 ... 6C00 (hexadecimal)
Output resolution	12 Bit	Short-circuit protection	yes
Diagnostic LEDs	none	Overdrive range	20 ... 23 mA 10 ... 11,3 Vsettling timeSettling time:
Settling time:	Time constant t (typ) 1,5 ms	Short-circuit current (typ.)	20 mA (at 10V) 32 mA (at mA)
Load resistor/ load resistor to A-GND	mA: 500 Ω (max.) V: 1 kΩ (min.)	Accuracy (related to measuring range)	< 1%

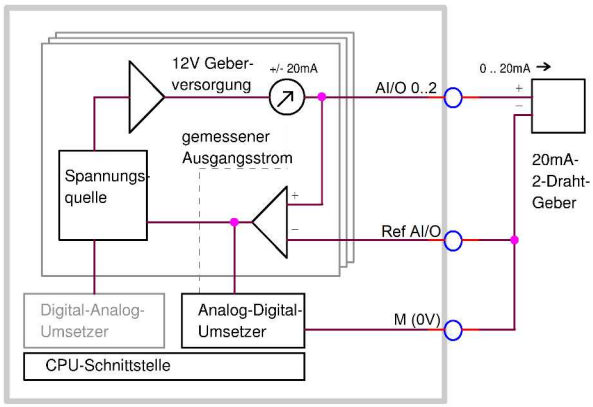
Block diagrams analog inputs/outputs U/I (AIO 0...2)



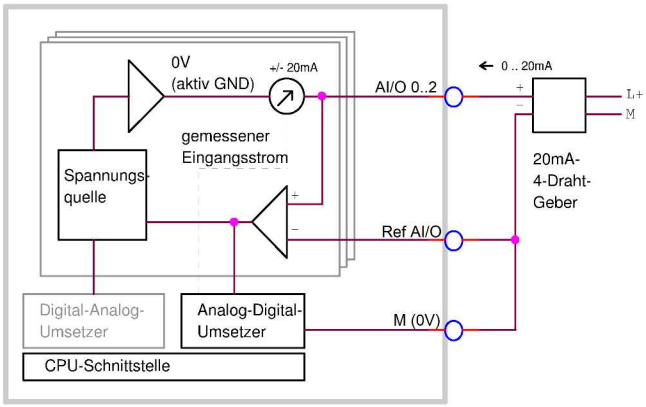
Block diagram of the analog inputs for 0 ... 10 V



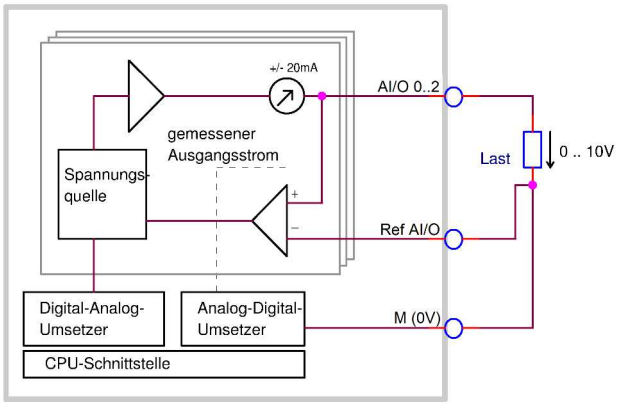
Configuration block addresses (in bytes)
and measuring range configuration Analogue I/O in the ConfigStage



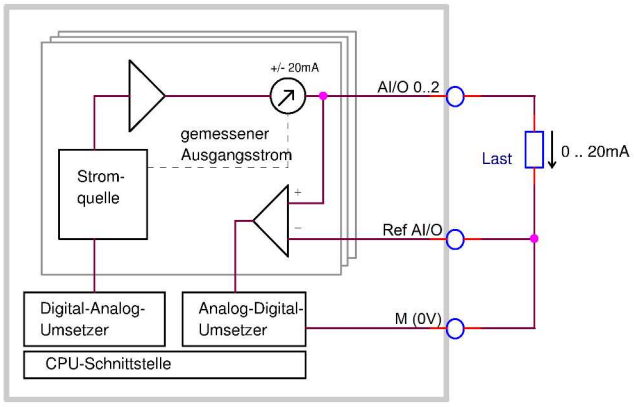
Block diagram of the analogue inputs for 20 mA
with 2-wire encoder



