



# Project Setup and configuration Tool flexoTEMPMANAGER

Operation

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# 1 Introduction

flexotempMANAGER is

- a project setup and configuration tool
- for visualization of parameters and status in form of value and graphic displays

for all flexotemp® components.

In this document the operation of flexotempMANAGER is described.

# 1.1 Additional and continuative documents

	Information on this topic are in the operating instructions
System configuration & project setup	Temperature control system flexotemp® System Configuration & Project Setup
Parameters	Information on this topic are in the operating instructions Temperature Control System flexotemp® Parameter
Protocol PSG II	Information on this topic are in the protocol description <b>PSG II</b> and the corresponding object lists.
Protocol PSG II Ethernet (ASCII)	Information on this topic are in the protocol description <b>PSG II Ethernet</b> (ASCII) and the corresponding object lists.
Protocol Profibus DP	Information on this topic are in the protocol description <b>Profibus DP</b> and the corresponding object lists.
Protocol Modbus	Information on this topic are in the protocol description <b>Modbus</b> and the corresponding object lists.
Protocol Modbus/TCP	Information on this topic are in the protocol description <b>Modbus/TCP</b> and the corresponding object lists.
Protocol Profibus DPEA	Information on this topic are in the protocol description <b>Profibus DPEA</b> and the corresponding object lists.
Protocol PROFINET IO	Information on this topic are in the protocol description <b>PROFINET IO</b> and the corresponding object lists.
Protocol CANopen	Information on this topic are in the protocol description <b>CANopen</b> and the corresponding object lists.
Installation and Han- dling CoDeSys	Information on this topic are in the description of Installation and Handling of <b>Temperature control system flexotemp® CoDeSys</b> .

# **1.2 Typographical Conventions**

Symbols and conventions are used in this manual for faster orientation for you.

## Symbols

	Caution	With this symbol, references and information are displayed which are decisive for the operation of the device. In case of non-compliance with or inaccurate compliance there can result damage to the device or injuries to persons.
	Note	The symbol refers to additional information and declarations, which serve for improved understanding.
	Example	With the symbol, a function is explained by means of an example.
	Reference	With this symbol, information in another document is referred to.
?	FAQ	Here FAQ (Frequently Asked Questions) are answered.
7		Cross references are marked with the character f. In the pdf version of the doc- ument the objective of the cross reference is reached via the link.
Equations		Calculation specifications and examples are represented in this way.
<view></view>		Menu points (e.g. view) are represented in this way.
Project		Windows (e.g. project) are represented in this way.
n.a.		Not applicable, not existing

The displays/views presented in flexotempMANAGER are exemplarily, because

- names of components
- zone names

etc. may have been modified compared to the standard delivery.

# 2 Start of flexotempMANAGER

After the standard installation of flexotempMANAGER is completed successfully, the executing program is located in the directory

 $\rightarrow$  Start  $\rightarrow$  Programs  $\rightarrow$  PSG Plastic Service GmbH  $\rightarrow$  flexotempMANAGER

The first call of the program shows the following operator interface.



Each further call of the program shows the stored settings for the operator interface of the login before (see chapter 7User Interface Segmentation)



As long as there are no changes in the setting, the software is stored on the directory local data medium (C:)  $\rightarrow$  PSG  $\rightarrow$  flexotempMANAGER.

(flexotempMANAGER SW-Version before 1.02.06: local data medium (C:)  $\rightarrow$  Programs  $\rightarrow$  PSG  $\rightarrow$  flexotempMANAGER)

ß

The program executes no registry entries at installation.

After installation, the program directory can be completely copied on a storage medium and be used as a portable version.

# 2.1 System prerequisites

Processor	Intel or comparable
Clock frequency	At least 500 MHz
Random access memory	512 MB RAM recommended
Hard disk	At least 150 MB
Graphic board	SVGA compatible
Display resolution	1024 x 768 Pixel
Operating system	Windows 2000 SP4, Windows XP Professional SP3, Windows Vista SP1
Applications	Adobe Acrobat Reader 7.0
Online connection	Optional
Communication	Ethernet LAN, RS232 (optional for interface converter), USB (optional for in- terface converter)

# 3 Communication concepts of flexotempMANAGER

For a better distribution of tasks in the network, the client server model was implemented in flexotempMANAGER.

The flexotempMANAGER as operator interface and client, requires services from the server PSGCommServer (communication server), that take care of the communication to the controllers. That provides

- a decoupling of interfaces and program
- the use of different interfaces for several controllers in one project
  - serial interface
  - Ethernet interface
  - CANBus (driver PSG SKUSBCAN supported)

Client and server can run on the same or different computer hardware.

flexotempMANAGER works project oriented. In the window |Project| the communication server is shown upmost. By selection of the communication server, its settings appear in the window |Selection depended content|. All, connected to the communication server, belongs to one project.

View				
	Ele Edit Communication Yew Extras 2			
	] 🗅 🖨 🖬 🕹 🖻 🚳 🚳 😵 👳	🖬   90 90 90 90 90 90 🕼 😻	£ 6 <b>0</b>	
	×	Communication server		
	-D Communication server	Info	A second second	
	- of <create component="" new=""></create>	Name of component:	LAN	
		Data version	1.21.1	
Project		Server version		
Tiojeci		Connection status	offline - Server connection terminated	
				Selection
		Communication parameters of PSGCo	mmServer	Selection
		The PSGCommServer runs on th	e same computer as flexotempMANAGER	dependent
		Server IP address:	G 127 . 0 . 0 . 1	dependent
		Server name.	C locahost	content
		Server port number:	4568	
		Timeout [ms]	2000	
			F Send ping before connect	
		Serial		
Components			Head setting of interlace manually by PSGCommServer	
Componenta	Project 🐉 Status 🔚 Trend	UAN		
			Load standard values	
	B PCU048		Save as standard values	
	G PCU128     FOU128     FOU128     FOU128			
	E PCUDH8PNBO			
	© ##P(01289400			
	MASTER M CAN M PCL ( )			
	Press F1 for help.		OFFLINE TREND OFFLINE	- 🛪 🛲

By the menu item <Create new component> controllers (Window |Components| Register <Master>) are connected to the communication server.

Which device architectures are possible and which settings are necessary, see chapter *¬*Examples of Use.

For the possible status please see chapter *¬*Connection status flexotempMANAGER to PSGCommServer.

# 3.1 Examples of Use

In the following examples is described, in which environment the flexotempMANAGER and the PSGCommServer are running and how the controllers can be connected.

# 3.1.1 flexotempMANAGER and PSGCommServer on one PC, controller connected by Ethernet



The flexotempMANAGER and PSGCommServer are running on the same computer hardware.

On the communication server side and under

Menu bar  $\rightarrow$  <Extras> <Options> <Communication parameters>, tick  $\checkmark$  the menu item <PSGCommServer runs on the same computer as flexotempMANAGER>.

PCU and/or MCU are connected by Ethernet.

Communication server side				
	File Edit Communication View Extrac			_@×
		• • • • • • • • • • • • • • • • • • •	<b>⊯</b> 60	
	×	Communication server		
	Communication server	nfo		
	Commentary	Name of component:	Communication server	
		DLL:	LAN	
		Data version	1.21.1	
		Server version	office - Server connection terminated	
		Connection status	John - Server connection terminated	
		- Communication parameters of PSGI	CronnServer	
		be PS6CommServer suns on	the same computer as fewohernoMANAGER	
		Server IP address:	c 127 . 0 . 0 . 1	
		Server name:	C locahost	
		Server port number:	4568	
		Timera d Invil	2000	
		i mosa (m)	Send ping before connect	•
		0.11		
		2 etra	Bead setting of interface manuality PSGCoversSecurit	
	🔩 Project 🛃 Status 툳 Trend	CAN	CAN205.	
	×.		Load standard values	
	PCU024		Save as standard values	
	PCU128			
	E CLUD24PM20			
	PCU128PNIO			
	MASTER MY CAN MA POL ( )			
	Press P1 for help.			JUFFLINE ITHEND OFFLINE N





# PCU by Ethernet and/or MCU by Ethernet

	0048		
Nu	mber of slots		
15	i		1
Co	ding switch		
	Device ID	0 💌	3450 m
	For device ID = default,	fixed default	
	addresses are used for t	he PCUU48.	008
		4,	LS & BCOK
Etł	nernet interface [X2 TCP/I	P]	
e	Base IP	192 . 168 .	0 . 220
	IP	192 . 168 .	0.22
CA	N interface [X4 CAN]		
CA C	N interface [X4 CAN] Base NodelD	0	
CA	N interface [X4 CAN] Base NodelD NodelD	0	
CA C Se	N interface [X4 CAN] Base NodelD NodelD rial interface [X5 COM]	0	
CA C Se	N interface (X4 CAN) Base NodelD NodelD rial interface (X5 CDM) Software base address	0	

MC	0128	
Co	ding switch	
	Device ID For device ID = default, fi addresses are used for th	swi swi MSB)
		(LSB)
Eth	ernet interface [X6 TCP/IP	1
۲	Base IP	192 . 168 . 0 . 220
	IP	192 . 168 . 0 . 22
CA	N interface [X3 CAN1]	
0	Base NodelD	0
	NodelD	0
Sei	ial interface [X2 COM]	
0	Software base address	0
	Software address	

The resulting address (IP) of the Ethernet interface is a combination of the interface depending base part (base IP) and the device ID. The resulting address must be unique for all controllers of a project.

The base part is configured and must be set to the same subnet mask (here: 192.168.0.\*\*\*) as the client server PC.

The device ID (here: 0) is set by rotary switch on the controller.

# 3.1.2 flexotempMANAGER and PSGCommServer on one PC, controller connected serial



The flexotempMANAGER and PSGCommServer are running on the same computer hardware.

On the communication server side and under

Menu bar  $\rightarrow$  <Extras> <Options> <Communication parameters>, tick  $\blacksquare$  the menu item <PSGCommServer runs on the same computer as flexotempMANAGER>.

MCU is serial connected to COM1 (for example).

PSGCommServer	2006						
	PSGCommServer						×
	Server name:	er01-2k-virt				<u> </u>	Call parameter
	Server IP-address:	1) 192.168.1.11	9		A 11-11		Information
					*		
	Server Port-number:	4568			-		
	Interface		Create new interface				
	ビー ETH     「「「」」     「「」     「「」     「「」     「」     「「」     「     「」     「」     「」     「」     「」     「」     「     「」     「     「」     「」     「     「     「」     「	E rface	Name	SER1			
			Interface	Serial	•		
			COM-Port	COM1	•		
			Flow control	BTS high active	-		
				Intro high deave			
	IP Pointer	receive	OK	Cancel	-		
	127.0.0.1 0x009FB0	00 00 00 800	<del></del>	100 00 00 01 E AJ 00 00	00 00	0 00 00 00 00 00	00
	8						
1							

PSGCommServer Create serial interface Activate the PSGCommServer (by task bar). In the free area under interface, select the menu item <New> with the secondary mouse button. Select as interface <Serial> and a free port COM\*\* (here: COM1).

#### PSGCommServer PSGCommServer × Serial interface existing er01-2k-virt Call parameter Server name: 1) 192.168.1.119 Server IP-address: Information -Server Port-number: 4568 Interface ETH E € SER1 Create new interface Ethernet Serial Pointer 0x009FB008 IP 127.0.0.1

flexotempMANAGER - Unnamed *			_8×
Pie Edit Communication View Extras 7	1 02 08 08 08 08 1 <b>11</b>	Á	
	Communication serve	*	
Communication server	Info Name of component:	Communication server	
Create new components	DLL:	LAN	
	Data version	1.2.1.1	
	Server version		
	Connection status	offine - Server connection terminated	
	Communication parameter of	PSGCommServer	
	he PSGCommServer n	uns on the same computer as flexotempMANAGER	
	Server IP address:	a 127 . 0 . 0 . 1	
	Server name:	C localhost	
	Server port number:	4568	
	Timeout [ms]	2000	
🎕 Project 😹 Status 🔚 Trend		Send ping before connect	
	Serial	SERI,COMI	
### PCU024     ### PCU040     ################################	CAN	manualy by PSGCommserver	
PCU024PNID		Load standard values	
HI PCUD46PNIO     H PCU120PNIO		Save as standard values	
mcu128     mcu			
MASTER M CAN M PCU M HPC .			
Press F1 for help.	9	(הרו ואר להראה הרו ואר	

In flexotempMANAGER the available settings for PSGCommServer can be imported by <Read settings of interface manually by PSGCommServer> (here: SER1, COM1).



Communication server side

Connect MCU (serial)	Create new component for MCU128
	Component names
	MCU128
	Coding switch
	Device ID 0 SW1 For device ID = default, fixed default addresses are used for the MCU128. SW2 (LSB)
	Ethernet interface [X6 TCP/IP]
	C Base IP 192 . 168 . 0 . 220
	IP 192 . 168 . 0 . 220
	CAN interface [X3 CAN1]
	O Base NodelD 0
	NodelD
	- Serial interface [X2 COM]
	<ul> <li>Software base address</li> </ul>
	Software address
	OK Cancel

The MCU with software address 0 (software base address=0, device ID=0) is addressed by COM1.

# 3.1.3 flexotempMANAGER and PSGCommServer on one PC, controller connected by CAN



The flexotempMANAGER and PSGCommServer are running on the same computer hardware.

On the communication server side and under

Menu bar  $\rightarrow$  <Extras> <Options> <Communication parameters>, tick  $\checkmark$  the menu item <PSGCommServer runs on the same computer as flexotempMANAGER>.

MCU is connected by CAN to COM5 (for example).

PSGCommServer	<b>22</b> PSGC oppoServer					x
	Server name:	er01-2k-virt			_ 🔳 ସ	Call parameter
	Server IP-address:	1) 192.168.1.11	9			Information
	Server Port-number:	4568			<u>-</u>	
	Interface		Create new interface		×	
	Create nev	w interface	Name	CAN1		
			Interface	PSG USB	1	
			COM-Port		1	
			Frame	Standard frame		
	IP Poi	inter receive	OK	Cancel		
	127.0.0.1 0x00	09FB008 00 00 00		0 00 00 00 0TE AJ 0T 00 0	00 06 1E 0B 34 ו	06 00 01 00 00 00 00
	-					

PSGCommServer Create CAN interface Activate the PSGCommServer (by task bar). In the free area under interface, select the menu item <New> with the secondary mouse button. Select as interface <PSG USB> and a free port COM\*\* (here: COM5).



The driver for the CAN Dongle is already installed. If not, the Dongle is detected as new hardware on the computer and a driver is required. The COM port allocated can be determined, e.g. for operating system Windows 2000, by <My computer> <Administration> <Device manager> <Connection (COM and LPT)> and must be specified in the PSGCommServer.

# PSGCommServer CAN interface existing

T S G C O M M S													
erver name: erver IP-addre	ss:	r01-2k-virt ) 192.168.1.	119							9	C	Call paran Informati	neter ion
erver Port-nun	nber:	568						-					
Inte	, arface												
EIH	1		Ethernet CAN										
	te new inter	ace											
P	Pointer	Irecei	10				mand						
P ) 127.0.0.1	Pointer 0x009FBC	recei	ve 00 00 00 00 00	00 00 00	00 00 00 00	0 00 00 F	send E A5 01 0	0 00 14 (	D0 06 1E	OB 34 0	06 00 (	01 00 00 (	00 00
P D 127.0.0.1	Pointer 0x009FBC	recei 08 00 00	ve 00 00 00 00	00 00 00	00 00 00 00	0 00 00 0 F	send E A5 01 0	0 00 14 (	DO 06 1E	OB 34 0	06 00 (	01 00 00 (	00 00
IP D 127.0.0.1	Pointer 0x009FBC	recei 08 00 00	ve 00 00 00 00	00 00 00	00 00 00 00	0 00 00 0 F	send E A5 01 0	0 00 14 (	DO 06 1E	OB 34 0	06 00 (	01 00 00 (	00 00
IP う 127.0.0.1	Pointer 0x009FBC	recei 08 00 00	ve 00 00 00 00	00 00 00	00 00 00 00	0 00 00 0 F	send E A5 01 0	0 00 14 (	DO 06 1E	OB 34 0	06 00 (	01 00 00 (	00 00
P 〕 127.0.0.1	Pointer 0x009FBC	recei 08 00 00	ve 00 00 00 00	00 00 00	00 00 00 00	0 00 00 0 F	send E A5 01 0	0 00 14 0	00 06 1E	OB 34 0	06 00 1	01 00 00 0	00 00

	flexotempMANAGER - Unnamed *			_ (#) X
File	Edit Communication View Extras ?			
D	) 📽 🖬 🕺 🗞 🗠 🚳 🥞 🦻 📌 🛤	10 IB IB IB IB IB 🖬 🔞		
	Communication View Extrems ?     Communication View Extrems ?     Communication Server     Communication Server	Communication server     Info     Name of component:     DL1:     Duta version     Connection status      Con	Communication server UA I 2.1.1  offine - Server connection terminated  c	
	MASTER THE CAN THE POU TO HPC + [ + ]			
	u fi far hab			
PT dist	is F1 for hep.		OPPLINE THEND OPP	

In flexotempMANAGER the available settings for PSGCommServer can be imported by <Read settings of interface manually by PSGCommServer> (here: CAN1, PSG USB, COM5).

<Create new component>



# Connect MCU by CAN

reate new component for MC	U128 🔀
Component names	
MCU128	
Coding switch	
Device ID	0 SW1 (45072)
For device ID = default, fixe	d default (MSB)
addresses are used for the f	MCU128.
	SW2
	(LSB)
Ethernet interface IX6 TCP/IP1-	
Enternet internete (No Fer Vir ]	
C Base IP	192 . 168 . 0 . 220
IP	192 . 168 . 0 . 220
- CAN interface [X3 CAN1]	
<ul> <li>Base NodelD</li> </ul>	
NodelD	0
	,
Serial interface [X2 COM]	
<ul> <li>Software base address</li> </ul>	0 🗾
Software address	0
OK	Cancel

The MCU with the NodeID 0 (base NodeID=0, device ID=0) is addressed by COM5.

3.1.4 flexotempMANAGER and PSGCommServer on two PCs, LAN, controller connected by Ethernet



E.g. for remote control by remote work station in a network.

The flexotempMANAGER and the PSGCommServer are running on the two different computers. On the communication server side and under

Menu bar  $\rightarrow$  <Extras> <Options> <Communication parameters> the PSGCommServer must be clearly identified by IP address, server name and port.

PCU is connected by Ethernet.

Communication server side				_
	flexotempMANAGER - Unnamed *			×
	File Edit Communication View Extras ?			
	D 🗳 🖬   X 🕪 📾   🖀   🎖 🕏 🕏 💵	👌 📫 🖗 🖓 🖓 🖓		
	Commentary Commentary Collede new components	Communication server     Info     Info     Data version     Sarver version     Connection status  - Communication parameter of PSGC	Communication server LAN T2.1.1 offline - Server connection terminated onenServer	
		The PSGCommServer runs on Server IP address: Server name:	the same computer as flexible #MANAGER	
		Common and an archer	4559	
		o erver port number.		
	1	Timeout [ms]	2000	
	Project 法y Status 正 Trend     X     Fm 部 PCU024	Serial	Send ping before connect	
	日 1월 PCUD48 9 월 PCUD49 8 월 PCUD49940 9 월 PCUD49940 9 월 PCUD49940 9 월 PCUD49940	CAN	Load standard values Save as standard values	
	·····································			
	Press F1 for help.		OFFLINE TREND OFFLINE	1
	The PSGCommServe	er must be cl	early identified by IP address, server	nar



The settings for communication parameter PSGComm-Server can be permanently stored by the button <Save as standard values> (until new save as standard values).

The firewall must be adapted accordingly.

