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05 - IO Module EN:01 DIGITEC 1 29.03.2007 16:10 Uhr Seite 1

I/O system IP20

Introduction 5-2
- ▶ The ideal solution for every application
- ▶ Standards and operating instructions

Modular system 5-4
- ▶ Gateway
- ▶ Digital I/O modules
- ▶ Analog I/O modules
- ▶ Function modules

Compact system 5-12
- ▶ Digital I/O modules

Accessories 5-13

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I/O system IP20
Introduction

The ideal solution for every application

The increasing level of automation in machines and systems and the consequent rise in the number of I/O devices have in turn increased the amount of wiring required.

Decentralised I/O systems bring order to this chaos. Lenze has developed two product concepts which are suitable for both basic digital applications and more complex automation tasks.

The modular system

We can provide a complete range of I/O systems for more complex automation applications. The modular system comprises three components: a gateway, electronic modules and a backplane bus.

The modular system is connected to the CAN system bus via the gateway. An internal backplane bus is used for the intra-station communication of process and parameter data, as well as diagnostic data.

The electronics modules house the actual I/O functions. Up to 32 units can be combined as required to form an overall station where each module is optimised for the individual application in which it is to be used.



The compact system

The product family comprises a range of compact products with a fixed number of digital inputs and outputs. It has a built-in communication interface in the form of the CAN system bus. The compact system is available in four different versions – one of which is bound to meet your exact application requirements.

8, 16 and 32-channel modules can be supplied in one or three-wire technology with up to 24 inputs and 8 outputs.

The modules have a SUB-D connector for the connection of the system bus, pluggable tension spring terminal strips to speed up the wiring process and a switch for the node address. The compact system offers operational reliability, can be mounted quickly and easily on 35 mm standard mounting rails and is even easy to configure. All in all, this makes for faster commissioning.



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05 - IO Module EN:01 DIGITEC 1 29.03.2007 16:10 Uhr Seite 3



Standards and operating conditions

Area	Values		
Vibration resistance	1G / 12G, in acc. with IEC 60068-2-6 / 60068-2-27		
Climatic conditions	RH1 to EN 61131-2 (no moisture condensation, relative humidity 50 ... 95%)		
Permissible temperature ranges	Transport: Storage: Operation: ▶ Horizontal mounting ▶ Vertical mounting	 -25...+70 °C -45...+85 °C 0...+55 °C 0...+45 °C	
Mounting positions	horizontal and vertical		
Degree of pollution	Degree of pollution 2 to EN 61131-2		
Noise emission	Compliance with limit class A to EN 55011		
Noise immunity	**Requirements** ESD Conducted high frequency RF Interference (housing) Burst	**Standard** EN 61000-4-2 EN 61000-4-6 EN 61000-4-3 EN 61000-4-4	**Severity** 8 kV for air discharge, 4 kV for contact discharge 2, 150 ... 80 MHz, 3 V/m 80 % AM (1 kHz) 3, 80 ... 1000 MHz, 10 V/m 80 % AM (1 kHz) 895 ... 905 MHz, 10 V/m 50 % ED PM (200 Hz) 3 i.e. 1/2 kV with 5 kHz
Insulation resistance	In acc. with IEC 61131-2		
Insulation voltage to reference earth	I/O: 50 V AC / DC, text voltage 500 V AC		
Electrical isolation to system bus (CAN)	Modular system, Compact modules	Yes, via optocoupler	
Electrical isolation to process level	Modular system	Yes, via optocoupler	
Packaging	Transport packaging to DIN 4180		
Protection category	IP20		
Labelling **Approvals**	CE: Meets the requirements of the EC's Low Voltage Directive Approvals cULus: Approved to UL 508, file no. E234291		