Block diagram of the analogue inputs for 20 mA
with 3/4-wire encoder



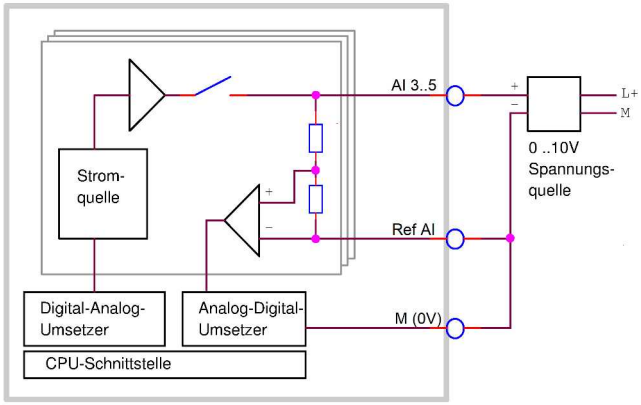
Block diagram of the analogue outputs for 10 V



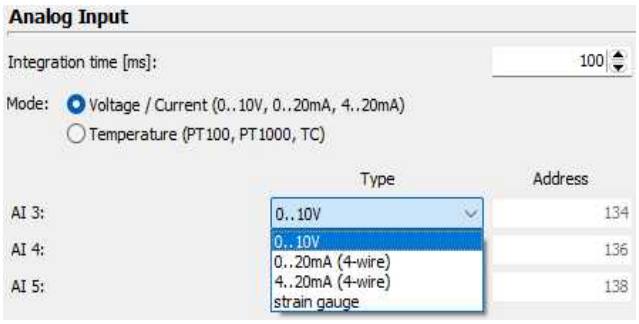
Block diagram of the analogue outputs for 20 mA

Technical data	Analog Inputs U/ I/ RTD/ TC/ Strain gauge (AI 3...5)		
Load voltage L+	- (internal supply)	Cable length - unshielded (max.) - shielded (max.)	 30 m 100m
Input ranges	0...20 mA, 4...20 mA, 0..10 V, DMS, PT100, PT1000, 2 kOhm, TC Typ K, J, N possible combinations: - 3x 20 mA or 10 V - 1x DMS - 3x PT100/PT1000/R (2 wire) - 1x PT100/PT1000/R (3 wire) + 1x PT100/PT1000/R (2 wiret) - 2x ThermoCouples , 1x PT	Permissible voltage between inputs and A-GND (max.)	-1 V ... + 24 V DC
Diagnostic LEDs	none	Error message if range is exceeded	Parameterizable diagnostic and limit value alarms on request
Number formats: 0 (4) .. 20mA /10V: PT100 standard / TC PT100 clima / PT1000 clima 2 kOhm	 0 ... 6C00 (hex) 1/10 °C 1/100 °C 0 … 2000 (dez)	Wire break monitoring	due to overrange or underrange
TC numerical Limits Overflow > 1622°C Underflow< F0C4 (hex) (transmitter error)	 7FFF (hex) 8000 (hex)	TC-Terminal point compensation:	External: connect PT100/PT1000 on AI 5 Internal: connect AI 5 to AI Ref instead of PT100/PT1000 → usage of PCB temperature
Overdrive range	20 mA ... 22 mA 10V … 11,3 V	Connection type of the signal transmitter Measuring ranges mA, V: otherwise:	 unbalanced (single ended) against 0V potential-free (floating)
Input resistance	70Ω (typ.) for measuring range mA 1MΩ (typ.) otherwise	Measuring principle/ Conversion principle Resolution	Sigma Delta 16 Bit
Sampling cycle time = Integration time	parameterizable default: 100 ms depending on the measuring range	Accuracy (related to measuring range)	< 1%