#### <Create new component>

flexotemp	MANAGER -	Unnam	ned *			
File Edit Co	ommunication	View	Extras	?		
🗅 🚅 日	X 🖻 🖬	6	?	<b>\$</b>	5	
						= × [
Com	munication co	u lor				- 11
	inunication ser	ver				
	imentary					
	PCU024					
	PCU048					
	PCU128					
	PCU024PN	IIO				
	PCU048PN	IIO				
	PCU128PN	IIO				

# PCU by Ethernet

- Cor	nponent names			
PC	U048			
Nu	mber of slots			
15				-
Co	ding switch			
	Device ID	0	•	345 m
	For device ID = default, fis	ed default		B B B
	dulesses die used for the	.1 00040.		-345 II
				S 60 1
				LACOBA
- Eth	ernet interface [X2 TCP/IP]			TACOB <sup>4</sup>
- Eth	ernet interface [X2 TCP/IP] Base IP	192	. 168 .	0 . 220
Eth (•	ernet interface [X2 TCP/IP] Base IP IP	192	. 168 . . 168	0 . 220 0 . 220
Eth ©	ernet interface (X2 TCP/IP) Base IP IP N interface (X4 CAN)	192 192	. 168 .	0 . 220 . 0 . 220
- Eth (* CAI	ernet interface [X2 TCP/IP] Base IP IP N interface [X4 CAN] Base NodelD	192 192 0	. 168 . . 168	0 . 220 0 . 220
- Eth © - CAI ©	ernet interface [X2 TCP/IP] Base IP IP N interface [X4 CAN] Base NodeID NodeID	192 192 0 0	. 168 .	0 . 220 . 0 . 220 . 0 . 220
- Eth C C Ser	ernet interface (X2 TCP/IP) Base IP IP Ni Interface (X4 CAN) Base NodelD NodelD ial interface (X5 COM)	192 192 0 0	. 168 .	0 . 220 0 . 220
-Eth © -CAI C	emet interface (X2 TCP/IP) Base IP IP IP N interface (X4 CAN) Base NodelD NodelD Software base address	0 0 0	. 168 .	· 0 . 220 . 0 . 220 . 0 . 220

The resulting address (IP) of the Ethernet interface is a combination of the interface depending base part (base IP) and the device ID. The resulting address must be unique for all controllers of a project.

The base part is configured and must be set to the same subnet mask (here: 192.168.0.\*\*\*) as the client server PC.

The device ID (here: 0) is set by rotary switch on the controller.

3.1.5 flexotempMANAGER and PSGCommServer on two PCs, WAN, controller connected by Ethernet



E.g. for remote control of a control system by PC over WAN in another network.

The flexotempMANAGER and the PSGCommServer are running on the two different computers. On the communication server side and under

Menu bar  $\rightarrow$  <Extras> <Options> <Communication parameters> the PSGCommServer must be clearly identified by IP address, server name and port.

PCU is connected by Ethernet.

Communication server side		
	ResotempMANAGER - Unnamed *	
	Pie Eak Communication View Extras 7	
	Commentary Commentary Connertary Content new components	Communication server
		Control and any planteer for and consultant error     The PSGCoemServer runs on the same computer as llexotengMANAGER     Server IP addess: <sup>C</sup> <sup>152</sup> <sup>159</sup>
		Part and Part Internation
		Timeout [ms] 2000
	Note:         Reg / Statut         Trend           **         **         **           **         **         **           **         **         **           **         **         **           **         **         **           **         **         **           **         **         **           **         **         **           **         **         **           **         **         **           **         **         **           **         **         **           **         **         **	Senial  Senial  Read setting of interface menuality by PSGCom/Server  Load standard values  Sarve as standard values
	國 MASTER 國 CAN 题 PCU 题 HPC ()	
	Press F1 for help.	OFFLINE TREND OFFLINE 😫 💼
-	The PSGCommServe	ver must be clearly identified by IP address, server nam



The settings for communication parameter PSGComm-Server can be permanently stored by the button <Save as standard values> (until new save as standard values).

The firewall must be adapted accordingly.

#### <Create new component>



#### PCU by Ethernet

PCUDAR Number of slots		
Number of slots		-
15		-
Coding switch		
Device ID	0 • 3450	
For device ID = default,	fixed default	MS
addresses are used for t	-345	- ip
		8
	400B*	-1
Ethernet interface [X2 TCP/I	9]	
<ul> <li>Base IP</li> </ul>	192 . 168 . 0 .	220
IP	192 . 168 . 0 .	220
CAN interface [X4 CAN]		
C Base NodelD	0	•
NodelD	0	
Serial interface [X5 COM]		
C Software base address	0	-
Software address	0	

The resulting address (IP) of the Ethernet interface is a combination of the interface depending base part (base IP) and the device ID. The resulting address must be unique for all controllers of a project.

The base part is configured and must be set to the same subnet mask (here: 192.168.0.\*\*\*) as the client server PC.

The device ID (here: 0) is set by rotary switch on the controller.

For the connection of networks with different IP ranges, connected by WAN, routers are attached.

# 3.2 View communication

In the window |Project| under <MCU/PCU> <Communication> the communication parameters for the used interface, are set. The settings are transferred to the controller. The active interface is indicated by color.

Changes in the project setup for the active interface, may result in communication problems (see chapter *¬*Status Communication).

In the view communication, the controller can be excluded from the polling cycle by  $\mathbf{M}$  -Set communication for this component out of service>. The icon of the controller shows this.

The interface settings are only valid, when the interfaces are physically existing.

# 3.3 Remote maintenance by VPN



Remote maintenance by VPN (virtual private network) for example PCU

Remote maintenance by VPN ties the participant of the network (input of any IP under Routing IP) to the network of the master component, without networks being compatible with each other.

A so called VPN tunnel is build between the client (Notebook or PC) and the VPN server. The data is exchanged between client and VPN server.

# 4 User Interface Segmentation

The segmentation of the user interface depends on the views to be displayed. When all views are selected, the default user interface appears as follows.



The views can be switched on and/or off by menu item <View> in the menu bar. Each view (except status bar) can be positioned to any position on the operator interface per drag&drop.

# 4.1 Header

The name of the active project is displayed in the header, to the right of the program name. If no project has been created, i.e. there is no file in Installation directory  $\rightarrow$  flexotempMANAGER  $\rightarrow$  PROJECTS then the project is entitled <Unknown> in the header.

Once project <Unknown> has been modified the project name will change to <Unknown \*>. Upon exiting project <Unknown \*> the user will be asked whether or not to save the changes.

Key combinations are available, aside from menu items, that allow for an accelerated work flow. The possible key combinations are behind the menu items.

# 4.2 Functions of the menu bar

Functions are called, activated, and deactivated via the menu bar and the symbol bar (selected functions). The status of specific functions is displayed in the menu bar, the symbol bar, and the status bar.

# 4.2.1 Menu Bar: File

Menu bar → <File>

l	flexote	mpMANAGER	- Unbei
	<u>File E</u> dit	Communication	⊻iew
	New		Strg+N
	<u>O</u> pen		Strg+C
	<u>S</u> ave		Strg+S
	Save <u>a</u> s		
	Import		
-	Import f	or memory card	
	Export f	or memory card	
-		·	
	Scan		
	Print		Strg+P
-	1.0		
	12		
	21		
	3		
	4		
	E		

New or

A new project named <Unknown> is created. The |Project| window includes the communications server (PSGCommServer); its settings as well as the menu item <Create new component> are displayed in the corresponding window.



If a project was previously active the user is asked whether or not the project is to be saved.

gen		3	ЦĂ
Searchin	PROJEKTE	· · · · ·	
File name :	10223	Open	

XML files saved under

Installation directory  $\rightarrow$  flexotempMANAGER  $\rightarrow$  PROJECTS are offered in a list and can be uploaded into flexotempMANAGER.

#### Menu bar → <File>



flexotempMANAGER administered projects are saved under the same project name in XML format.

If the project name is <Unknown \*> the filename will be queried and the <Save as...> menu opens.

The flexotempMANAGER administered project is saved under the project name that is provided under file name.

XML files, where projects are defined, can be imported into the fle-xotempMA-NAGER. Is a separate validation program used, the file fm.xsd is available and/or the validation is executed during import. With the help of plain-text messages the operator can easily analyze and remove errors /warnings.





The import function allows import of memory card compatible projects into a project. The data is saved on a path from where they can be read into a project.

Please see the the operating manual for temperature control system flexotemp(B), system structure & project planning (chapter on memory cards) for further details.

The export function allows the conversion of projects into memory card compatible projects. The data is saved on a path from where they can be copied onto a memory card and/or directly copied to a memory card.

Please see the the operating manual for temperature control system flexotemp(0, 0), system structure & project planning (chapter on memory cards) for further details.

# Menu bar → <File>

Scan	<ul> <li>This dialogue allows for the scanning of all controllers connected to the system (see chapter ⊅Examples of Use).</li> <li>Possible interfaces are Ethernet, CAN, and the serial interface. The controllers to be scanned are determined by entering beginning and end address. The controllers are scanned in sequence of their addresses.</li> <li>Default settings for the respective interface are:</li> <li>CAN: Baudrate 250kBit</li> <li>Serial: Baud rate: 19.2k Baud, No Parity, 2 Stop bits and can be altered via the <settings> key.</settings></li> </ul>			
	The found components are listed. Upon selecting components with $ ensuremath{\mathbb{M}}$ these can be added to an existing project			
	(Delete Project? In no), respectively instead (Delete Project? In yes) be uploaded into the window. If the scan returns component errors (e.g. node guarding error) the data is not retrieved.			
Print or	All components in the $ Project $ window are reflected here. By $\checkmark$ selected project tree data is printed. System printers are offered in a list.			
	<image/>			
1 2 3 4	The last 5 projects retrieved from <file> <open> are saved here: Installation directory <math>\rightarrow</math> flexotempMANAGER <math>\rightarrow</math> PROJECTS Choosing one of the 5 projects allows for a quick change among projects.</open></file>			
5 Close	flexotempMANAGER is closed via this menu item.			

Rev. 1.04.11 Technical changes reserved

# 4.2.2 Menu bar Edit

The gray displayed menu items are currently not supported by flexotempMANAGER

# Menu bar → <Edit>

Edit Communication Vie			
Undo	Strg+Z		
Cut	Strg+X		
Insert	Strg+V		
Find Find next Replace	Strg+F F3 Strg+H		

These menu items are offered.

Undo	The previously executed command (e.g. copy) is undone.			
Cut or	The objects selected with the cursor are cut. The objects are deleted from their previous location, but they still remain saved internally (e.g. to paste).			
Copy or	Objects selected with the cursor are copied. The objects remain in their pre- vious location and, additionally, they are saved internally (e.g. to paste).			
Paste or	Objects saved internally (e.g. from cut or copy) are pasted in the location marked by the cursor.			
Search	The entered term is searched for. (Only in window  Project  <mcu pcu=""> <zone blocks="" input="" name="">, see chap- ter ⊅Menu Bar Extras)</zone></mcu>			
Continue search	The entered term is searched for. (Only in window  Project  <mcu pcu=""> <zone blocks="" input="" name="">, see chap- ter ⊅Menu Bar Extras).</zone></mcu>			
Replace	The entered term is searched for and replaced by another entered term. (Only in window  Project  <mcu pcu=""> <zone blocks="" input="" name="">, see chap- ter ⊅Menu Bar Extras).</zone></mcu>			

# 4.2.3 Menu bar communication

Functions pertaining to the communications between flexotempMANAGER - communications server - controllers are categorized under this menu item.

The menu items can be selected individually to individually control data throughput, which is rather large during trend recording.

# Menu bar $\rightarrow$ <Communication>

Communication Vie online Trend online	These menu items are offered.				
online	Menu item <online> initia GER and the controllers</online>	Menu item <online> initiates the connection between flexotempMANA- GER and the controllers of the project via the communications server.</online>			
	Selection	ion			
	Menu bar	Menu bar			
	Communication Vi€ ✓ online Trend online	Menu item <online> is marked as ac- tive by ☑.</online>			
	Symbol bar				
		The LAN connection symbol is pressed (=active).			
	Display Status bar	/ Status har			
		<ul> <li>Change of display color OFFLINE to ONLINE in green</li> </ul>			
		<ul> <li>Blinking LAN connection symbol (flexotempMANAGER connection to PSGCommServer) during data access occurred</li> </ul>			
		<ul> <li>Yellow LED (Connection status in- terface to controller)</li> </ul>			
	Communication server side	The communications server shown in the selection-dependent window dis- plays in connection status <online –<br="">Server Connection o.k.&gt; and under server connection, hyphen, slash, and back-slash are alternating in the display.</online>			

#### Menu bar $\rightarrow$ <Communication>

# **Trend online** Menu item <Trend online> initiates the connection between flexotempMANA-GER and the controllers of the project via the communications server. Selection Menu bar Menu item <Trend online> is marked Communication Vie as active by $\mathbf{V}$ . online Trend online Symbol bar The LAN connection symbol for trend 1 🕏 🕏 is pressed (=active). Display Status bar Change of display color TREND OFFLINE TREND ONLINE 📑 📻 OFFLINE to TREND ONLINE in green Blinking LAN connection symbol (flexotempMANAGER connection to PSGCommServer) during data access occurred Yellow LED (Connection status interface to controller) Further information on Trend see chapter *¬*Trend.

# 4.2.4 Menu bar View

Task-oriented, the user may activate / deactivate windows via the menu bar <View> to have a more organized view.

Menu bar $\rightarrow$ <view></view>	
View Extras ? Toolbar Status bar Data recording Project Components Template	These menu items are offered.
	Default view arrangements see chapter 7User Interface Segmentation.
Symbol bar	Menu item <symbol bar=""> is marked as active by ☑. The symbol bar is displayed. See chapter ↗Functions of the symbol bar.</symbol>
Status bar	Menu item <status bar=""> is marked as active by 🗹 . The status bar is displayed.</status>
Data recording	Menu item <data recording=""> is marked as active by ☑ and the corresponding window is displayed. See chapter ↗Data recording.</data>
Project	Menu item <project> is marked as active by ☑ and the corresponding win- dow is displayed. See chapter ↗Project.</project>
Component	Menu item <components> is marked as active by ☑ and the corresponding window is displayed . See chapter ↗Components.</components>
Template	Menu item <template> is marked as active by 🗹 and the corresponding win- dow is displayed. See chapter ↗Template.</template>

# 4.2.5 Menu Bar Extras

The entry mode for parameters is adjusted and options can be activated / deactivated via menu item <Extras>. The Ethernet-scan identifies all controllers connected to the network via UDP protocol.

Menu bar → <extras></extras>				
Extras ? Mode • Options Ethernet scan	These menu items are offered.			
Mode Extras ? Mode Options Ethernet scan	Aside from changing individual parameters of individual zones, in so-called SIN- GLEMODE, zones can be grouped to input blocks. If a parameter of a zone is changed the same parameter changes for the zones in the input block. This is the so-called block mode. It simplifies zone-wide parameter input. Single mode (default) and 5 input blocks for pre-definition are available. Zone-to-input block allocation occurs in the  Project  <mcu pcu=""> <zone <="" name="" th=""></zone></mcu>			
	<ul> <li>Mode settings apply per controller in the project.</li> <li>PRIOR to data input, the mode is to be selected and then the parameter be changed.</li> <li>A changed parameter of a zone is also changed for the zones selected in the input block.</li> <li>Input blocks can be renamed in the  Project  window under <mcu pcu=""> <zone blocks="" input="" name=""> (Function menu bar → <edit> Find/Replace see chapter ¬Menu bar Edit here possible). The new names will be shown in all relevant places in the program. The default names are used in this description.</edit></zone></mcu></li> </ul>			
Mode	Selection Menu bar ✓ Single mode Input block 1 Input block 2 Input block 3 Input block 4 Input block 5 Menu bar			



#### Menu bar $\rightarrow$ <Extras>



Options		Directories	
		Options       X         Category       Colors         Directoring       OK         Load & save       C:VPSGVFLEXOTEMPMANAGER\EDS\         Switch project views on/off       C:VPSGVFLEXOTEMPMANAGER\CONF\         Language       C:VPSGVFLEXOTEMPMANAGER\CONF\         Team template       Components         C:VPSGVFLEXOTEMPMANAGER\VARTNR\       Update         C:VPSGVFLEXOTEMPMANAGER\VARTNR\       Update         C:VPSGVFLEXOTEMPMANAGER\VARTNR\       Update         C:VPSGVFLEXOTEMPMANAGER\VDPATE\       Datasheet         C:VPSGVFLEXOTEMPMANAGER\VDOKU\       HEX lie         C:VPSGVFLEXOTEMPMANAGER\VDOKU\       HEX lie         C:VPSGVFLEXOTEMPMANAGER\VDATE\       Datasheet	
	HEX-File	The directories show where data is physically saved on the computer. Suc cannot be altered, except for the work group templates and HEX-Files. The path can be selected for HEX-Files, where the HEX-Files are chosen f functions software version and firmware update. Is in the open project a subdirectory HEX existing, this is used as path for tion software version and firmware update. The update of HEX-Files by <extras> <options> <update> works still wi directory "\flexotempMANAGER\HEX".</update></options></extras>	h data for the r func- ith the
Options		Cotad & Save         Cotors         Directories         Switch project views on/off         System         Language         Update	
		Project load & save settings can be adjusted here.	

Options	Activate / deactivate project views			
	Options X			
	Category			
	Colors Directories Load & save Switch project views on/off proiTEMP System Language Update Update Colors Show Vol coding Show to coding Show bick to be Show bick to be Show bick to be Show bick to be Show time server Update Colors Show to coding Show time server Colors Show to coding Show bick to be Show time server Colors Show time server Show time			
	Project view can be adjusted for controllers indicated here.			
	For hot runner applications, the following controller relevant data can be displayed:			
■ TEMP-Command-Wizard in the symbol bar (see chapter ↗TEMP-Command Wizard)				
	tool codes in the project			
	<ul> <li>additional parameters for hot runner applications</li> </ul>			
Direct IOs	direct IO's in the project (see chapter ⊅Direct IOs).			
Time Server	Time server in the project below the master component (see chapter a Time Server).			
Options	profiTEMP			
	Options       X         Category       0K         Discloses       0K         Suitch project views on/off       0K			

At new installation automatically set (from software version 1.3.4)

Options	System			
	Category Colors Directories Load & save Switch project views on/off profTEMP System Language Update	Minimal polling cycle of all trends Maximal recording length per trend cextended combobax Den of the datasheets in separate window Save selected input block with component change For service purposes only Debug configurable data export from the directory\DATA	1.0 13h 53m 20s	OK Abbrechen
Combo box	There are two type and parameter sel	es of combo boxes for the prese ection lists in flexotempMANAGE	entation of syste ER. The setting	em parameter for which type
Data sheets	is to be used occurs here. The extended combo box is active in default settings. According to the settings here, the data sheets are directly shown in flexo- tempMANAGER or in a separate window.			
input block	. The selected input block is saved with change of component.			
For service purposes only	/ flexotempMANAGER can be started in debugging mode for error analysis. Ad- ditional information is displayed for individual components. For trend readings, a polling cycle for 1.0 to 60.0 seconds can be entered. The shorter the cycle time the shorter the recording time.			
	The sett starting t	ings for debug and polling will on the program.	only become ac	ctive upon re-
For service purposes only	By a XML-File in thus of components	he directory\DATA a function s in a project. The XML-File mus	can be activate t be defined ac	ed to read val-
### Menu bar → <Extras>

ptions	Deptionen X
	Category Colors Directories Load & save Switch project views on/off System Larguage Update Update Update Undet Update Undet Un
	Text language on the user interface can be switched in <language>. Settings here will only become active upon restarting the program</language>

### Menu bar → <Extras>

Options	Update						
	Options X						
	Category						
	Directories Load & save Load & save Directories Load & save Directories Load & save Directories Direct						
	Switch project views on/off C Download updates, derine installation time manually (recommended) profiTEMP C Notify, but no automatic download or installation System C Deactivate automatic updates						
	Language Search for new update						
	Proxyserver Use proxyserver for updates						
	Address: Port: 0						
	We continuously further develop and improve our PSG products and make avail-						
	able online updates for:						
	flexotempMANAGER software						
	<pre>corresponding operating manuals</pre>						
	controller software in HEX Files						
	Data abasta for componenta						
	to wait for manual user input.						
	Proxy server						
	Connection to Internet by						
	<ul> <li>as direct connection</li> </ul>						
	<ul> <li>by entry of Proxy Server (manual data entry possible)</li> </ul>						
	Is the connection to the Internet missing, the message: Cannot connect to up-						
	date server" is displayed.						
	Display						
	Status bar						
	Update (1/3) (0.09MB) SINGLE MODE OFFLINE TREND OFFLINE 剩 🚛						
	If O Download undeta , a is active a status har (blue) indicates						
	progress and it is displayed how many files have been downloaded						
	(e.g. 1 of 2).						
	I						

#### Symbol bar

٦

Once updates are ready for installation the symbol for <Updates available> is shown in the status bar.