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Gateway

Rated data

Design		CAN Gateway 	CAN Gateway ECO 
Order designation		**EPM-T110**	**EPM-T111**
DC supply voltage	U_{DC} [V]	24 (20.4...28.8)	24 (20.4...28.8)
Connections		9-pin Sub-D	9-pin Sub-D
Electrical isolation		yes, via octocoupler	yes, via octocoupler
Interface, Field bus		System bus CAN / CANopen	System bus CAN / CANopen
Baud rate		10 kBps to 1 MBps	10 kBps to 1 MBps
Numbers of bus, Field bus		max. 63	max. 63
Electronics... per station		max. 32	8 digital und analog
Dimensions			
Height	**h** [mm]	76	
Width	**w** [mm]	25.4	
Depth	**d** [mm]	76	
Weight	**m** [kg]	0.08	

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05 - IO Module EN:01 DIGITEC 1 29.03.2007 16:10 Uhr Seite 5



Gateway

Rated data

Design		PROFIBUS Gateway 	PROFIBUS Gateway ECO 
Order designation		EPM-T120	EPM-T121
DC supply voltage	U_{DC} [V]	24 (20.4...28.8)	24 (20.4...28.8)
Connections		9-pin Sub-D	9-pin Sub-D
Electrical isolation		yes, via octocoupler	yes, via octocoupler
Interface, Field bus		PROFIBUS-DP-V1	PROFIBUS-DP-V1
Baud rate		9.6 kBps to 12 MBps	9.6 kBps to 12 MBps
Numbers of bus, Field bus		max. 32 (without repeater)	max. 32 (without repeater)
Electronics... per station		32	max. 8 (digital and analog)
Dimensions			
Height	**h** [mm]	76	
Widht	**w** [mm]	25.4	
Depth	**d** [mm]	76	
Weight	**m** [kg]	0.08	

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Digital input/output modules

Rated data

Design		8x digital input	16x digital input	8x digital output 0,5 A	8x digital output 1A	8x digital output 2A
						
Order designation		**EPM-T210**	**EPM-T211**	**EPM-T224**	**EPM-T220**	**EPM-T221**
Inputs/outputs		8/-	16/-	-/8	-/8	-/8
DC supply voltage	U_{DC} [V]	5 (via backplane bus)				
Rated voltage						
Input voltage	U_{DC} [V]	24 (18...28.8)	24 (18...28.8)	-	-	-
Load voltage	U_{DC} [V]	-	-	24 (18...35)	24 (18...35)	24 (18...35)
Level	U_{DC} [V]	0...5 / 15...28.8	0...5 / 15...28.8	-	-	-
Output current per channel	I_A [A]	-	-	0.5	1	2 A max. residual current 10 A
Electrical isolation inputs and outputs		yes, via optocoupler				
Programming Data						
Input data	[byte]	1	2	-	-	-
Output data	[byte]	-	-	1	1	1
Parameter data	[byte]	-	-	-	-	-
Diagnostic data	[byte]	-	-	-	-	-
Dimensions						
Height	**h** [mm]	76				
Widht	**w** [mm]	25.4				
Depht	**d** [mm]	76				
Weight	**m** [kg]	0.05				

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05 - IO Module EN:01 DIGITEC 1 29.03.2007 16:10 Uhr Seite 7



Digital input/output modules

Rated data

Design		4x relay	16x digital output 0,5 A	16x digital output 1A	8x digital input/output
Order designation		**EPM-T222**	**EPM-T225**	**EPM-T223**	**EPM-T230**
Inputs/outputs		-/4	-/16	-/16	0...8/0...8
DC supply voltage	U_{DC} [V]	5 (vial backplane bus)			
Rated voltage					
Input voltage	U_{DC} [V]	-	-	-	24 (18...35)
Load voltage	U_{DC} [V]	max. DC 30 V or AC 230 V	24 (18...35)	24 (18...35)	24 (18...35)
Level	U_{DC} [V]	-	-	-	0...5 / 15...28.8
Output current per channel	I_A [A]	DC 30 V: 5A AC 230 V: 5 A	0.5 A	1 A max. residual current 10 A	1 A
Electrical isolation inputs and outputs		yes, via optocoupler			
Programming data					
Input data	[byte]	-	-	-	1
Output data	[byte]	1	2	2	1
Parameter data	[byte]	-	-	-	-
Diagnostic data	[byte]	-	-	-	-
Dimensions					
Height	**h** [mm]	76			
Widht	**w** [mm]	25.4			
Depth	**d** [mm]	76			
Weight	**m** [kg]	0.08		0.05	