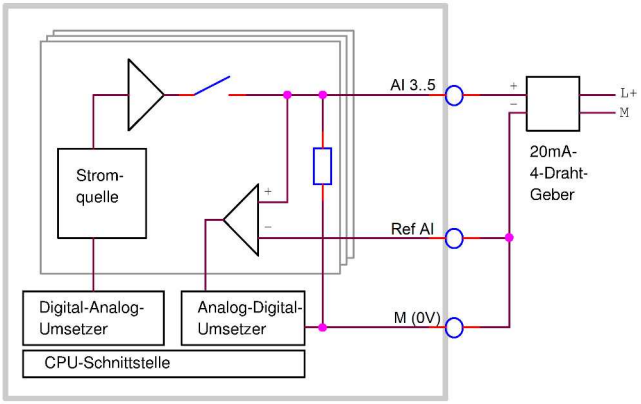
Block diagrams analog inputs U/I / RTD/ TC/ Strain gauge (AI 3...5)



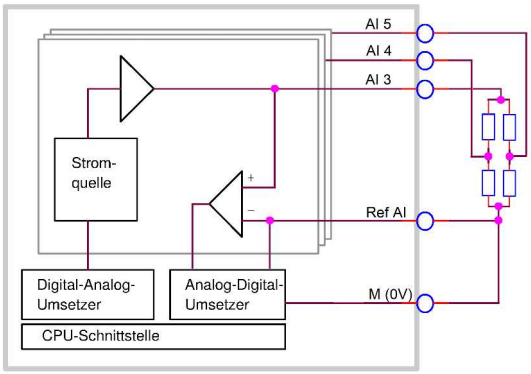
Block diagram of the analog inputs for 0 ... 10 V



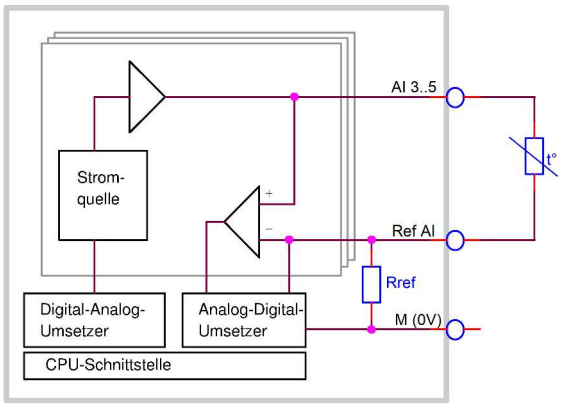
Configuration block addresses (in bytes)
and measuring range configuration in the ConfigStage
Voltage/current mode



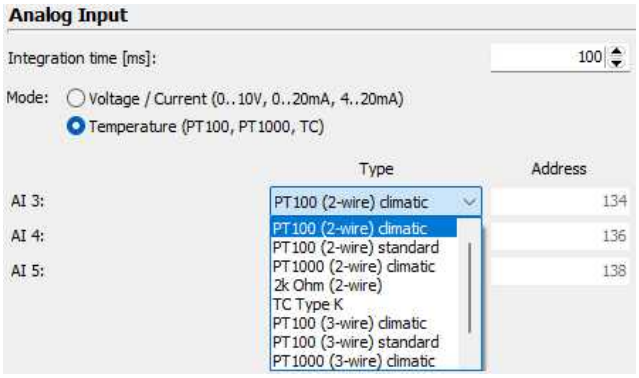
Block diagram of the analog inputs for 20 mA with 3/4 wire encoder