By selecting the symbol and/or after checking at flexotempMANAGER start-up, a window where the installation of updates can be initiated opens.

pdate		
1	A new update is available.	
Actual updati Version	e	
Date		
Title	Hex file	
News	Component: HCD6, 16 File name : HC_06950510.HEX Component: PCU048FNI0 File name : PCU048102210A.H86 Component: PCU024FNI0 File name : PCU024102210A.H86 Component: PCU024FNI0 File name : PCU024102210A.H86 Component: CANBE File name : CANBE-304308 HEX Component: D1016_C1_SPL.File name : D1016F944009.HEX Component: D1016_C1_SPL.File name : D1016F944009.HEX Component: PCU024 File name : PCU024102210A.H86 Component: PCU024 File name : PCU024102210A.H86 Component: PCU024 File name : PCU024012210A.H86 Component: PCU024 File name : PCU024012210A.H86 Component: PCU024 File name : PCU024012210A.H86 Component: PCU024 File name : PC0224002HEX Component: PC026File name : PC02400210A.H86 Component: PC027EFile name : PC02400210A.HEX Component: PC027EFile name : PC02400210.HEX Component: PC027E7.SPL.File name : CANCF00108.HEX Component: CANFI File name : CANVT-00003.HEX Component: CANFI File name : CANFI SPL.S0000.HEX	×
	Install Car	ncel

#### Menu bar → <Extras>



Upon initiating <Ethernet scan>, all controllers connected to the network via UDP protocol are identified and, if recognized, displayed independent of their IP range (see chapter <a href="https://communication.concepts">connected to the network via UDP protocol are identified and, if recognized, displayed independent of their IP range (see chapter <a href="https://communication.concepts">connected to the network via UDP protocol are identified and, if recognized, displayed independent of their IP range (see chapter <a href="https://communication.concepts">connected to the network via UDP protocol are identified and, if recognized, displayed independent of their IP range (see chapter <a href="https://communication.concepts">connected to the network via UDP protocol are identified and, if recognized, displayed independent of their IP range (see chapter <a href="https://communication.concepts">connected to the network via UDP protocol are identified and, if recognized, displayed independent of their IP range (see chapter <a href="https://communication.concepts">connected to the network via UDP protocol are identified and, if recognized, displayed independent of their IP range (see chapter <a href="https://communication.concepts">connected to the network via UDP protocol are identified and, if recognized, displayed independent of their IP range (see chapter <a href="https://communication.concepts">connected to the network via UDP protocol are identified and, if recognized, displayed independent of their IP range (see chapter <a href="https://communication.concepts">connected to the network via UDP protocol are identified and, if recognized, displayed independent of their IP range (see chapter <a href="https://communication.concepts">connected to the network via UDP protocol are identified and the network via UDP protocol are i

By etherne	et available MCU's a	ind PCU's		x
	[			
+ <mark>6</mark> 8	IP: 192.168.001.23	4 PCU048	PCU048_234	
÷-63	IP: 192.168.001.23	6 PT_DC_USB	ProfiTemp_236	
Sta	rt ethernetscan	Change setting	g   C	ancel

Is only one controller listed, the detail information is shown immediately. Otherwise an entry in the list must be selected per double click to show the detail information.

The detail information comprises among other things software version, interface settings, etc.

Settings, such as Base IP, for example, can be altered here to adjust the controller to the address range of its network.

### Menu bar → <Extras>

### Ethernet scan

For master component WITHOUT abbreviation PNIO 5

ttings				×
Info Name Version MAC address Serial number	PCU048 PCU048004309A 00-08-DC-85-05-2E 1326	CoDeSys	Coding switch SW1 (MSB) SW2 (LSB)	Accept changes
Ethernet interface (X2 TCP/IP) Base IP IP Subnet mask Port 1 Port 2 Port 3	192         . 168         . 1         . 236           192         . 168         . 1         . 236           255         . 255         . 0           5000         .         .           5000         .         .           80         .         .         .	CAN interface [X4 CAN] Base NodelD NodelD CAN baud rate Timeout CAN (zone off) Auto operational mode	0 0 3 - 250k 0 1 - On	×
serial interface (X5 CDM) Software base address Software address Protocol Baud rate Number of stop bits Parity	0 0 0 - PSG (PSG-II) 4 - 13200 1 - 2 Stop bits 0 - oFF V	CAN baud rate CAN baud rate Profibus DP interface (X5 L2 Profibus DP base slave ad Profibus DP slave address DPEA protocol Timeout DP (zone off) MODBUS interface (X5 CD) MODBUS address	3 - 250k 2-DP) Idres 30 1 - On 0 M] 1 1	× ×

#### Ethernet scan

For master component WITH abbreviation PNIO

nfo Name	ProfinetIO PSG	ProfinetIO PSE		
Version	PCU1281007104		(MSB)	10 <del></del>
Version	00.08.00.45.00.01	- CoDioSucc	SW2	Cancel
Serial number	1	IN CODEDAS	00	Blink
Ethernet interface [X2 TCP/	/IP]	PROFINET IO		
Base IP	192 . 168 . 0 . 232	Station name	pcu128pnio	.pn-netzwerk
IP	192 . 168 . 0 . 232	Byte Order	0 - Big Endi	an
Subnet mask	255 . 255 . 255 . 0	Number of slots	6	
Port 1	5000	Slot	Modules	
Port 2	5000	1	128 Byte Output mo	dule
Port 3	80	- 2 3	128 Byte Uutput mo 128 Byte Input modu	dule Ile
	1 sec.	4	100 Dute lueut ere d	J_
CAN field bus		6	128 Byte Input modu	ale
CAN baud rate	3 - 250k 💌			

Selecting menu item <Blink> causes the controller to synchronize the blinking of status LED's. This facilitates identification of a specific controller installed in a control cabinet together with many other control cabinets (Deactivate via menu item <Stop blink>).

## 4.2.6 Menu bar ?

This menu point offers help to the user.

Menu bar $\rightarrow$	
?       Help theme       Info about flexotempMANAGER	These menu items are offered.
Help topics	<ul> <li>Contents of the operating manuals on the following subjects</li> <li>Operation</li> <li>Parameters</li> <li>System configuration &amp; project setup are displayed (further documentation see chapter Additional and continua- tive documents).</li> </ul>
Info on flexotempMANAGER or १	Displays current software version of flexotempMANAGER in <b>flexotempMANAGER V n.mm.pp/jjmmtt</b> format.
<f1></f1>	Key <f1> displays manual (Project Setup and Configuration Tool flexo-tempMANAGER Operation)</f1>

## 4.3 Functions of the symbol bar

Functions are called or activated / deactivated via the symbol bar.

The status of individual functions is displayed in the menu bar, the symbol bar, and in the status bar.

Functions described here are only available in the symbol bar. Menu bar redundant functions are described in *¬*Functions of the menu bar.

### 4.3.1 Software version

Symbol bar $\rightarrow$	
Software version	<ul> <li>All components grouped in a project are listed here by their</li> <li>Names, current interface address (Master [IP:x.x.x.x], [CAN:x] and/or [COM:x] for CAN- and PCU-Slaves [CAN:x] and for PSG-Slaves [PSG:x])</li> <li>Status</li> <li>Component</li> <li>Software version of component</li> <li>Software version of flexotempMANAGER</li> </ul>
	Software version         Software version           Component         Software version         Software version           The Software version         Component         Component         Component         Component         ReviseredMANAGER           The Software version         Component         Component         Component         Component         ReviseredMANAGER           The Software version         Component         Component         Component         ReviseredMANAGER           The Software version         Component         Component         Component         ReviseredMANAGER           Component         Software version         Component         Component         ReviseredMANAGER           Component         Software version         InterviseredMANAGER         Component         ReviseredMANAGER           Component         Software version         InterviseredMANAGER         Component         ReviseredMANAGER           Component         Software version         InterviseredMANAGER         Component         ReviseredMANAGER           Component         Software version         Software version         Roversion         Roversion
Status	
Software identical	The current component hex-file matches the most recent hex-file in memory of flexotempMANAGER. Action: None
No Hex-File available	No hex-file for the component in flexotempMANAGER available. Action: See $\neg$ Menu Bar Extras $\rightarrow$ Options $\rightarrow$ Update
Software version in component newer	The hex-file for the component is newer than in flexotempMANAGER. Action: None or See $\neg$ Menu Bar Extras $\rightarrow$ Options $\rightarrow$ Update
Software version in flexo- tempMANAGER is newer (Up- date recommended)	A newer hex-file in flexotempMANAGER available. Action: None or "update"
	The button <start component="" firmware="" of="" selected="" the="" update=""> becomes se- lectable (black lettering) when no error message (red) is existing.</start>
	A red entry appears under software version indicating
	Set communication for this component out of service - Communication to MCU/PCU was taken out of service
	<ul> <li>Communication error - MCU/PCU cannot be reached</li> <li>Different project setup - Project setup different between flexotempMANA- GER and connected components</li> </ul>
	<ul> <li>Another component connected - Another component than in project setup connected</li> <li>Node guarding error - Programmed component missing</li> </ul>
	Node guarding error - Programmed component missing



#### Software version

### Carry out firmware update of selected component

Firmware update	ТСРТО8	X
Hex file File Version	C:\PROGRAMME\PSG\FLEXOTEMPMANAGER\HEX\TCPT08814003.HEX	File
Address:	IP 192.168. 1.236->NodelD 2	Execute verify
Info 0% Status	50%	100%
Star In the projection a Please choose for ⊡-⊡: PCU04	t firmware update [ e several TCPT08 existing, which TCPT08 you want to execute a firmware update. I8 I9 I9T00	OK Cancel
	PT08	

The most current hex-file available for firmware upgrade is displayed.

Another hex-file previously saved on the computer can be selected via the  $\mbox{File}\mbox{button}.$ 

All components of the same type in the project (example here: TCPT 08) are listed and are update by placing a check  $\square$ .

If a  $\square$  Verify is executed, the hex-file will be uploaded to the controller. In flexotempMANAGER and in the controller it is verified that both hex-files are identical. Only then the controller EEProm accepts the file and the controller is restarted. Without Verify there is no verification prior to copying to EEProm. Verify is recommended (doubles update time).

Upon selecting the right hex-file and the components to be updated the function needs to be activated via <Start firmware update>.

## 4.3.2 ARP (Address Resolution Protocol)

Symbol	bar	→	ARP
Symbol	bar	$\rightarrow$	_

ARP AddressResolution Protocol	The Address Resolution Protocol (ARP) is a network protocol that determines a network address of the Internet layer, the physical address (hardware ad- dress) of the network access layer. This assignment is stored in so-called ARP tables of the computers involved.
	dresses to IP addresses given.
	(Source: wikipedia)
	It happens now that there are incorrect entries in the ARP table. It can no lon- ger be communicated with the respective host. In this case, the ARP table should be deleted, so that it can rebuild.
	In addition to the automatic call from flexotempMANAGER, whenever a com- ponent is not reached, the function can also be invoked manually by the op- erator by this icon, without having to leave the flexotempMANAGER.
	After confirmation with <ok>, the ARP table is deleted.</ok>

## 4.3.3 TEMP-Command Wizard

TEMP-Command is control cabinet system specifically designed for hot runner applications and built according to a fixed, corresponding structure.

A standard TEMP-Command system is easily planned and configured via this selection point. The selection point is only visible if the function was previously activated.

(see menu list  $\rightarrow$  <Extras> <Options> <Activate/deactivate project views> <Hot runner applications>).



project in form of a new PCU-component through the following components:

- DIO 16 CI (Digital In-/Output Interface, Current Input) one component
- TCPT 08 (Thermocouple Interface only if external comparison available
- CANPC (Power Card) Number of components according to specification
- CANTC (Thermocouple Card) one component, 12/24 zones each

The individual components are automatically addressed and configured in project setup.

In analogy to project setup, addressing is carried out on the respective components via DIP-switch.

### Add external reference junction

If copper wiring is used to connect to the sensor, a measuring point for comparison is needed. TCPT 08 (Thermocouple Interface) allows for the connection of resistance thermometer Pt100 to carry out the comparative reading.



			TEMP-command r	rack-system	
Component	Node ID	Zone	Sensor	Current	
DI016_CI	1				
TCPT08	2				Delete external reference junction
CANPC06	32 123	45678 <sup>1-6</sup>		6*16A	Delete CANPC
CANPC03	33 123 ON	<b>45678</b> 7·9		3*32A	Delete CANPC
CANPC12	34 123	45678 10·21		12×3A	Delete CANPC
					Add CANPC
CANTC24	16 <b>123</b> 0 N	45678	1 · 24		
Summary		21	24	228 A	
		es to the project			
uu i eimiP-comm	anu rack-syste	in to the project.			

Symbol bar →	
TEMP-Command-Wizard	Component DIO 16 CI is always present;
	Component TCPT 08 is added when selecting an external comparison point;
	<add canpc=""> offers a list from which Power Cards of the following types can be selected:</add>
	<ul> <li>CANPC03 (3 zones at 32A per card)</li> </ul>
	CANPC06 (6 zones at 16A per card)
	<ul> <li>CANPC12 (12 zones at 3A per card)</li> </ul>
	For every 12/24 zones one component CANTC 12/24 is added.

### 4.3.3.1 Default addressing of components

By using the TEMP-Command-Wizard addresses are automatically allocated to the newly created PCU-component and its components in the project.

### Default addressing of components with TEMP-Command-Wizard

Component DIO 16 CI	NodeID = 1
Component TCPT 08	NodeID = 2
Component CANTC **	NodeID = 16 and up (until 31)
Component CANPC **	NodeID = 32 and up (until 67)

Up to 128 zones can be configured.

## 4.3.3.2 Default configuration of the components

Using the TEMP-Command-Wizard automatically configures the newly created PCU component and their components in the project.

### Default configuration of the components with TEMP-Command-Wizard

Controller - Communica- tion	Ethernet	Base-IP: 192.168.0.220 (Standard)
Controller - System param- eter	[SP03] MAXK	Depending on CANPC ports; one port each is allocated to one zone.
	[SP09] IN1S=4	If a signal is active on system-digital port 1, the function defined here is executed for the entire system.
		A reduction relative by the 2. setpoint value is carried out for all zones, equals standby function.
	[SP10] IN2S=8	If a signal is active on system-digital port 2, the function defined here is executed for the entire system.
		An increase relative by the 3. setpoint value is carried out for all zones, equals boost function.
	[SP11] S1D1=15	This parameter defines which event triggers system alarm 1.
		<ul> <li>Thyristor alarm (TA) (1<sub>dec</sub>)</li> <li>Current Tolerance Alarm (CTA) (2<sub>dec</sub>)</li> <li>LI1 (storing by LI1D) (4<sub>dec</sub>)</li> <li>LI2 (storing by LI2D) (8<sub>dec</sub>)</li> </ul>
		The setting value for the parameter is presented in dec- imal notation and it is the sum of all setting values, e.g. $1_{dec} + 2_{dec} + 4_{dec} + 8_{dec} = 15_{dec}$
	[SP12] S1D2=226	This parameter defines which event triggers system alarm 1.
		<ul> <li>Sensor break (tCb)/sensor incorrect polarity (tCp)/ sensor 1 (not storing) (2<sub>dec</sub>)</li> <li>Project setup or control zone not initiated (32<sub>dec</sub>)</li> <li>System-/Channel data error (64<sub>dec</sub>)</li> <li>Error CAN / Slave error (128<sub>dec</sub>)</li> </ul>
		The setting value for the parameter is presented in dec- imal notation and it is the sum of all setting values, e.g. $2_{dec} + 32_{dec} + 64_{dec} + 128_{dec} = 226_{dec}$
	[SP19] TRES=2	The Timer is stopped, reset and after reset started again.
		A reset is triggered by a sensor break, setpoint value at zero, or a zone passivation.
	[SP20] ASP=20	For zones with an active automatic ramp function, the automatic ramp is started for setpoint value changes greater than 20K.
	[SP23] IN3S=17	If a signal is active on system-digital port 3, the function defined here is executed for the entire system. All zones are passivated.

[SP24] IN4S=146

If a signal is active on system-digital port 4, the function defined here is executed for the entire system. Input block active in software TEMP-Soft (inverted), equals enable signal from machine control.