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Analog input/output modules

Rated data

Design		4x analog input 	4x analog input 	4x analog input 
Order designation		**EPM-T310**	**EPM-T311**	**EPM-T312**
Inputs/outputs		4/-	4/-	4/-
Input/output range				
Voltage		DC ± 10 V, ± 4 V, ± 400 mV, 0...50 mV	DC ± 10 V, 0...10 V	-
Current		0/4...20 mA, ± 20 mA	-	0/4...20 mA, ± 20 mA
Temperature		PT100, PT1000 NI100, NI1000	-	-
Thermocouple		J, K, N, R, S, T	-	-
Electrical isolation		yes, via optocoupler		
Programming data				
Input data	[byte]	8	8	8
Output data	[byte]	-	-	-
Parameter data	[byte]	10	4	4
Diagnostic data	[byte]	4	-	-
Dimensions				
Height	**h** [mm]	76		
Widht	**w** [mm]	25.4		
Depth	**d** [mm]	76		
Weight	**m** [kg]	0.1		

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05 - IO Module EN:01 DIGITEC 1 29.03.2007 16:10 Uhr Seite 9



Analog input/output modules

Rated data

Design		4x analog output 	4x analog output 	4x analog output 	4x analog inout/output 
Order designation		**EPM-T320**	**EPM-T321**	**EPM-T322**	**EPM-T330**
Inputs/outputs		-/4	-/4	-/4	2/2
Input/output range					
Voltage		DC ± 10 V, 0...10 V, 1...5 V	DC ± 10 V, 0...10 V	-	DC 0...10 V, ± 10 V, 1...5 V
Current		0/4...20 mA, ± 20 mA	-	0/4...20 mA	0/4...20 mA, ± 20 mA
Temperature		-	-	-	-
Thermocouple		-	-	-	-
Electrical isolation		yes, via optocoupler			
Programmind data					
Input data	[byte]	-	-	-	4
Output data	[byte]	8	8	8	4
Parameter data	[byte]	6	4	4	12
Diagnostic data	[byte]	4	-	-	-
Dimensions					
Height	**h** [mm]	76			
Widht	**w** [mm]	25.4			
Depth	**d** [mm]	76			
Weight	**m** [kg]	0.1			

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Function modules

Rated data

Design		2/4x counter 	1x counter/ 16x digital input 
Order designation		**EPM-T410**	**EPM-T430**
Numbers of counter / timers		2/4 (32/16 bit counter widht)	1 (32 bit counter widht)
Counter			
Operating modes		Up/down counter Compare- / Auto Reload function Encoder pulses frequency measurements Continuous period measurement	Up/down counter Encoder pulses frequency measurements Continuous period measurement
Counter frequency	[kHz]	1000	100
Inputs/outputs		-	16/-
Rated voltage			
Input voltage	U_{DC} [V]	-	24 (18...28.8 V)
Load voltage	U_{DC} [V]	24 (18...35)	
Level	U_{DC} [V]	-30...5 / 13...36	0...5 V / 15...28.8 V
Electrical isolation		yes, via optocoupler	
Progamming data			
Input data	[byte]	10	6
Output data	[byte]	10	6
Parameter data	[byte]	2	1
Diagnostic data	[byte]	-	-
Dimensions			
Height	**h** [mm]	76	
Widh	**w** [mm]	25.4	
Depth	**d** [mm]	76	
Weight	**m** [kg]	0.1	0.05

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Function modules

Rated data

Design		SSI Interface 
Order designation		**EPM-T411**
Number of channels		1
Inputs/outputs		2
Rated voltage		
Input voltage	U_{DC} [V]	24 (18...28.8)
Load voltage	U_{DC} [V]	0...5 / 15...28.8
Level	U_{DC} [V]	-5...7 / 13...36
Electrical isolation		yes, via optocoupler
Programming data		
Input data	[byte]	8
Output data	[byte]	8
Parameter data	[byte]	4
Diagnostic data	[byte]	-
Dimensions		
Height	**h** [mm]	76
Width	**w** [mm]	25.4
Depth	**d** [mm]	76
Weight	**m** [kg]	0.1