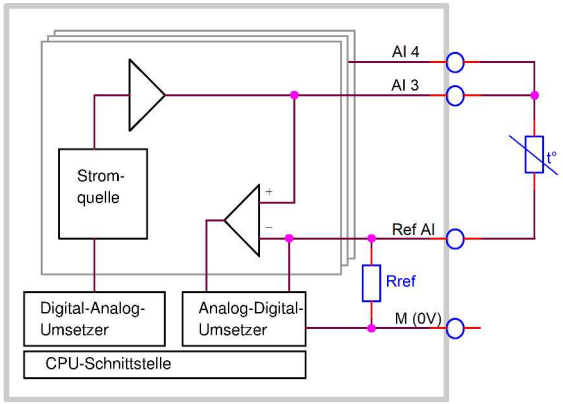
Block diagram of the analog inputs for strain gages (strain gauge)



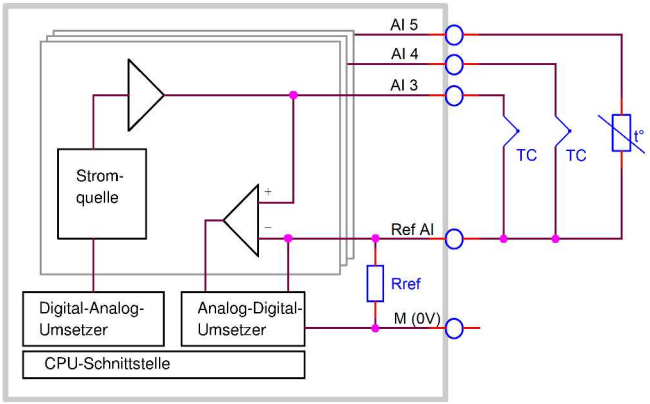
Block diagram of the analog inputs for PT100/PT1000/R 2-wire



Configuration block addresses (in bytes) and measuring range configuration Analog Input in the ConfigStage Mode temperature



Block diagram of the analog inputs for PT100/PT1000/R 3-Wire



Block diagram of the analog inputs for thermocouples with Terminal compensation

Attention

For terminal point compensation:

- either with PT100/1000 temperature at the terminal point or
- Connect AI5 (Pin33) to Ref AI (Pin34) (less accurate)

Assignment of the process image:

Assignment of the process image: Digital inputs The module occupies 16 bytes in the process image (from the configured start address).			
Offset	I/O	Function	Description
0..2	I	Input DI0.0..DI2.7	Input bits (possibly blocked - depending on configuration)
3	I	reserved	
4,5	I	Slow counter 0	Counter word (16-bit high-endian), measuring range depending on configuration
6,7	I	Slow counter 1	Counter word (16-bit high-endian), measuring range depending on configuration
8..11	I	Fast counter 0	Counter word (32-bit high-endian), measuring range depending on configuration
12..15	I	Fast counter 1	Counter word (32-bit high-endian), measuring range depending on configuration

Assignment of the process image: Digital outputs The module occupies 8 bytes in the process image (from the configured start address).			
Offset	I/O	Function	Description
0	O	Output DO0..DO7	Standard-PLC outputs
1	O	Output DO8..DO11	4 push/pull outputs (4 bits unused)
2	O	Resetbits slow counter	.0 Reset Counter 0, .1 Reset Counter1
3	O	Reset-/Controlbits fast counter	.0 Reset Counter 0, .1 Reset Counter1 .2 EnableRef Counter 0, .3 EnableRef Counter1
4,5	O	PWM 0 target value	(16 Bit high-endian)
6,7	O	PWM 1 target value	(16 Bit high-endian)

Assignment of the process image: Analog inputs The module occupies 6 input words in the process image (from the configured start address).			
Offset	I/O	Function	Description
0,2,4	I	Input AI0..AI2	Measurement range depending on configuration
6,8,10	I	Input AI3..AI5	Measurement range depending on configuration

Assignment of the process image: Analog outputs The module occupies (from configured start address) 3 output words in the process image.			
Offset	I/O	Function	Description
0,2,4	O	Output AO0..AO2	Measurement range depending on configuration