### Default addressing of components with TEMP-Command-Wizard

Controller inputs	System Input = 1 ***DIO16_CI.DIO1	Digital port 1 of DIO 16 CI is used as signal for system parameter [SP09].
	System Input = 2	Digital port 2 of DIO 16 CI is used as signal for system
	***DIO16_CI.DIO2	parameter [SP10].
	System Input = 3	Digital port 3 of DIO 16 CI is used as signal for system
	***DIO16_CI.DIO3	parameter [SP23].
	System Input = 4	Digital port 4 of DIO 16 CI is used as signal for system
	***DIO16_CI.DIO4	parameter [SP24].
Controller - Measured Val- ues	Zone 1 =	The analog ports of sensor cards are continually allocated, in 12/24-step increments, to the measured values of
	***CANTC12.AI1	controllers in zone 1.
	etc.	
	and/or	
	Zone 1 =	
	***CANTC24.AI1	
	etc.	
	_	
Controller - Tool Coding	Tool coding Bit 0 7 is set to	The Wizard has allocated the digital ports of the DIO 16 CI module to tool code bit 07. The user can manually
	***DIO16_CI.DIO9	change the allocation here.
	***DIO16_CI.DIO16	

## Default addressing of components with TEMP-Command-Wizard

DIO 16 CI Module In-/outputs	In-/output DIO 01 = ***DIO16_CI.DIO01	The digital port provides a signal for system-digital port 1 (see [SP09] IN1S - standby function)
		The digital port provides a signal for system-digital port 2 (see [SP10] IN2S - boost function)
	In-/output DIO 03 = ***DIO16_CI.DIO03	The digital port provides a signal for system-digital port 3 (see [SP23] IN3S - all zones are passivated)
	In-/output DIO 04 = ***DIO16_CI.DIO04	The digital port provides a signal for system-digital port 4 (see [SP24] IN4S - enable signal for machine control)
	In-/output DIO 05 = ***DIO16_CI.DIO05	Digital port to which <system 1="" alarm="" inverted=""> is con- nected The signal is used as <enable inverted="" machine=""></enable></system>
	In-/output DIO 06 = ***DIO16_CI.DIO06	Digital port to which <system 1="" alarm=""> is connected The signal is used as <enable machine=""></enable></system>
	In-/output DIO 07 = ***DIO16_CI.DIO07	<n.a.></n.a.>
	In-/output DIO 08 = ***DIO16_CI.DIO08	<n.a.></n.a.>
DIO 16 CI Module	Tool Coding	
In lautauta		
In-/outputs	A code from 1255 ( ports is sent via a plu control cabinet and r are imported upon ac	depending on the plugged-in bridges) for the digital input ig on the tool. A recipe can be stored for each code in the nulti loop controller software TEMP-Soft whose settings ctivating the tool recognition function.
In-/outputs	A code from 1255 ( ports is sent via a plu control cabinet and r are imported upon ac In-/output DIO 09 = ***DIO16_CI.DIO09	depending on the plugged-in bridges) for the digital input ig on the tool. A recipe can be stored for each code in the nulti loop controller software TEMP-Soft whose settings ctivating the tool recognition function. Digital input port for tool coding 0 (LSB)
In-/outputs	A code from 1255 ( ports is sent via a plu control cabinet and r are imported upon ac In-/output DIO 09 = ***DIO16_CI.DIO09 In-/output DIO 10 = ***DIO16_CI.DIO10	depending on the plugged-in bridges) for the digital input ig on the tool. A recipe can be stored for each code in the nulti loop controller software TEMP-Soft whose settings ctivating the tool recognition function. Digital input port for tool coding 0 (LSB) Digital input port for tool coding 1
In-/outputs	A code from 1255 ( ports is sent via a plu control cabinet and r are imported upon ac In-/output DIO 09 = ***DIO16_CI.DIO09 In-/output DIO 10 = ***DIO16_CI.DIO10 In-/output DIO 11 = ***DIO16_CI.DIO11	depending on the plugged-in bridges) for the digital input ig on the tool. A recipe can be stored for each code in the nulti loop controller software TEMP-Soft whose settings stivating the tool recognition function. Digital input port for tool coding 0 (LSB) Digital input port for tool coding 1 Digital input port for tool coding 2
In-/outputs	A code from 1255 ( ports is sent via a plu control cabinet and r are imported upon ad In-/output DIO 09 = ***DIO16_CI.DIO09 In-/output DIO 10 = ***DIO16_CI.DIO10 In-/output DIO 11 = ***DIO16_CI.DIO11 In-/output DIO 12 = ***DIO16_CI.DIO12	depending on the plugged-in bridges) for the digital input ig on the tool. A recipe can be stored for each code in the nulti loop controller software TEMP-Soft whose settings stivating the tool recognition function. Digital input port for tool coding 0 (LSB) Digital input port for tool coding 1 Digital input port for tool coding 2 Digital input port for tool coding 3
In-/outputs	A code from 1255 ( ports is sent via a plu control cabinet and r are imported upon ad In-/output DIO 09 = ***DIO16_CI.DIO09 In-/output DIO 10 = ***DIO16_CI.DIO10 In-/output DIO 11 = ***DIO16_CI.DIO11 In-/output DIO 12 = ***DIO16_CI.DIO12 In-/output DIO 13 = ***DIO16_CI.DIO13	depending on the plugged-in bridges) for the digital input ig on the tool. A recipe can be stored for each code in the nulti loop controller software TEMP-Soft whose settings stivating the tool recognition function. Digital input port for tool coding 0 (LSB) Digital input port for tool coding 1 Digital input port for tool coding 2 Digital input port for tool coding 3 Digital input port for tool coding 4
In-/outputs	A code from 1255 ( ports is sent via a plu control cabinet and r are imported upon ad In-/output DIO 09 = ***DIO16_CI.DIO09 In-/output DIO 10 = ***DIO16_CI.DIO10 In-/output DIO 11 = ***DIO16_CI.DIO11 In-/output DIO 12 = ***DIO16_CI.DIO12 In-/output DIO 13 = ***DIO16_CI.DIO13 In-/output DIO 14 = ***DIO16_CI.DIO14	depending on the plugged-in bridges) for the digital input g on the tool. A recipe can be stored for each code in the nulti loop controller software TEMP-Soft whose settings ctivating the tool recognition function. Digital input port for tool coding 0 (LSB) Digital input port for tool coding 1 Digital input port for tool coding 2 Digital input port for tool coding 3 Digital input port for tool coding 4 Digital input port for tool coding 5
In-/outputs	A code from 1255 ( ports is sent via a plu control cabinet and r are imported upon ad In-/output DIO 09 = ***DIO16_CI.DIO09 In-/output DIO 10 = ***DIO16_CI.DIO10 In-/output DIO 11 = ***DIO16_CI.DIO11 In-/output DIO 12 = ***DIO16_CI.DIO12 In-/output DIO 13 = ***DIO16_CI.DIO13 In-/output DIO 14 = ***DIO16_CI.DIO14 In-/output DIO 15 = ***DIO16_CI.DIO15	depending on the plugged-in bridges) for the digital input g on the tool. A recipe can be stored for each code in the nulti loop controller software TEMP-Soft whose settings ctivating the tool recognition function. Digital input port for tool coding 0 (LSB) Digital input port for tool coding 1 Digital input port for tool coding 2 Digital input port for tool coding 3 Digital input port for tool coding 4 Digital input port for tool coding 5 Digital input port for tool coding 6

TCPT 08 Module External reference junction System Parameters	SEN1 (sensor type)	This sensor type is pre-set with <pt100> and applies to analog input ports 14.</pt100>
	SEN2 (sensor type)	This sensor type is pre-set with <pt100> and applies to analog input ports 58.</pt100>
TCPT 08 Module		A resistance thermometer Pt100 can be connected to one of the 8 ports.
		If using SPS programming, a CoDeSys variable can be entered here that the program can address then.
CANPC ** Module		Available output ports are pre-set with zones from 1 on- wards.
outputo		If using SPS programming, a CoDeSys variable can be entered here that the program can address then.

## Default addressing of components with TEMP-Command-Wizard

CANTC ** Module System Parameters	SEN1 (sensor type)	This sensor type is pre-set with <fe-j> and applies to sensor input ports 1 6 (CANTC 12 and/or CANTC 24). If a comparison exists it is displayed after the sensor type.</fe-j>
	SEN2 (sensor type)	This sensor type is pre-set with <fe-j> and applies to sensor input ports 7 12 (CANTC 12 and/or CANTC 24). If a comparison exists it is displayed after the sensor type.</fe-j>
	SEN3 (sensor type)	This sensor type is pre-set with <fe-j> and applies to sensor input ports 13 18 (CANTC 24). If a comparison exists it is displayed after the sensor type.</fe-j>
	SEN4 (sensor type)	This sensor type is pre-set with <fe-j> and applies to sensor input ports 19 24 (CANTC 24). If a comparison exists it is displayed after the sensor type.</fe-j>
		For each input port SEN 14 it is displayed via which component an available external comparison is con- nected. It is described by NodeID, component name, and input port.
CANTC ** Module Inputs		The analog input ports of the CANTC** module are con- figured on the controller under measured values (see controller - measured values).
		If using SPS programming, a CoDeSys variable can be entered here that the program can address then.

### 4.3.4 Simulated secondary mouse button

The secondary mouse key to open up selection menus can be simulated one time when using touch screen.

Simulated secondary mouse button



Example: Select component via primary mouse key

 $\rightarrow$  Select symbol  $\rightarrow$  Select component via primary mouse key  $\rightarrow$  the respective selection menu is activated.

# 5 Project

The following tasks can be executed in project view.

## 5.1 Create projects



## Menu bar → <View> <Project>, Register <Project>

Show project	flexotempMANAGER works project oriented.
	The following entries that are grouped to one project are shown / can be con- nected in the  Project  window below the communication server:
	<ul> <li>Controller and open loop control units</li> <li>CAN components (bus coupler modules, I/O modules)</li> <li>PCU components (bus coupler modules, I/O modules)</li> <li>RS485 components (I/O modules PSG output bus)</li> </ul>
	(see chapter <sup>¬</sup> Commentary for project)
	<ul> <li>A project description is generated through</li> <li>commentary (see chapter <i>¬</i>Commentary for project)</li> <li>a description of the components is generated through</li> <li>Data sheet</li> <li>Operating instructions (when existing)</li> <li>Parameter for specification</li> <li>Communication (only for controllers)</li> <li>Time server (only for controllers)</li> <li>In-/outputs</li> </ul>
	<ul> <li>A change between projects is done by</li> <li><file> <new> or</new></file></li> <li><file> <open> (select a saved project from disk) or</open></file></li> <li>1 etc. (select a stored on disk and already once opened project in fle- xotempMANAGER (see chapter ↗Menu Bar: File)</li> </ul>
	New components can be created via <ul> <li>Selection item <create component="" new=""> in project</create></li> <li><component> view per drag&amp;drop</component></li> <li>From <template> view and transfer of entire project</template></li> </ul>
	After creation of a project or after modification, the components may need to be configured (for further documentation see chapter Additional and contin- uative documents)

## 5.1.1 Context menus on project level

At the project level, a menu can be called for each component via the secondary mouse key. Further functions can be called via this menu.

Selected context menus with the array of functions described below are available in the status menu.

### 5.1.1.1 Context menu for master components

Create new component
rename
delete
 transform to
Read parameters
Import data
Read project setup
Read Profibus object list
Read parameter + project setup + Profibus
Read parameters of all sub components
Write parameter
Export data
Write project setup
Write profibus object list
Write parameters + project setup + Profibus
Write parameter to all sub components
Store / restore parameter image
Display error storage
Firmware update
Interfaces test
Export CoDeSys variable list
Code number
Data->EEPROM
Current transfer
Start address scan
Restore factory settings
Create template

Master Components	MCU/PCU	
Create new component	flexotempMANAGER offers those components that can be suitably integrated here.	
rename	The default build-group or component name can be renamed.	
delete	The selected build-group or component can be deleted from the project upon confirmation.	
transform to	A projected master component can be transferred to another master component via the menu point <transform to="">.</transform>	
	If the transformation is from smaller to larger components, the additional zones will be given default values.	
	If a larger component is transformed to a smaller component, the following ap- plies:	
	Transform to PCUXXX: (XXX=024 respectively 048)	
	<ul> <li>If <u>default values</u> apply to the parameters over zone XXX and <u>no zone</u> is allocated over XXX in project setup, the following query appears:</li> </ul>	
	Transform build-group <name> to PCUXXX?</name>	
	If <u>no default values</u> apply to the parameters over zone XXX and <u>no zone</u> is allocated over XXX in project setup, the following query appears:	
	Parameters from zone XXX+1 will be lost for the component.	
	Transform build-group <name> to PCUXXX?</name>	
	<ul> <li>If <u>default values</u> apply to the parameters over zone XXX and <u>a zone</u> is allocated over XXX in project setup, the following query appears:</li> </ul>	
	Project setup data from zone XXX+1 will be lost for the component.	
	Transform build-group <name> to PCUXXX?</name>	
	<ul> <li>If <u>no default values</u> apply to the parameters over zone XXX and <u>a zone</u> is allocated over XXX in project setup, the following query appears:</li> </ul>	
	Parameters and project setup data from zone XXX+1 will be lost for the component.	
	Transform build-group <name> to PCUXXX?</name>	
	A projected master component can only be transformed to the MCU 128 mas- ter component if no I/O components, such as DIO 16 CI or TCPT08, etc. are allocated.	

Master Components	MCU/PCU
Read parameter	Parameters (all values, like zone -, system -, communication parameters, time server and model) of the selected components (and sub-components upon confirmation) will be read from the connected controller system and imported into the project.
Import data	A project can be selected and its data be imported.
	Import data     ? ×       Search in:     PR0JEKTE     • • • • • • • • • • • • • • • • • • •
	File name : *:XML     Open       Data type:     filexotempMANAGER file (*:XML)     Cancel
	It can be specified, upon project selection, which data is to be imported from the selected project and from/for which zones. Default setting is all data for all zones. The selected data is replaced at the selected master component.
	Import data <pcu048.xml></pcu048.xml>
	Select, which data you would like to import         Zone names         Block mode         Groups         System parameter         System parameter (without Base IP and Base NodeID)
	Profibus DPEA     Available zones     Selected zones
	Available zones       Selected zones         1 - Zone 1       -         - Zone 2       -         - Zone 3       -         - Zone 4       -         - Zone 5       -         - Zone 8       -         - Zone 9       -         - Zone 10       11         - Zone 10       11         - Zone 10       11         - Zone 11       12         - Zone 12       13         - Zone 13       14         - Zone 16       17         - Zone 18       19         - Zone 19       20         - Zone 2       -
	UK Uancel



Example: Zone names of zones 1, 4, 6, and 7 are selected from project <PCU48.XML> to be imported to the current project into the same zones.

Import data	Import data <pcu048.xml></pcu048.xml>	
	Select, which data you would like to import         ✓       Zone names         Block mode         Groups         Zone parameter         System parameter         Communication parameter (without Base IP and Base NodeID)         Profibus DPEA         2-Zone 3         2-Zone 3         S-Zone 5         8-Zone 8         9-Zone 9         10	
Read project setup	Project setup (all in- and output allocations, module lists, actual value alloca- tion) of the selected master component is read from the connected controller system and imported into the project. It will be explicitly queried whether the zone names are supposed to be im- ported as well.	
Read Profibus and/or PROFINET IO Object list	Object lists created in the  Project  window with menu item <profibus dpea=""> and/or PROFINET IO settings are imported by the controller into flexo-tempMANAGER.</profibus>	
Read Parameter + Project Setup + Profibus and/or PROFINET IO	Parameters of the selected master component (and sub-components upon confirmation), project setup, and the Profibus DPEA object lists and/or PROFINET IO settings are read from the connected controller system and imported into the project. It will be explicitly queried whether the zone names are supposed to be imported as well.	
	Once a master component with the abbreviation "PNIO" is selected the menus will read PROFINET IO instead of Profibus.	
Read parameter of all sub components ?	Parameters (all values, like zone -, system -, communication parameters, time server and model) of all components will be read from the connected control-	

ler system and imported into the project.

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Master Components	MCU/PCU
Write parameter	Parameters (all values, like zone -, system -, communication parameters, time server and model) of the selected components (and sub-components upon confirmation) are transferred from the project to the connected controller system (see chapter <i>¬</i> Notifications list - Changes). For <write <selection="" parameters=""> a window is displayed, where the single parameters can be selected for writing.</write>
Export data	A project can be selected and its data exported.
	The name of the selected master component (here for example PCU048) is the default file name for the data export file. The name can be changed.
	Export data         Search in:         PROJEKTE         PCLUMB.XM.         File name:         Data type:         The data export file contains the following data:         Zone names         Block mode         Groups         Zone Parameters         System Parameters         System Parameters         Communications parameters (except base-IP and base NodeID and software base address)         Profibus (buffer size, object list of input and output buffer)
Write project setup	<ul> <li>Project setup (all in- and output allocations, module lists, actual value allocation) of the selected master component is transferred from the project to the connected controller system.</li> <li>A write-execution of the project setup requires a previous stopping of the master component, which will be queried.</li> <li>Upon successful transfer it will be queried if the project setup is supposed to be saved.</li> <li>After this, the master component is restarted, upon query (see chapter ↗No-tifications list - Changes).</li> </ul>
Write Profibus and/or PROFINET IO Object list	Object lists created in the  Project  window with menu point <profibus dpea=""> and/or PROFINET IO settings are written to the controller by the flexo-tempMANAGER (see chapter PNotifications list - Changes).</profibus>

Write Parameter + Project Setup + Profibus and/or PROFINET IO	Parameter + Project       + Profibus and/or         + Profibus and/or       Parameters (all values, like zone -, system -, communication parameters (and sub-components) and parameters (and sub-components) are transferred from the project to the connected tem (see chapter <i>¬</i> Notifications list - Changes). For <write for="" parameters="" td="" writing.<="">         Additionally project setup and the Profibus DPEA object lists NET IO settings are read from the connected controller system into the project.         A write-execution of the project setup requires a previous stop ter component, which will be queried.         Upon successful transfer it will be queried if the project setup</write>	
	After this, the mas tifications list - Cha	ter component is restarted, upon query (see chapter ↗No- anges).
		Once a master component with the abbreviation "PNIO" is selected the menus will read PROFINET IO instead of Profibus.

Write parameter to all sub components ?

Parameters (all values, like zone -, system -, communication parameters, time server and model) of all components will be transferred from the project to the connected controller system.

Master Components	MCU/PCU		
Store / restore parameter im- age	A parameter image of the sub-components is kept in the master component MCU / PCU. Before maintenance work (e.g replacement of components) a parameter image can be stored in the master component. After maintenance work the parameter image can be restored in the sub-component.		
Display error memory	A maximum of 100 notifications (FIFO) are shown in the window. Each notification is uniquely described through: • Status/number • Date • Date • Time • NodelD • Plain-text message		
	No.         Date         Time         NodelD         Error           C         1         4314.55         15:29:08         4         00014 - Time out NodeGuarding           C         2         4314.55         15:29:08         4         00012 - Time out error / slave does not respond           C         3         43.14.55         15:29:08         3         00012 - Time out error / slave does not respond           C         4         43.14.55         15:29:08         3         00014 - Time out NodeGuarding           C         5         43.14.55         15:29:08         3         00009 - Error CANCT table           C         6         43.14.55         15:28:37         3         00009 - Error CANCT table           C         7         43.14.55         15:27:41         3         00012 - Time out error / slave does not respond           C         8         43.14.55         15:27:41         4         00012 - Time out error / slave does not respond           C         9         43.14.55         15:27:41         4         00012 - Time out error / slave does not respond           C         10         43.14.55         15:27:09         3         00009 - Error CANCT table           C         11         43.14.55		

When the window is active, the current notifications are immediately displayed.

If the window is already active, subsequently occurring notifications can be visualized via menu point <Update error memory>.



The contents of the error memory are copied as a .CSV file to the projects path via menu item <Export>.

#### Master Components

MCU/PCU

#### Firmware update

Settings management for firmware update of the component.

Firmware upda	te DI016_CI		×
Hex file			File
Version		 	
Interface		 	
Address:	IP 192.168. 1.236->NodeID 1	🗖 Ехесі	ute verify
- Info			
0%	50%		100%
Status			
S	art firmware update	эк 🛛	Cancel
In the projection Please choose f	are several DI016_CI existing. or which DI016_CI you want to execute a firmware update.		
	048 DID16_CI DID16_CI		

The component (here DIO16CI) for firmware update is activated. A hex-file, previously copied to the processor, is selected via the <File> key.

A list from which to chose the relevant components will be displayed if there are several components of the same type.

If a  $\checkmark$  Verify is executed, the hex-file will be uploaded to the controller. In flexotempMANAGER and in the controller it is verified that both hex-files are identical. Only then the controller EEProm accepts the file and the controller is restarted. Without Verify there is no verification prior to copying to EEProm. Verify is recommended (doubles update time).

Upon selecting the right hex-file for the component its function needs to be activated via <Start firmware update>.

Master Components	MCU/PCU
Interfaces test	The interfaces can be tested via this menu item.
	The interfaces test is started via
	Interfaces test       Address     IP 192.168. 1.236       Version     PCU048002210A       Counter / Status     766 / 0000h-No error         Cancel
	The software version of the component and the number of cycles (counter) with status is displayed.
Export CoDeSys variable list	All CoDeSys variables identified for component interfaces are compiled in a list and copied to an export file. The name of the selected master component (here PCU048) is used as the default file name for the list of variables. The name can be changed.
	Search POLEXTE I F CO C II S POLEXTE I F CO C II II Fin name : 2000 Fin name : Court In to COONgr vender (FLP) / Court

The list of variables is used to import the variables into the CoDeSys developer environment.

#### **Master Components**

#### MCU/PCU

Code number

Behind code numbers are complex system-specific or process-specific functions that simplify the handling of certain controller functions or that repair exception states in which the controller may find itself e.g. after faults or alarms. All interfaces can be activated via code numbers.

Code numbers available for the master component are displayed.