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Digital input/output modules

Rated data

Design		8 x digital I/O compact	16 x digital I/O compact	32 x digital I/O compact
				
Order designation		**EPM-T830** (3-wire)	**EPM-T831** (1-wire) **EPM-T833** (3-wire)	**EPM-T832** (1-wire)
Interface, Field bus		System bus CAN / CANopen	System bus CAN / CANopen	System bus CAN / CANopen
Electrical data				
Number of inputs/outputs		0 ... 8 / 8 ... 0 (total no. of channels: 8)	8 ... 12 / 8 ... 4 (total no. of channels: 16)	24 / 8 (total no. of channels: 32)
Voltage supply	U_{DC} [V]	24 (20.4 ... 28.8)	24 (20.4 ... 28.8)	24 (20.4 ... 28.8)
Rated input voltage	U_{DC} [V]	24 (18 ... 35)	24 (18 ... 35)	24 (18 ... 35)
Rated load voltage	U_{DC} [V]	24 (18 ... 35)	24 (18 ... 35)	24 (18 ... 35)
Signal voltage	U_{DC} [V]	0 ... 5 / 15 ... 30	0 ... 5 / 15 ... 30	0 ... 5 / 15 ... 30
Output current	U_{DC} [V]	1 A	1 A	1 A
Electrical isolation	U_{DC} [V]	yes, via optocoupler	yes, via optocoupler	yes, via optocoupler
Programming data				
Input data		1 Byte	2 Byte	3 Byte
Output data		1 Byte	1 Byte	1 Byte
Parameter data		-	-	-
Diagnostic data		2 Bit	2 Bit	2 Bit
Dimensions				
Widht x Height x Depth	[mm]	101 x 76 x 46	101 x 76 x 46 (1-wire) 152 x 76 x 46 (3-wire)	152 x 76 x 46

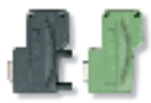
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05 - IO Module EN:01 DIGITEC 1 29.03.2007 16:10 Uhr Seite 13



Accessories

Order data

	Item / description:		Order designation
	**Backplane bus**	The backplane bus is used to connect the individual components of the modular system to an overall station. To maximise system flexibility, we offer four different versions of the bus. The single-slot backplane bus is used to connect two modules, the 4-slot backplane bus to connect five modules, etc. Combinations maximise flexibility	
		Backplane bus, 1 slot	**EPM-T910**
		Backplane bus, 2 slots	**EPM-T911**
		Backplane bus, 4 slots	**EPM-T912**
		Backplane bus, 8 slots	**EPM-T913**
	**Label sheet / card**	There are two ways of labelling the system modules: ▶ The label sheet is DIN A4 format and can therefore be printed using standard printers. ▶ The label card is used for local labelling. it is inluded in the scope of supply.	
		Label card	**EPM-T930**
		Label sheet	**EPM-T931**
	**Terminal module**	Take advantage of the possibility of using terminal modules to support the requirements of 2/3-wire connections even in an modular system.	**EPM-T940**
	**Terminal strip**	The terminal strip is used to connect the field wiring to the appropriate I/O modules. A terminal strip is included in the scope of supply of the modules.	**EPM-T920**
	**CAN bus-connector node/ termination**	The connectors are used to connect the CAN to those Lenze drives which are provided with a Sub-D connections for the CAN bus. They are screw type connectors. Two versions are available, one with and one without CAN terminating resistor (for CAN bus node/termination). A connector with integrated switch for the terminating resistor is also available. Internal spring terminals make the use of special mounting tools superfluous. The switch setting can be read from two sides.	
		CAN Bus connector „node“	**EPM-T950**
		CAN Bus connector „termination“	**EPM-T951**
		CAN Bus connector „switch“	**EWZ0046**

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