Cut out in switching cabinet

Dimensions / Cut out

B x H (mm) 387 x 228
14 holes with D 4,5mm

Mounting depth

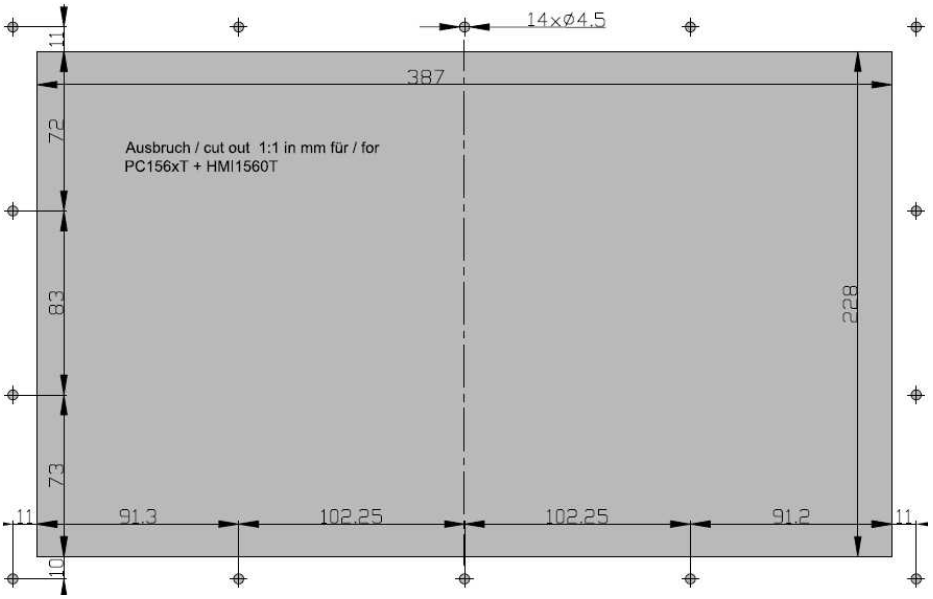
54mm

Cable outlets

Standard interfaces
2x RJ45 (Ethernet)
E-CONS10, E-CON(S)34

PC1011T-0-02
→ to the left
PLC-interfaces E-CON(S) 10
→ to the right:*
I/O interfaces E-Con(S) 34

*) at rear view and
horizontal mounting



Drill jig →

An 1:1 pattern as drill jig is available as PDF at INSEVIS web site for this product
Print it 1:1 and use it for marking the cut out.

Ordering data of devices

Identification	Standard	With digital I/Os only
S7-Panel-PLC **PC1561T**	PC1561T-0-02	PC1561TD-0-02

Ordering data of accessoires

Identification / Order-No.	Identification / Order-No.
Connector 2x5pin (bolt flanges) / E-CONS10-00	Micro SD-card 2GB (external memory) / E-MSD2-00
Connector 2x17polig (Locking lever) / E-CON34-00	Micro SD-card 4GB (external memory) / E-MSD4-00
Connector 2x17polig (bolt flanges) / E-CONS34-00	Micro SD-card 8GB (external memory) / E-MSD8-00

Qualified personnel
All devices described in this manual may only be used, built up and operated together with this documentation. Installation, initiation and operation of these devices might only be done by instructed personnel with certified skills, who can prove their ability to install and initiate electrical and mechanical devices, systems and current circuits in a generally accepted and admitted standard.

Manuals, sample programs
Additional documentation by manuals is available as well sample applications at the download area of www.insevis.com in English language for free download.

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Disposal
Do not throw old appliances in the household waste! In the interest of environmental protection, old appliances must be collected separately from unsorted municipal waste. You can find out more about the proper disposal / return of your old appliance at www.insevis.com/disposal.
Attention: The deletion of personal data on the old devices to be disposed of is the responsibility of the end user.

With publication of this information all other versions are no longer valid.