Ca	ode nun	nber PCU048 <pcu048></pcu048>	>
		XXX - Manual entry of code number	•
	valid co	XXX - Manual entry of code number	*
ł		050 - Zone locking on	
		051 - Zone locking off	
		060 - Store recipe 1 to storage card (RCP 0.EXP)	
		061 - Store recipe 2 to storage card (RCP 1.EXP)	
		062 - Store recipe 3 to storage card (RCP 2.EXP)	
	(	063 - Store recipe 4 to storage card (RCP 3.EXP)	
		064 - Store recipe 5 to storage card (RCP 4.EXP)	
		065 - Store recipe 6 to storage card (RCP 5.EXP)	
	<b>–</b>	066 - Store recipe 7 to storage card (RCP 6.EXP)	
		067 - Store recipe 8 to storage card (RCP 7.EXP)	
	÷	068 - Store recipe 9 to storage card (RCP 8.EXP)	
		069 - Store recipe 10 to storage card (RCP 9.EXP)	
		070 - Load recipe 1 from storage card (RCP 0.EXP)	
		071 - Load recipe 2 from storage card (RCP 1.EXP)	
		072 - Load recipe 3 from storage card (RCP 2.EXP)	
		073 - Load recipe 4 from storage card (RCP 3.EXP)	
		074 - Load recipe 5 from storage card (RCP 4.EXP)	
		075 - Load recipe 6 from storage card (RCP 5.EXP)	
		076 - Load recipe 7 from storage card (RCP 6.EXP)	
		077 - Load recipe 8 from storage card (RCP 7.EXP)	
	···· [28	078 - Load recipe 9 from storage card (RCP 8.EXP)	
	_	079 Load regine 10 from storage oard (PCP 9 EVD)	

#### etc.

Select the favored code number out of the list, and/or select <Manual entry of code number> and enter a number between 1...900.

The code number is activated via <Execute code number>.

### Data->EEProm

Data that is only saved to RAM is volatile and it is therefore automatically copied to EEProm after 10 minutes if there is no further alteration. Hence, data is permanently available.

Master Components	MCU/PCU
Current transfor	
Current transfer	with heating current monitoring available in the controllers if heating current monitoring is installed and correspondingly configured
	Current transfer PCU048 <pcu048></pcu048>
	Activate current transfer ?
	OK Canc
	Current setpoint values are overwritten with actual values.
	EXCEPTION: no current was measured. The previous values remain in place.
Start address scan	By the master component an address scan can be executed for all connected components.
Restore factory setting (ONLY PCU/MCU)	All parameters (SP**, CP**, P***, PROFINET, Profibus) were reset to default values. The project setup is deleted (only master component WITHOUT sub-components). From PCU/MCU software version4013A.
Create template	Upon selection, the master component of a current project can be copied and then used as a template in <template> view.</template>
	The name of the last selected master component (here: PCU048) is the de- fault file name for the template. The name can be changed.
	Template save
	Template FROUME OK Cancel

See chapter *¬*Template.

### 5.1.1.2 Context menu for CAN components

Create new component rename delete	•
Read parameter	
Write parameter	
Firmware update Interfaces test Start address scan	

### **CAN** components

Create new component	See chapter PContext menu for master components Create new component (only CANCT, CANBC)
rename	See chapter PContext menu for master components rename
delete	See chapter PContext menu for master components delete
transform to CANCT_SPL transform to CANCT	The simple component can be transformed to the component with Smart Power Limitation SPL functionality and vice versa. (only for CANCT and CANCT_SPL)
Read parameter	See chapter PContext menu for master components Read parameter
Write parameter	See chapter PContext menu for master components Write parameter
Firmware update	See chapter PContext menu for master components Firmware update
Interfaces test	See chapter PContext menu for master components Interfaces test
Start address scan	Only component CANBC An address scan is triggered for the components assigned to CANBC.

## 5.1.1.3 Context menu for PCU components

rename delete	
Read parameter	
Write parameter	
Firmware update Interfaces test	

## **PCU** components

Create new component	See chapter <a>Context menu for master components</a> Create new component (only BACI)
rename	See chapter PContext menu for master components rename
delete	See chapter PContext menu for master components delete
transform to DIO16_CI_SPL transform to DIO16_CI	The simple component can be transformed to the component with Smart Power Limitation SPL functionality and vice versa. A message appears if in-/ output port DIO16 (X3.12) is used. (only for DIO16_CI and DIO16_CI_SPL)
Read parameter	See chapter PContext menu for master components Read parameter
Write parameter	See chapter PContext menu for master components Write parameter
Firmware update	See chapter PContext menu for master components Firmware update
Interfaces test	See chapter <a>Context menu for master components Interfaces test</a>

## 5.2 Commentary for project

A text commentary can be tagged to the project using an editor. The comment is saved with the project.

flexotempMANAGER - PCU048 *			
File Edit Communication View Extras ?			
D 🛎 🖬   X 🖻 🖻   🗳   🌹 🕏   🕕 🗉			
Communication server	E Commentary		
Commentary	🗃 🖬 🛛 Times New Roman 🔹 10 💌 🖪 🖍 🖳 🕏 🗮 🗮 🗮 🖾		
<pre>Coreate new component&gt;</pre>			
-	The comment is saved as an RTF file in		
Save or	Installation directory $\rightarrow$ flexotempMANAGER $\rightarrow$ PROJECTS		
	An DTE file served under		
Open or	Installation directory $\rightarrow$ TiexotempMANAGER $\rightarrow$ PROJECTS		
	is uploaded in the comment editor and the text at the end is attached.		

## 5.3 Info page

For each component an information page exists with entries for

- Component name
- DLL
- Data version (only master component)
- Software version
- Communication, in form of slot number, CAN NodelD
- Notifications list

The notifications list with plain text messages indicates to the operator

- that changes in flexotempMANAGER are not yet transferred to the controller
- that there are errors in the project setup

## 5.3.1 Notifications list - Changes



The user is informed that changes are not yet copied to the controller once a parameter and/or PROFINET IO data is altered in project setup. The master component is marked with a red star in the project tree and a corresponding text appears in the notifications list.

Notifications are reset upon successful transfer.

## 5.3.2 Notifications list - Project setup errors

Accompanying the project setup by the operator, flexotempMANAGER checks the plausibility for

- allocation of output to zone
- allocation to CoDeSys variable
- continuous addressing for RS485 and PCU components



In the event of an error in project setup, such is displayed on the master component with a yellow triangle at the top level in the |Project| window. The project tree needs to be searched downwards until the error causing component has been found. Error needs to be rectified.

fickotempMANAGER - PCU048 *				
File Edit Communication View Extras ?				
🗅 🎯 🖬 🕺 🗈 🛍 🚳 📍 🥩 📌 💵	DE DE DE DE DE 🗯 🧉			
Communication server Communication server Communication Communi	Oto 1016_0_Colored       Mode       Compared name       D0016_0_       D0016_0_       D0016_0			
Press F1 for help.	OFFLINE [TREND OFFLINE 🛃 💳			

## 5.4 Time Server

The time server, a PC equipped with the Network Time Protocol, where the project setup - and configuration tool flexotempMANAGER is running, provides the clients (master components MCU, PCU) with the current time stamp on request. Thus the master components are synchronized.

The time server is shown in the project for the master components, when under menu bar  $\rightarrow$  <Extras> <Options> <Switch project view on/off> <Show time server> is ticked  $\square$ .



The IP address of the time server (SP42...SP45]), that executes the time synchronization, as well as the time zone ([SP46]) must be specified.

After that the time synchronization ([SP41]) has to be started.

The change of the parameters lead to a flag (see chapter *¬*Notifications list - Changes) on the master component. A check whether the master component supports the time server is carried out when the changed parameters are transferred to the master component (software version 0910A onwards). If it is not supported, time synchronization ([SP41]) can be deactivated in this step.

Write pa	rameter PCU048 <pcu048> (PCU048002208A)</pcu048>	×	
2	Time server will be supported from software version <b>PCU048000910A</b> .		
Should the system parameter time synchronisation be turned off ?			
	OK Cancel		

# 6 In-/outputs

Processing of virtual and physical in-/output is defined in flexotempMANAGER.

This is in detail:

- virtual digital inputs VDI
- virtual digital outputs VDO
- Analog inputs (AI)
- Digital inputs (DI)
- Analog outputs (AO)
- Digital outputs (DO)

Project-setup occurs for every in-/output, i.e. an allocation to a marker / alarm in the system and a configuration, i.e. a parameter defines the action sequence / trigger of the marker / alarm.

Project setup and configuration occurs in the location where an in-/output is configured to work.

CoDeSys-
→ **

### **Configuration Wizard**

For some components the in-/outputs can be configured via a wizard. The in-/outputs to be configured are selected with  $\square$ . The wizard is activated by  $\square$ . Depending on the component, the Wizard offers the following menu settings that can be adopted for all

selected in-outputs with
#### 6.1 Digital inputs

The project setup of a digital input is comparable to the allocation of a digital input to a marker. The markers reflect the condition of the digital input in the controller. There are system markers, group markers, or zone markers. Function specifications are configured based on the markers.



n: number of zones depending on MCU/PCU

Project setup for a physical digital input of an E/A component is implemented through

- a description a) as provided by flexotempMANAGER
- a standard name b) as provided by the system that can be changed by the user
- the type c) <digital input> (only for combined digital in-/outputs)
- a CoDeSys variable d) for the programming of own functions (for controllers with Soft-PLC option)

a)	b)	c)d)
	Name	CoDeSys variable / definition
Input DI 1 (X1, 5-7)	003CANI008.DI01	
Input DI 2 (X1. 8-10)	003CANI008.DI02	
Input DI 3 (X1.11-13)	003CANI008.DI03	
Input DI 4 (X1.14-16)	003CANI008.DI04	
Input DI 5 (X2, 5-7)	003CANI008.DI05	
Input DI 6 (X2. 8-10)	003CANI008.DI06	
Input DI 7 (X2.11-13)	003CANI008.DI07	
Input DI 8 (X2.14-16)	003CANI008.DI08	

Example: E/A component CANIO08 with 8 digital inputs.

Project setup for digital inputs (DI): MCU/PCU (Window → |Project| <MCU/PCU> <Inputs>).

#### 6.1.1 System Input

A system input allocated to a system input marker always influences the entire system, i.e. all zones. Projects can be set-up for 8 system inputs. The functions of the system input parameter is specified by the configuration of:

- [SP09] IN1S Function System Input 1,
- [SP10] IN2S Function System Input 2,
- etc.

(Please find detailed information in further documentation on parameters in chapter 7Additional and continuative documents Parameter [SP23], [SP24], [SP25], [SP26], [SP27], [SP28]).



n: number of zones depending on MCU/PCU

#### 6.1.2 Group Input

Each zone can be allocated to one of the 32 input groups. 2 functions can be allocated to each group. Projects can be set-up on 32 x 2 group inputs. A digital input that is allocated to a group input marker influences all zones that are allocated to the group. The functions of the group input parameter is specified by the configuration of:

- [SP082] IN1C Function Zone Input 1
- [SP083] IN2C Function Zone Input 2

The allocation of a zone to an input group occurs via parameter [P084] GPIN - Input Group (also see window |Project| <MCU/PCU> <Group Administration > <Input Group>).

(Please see chapter Additional and continuative documents for detailed information in further documentation on parameters).



m: Grouped zones

#### 6.1.3 Zone input

Each zone can be allocated to a zone input. 2 functions can be allocated to each zone input. Projects can be setup on n x 2 zone inputs. A digital input that is allocated to a zone input marker influences the zone to which it is allocated. The functions of the zone input parameter is specified by the configuration of:

- [SP082] IN1C Function Zone Input 1
- [SP083] IN2C Function Zone Input 2

(Please see chapter Additional and continuative documents for detailed information in further documentation on parameters).

**Digital inputs** 



n: number of zones depending on MCU/PCU

Z: a zone

#### 6.1.4 Prioritization when processing digital inputs / markers

As there are several types of inputs/markers and also as there is more than only one input/marker per group/zone, the inputs / markers are processed as follows:

- System input 8 (highest priority)
- System input 7
- ...
- System input 1
- Group-/zone input 2
- Group-/zone input 1 (lowest priority)

#### 6.2 Analog inputs

An analog input that is allocated to a measured value input influences the zone it is allocated to. 2 measuring value inputs can be allocated to each zone.



n: number of zones depending on MCU/PCU

Z: a zone

A physical analog input of an E/A component is defined through

- a description a) as provided by flexotempMANAGER
- a standard name b) as provided by the system that can be changed by the user
- a CoDeSys variable c) for the programming of own functions (for controllers with Soft-PLC option)

a)	b)	c)
	Name	CoDeSys variable
Input Al 1 (X2, 1-3)	005AI004.AI1	
Input AI 2 (X2, 4-6)	005AI004.AI2	
Input AI 3 (X2, 7-9)	005AI004.AI3	
Input AI 4 (X2.10-12)	005AI004.AI4	

Example: E/A component AIO04 with 4 digital inputs.

Project setup analog inputs (AI): MCU/PCU (Window  $\rightarrow$  |Project| <MCU/PCU> <Measured values>). The functions of the measured value input parameter are specified by the configuration of:

[P008] SEnC – Actual Value of Control

(Please find detailed information on parameters in chapter 7Additional and continuative documents Parameter [P063], [P064], [P065], [P066], [P067], [P068], [P069], [P070], [P071], [P072]).

**Digital outputs** 

#### 6.3 Digital outputs

Data collected in the controller is monitored and is available by configuring the specifications of responding. When setting up a project on a digital output the allocation to a digital output is created.

Control outputs / Possible alarms /

Virtual data outputs

The collected data includes

- Output value of one of the n control zones
- System, group, or zone alarms
- Virtual digital output
- further data



n: number of zones depending on MCU/PCU

A physical digital input of an E/A component is defined through

- a description a) as provided by flexotempMANAGER
- a standard name b) as provided by the system that can be changed by the user
- a type c) and a corresponding definition d)
- a CoDeSys variable d) for the programming of own functions (for controllers with Soft-PLC option)

a)	——b)	 	d)
	Name	Тур	Definition
In-/output DIO 01 (X2, 5)	007DI016_CI.DI01		
In-/output DIO 02 (X2. 6)	007DI016_CI.DI02		
In-/output DIO 03 (X2. 7)	007DI016_CI.DI03		
In-/output DIO 04 (X2. 8)	007DI016_CI.DI04		
In-/output DIO 05 (X2. 9)	007DI016_CI.DI05		
In-/output DIO 06 (X2.10)	007DI016_CI.DI06		
In-/output DIO 07 (X2.11)	007DI016_CI.DI07		
In-/output DIO 08 (X2.12)	007DI016_CI.DI08		
In-/output DIO 09 (X3. 5)	007DI016_CI.DI09		
In-/output DIO 10 (X3. 6)	007DI016_CI.DI010		
In-/output DIO 11 (X3. 7)	007DI016_CI.DI011		
In-/output DIO 12 (X3. 8)	007DI016_CI.DI012		
In-/output DIO 13 (X3. 9)	007DI016_CI.DI013		
In-/output DIO 14 (X3.10)	007DI016_CI.DI014		
In-/output DIO 15 (X3.11)	007DI016_CI.DI015		
In-/output DIO 16 (X3.12)	007DI016_CI.DI016		

Example: E/A component DIO16CI with 16 DIO's.

Project setup digital outputs (DO): E/A-Component (Window  $\rightarrow$  |Project| <E/A-Component> under <In-/Outputs> and/or <Outputs>).

#### 6.3.1 Control output

The output value of one of the n control zones can be relayed on a digital output. The following types are available:

Туре	Meaning		
Cooling	Output active when output value < 0%		
Heating	Output active when output value > 0%		
Heating with current measurement	Current reading within the time-frame defined in the component.		
Heating with common supply	"Common supply" means that the actuators (heating, cooling fans,		
Cooling with common supply	etc.) connected via the control outputs may be supplied over the same power supply. Exact heating current measuring is still possible as the I/O module deactivates the respective outputs (also the cooling out- puts) for current measuring.		

The actuating signal is relayed through a PWM signal, the control of the heating current monitoring occurs through the module on which the digital output is located.

Projects can be set-up for n control outputs. A control output is set on the digital output to which it is allocated.



n: number of zones depending on MCU/PCU

Z: a zone

#### 6.3.2 System alarm

A system alarm is triggered when a zone of the controller has triggered a respective alarm. The system alarm is relayed on the digital output to to which it is allocated. Projects can be set-up for 4 system alarms. The trigger of the system alarm is defined by configuring the following parameters:

- [P011] S1D1 Definition Byte 1 System Alarm 1
- [P012] S1D2 Definition Byte 2 System Alarm 1
- [P013] S2D1 Definition Byte 1 System Alarm 2
- [P014] S2D2 Definition Byte 2 System Alarm 2
- [P015] S3D1 Definition Byte 1 System Alarm 3
- [P016] S3D2 Definition Byte 2 System Alarm 3
- [P017] S4D1 Definition Byte 1 System Alarm 4
- [P018] S4D2 Definition Byte 2 System Alarm 4

To trigger an alarm definition byte 1 and definition byte 2 are always analyzed.

(Please see chapter Additional and continuative documents for detailed information in further documentation on parameters).



n: number of zones depending on MCU/PCU

#### 6.3.3 Group alarm

A group alarm is triggered when at least 1 of n zones in a group have triggered an alarm. The group alarm is relayed on the digital output to to which it is allocated. Projects can be set-up on 32 x 4 group alarms. The trigger of the group alarm is defined by configuring the following parameters:

- [P073] A1D1 Definition Byte 1 Alarm 1
- [P074] A1D2 Definition Byte 2 Alarm 1
- [P075] A2D1 Definition Byte 1 Alarm 2
- [P076] A2D2 Definition Byte 2 Alarm 2
- [P077] A3D1 Definition Byte 1 Alarm 3
- [P078] A3D2 Definition Byte 2 Alarm 3
- [P079] A4D1 Definition Byte 1 Alarm 4
- [P080] A4D2 Definition Byte 2 Alarm 4

The allocation of a zone to an alarm group occurs via parameter [P081] GPAL – Alarm group (also see window |Project| <MCU/PCU> <Group administration> <Alarm group>).

To trigger an alarm definition byte 1 and definition byte 2 are always analyzed.

(Please see chapter Additional and continuative documents for detailed information in further documentation on parameters).



m: Grouped zones

#### 6.3.4 Zone alarm

A zone alarm is triggered when the allocated zone has triggered an alarm. The zone alarm is relayed on the digital output to to which it is allocated. Projects can be set-up for n x 4 zone alarms. The trigger of the zone alarm is defined by configuring the following parameters:

- [P073] A1D1 Definition Byte 1 Alarm 1
- [P074] A1D2 Definition Byte 2 Alarm 1
- [P075] A2D1 Definition Byte 1 Alarm 2
- [P076] A2D2 Definition Byte 2 Alarm 2
- [P077] A3D1 Definition Byte 1 Alarm 3
- [P078] A3D2 Definition Byte 2 Alarm 3
- [P079] A4D1 Definition Byte 1 Alarm 4
- [P080] A4D2 Definition Byte 2 Alarm 4

To trigger an alarm definition byte 1 and definition byte 2 are always analyzed.

(Please see chapter Additional and continuative documents for detailed information in further documentation on parameters).

#### Zones

**Digital outputs** 



n: number of zones depending on MCU/PCU

Z: a zone

#### 6.4 Virtual digital output

Control system conditions can be relayed to real digital outputs over the so-called virtual digital outputs.

**Digital outputs** 



#### 6.5 Further data

#### 6.5.1 Release limit values

In order to enable controller-surpassing functions, such as cascading heating-up over several controllers, digital outputs of type <Release limit value n reached and group released> (inverted signal possible) can be configured. For details on parameter configuration, please see the operating manual for temperature control system flex-otemp® Parameters (chapter Group Functions).

#### **Digital outputs**



m: Grouped zones

#### 6.5.2 Heat sink temperature limit value

An exceeding of the heat sink temperature can be monitored by the controller if a project is set up and configured (parameter [SP12] S1D2, please see operating manual temperature control system flexotemp® Parameter) accordingly. A digital output of an RS485 component of type <Heat sink temperature limit value exceeded> transmits this signal to an output.



Digital outputs

#### 6.6 Analog outputs

Analog outputs can be used for

- relaying output values
- standardized relaying of measured values
- relaying of CoDeSys variables



n: number of zones depending on MCU/PCU

Z: a zone

A physical analog output of an E/A component is defined through

- a description a) as provided by flexotempMANAGER
- a standard name b) as provided by the system that can be changed by the user
- a type c) and a corresponding definition d)
- a CoDeSys variable d) for the programming of own functions (for controllers with Soft-PLC option)

∎+⁄⊂ AlOO4 [CAN:4]->Outputs> a)	×3 b)	c)	d)
	Name	Туре	Definition
Output AO 1 (X3. 1- 3)	005AI004.A01		
Output AO 2 (X3. 4-6)	005AI004.A02		
Output AO 3 (X3. 7-9)	005AI004.A03		
Output AO 4 (X3.10-12)	005AI004.A04		
,	,		

Example: E/A component AIO04 with 4 analog outputs.

Projects can be set-up for n control outputs and measured values. A control output / measured value is relayed on those analog outputs to which it is allocated.

# 7 Communication by Profibus

The master component can be addressed by Profibus DP and/or Profibus DPEA.

For Profibus DPEA

- specify the communication parameter [CP13] DPEA Profibus DPEA protocol = ON
- configure the communication settings and the object lists for the input and output buffers (SPS) under <Project>
   Profibus DPEA>

The procedure for

- project setup and configuration with flexotempMANAGER
- test in Online mode without control and/or for debugging of input and output buffers (SPS)
- necessary settings of Profibus DPEA for integration in Profibus of S7

are detailed described in the corresponding protocol descriptions (see chapter 7Additional and continuative documents).

# 8 Communication by PROFINET IO

The master component can be addressed by PROFINET IO, when one master component with the mnemonic "PNIO" is used.

#### For PROFINET IO

configure the communication settings and the object lists for the input and output buffers (SPS) under <Project>
 PROFINET IO>

The procedure for

- project setup and configuration with flexotempMANAGER
- test in Online mode without control and/or for debugging of input and output buffers (SPS)
- necessary settings of PROFINET IO for integration in a PROFINET network

are detailed described in the corresponding protocol descriptions (see chapter 7Additional and continuative documents).

The procedure of project setup and configuration in flexotempMANAGER and the necessary settings for integration in a PROFINET network are detailed described in the corresponding protocol descriptions (see chapter 7Additional and continuative documents).

## 9 Direct IOs

Direct IOs allow direct access to digital / analog in/outputs of flexotemp® components via CAN-Bus, Ethernet, Profibus, PROFINET IO and CoDeSys. A maximum of 300 Direct IOs can be processed.

Menu bar $\rightarrow \langle v   ew \rangle \langle Pro   ect \rangle$ , Register $\langle Pro   ect \rangle$ , $\langle D   rect   O   ect \rangle$	roject>, Register <project>, <direct ios=""></direct></project>
---	---

Direct IOs	Selection item Direct IO is displayed in the  Project  window below the master component.
	Direct IOs are available since flexotempMANAGER-Version 1.04.00 for components with software version kk4009z (see chapter PSoftware version of components)
	■ TCPT08 ■ TC12
	■ PT12
	DIO16_CI
	DIO16_CI_SPL
	AIO04
	DO08R
	■ MPI02
	■ CANAIN08
	■ CANTC12
	CANTC 24
	■ CANIO08
	are available.
	flexotemp® components are displayed in the  Direct IOs  <component groups=""> window. If there are no Direct IOs it is displayed under <variable>.</variable></component>

#### 9.1 Accessing Direct IOs in flexotempMANAGER

There are different ways to access Direct IOs, i.e.

- I/O buffer access
- CAN access
- CoDeSys access (see chapter Access via CoDeSys)

Which access is possible depends on the flexotemp® component.

#### 9.1.1 I/O buffer access

Using I/O buffer access, the Direct IOs are accessed via the IN-/OUT buffer of the master component MCU/PCU to which the Direct IOs are mapped.

Advantage	There is no additional utilization of the internal CAN bus from the access process.
Disadvantage	The in-/output is refreshed during the MCU/PCU master component project setup cycle (depends on the number of connected flexotemp® components).
Access time	Depends on the slave component, usually 500 msec.

#### 9.1.2 CAN access

Using CAN access

- Writing to outputs occurs directly via writing the Direct IO resembling CAN object to the flexotemp® component.
- Reading of the inputs occurs cyclically. All Direct IOs defined in the Direct IO table (see chapter *¬*Direct IOs table) are read subsequently. The number of Direct IOs in the table is the determinant. There is a minimum wait of 10 msec between each reading of a Direct IO to avoid an excessive increase of CAN utilization and to ensure the remaining functions.

Advantage	Fast access.	
Disadvantage	Additional utilization of the CAN bus.	
Access time	From firmware version PCUMCU 4513A For the first 20 objects < 100 ms	
	Then dependent of number of objects in table, system design, components configured	

#### 9.2 Direct IOs table

All flexotemp® components with a set project are listed under selection item Direct IOs.



# Select table element <Create new Direct IO>

flexotempMANAGER - Unnamed *				_ @ ×
File Edit Communication View Extras ?				
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· · · · · · · · · · · · · · · · · · ·				
Communication server	lease consider the references in the operat	ting instruction of		
Commentary	view NodelD Component	Type	Selected	
B 01 PC0018	Create new Direct 10>			
- M Communication				
Time server     Direct 10	N		×	
System parameters     Comp	meri			
Note of zone floort blocks     Node	D <1> TCPT08 <tcpt08></tcpt08>	-	Abbrackan	
Profibus DPEA     Viscol	la .	_	Accrecition	
Direct IOs	vit A/2 (U) holles access)			
Inputs				
Vitual data outouts	Available	Selected		
<ul> <li>Measured values</li> <li>0 - 1</li> </ul>	nput Al 01 (K1. 1-3)			
Group administration	nput Al 02 (x1, 4-6)			
⊕ ∰U TCPT00 3-1	nput AI 04 (<1.10-12)			
Create new component > 5.1	nput Al 05 (x2, 1+3) nput Al 06 (x2, 4, 6)			
6-1	nput AI 07 (x2, 7, 9)			
7-1	nput AI 08 (x2.10-12)			
Project 🐉 Status 🔚 Trend				
Press button F1 for help.			SINGLE MODE OFFLI	NE (TREND OFFLINE 🛒 📻

# Select from dialog window <Component> (flexotemp® component) <Variable> (In-/output and Access mode)

🔩 Project 🛃 Status 💽 Trend Press button F1 for help.

The available in-/outputs for the respective access mode are displayed under <Available>

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Select in-/outputs and use > to transfer to the <Selected> window

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	PCII048aDirectID:			
Communication server	Please consider the references in the operat	ing instructional		
- Commentary			Later and	
🖹 🙀 PCU018	Index NodelD Component	Type Variable	Selected	
Datasheet				
- Time server	Direct 10s		×	
<ul> <li>System parameters</li> </ul>	Concerned		1	
E Sche parameters	Under the Tentron (Tentron)		<u>0K</u>	
<ul> <li>Name of zone/Input blocks</li> <li>Deathure DODA</li> </ul>	Indep (1) Terros (Terros)		Abbrechen	
Direct IOs	Variable			
Inputs	Inputs X1.A/2 (I/D buffer access)		-	
<ul> <li>Virtual digital inputs</li> </ul>	Available	Selected		
<ul> <li>Virtual digital outputs</li> </ul>	1 : Inter AI 02 0(1 4 5)	0. Investel 01 001 1:31		
Group administration	2 - Input AI 03 (41. 7-9)			
TCPT00	3 - Input AI 04 (x1.10-12)			
<create component="" new=""></create>	5 - Input Al 05 (42, 11-3) 5 - Input Al 06 (42, 4, 6)			
- Greate new component>	6 - Input AI 07 (c2. 7-9)			
	7 - Input AI 08 (c2.10-12)			
	1			
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Press button F1 for help.			SINGLE MODE OFFLINE TREN	D OFFLINE 💐 🛲
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The selected in-/output of the flexotemp® component is displayed in the Direct IOs table.

The Direct IO table is transferred to MCU/PCU to write the project setup for the master component and from there it is saved to EEPROM.

Direct IOs tableThe direct IOs table displays the following information:IndexIndex of Direct IO's. The variables CAN bus, Ethernet,<br/>Profibus, PROFINET IO, CoDeSys are accessed via this<br/>index (see 겨Access via Direct IOs).NodeIDNodeID of flexotemp® component.ComponentDisplays component / flexotemp® component

Туре	Type of Direct IO. The type is necessary for correct read- ing / writing of Direct IOs (see chapter <i>P</i> Direct IOs table - Type).
Variable	Displays Direct IO. Direct IO may be read only (RO) or read and write (RW).
Selected	Displays which in-/output of the flexotemp® component is allocated to the Direct IOs.

Making changes to the Direct IOs table Once there are Direct IO entries in the table, changes can be made to the Direct IOs table by



selecting the Direct IO via primary mouse key  $\rightarrow$  press secondary mouse key  $\rightarrow$  the respective selection menu is displayed.

The Direct IO's table can be changed.



Once an in-/output for Direct IOs is selected and successfully allocated it is <u>not</u> available for project setup anymore. Then <Direct IOs> is displayed in the |Project| window under <Definition> at the flexotemp® component in-/outputs.

#### 9.2.1 Direct IOs table - Type

The Direct IO type defines how the master component MCU/PCU is expecting the Direct IO value.

If the type is defines as **WORD** the user must send the value via CAN-Bus/Ethernet/Profibus/PROFINET IO to the master component as a **WORD**.

If, in addition, a type comes with a bit mask (see column <Selected> only the selected bits of the bit mask are read. This only applies to digital in-/outputs. The bit mask ensures that only digital outputs defined for the Direct IOs are set by the Direct IO. All others are still available for project setup and are still controlled thereby.

## 10 Status

The status page shows

- the data sheet belonging to the component (independent of <Online>)
- the operating instructions (when existing) belonging to the component
- communication status (communication server master component slave components)
- time server status
- system parameter status
- zone parameter status
- pre-defined status views of
  - single parameters, flags, timer
  - project setup
  - ■in-/outputs
  - the communication via Profibus/PROFINET IO
  - measured readings on the component
  - alarm conditions
  - Date / Time

if communication is <Online>.

#### Menu bar → <View> <Project>, Register <Status>

System and zone parameters are defined for the entire system, i.e. the same descriptions, value ranges, etc. apply for project and status.

A parameter change is different whereby

- Project a static pre-set occurs, which is explicitly written to the controller / which must be read by the controller.
- Status a dynamic change occurs, i.e. the controller is directly accessed online.

An exception is communication. A change in status only impacts the project for the selected communication parameters.

#### **10.1 Status Communication**

In addition, <Status Communication> view allows to define slots.

Status reads its settings from the project (see chapter *¬*View communication). When changing communication parameters in <Status Communication> the currently changed parameters are written to the controller. All selected communication parameters are adopted by project setup.

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File Edit Communication View Extras ?		
🗅 😅 🖬   X 🖻 🖻 🎒 🦹 📑 🛃		
PCU048 [IP 192.168.1.236]     Datasheet     Status Communication     Status System parameters     Status System parameters     Status Control parameters     Status control parameters     Status controling     Status controling     Status projection     Status profibus     Status priorect IOs	Coding switch Coding switch Device ID For device ID = default, fixed default addresses are used for the PCU048.	Changes were adopted by the projection !
Status of virtual digital inputs		Changes were adopted by the projection !
Status of virtual digital outputs	CP18-21 IP1 -4 Base IP	192 . 168 . 1 . 236
Time/Date	IP	192 . 168 . 1 . 236
Create new status view>	CP22-25 SUB1-4 Subnet mask	255 . 255 . 255 . 0

#### 10.2 Status Time Server

The <Status Timeserver> view shows the current parameter settings for the time server.



The IP address of the time server (SP42...SP45]) executing the time synchronization as well as the time zone ([SP46]) can be changed here. Also, time synchronization ([SP41]) can be turned on / off here.

#### 10.3 Info page

When selecting the component, an information page with an additional information list is displayed that states the condition of communication within a project. Normally, this list is empty indicating that communication to the component is in order.

In the event of an error in communication, the component causing the error is marked as well as the relating master component. An error is recognized immediately and, by opening the project tree, quickly found.

The additional information list is in plain text.

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PCU048 [IP 192.168.1.236] Datasheet Status Communication Status System parameters Status Zone parameters Status Control parameters Status of virtual digital inputs Status of virtual digital outputs Status of virtual digital outputs Status of virtual digital outputs Status I/O buffer CAN components Time/Date Create new status view> DIO16_CI [Slot number 1] CANEC Node guarding error (or parameters) Node guarding error (or parameters)	CANBC CANBC CANBC CANBC-82????	
Project 😹 Status 📴 Trend		
Press button F1 for help.		ONLINE TREND ONLINE 🛒 🗂

flexotempMANAGER removes the indicators on the components after resolving the errors.

#### **10.4 Parameters**

Aside from the two overall views of all system and zone parameters, parameter conditions are summarized in socalled status views for better viewing purposes.

Here,

- the single component has got no or one status views (Status)
- DIO16\_CI, BACI, CANCT: two status views (Status I/O, Status Zone)
- Components with identification SPL: three status views (Status I/O, Status Zone, Status SPL)
- the master component has got more than three status views and allows for the definition of own status views.

The status views have in common the display format of

- Numerical value (e.g. setpoint value, actual value, etc.) [unit, if available]
- Text (e.g. status)
- Bar (e.g. degree of
- operation)
- LED (red: Alarm active; green: input active)

For the master components, the status for

all 8 System Inputs	(green: input active)
all 4 System Alarms	(red: Alarm ac- tive)

is shown as an LED display.

#### 10.4.1 Status Display Master Component

All zones are repeatedly scanned in sequence and their conditions are updated in the status views.

The pre-defined views of the master component are:



In

- Istatus view <Status> Zone 1...n
- *¬*Status view <Status control parameters> Zone 1...n
- Status view <Status Controller> Zone 1...n
- Status view <Status Channel flag/Timer> Zone 1...n

the following standard views are always displayed.

Display	Display Format	Parameters
>	Identification of zone currently being processed	
Sequential numbers	Zone number 1n for identification	
Zone name	Zone name 1n for identification	
Setpoint	Numerical value with unit	[P001] SP
Actual value	Numerical value with unit	Controlled Actual Value
Degree of operation	Numerical value with unit and bar display format	[P002] OPWR
Current	Numerical value with unit	Current
Status	Text (see chapter PStatus controller/ Master component)	See Chapter Status controller/Master component

	PCU048 [IP 192.168.1.236]>Status											
System inputs 00000000 System alarm 00001												
		Zone	Setpoint value	Actual value	Degree of operation	Current	Status	LV 1				
	1	Zone 1	100.0 ℃	25.0 °C	10 %	0.0 A	MA					
	2	Zone 2	100.0 °C	25.0 °C	20 %	0.0 A	MA					
	3	Zone 3	100.0 °C	25.0 °C	30 %	0.0 A	MA					
	4	Zone 4	100.0 °C	24.9 °C	100 %	0.0 A	Id					
	5	Zone 5	100.0 °C	25.0 °C	100 %	0.0 A	Id					
	6	Zone 6	100.0 °C	1999.9 °C	0%	0.0 A	tCb					
	7	Zone 7	100.0 °C	1999.9 °C	0%	0.0 A	tCb					
	8	Zone 8	100.0 °C	1999.9 °C	0%	0.0 A	tCb					
	9	Zone 9	100.0 °C	1999.9 °C	0%	0.0 A	tCb					
	10	Zone 10	100.0 °C	1999.9 °C	0%	0.0 A	tCb					
	11	Zone 11	100.0 °C	1999.9 °C	0%	0.0 A	tCb					
	12	Zone 12	100.0 °C	1999.9 °C	0%	0.0 A	tCb					
	13	Zone 13	100.0 °C	1999.9 °C	0%	0.0 A	tCh					

The status views display further parameters in addition to the standard views.

For further details on parameters, please see the operating manual for temperature control system flexotempMA-NAGER and protocol descriptions with corresponding object lists (see chapter *¬*Additional and continuative documents).

10.4.1.1 Status view <Status> Zone 1...n

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x DCI 1000 //D 100 100 100 100 100 100 100 100 100 10											
PCU048 [IP 192,168.1,236]											
□-□ PCU048 [IP 192.168.1.236] System inputs のなのなののの System alarm のなのな											
Datasheet	Luia	1									
Status Communication	LV 3	LV 4									
Status Time server     1 Zone 1 100.0 C 25.0 C 10 % 0.0 A MA											
→ Status System parameters 2 / 200 2 / 100.0 °C 25.0 °C 20 % 0.0 A MA											
5 7 2018 4 100 0 23.0 °C 100 % 0.0 A 10											
Status control parameters 6 2000 € 100.0 °C 1999.9 °C 0.0 °C 0.0 A +Cb											
□ Status controling 7 Zone 7 100.0 °C 1999.9 °C 0 % 0.0 A tCb											
□ Status channel flan / timer 8 Zone 8 100.0 °C 1999.9 °C 0 % 0.0 A tCb											
Status projection 9 Zone 9 100.0 ℃ 1999.9 ℃ 0 % 0.0 A tCb											
10 Zone 10 100.0 ℃ 1999.9 ℃ 0 % 0.0 A tCb											
11 Zone 11 100.0 ℃ 1999.9 ℃ 0 % 0.0 A tCb											
12 Zone 12 100.0 ℃ 1999.9 ℃ 0 % 0.0 A tCb											
Status or virtual digital inputs 13 Zone 13 100.0 °C 1999.9 °C 0 % 0.0 A tCb											
Status of virtual digital outputs 14   Zone 14   100,0 ℃   1999,9 ℃ 0 % 0.0 A tCb											
Status I/O buffer CAN components 15 Zone 15 100.0 °C 1999.9 °C 0 % 0.0 A tCb											
Time/Date 16 Zone 16 100.0 ℃ 1999.9 ℃ 0 % 0.0 A tCb											
Create new status view> 17 Zone 17 100.0 °C 1999.9 °C 0 % 0.0 A tCb											
19 2016 19 100.0 °C 1999,9 °C 0 % 0.0 A CC											
21 2016 21 0.0 °C 1999,9 °C 0.0 M											
24 Zone 24 0.0 °C 1999.9 °C 0 % 0.0 A											
25 Zone 25 0.0 °C 1999.9 °C 0 % 0.0 A											
26 Zone 26 0.0 °C 1999.9 °C 0 % 0.0 A											
27 Zone 27 0.0 ℃ 1999.9 ℃ 0 % 0.0 A											
28 Zone 28 0.0 °C 1999.9 °C 0 % 0.0 A											
29 Zone 29 0.0 °C 1999.9 °C 0 % 0.0 A											
30 Zone 30 0.0 °C 1999.9 °C 0 % 0.0 A											
31 Zone 31 0.0 °C 1999.9 °C 0 % 0.0 A											
> 32 Zone 32 0.0 °C 1999.9 °C 0 % 0.0 A											
33 Zone 33 0.0 ℃ 1999.9 ℃ 0 % 0.0 A											
1 134 IZone 34 Ι 0.0 °CΙ 1999,9 °CΙ 0.% Ι 0.0 ΔΙ Ι											

Display	Display Format	Parameters (see also ⊅Status view <status <br="" channel="" flag="">Timer&gt; Zone 1n)</status>
LV1LV6	No display: deactivated; LED red: alarm active	Limit value; Channel flag 2, Bit 0 to 5
AL	No display: deactivated; LED red: alarm active	Temperature alarm; Channel flag 1, Bit 4
tCb	No display: deactivated; LED red: alarm active	Sensor break; Channel flag 1, Bit 1 or 7
tCP	No display: deactivated; LED red: alarm active	Sensor incorrect polarity; Channel flag 1, Bit 0 or 6

FAL	No display: deactivated; LED red: alarm active	Sensor short-circuit; Channel flag 1, Bit 5
I-	No display: deactivated; LED red: alarm active	Thyristor alarm; Channel flag 1, Bit 2
СТА	No display: deactivated; LED red: alarm active	Current tolerance alarm; Channel flag 1, Bit 3
INP1	No display: deactivated; LED green: input active	Zone Input 1; Channel flag 4, Bit 0
INP2	No display: deactivated; LED green: input active	Zone Input 2; Channel flag 4, Bit 1

10.4.1.2 Status view <Status control parameters> Zone 1...n

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PCU048 [IP 192.168.1.236]->Status control parameters											
⊡ 📴 PCU048 [IP 192.168.1.236]	System inputs	99999	36696	System	n alarm 🕜	000	۵				
📲 Datasheet		00000					-				
Status Communication	Zone	Setpoint value	Actual value	Degree of operation	Current	Status	XPH	IDH	ПН		
- 🕒 Status Time server	1 Zone 1	100.0 ℃	25.1 °C	10 %	0.0 A	MA	10.2 %	49 s	49 s		
Status System parameters	2 Zone 2	100.0 ℃	25.1 °C	20 %	0.0 A	MA	5.5 %	28 s	28 s		
🕀 🛛 👽 Status Zone parameters	3 Zone 3	100.0 ℃	25.1 °C	30 %	0.0 A	MA	9.3 %	49 s	49 s		
Status	4 Zone 4	100.0 °C	25.0 °C	100 %	0.0 A	Id Id	14.4 %	57 5	57 5		
Status control parameters	5 Zone 5	100.0 °C	25.0 °C	100 %	0.0 A	10	11.1.9/	57.5	57.5		
E Status controling		100.0 °C	1000.0.%	0%	0.0 A	ECD FCD	0.2%		57 S		
	2 Zone 2	100.0 °C	1000.0.%	0%	0.0 A	tCD FCb	9.3 %	495	495		
Status channel riag / timer	9 Zone 9	100.0 °C	1999.9 °C	0%	0.0 A	ECD ECD	10.6.%	40 c	40 c		
Status projection	10 Zone 10	100.0 °C	1000.0 %	0%	0.0 A	ECD ECD	54%	28.6	28.6		
Status profibus	11 Zone 11	100.0 °C	1999.9 %	0%	0.0 4	tCh	11.6 %	57 s	57 s		
Status Direct IOs	12 Zone 12	100.0 °C	1999.9 °C	0%	0.0 A	tCh	9.6 %	49 5	49 5		
Status of virtual digital inputs	13 Zone 13	100.0 °C	1999.9 °C	0%	0.0 A	tCh	6.0 %	95	95		
Status of virtual digital outputs	14 Zone 14	100.0 °C	1999.9 °C	0%	0.0 A	tCb	6.0 %	95	95		
Status I/O buffer CAN components	15 Zone 15	100.0 °C	1999.9 °C	0%	0.0 A	tCb	6.0 %	95	95		
Time/Date	16 Zone 16	100.0 °C	1999.9 °C	0%	0.0 A	tCb	6.0 %	95	95		
Create pew status views	17 Zone 17	100.0 °C	1999.9 °C	0%	0.0 A	tCb	6.0 %	95	9 s		
	18 Zone 18	100.0 °C	1999.9 °C	0%	0.0 A	tCb	6.0 %	9 s	9 s		
	19 Zone 19	100.0 °C	1999.9 °C	0%	0.0 A	tCb	6.0 %	9 s	9 s		
	20 Zone 20	100.0 °C	1999.9 °C	0%	0.0 A	tCb	6.0 %	9 s	9 s		
	21 Zone 21	0.0 °C	1999.9 °C	0%	0.0 A		0.0 %	0 s	0 s		
	22 Zone 22	0.0 ℃	1999.9 °C	0%	0.0 A		0.0 %	0 s	0 s		
	23 Zone 23	0.0 ℃	1999.9 °C	0%	0.0 A		0.0 %	0 s	0 s		
	24 Zone 24	0.0 ℃	1999.9 °C	0%	0.0 A		0.0 %	0 s	0 s		
	25 Zone 25	0.0 ℃	1999.9 °C	0%	0.0 A		0.0 %	0 s	0 s		
	26 Zone 26	0.0 ℃	1999.9 °C	0%	0.0 A		0.0 %	0 s	0 s		
	> 27 Zone 27	0.0 ℃	1999.9 °C	0%	0.0 A		0.0 %	0 s	0 s		
	28 Zone 28	0.0 ℃	1999.9 °C	0%	0.0 A		0.0 %	0 s	0 s		
	29 Zone 29	0.0 °C	1999.9 °C	0%	0.0 A		0.0 %	0 s	0 s		
	30 Zone 30	0.0 °C	1999.9 °C	0%	U.U A		0.0%	U s	Us		
	31 Zone 31	0.0 %	1999.9 %	0%	0.0 A		0.0%	0.5	0.5		
	32 Zone 32	0.0 %	1999,9 °C	0%	0.0 A		0.0%	0.5	U S		
	33 Zone 33	0.0 %	1999.9 %	0 %	0.0 A		0.0%	0.5	0.5		
	34 2016 34	1 0.0 °C	1999'9 vC	U %	0.0 A		0.0 %	US	US		

Display	Display Format	Parameters
XPH	Numerical value with unit	[P042] XPH – Heating Proportional Band
TDH	Numerical value with unit	[P043] TDH – Heating Derivative Time
TIH	Numerical value with unit	[P044] TIH – Heating Integral Time
СТН	Numerical value with unit	[P045] CTH – Heating Sampling Time
XPC	Numerical value with unit	[P046] XPC – Cooling Proportional Band
TDC	Numerical value with unit	[P047] TDC – Cooling Derivative Time
TIC	Numerical value with unit	[P048] TIC – Cooling Integral Time
СТС	Numerical value with unit	[P049] CTC – Cooling Sampling Time
Active control parameter set	Text	Channel flag 6, Bit 6

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	, PCU048	) [IP 192.168.1.23	6]->Status con	troling										
Sys	රාථ System inputs ගලලලලල System alarm ලලලල													
	Zone	Setpoint value	Actual value	Degree of operation	Current	Status	CTRL-SI	atus		CTRL-Flag	CTRL-Loop	CTRL-Type	P	I
1	Zone 1	100.0 °C	25.3 °C	10 %	0.0 A	MA	0 - Contr	rol		0×01		5	0.00	í — —
2	Zone 2	100.0 °C	25.3 °C	20 %	0.0 A	MA	0 - Contr	rol		0x01		5	0.00	J
3	Zone 3	100.0 °C	25.2 °C	30 %	0.0 A	MA	0 - Contr	rol		0x01		5	0.00	j
4	Zone 4	100.0 °C	25.3 °C	100 %	0.0 A	Id	2 - Ident	ification pha	re 1	0×09	CTRL Flag Z	ene <zone 4=""></zone>		
5	Zone 5	100.0 °C	25.2 °C	100 %	0.0 A	Id	2 - Ident	ification pha	se 1	0×0			_	
6	Zone 6	100.0 °C	1999.9 °C	0%	0.0 A	tCb	0 - Contr	rol		<del>0×0</del>	Sit Unit Ident	the ation On/Of	f	
7	Zone 7	100.0 °C	1999.9 °C	0%	0.0 A	tCb	0 - Contr	rol		0x0 <mark>2</mark>	Bit let stat	idi philipation a	t nevt setno	int valu
8	Zone 8	100.0 °C	1999.9 °C	0%	0.0 A	tCb	0 - Contr	rol		0×0	Bit 2=0 PID o	controller for co	ioling active	:
9	Zone 9	100.0 °C	1999.9 °C	0%	0.0 A	tCb	0 - Contr	rol		0×03	Dit 3=1 Ident	incation neatin	y active	
10	Zone 10	100.0 °C	1999.9 °C	0%	0.0 A	tCb	0 - Contr	rol		0x03	Bit 4=0 Ident	incation cooling	g active	
1	Zone 11	100.0 °C	1999.9 °C	0%	0.0 A	tCb	0 - Contr	rol		0x03	Bit 6-0 Ident	ification error (r	emperature	drift too
> 12	2 Zone 12	100.0 °C	1999.9 °C	0%	0.0 A	tCb	0 - Contr	rol		0×03	Bit 7=0 Interv	/ention unon n	arameters h	
13	3 Zone 13	100.0 °C	1999.9 °C	0%	0.0 A	tCb	0 - Contr	rol		0x03		5	0.00	/
14	1 Zone 14	100.0 °C	1999.9 °C	0%	0.0 A	tCb	0 - Contr	rol		0×03		5	0.00	1
15	5 Zone 15	100.0 °C	1999.9 °C	0%	0.0 A	tCb	0 - Contr	rol		0x03		5	0.00	1
16	5 Zone 16	100.0 °C	1999.9 °C	0%	0.0 A	tCb	0 - Contr	rol		0×03		5	0.00	1
17	7 Zone 17	100.0 °C	1999.9 °C	0%	0.0 A	tCb	0 - Contr	rol		0x03		5	0.00	1
18	3 Zone 18	100.0 °C	1999.9 °C	0%	0.0 A	tCb	0 - Contr	rol		0x03		5	0.00	1
19	9 Zone 19	100.0 °C	1999.9 °C	0%	0.0 A	tCb	0 - Contr	rol		0x03		5	0.00	1
20	2 Zone 20	100.0 °C	1999.9 °C	0%	0.0 A	tСb	0 - Contr	rol		0x03		5	0.00	1
2	I Zone 21	0.0 °C	1999.9 °C	0%	0.0 A		0 - Contr	rol		0×01		5	0.00	1
Z	Z Zone 22	0.0 °C	1999.9 °C	0%	0.0 A		0 - Contr	rol		0×01		5	0.00	1
23	3 Zone 23	0.0 °C	1999.9 °C	0%	0.0 A		0 - Contr	rol		0×01		5	0.00	1
24	1 Zone 24	0.0 °C	1999.9 °C	0%	U.U A		U - Contr	rol		0x01		5	0.00	1
2	20ne 25	0.0 °C	1999.9 °C	0%	0.0 A		U - Contr	rol .		0x01		5	0.00	1
20	2 Zone 26	0.0 °C	1999.9 °C	0%	0.0 A		0 - Contr	10I 1-1		0x01		5	0.00	1
2	7 Zone 27	0.0 °C	1999.9 °C	0%	0.0 A		0 - Contr	101 		0x01		5	0.00	
20	20ne 28	0.0 °C	1999.9 °C	0 %	0.0 A		0 - Contr	ioi iol		0x01		5	0.00	
	7 Zone 29	0.0 %	1999.9 °C	0%	0.0 A		0 - Contr	ol .		0x01		5	0.00	1
30	20118-30 1 Zone 31	0.0 %	1999.9 °C	0.%	0.0 A		0 - Contr	ol .		0x01		5	0.00	
3.	2 Zone 32	0.0 °C	1999.9 °C	0.%	0.0 A		0 - Contr	ol .		0x01		5	0.00	1
30	2 Zone 32	0.0 °C	1000.0.90	0.%	0.0 A		0 - Contr	ol .		0×01		5	0.00	1
3	1 Zone 34	0.0 °C	1000.0.%	0.%	0.0 A		0 - Contr	ol		0×01		5	0.00	1
3.	1 ZUNE 34	0.0 *C	1999.9 *C	0 %	0.0 A		o - cond	01		0001		5	0.00	1

#### 10.4.1.3 Status view <Status Controller> Zone 1...n

Display	Display Format	Parameters
CRTL-Status	Text	Displays the current position in the sequential chain of the algorithm:
		0 - Control
		1 - Identification check of temperature drift
		2 - Identification phase 1
		3 - Identification phase 2
		4 - Identification Loop Control
		21 - Cooling adaptation start phase
		22 - Cooling adaptation check of temperature drift
		23 - Cooling adaptation phase 1
		24 - Cooling adaptation phase 2
		25 - Cooling adaptation phase 3
		26 - Cooling adaptation phase 4
CRTL-Flag	Text (see list of values *)	
CRTL-Loop	Text	Current value control
		0 - not o.k.
		10 - ""
		Else o.k.
CRTL-Type	Numerical value	Structure change-over controller (for servicing)
Ρ	Numerical value	P part of controller
1	Numerical value	I part of controller
D	Numerical value	D part of controller

\*) CTRL-flag and on "cursor-over" the fields containing hexadecimal number values brings up value lists specifying set bits.

Example above: Bit 0=1 and Bit 2=1. Several bits can be set at the same time.

#### 10.4.1.4 Status view <Status Channel flag/Timer> Zone 1...n

fexe tamp	new flexotempMANAGER - Unnamed *																	
File	<u>E</u> dit Comm	unication <u>V</u> iew	Extras ?															
	- 1 62 🗖 🔤				1 8 <b>6</b> 8 8 1		6											
1			(  8    💵   8	🔭 🗌 🛛 한 한 한 한 한 한 한 한 한 한 한 한 한 한 한 한 한 한	이번 이번													
	🔍 , PCU048	(IP 192.168.1.23	6]->Status char	nnel flag / timer														
	<u>60</u>																	
Sys	stem inputs	000000		System	n alarm 🕚		9											
	Zone	Setpoint value	Actual value	Degree of operation	Current	Status	CF 1	CF 2	CF 3	CF 4	CF 5	CF 6	CF 7	CF 8	CF 9	CF10	T1	T2
	1 Zone 1	100.0 °C	25.5 °C	10 %	0.0 A	MA	0x00	0x82	0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00	0 s	0 s
	2 Zone 2	100.0 °C	25.5 °C	20 %	0.0 A	MA	0x00	0x82	0x00	0×00	0x00	0×00	0x00	0x00	0x00	0x00	0 s	0 s
1	3 Zone 3	100.0 °C	25.4 °C	30 %	0.0 A	MA	0x00	0x82	0x00	0×00	0x00	0x00	0x00	0x00	0x00	0x00	0 s	0 s
	4 Zone 4	100.0 °C	25.5 °C	100 %	0.0 A	Id	0x00	0x82	0x00	0×00	0x00	0x02	0×80	0x00	0x00	0x00	0 s	0 s
1	5 Zone 5	100.0 °C	25.4 °C	100 %	0.0 A	Id	0x00	0x82	0x00	0×00	0x00	0x02	0×80	0x00	0x00	0x00	0 s	0 s
	6 Zone 6	100.0 °C	1999.9 °C	0%	0.0 A	tCb	0x80	Chann	el flag 1	Zone <	:Zone E	>	0×80	0x00	0x00	0x00	0 s	0 s
	7 Zone 7	100.0 °C	1999.9 °C	0%	0.0 A	tCb	0x80		_			_	0×80	0x00	0x00	0x00	0 s	0 s
	8 Zone 8	100.0 °C	1999.9 °C	0%	0.0 A	tCb	0×80	Bit 0=0	Senso	polarity	/ senso	2	0×80	0x00	0x00	0x00	0 s	0 s
	9 Zone 9	100.0 °C	1999.9 °C	0%	0.0 A	tCb	0x80	Bit 1=0	Sensor	break	sensor :	2	0×80	0x00	0x00	0x00	0 s	0 s
1	l0 Zone 10	100.0 °C	1999.9 °C	0%	0.0 A	tCb	0×80	Bit 2=0	Current	or alarm	i (TAJ		0×80	0x00	0×00	0x00	0 s	0 s
1	11 Zone 11	100.0 °C	1999.9 °C	0%	0.0 A	tCb	0x80	DIC 3=0	Tompo	t tolerar	ice ala		0000	0000	0×00	0x00	0 s	0 s
1	l2 Zone 12	100.0 °C	1999.9 °C	0%	0.0 A	tCb	0×80	Bit 5-0	l Sensoi	sature a			0×80	0×00	0×00	0x00	0 s	0 s
1	13 Zone 13	100.0 °C	1999.9 °C	0%	0.0 A	tCb	0×80	Bit 6=0	Senso	nolariti			0×80	0x00	0x00	0x00	0 s	0 s
1	l4 Zone 14	100.0 °C	1999.9 °C	0%	0.0 A	tCb	0×80	Bit 7=1	Senso	break			0×80	0x00	0×00	0x00	0 s	0 s
1	l5 Zone 15	100.0 °C	1999.9 °C	0%	0.0 A	tCb	0x80	0,00	0.000	0.00	JXUU	0000	-0×80	0x00	0x00	0x00	0 s	0 s
1	l6 Zone 16	100.0 °C	1999.9 °C	0%	0.0 A	tCb	0x80	0x00	0x00	0×00	0×00	0×00	0×80	0x00	0x00	0x00	0 s	0 s
1	17 Zone 17	100.0 °C	1999.9 °C	0%	0.0 A	tCb	0x80	0x00	0x00	0×00	0×00	0x00	0x80	0x00	0x00	0x00	0 s	0 s
1	l8 Zone 18	100.0 °C	1999.9 °C	0%	0.0 A	tCb	0x80	0x00	0x00	0×00	0x00	0×00	0×80	0x00	0x00	0x00	0 s	0 s
1	l9 Zone 19	100.0 °C	1999.9 °C	0%	0.0 A	tCb	0x80	0x00	0x00	0×00	0x00	0x00	0x80	0x00	0x00	0x00	0 s	0 s
2	20 Zone 20	100.0 °C	1999.9 °C	0%	0.0 A	tCb	0x80	0x00	0x00	0×00	0x00	0x00	0×80	0x00	0x00	0x00	0 s	0 s
2	21 Zone 21	0.0 °C	1999.9 °C	0%	0.0 A		0x00	0x00	0x00	0×00	0x00	0x00	0x40	0x40	0x00	0x00	0 s	0 s
2	22 Zone 22	0.0 °C	1999.9 °C	0%	0.0 A		0x00	0x00	0x00	0×00	0x00	0×00	0x40	0x40	0x00	0x00	0 s	0 s
2	23 Zone 23	0.0 °C	1999.9 °C	0%	0.0 A		0x00	0x00	0x00	0×00	0x00	0x00	0x40	0x40	0x00	0x00	0 s	0 s
2	24 Zone 24	0.0 °C	1999.9 °C	0%	0.0 A		0x00	0x00	0x00	0×00	0x00	0×00	0x40	0x40	0x00	0x00	0 s	0 s
2	25 Zone 25	0.0 °C	1999.9 °C	0%	0.0 A		0x00	0x00	0x00	0×00	0×00	0×00	0x40	0x40	0x00	0x00	0 s	0 s
2	26 Zone 26	0.0 °C	1999.9 °C	0%	0.0 A		0x00	0x00	0×00	0×00	0x00	0×00	0×40	0x40	0x00	0x00	0 s	0 s
2	27 Zone 27	0.0 °C	1999.9 °C	0%	0.0 A		0x00	0x00	0×00	0×00	0x00	0×00	0×40	0x40	0x00	0x00	0 s	0 s
> 2	28 Zone 28	0.0 °C	1999.9 °C	0%	0.0 A		0x00	0x00	0×00	0×00	0x00	0×00	0×40	0x40	0x00	0x00	0 s	0 s
2	29 Zone 29	0.0 °C	1999.9 °C	0%	0.0 A		0x00	0x00	0x00	0×00	0x00	0×00	0x40	0x40	0x00	0x00	0 s	0 s
3	30 Zone 30	0.0 °C	1999.9 °C	0%	0.0 A		0×00	0x00	0×00	0×00	0x00	0×00	0×40	0x40	0×00	0x00	0 s	0 s
3	31 Zone 31	0.0 °C	1999.9 °C	0%	0.0 A		0x00	0x00	0x00	0x00	0x00	0x00	0x40	0x40	0x00	0x00	0 s	0 s
1 3	32 Zone 32	0.0 °C	1999.9 °C	0%	0.0 A		0x00	0×00	0x00	0x00	0x00	0x00	0x40	0x40	0×00	0x00	0 s	0 s
3	33 Zone 33	0.0 °C	1999.9 °C	0%	0.0 A		0x00	0x00	0x00	0x00	0x00	0x00	0x40	0x40	0x00	0x00	0 s	0 s
1 12	34 Zone 34	I 0.0.°⊂	1999.9 °C	0%	0.0 A		0×00	0x00	0x00	0x00	0x00	0x00	0x40	0x40	0x00	0x00	0 s	0 s

Display	Display Format	Parameters
CF1	Numerical value (see value list*)	Channel Flag 1
CF2	Numerical value (see value list*)	Channel Flag 2
CF3	Numerical value (see value list*)	Channel Flag 3
CF4	Numerical value (see value list*)	Channel Flag 4
CF5	Numerical value (see value list*)	Channel Flag 5
CF6	Numerical value (see value list*)	Channel Flag 6
CF7	Numerical value (see value list*)	Channel Flag 7
CF8	Numerical value (see value list*)	Channel Flag 8
CF9	Numerical value (see value list*)	Channel Flag 9
CF10	Numerical value (see value list*)	Channel Flag 10
Т 1	Numerical value with unit	Timer 1
T2	Numerical value with unit	Timer 2
Т3	Numerical value with unit	Timer 3
Τ4	Numerical value with unit	Timer 4

\*) Channel flag and on "cursor-over" the fields containing hexadecimal number values brings up value lists specifying set bits.

Example above: Bit 7 = 1

Several bits can be set at the same time.

#### 10.4.2Status display on components

Component-relevant parameters, in-/outputs, and measured readings on the components are displayed with their status.

Status I/O displays the inputs of the component in the sequence as they are allocated on the device.

In-/outputs	TYP	Definition	Status
In-/output DIO 01 (X2, 5)	digital input	Zone input 1 Zone 1>/Zone 1	
In-/output DIO 02 (X2. 6)	digital input	Group input 1 Group <1>/Group 1	
In-/output DIO 03 (X2, 7)	digital input	System input 1	
In-/output DIO 04 (X2, 8)	Heating	Zone <3>/Zone 3	30.00 %
In-/output DIO 05 (X2, 9) 👘	Heating	Zone <2>/Zone 2	20.00 %
In-/output DIO 06 (X2.10)	Heating	Zone <1>/Zone 1	10.00 %
In-/output DIO 07 (X2.11)	Heating	Zone <7>/Zone 7	0.00 %
In-/output DIO 08 (X2.12)	Heating	Zone <11>/Zone 11	0.00 %
In-/output DIO 09 (X3, 5)	Heating	Zone <1>/Zone 1	10.00 %
In-/output DIO 10 (X3. 6)	Heating	Zone <1>/Zone 1	10.00 %
In-/output DIO 11 (X3, 7)			
In-/output DIO 12 (X3. 8)			
In-/output DIO 13 (X3, 9)			
In-/output DIO 14 (X3.10)			
In-/output DIO 15 (X3.11)			
In-/output DIO 16 (X3.12)			

Zone status displays the zones ranged on the components in their project setup sequence.

Current in Voltage	I016_CI [Slot number 1]->Status zone L1 n status heating OFF	L2 L3	.0A				
	1	1					
	Zone	Degree of operation	Current tolerance alarm (CTA)/thyristor alarm (TA)	Current setpoint value	Cooling by impulses	Pause duration	Pulse duration
1	<1> Zone 1	10.00 %		0.7 A		0 ms	
2	<3> Zone 3	30.00 %		0.5 A		0 ms	
3	<7> Zone 7	0.00 %		0.8 A		0 ms	
4	<11> Zone 11	0.00 %		0.5 A		0 ms	
5	<2> Zone 2	20.00 %		0.7 A		0 ms	
6		0.00 %		0.0 A		0 ms	
7		0.00 %		0.0 A		0 ms	
8		0.00 %		0.0 A		0 ms	
9		0.00 %		0.0 A		0 ms	
10		0.00 %		0.0 A		0 ms	
11		0.00 %		0.0 A		0 ms	
12		0.00 %		0.0 A		0 ms	
13		0.00 %		0.0 A		0 ms	
14		0.00 %		0.0 A		0 ms	
15		0.00 %		0.0 A		0 ms	
16		0.00 %		0.0 A		0 ms	
•							•

#### 10.5 Status project setup

<Status Project setup> provides an overview of the components, call- and computation cycles, connected to the master component.

L, PCU048 [IP 192.168.1.236]->Status projectio	n	
60		
	Status	
PC11048	started	
Slaves (Number: 2)	OK	
Actual values (Number: 6)	OK	
Inputs/outputs (Number: 1)	OK	
Name of zone	OK	
CANPC (Number: 0)	OK	
Calling cycle of control channels in [msec]	500	
Calling cycle of SPS in [msec]	51	
Calculating time of SPS in [msec]	0	
SPS	started [0x30]	
Send / receive	not connected	
CANCT (NodelD: 1 / Number: 1)	OK	

#### **10.6 Status Profibus**

<Status Profibus> displays the input and output buffers of Profibus DP, respectively Profibus DPEA (communication parameter [CP13] DPEA – Profibus DPEA-protocol = ON) that are managed by the controller (Project setup and configuration see chapter *¬*Communication by PROFINET IO).

If the <SIO ON> key is activated, the buffers are no longer controlled by controls, but solely by flexotempMANA-GER. For details, please see protocol description Profibus DP, respectively Profibus DPEA (see chapter 7Additional and continuative documents)

#### **10.7 Status PROFINET IO**

If a master component with abbreviation "PNIO" is employed, <Status PROFINET IO> displays communication settings as well as the in-/output buffers of PROFINET IO that are managed by controls (Project setup and configuration see chapter <a href="https://www.communication.com">Communication</a> by PROFINET IO that are managed by controls (Project setup and configuration see chapter <a href="https://www.communication.com">Communication</a> by PROFINET IO that are managed by controls (Project setup and configuration see chapter <a href="https://www.communication.com">Communication</a> by PROFINET IO.



Communication settings PROFINET IO

- Version, Firmware of master component
- Possible status

	Status-message	Meaning
0	PROFINET IO not yet initialized	Before an initialization PROFINET IO is not operable. Wait until initialization is ready.
1	Data exchange active (with control)	The data is exchanged by bus. In a cyclical data exchange the input - and/or output data is trans- ferred between PROFINET IO controller and PROFINET IO de- vice.
2	Data exchange not active (with control)	The data is not exchanged by bus. The PROFINET IO device has been paused by the user program or had to go due to a bus error to the Stop state.
3	Initialization active (of master component)	The initialization is in progress. Wait.
4	PROFINET IO reset active (of master component)	A reset is executed. Wait.

- Communication status for example:
   SUCCESS, STATUS OK
   CABLE DISCONNECT (controls off)
- Station name (Settings in <Project> <PROFINET IO> and controls)
- IP, Subnet mask, Gateway settings set by controls
- byte sequence
- Timeout (all outputs are set to passive upon expiration of the time in seconds set here. If set to 0, the function is deactivated.)
- Number of slots, number of free bytes in-/output buffer (SPS), slot display (Settings in <Project> <PROFINET IO> and controls).

If the <SIO ON> key is activated, the buffers are no longer controlled by controls, but solely by flexotempMANA-GER. For details, please see protocol description PROFINET IO (see chapter *¬*Additional and continuative documents).

#### **10.8 Status Direct IOs**

Change to Status to see the current values of the Direct IOs.



The table of variables of Direct IOs compiled in the |Project| window via <Direct IOs>...

flexotempMANAGER - Unnamed *						_ 8 ×
File Edit Communication View Extras ?						
🗅 😅 🖬 🖇 🖻 🚳 🤗 🍺 👷 🛛		9 19 📫 🎊 é				
· · · · · · · · · · · · · · · · · · ·	*	18 [IP 192.168.1.236]->Direct IOs				
Communication server	Please consi	der the references in the operating	instruct	ionsl		
Commentary	- iouse como			1		
🖻 👘 PCU048 [IP 192.168.1.236]	Index NodeID	Component	Туре	Variable	Selected	
Datasheet	1 1	TCPT08 <tcpt08 1]="" [slot="" number=""></tcpt08>	WORD	• digital outputs X2/X3 (I/O buffer access)	Toput ALO1 (V1 1-2)	
Communication	3 2	TCPT08 <tcpt08 2]="" [slot="" number=""></tcpt08>	INT	Inputs X1/X2 (I/O buffer access)	Input AI 02 (X1, 4-6)	
Time server	4 2	TCPT08 <tcpt08 2]="" [slot="" number=""></tcpt08>	INT	Inputs X1/X2 (I/O buffer access)	Input AI 06 (X2. 4- 6)	
<ul> <li>System parameters</li> </ul>	5 1	DIO16_CI <dio16_ci 1]="" [slot="" number=""></dio16_ci>	WORD	👺 digital inputs X2/X3 (CAN access)	Bitmask 0xFFFF	
Zone parameters		gr <create direct="" io="" new=""></create>				
Name or zone/input blocks	•					•
Pronous DPEA						
Inputs						
Tool coding						
Virtual digital inputs						
<ul> <li>Virtual digital outputs</li> </ul>						
🗣 Measured values						
<ul> <li>Scoup administration</li> </ul>						
IDIO16_CI [Slot number 1]						
TCPT08 [Slot number 2]						
<pre>Generate new component&gt;</pre>						
Create new component>						
🗣 Project 🛃 Status 🛃 Trend	-1					
			_			
Press button E1 for help.				SINGLE MODE	TINUNE ITREND ONLIN	



.. provides the following display in the |Status| window

flexotempMANAGER - Unnamed *						_ 8 ×
File Edit Communication View Extras ?						
🗋 🗅 🚅 🖬   X 🖻 🖻 🎒 🍞 📑	😴 🛛 🖬 🕄 🖬	) IQ IQ 📫 🏠 é				
	* 🧕 PCU048	[IP 192.168.1.236]->Status Direct IOs				
E	Please conside	er the references in the operating in	struction	ns!		
Datasheet	Index NodeID	Component	Type	Variable	Selected	
Status Communication	>1 1	DIO16_CI <dio16_ci 1]="" [slot="" number=""></dio16_ci>	WORD	🐯 digital outputs X2/X3 (I/O buffer a	cce Bitmask 0xFC00	0x00.0
Status System parameters	2 2	TCPT08 <tcpt08 2]="" [slot="" number=""></tcpt08>	INT	Inputs X1/X2 (I/O buffer access)	Input AI 01 (X1. 1- :	25.
Status Zone parameters	3 2	TCPT08 <tcpt08 2]="" [slot="" number=""></tcpt08>	INT	Inputs X1/X2 (I/O buffer access)	Input AI 02 (X1, 4-	25.8
- Status	5 1	DIO16 CI <dio16 1]="" [slot="" ci="" number=""></dio16>	WORD	Inputs X1/X2 (1/O burrer access)	Bitmask OxEEEE	0x0008
Status control parameters		stoteller anotoller fotottamper tijt		agrantipate millio (anni access)		0.0000
Status projection						
Status profibus						
Status Direct IOs						
Status of virtual digital inputs						
Status of virtual digital outputs						
Status I/O buffer CAN components						$\smile$
Create pow status views						
DI016 CLISIot number 1]						
Datasheet						
Status I/O						
Status zone						
TCPT08 [Slot number 2]						
Reviect Na Status	-					
Press button E1 for bein				STMGLE MC		
I				DINGLE PIC		
## 10.9 Status virtual digital inputs

If virtual inputs are used, the condition of virtual digital data inputs can be viewed here (LED green: input active).

PCU048 [IP 192.168	(1.236)->Status of virtual digital inputs	
digital input		Status
digital input 1	001PCU048.VD101	<u>o</u>
algital input 2	001PCU048.VDI02	Ŭ,
digital input 3	001PCU048.VD103	<u> </u>
digital input 4	001PCU048.VD104	U U
digital input 5 digital input 6	001PCU048.VD105	<u> </u>
digital input 6	001PCU048.VD106	Ö
digital input 7 digital input 9	001PCU048.VDI07	U U
algital input o disital issuel 0	001PCU048.VD108	U U
digital input 5 diaital inaut 10	001PCU048.VD103	<u> </u>
digital input 10	001PCU040.VDI10	<u> </u>
digital input 17	001PCU040.70111	<u> </u>
digital input 12	001PCU040.VDI12	<u> </u>
digital input 13	001PCU040.7D113	<u> </u>
digital input 15	001PCU040.VDI14	<u> </u>
digital input 16	001PCU046.VDI15	ğ
digital input 17	00100040.00110	<u> </u>
digital input 19	00100040.0017	ĕ
figital input 19	001PCU048.VD119	ĕ
digital input 20	001PCU048 VDI20	ĕ
digital input 21	001PCU048 VDI21	X
digital input 22	001PCU048 VDI22	ă
digital input 23	001PCU048 VDI22	ă
digital input 24	001PCU048 VDI24	ă
digital input 25	001PCU048 VDI25	ă
digital input 26	001PCU048 VDI26	ă
digital input 27	001PCU048 VDI27	ă
digital input 28	001PCU048 VDI28	ă
digital input 29	001PCU048 VDI29	ă
digital input 30	001PCU048 VDI30	ă
digital input 31	001PCU048 VDI31	ă
diatal insul 22	001 PCU 049 V/DI 22	ĕ



The functionality is only required in connection with CoDeSys-Soft-SPS.

## 10.10Status virtual digital output

If virtual outputs are used, the condition of virtual digital data outputs can be viewed here (LED green: output active).

PCU048 [IP 192.168.	.236]->Status of virtual digital outputs	
digital output	Name	Status
digital output 1	001PCU048.VD001	0
digital output 2	001PCU048.VD002	0
digital output 3	001PCU048.VD003	Ō
digital output 4	001PCU048.VD004	0
digital output 5	001PCU048.VD005	0
digital output 6	001PCU048.VD006	O
digital output 7	001PCU048.VD007	0
digital output 8	001PCU048.VD008	O
digital output 9	001PCU048.VD009	0
digital output 10	001PCU048.VD010	0
digital output 11	001PCU048.VD011	0
digital output 12	001PCU048.VD012	0
digital output 13	001PCU048.VD013	0
digital output 14	001PCU048.VD014	Q
digital output 15	001PCU048.VD015	0
digital output 16	001PCU048.VD016	Q
digital output 17	001PCU048.VD017	0
digital output 18	001PCU048.VD018	Q
digital output 19	001PCU048.VD019	Q
digital output 20	001PCU048.VD020	Q
digital output 21	001PCU048.VD021	Q
digital output 22	001PCU048.VD022	O
digital output 23	001PCU048.VD023	Q
digital output 24	001PCU048.VD024	Q
digital output 25	001PCU048.VD025	<u> </u>
digital output 26	001PCU048.VD026	Q
digital output 27	001PCU048.VD027	<u> </u>
digital output 28	001PCU048.VD028	O
digital output 29	001PCU048.VD029	Q
digital output 30	001PCU048.VD030	O
digital output 31	001PCU048.VD031	Q
Educital output 32	001PCU0/8VD032	(°)



The functionality is only required in connection with CoDeSys-Soft-SPS.

### 10.11Status I/O buffer CAN components

#### Function for purposes of servicing

PCU048 [IP 192.168.1.236]->Stat	us I/C	) buffe	r CAN	comp	onents										
IN buffer	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E
0000	00	00	00	00	00	00	00	01	02	01	02	01	02	01	01
0010	01	01	1F	4E	06	01	02	01							
OUT buffer	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E
0000	00	00	00	00	00	00	00	00							
DID16_CI (NodelD <1> TCPT08 (NodelD <2>	•														

The magnifying lens function allows to display the status of components in the lower area of the display.

### 10.12Date / Time

The date / time of the master component can be synchronized with the PC running flexotempMANAGER, respectively via the time server.

[IP:192.168.001.234] PCU048->Time/Date		
Time / Date PCU048	12:35:46 / 07.02.2013	
Syr	nchronize time with PC	
Zeitserver		
SP41 tS Time synchronisation	1 · On	
SP42-45 tS1-4 Time server IP1	0.0.0.0	
SP46 tSMt Time zone	(GMT+01:00) Amsterdam, Berlin, Bern, Rome, Stockholm, Vien	
Next time synchronisation	00:35:46 / 08.02.2013	
Last successful time synchronisation	00:00:00 / 00.00.2000	
Status time synchronisation	1 - There was still no time synchronization	
Request Time Synchronization	00:00:00 / 00.00.2000	
Start time synchronisation manually		

The key for <Initiate time synchronization manually> is only visible if time synchronization ([SP41]) is active (see chapter *¬*Status Time Server).

Under Date/Time the information of the time server are shown. The status of the time synchronization can show the following conditions:

- 0- Time synchronization o.k.
- 1 There was still no time time synchronization
- 2 Time synchronization triggered
- 3 Time synchronization request sent
- 4 Time synchronization message error receipt
- 5 Time synchronization invalid time received
- 6- Time synchronization Timeout

## 11 Trend

The graphical display of analog and discrete values in form of a trend is available for

- any object
- any status
- any value

The database view offers the display of ONLINE-/ OFFLINE data sets. In files stored snap-shots can be called up every time and be displayed.

The poling cycle for the trend can be set under menu bar  $\rightarrow$  <Extras> <Options> <System> (see chapter  $\neg$ Menu Bar Extras).



Show trend

Menu bar → <View> <Project>, Register <Trend>

Trend
Create new trend>

At change to <Trend> the so called trend options can be set for the displayed project, and/or for an already existing definition the trend could be immediately displayed.

#### **Trend options**

_			
Ī	Trend Options		
Г	Available values for trend	1	Displayed values in tr
Г			
	24: Zone 24	_	
	25: Zone 25		
	- 🗖 📜 29: Zone 29		
	- 🗖 🔚 31: Zone 31		
	- 🗖 🗷 33: Zone 33		
	- 🗖 🛃 44: Zone 44		
	- <b>1 2</b> 48: Zone 48		
	🕂 ——— 🧰 AlOO4 [Slot number 1]		
	E TCPT08 [Slot number 2]		
	4: Input AI 4 (X1.10-12)		
	i		

By <Available values for trend> zones can be selected for the controller, which display

- the setpoint value
- the degree of operation and/or the effective degree of operation \*)
- the current
- the output value proportion for PID controller

of the selected zones.

What is displayed is shown in the window <Displayed values in trend>.

[ \*) effective degree of operation, when component DIO16\_CI\_SPL, and/or CANCT\_SPL is configured]

At all other components depending on their existence

- Analog inputs (AI)
- Analog outputs (AO)
- Digital inputs (DI)
- Digital outputs (DO)
- Leakage current
- Power supply input
- Measurement input

can be displayed.

32 objects (e.g. setpoint value of a zone = one object) are simultaneously displayed.



Is more than one digital in-/-output (display Low/High) displayed, offsets are used, that all trends are visible.



If you are on the regulation process online with the graphics window, the display is displaced to the left similar to an analog measurement recorder.



Illustration 1 Exemplary trend display (setpoint value, degree of operation shown)

## 11.1 Menu keys for trend

	By the key LEGEND (SHOW/HIDE) the current values of the parameters can be displayed for "Setpoint "Actual value "Degree of operation "Zone names
	"PID
	By the menu TREND SETTINGS the displayed parameters are selected. The display shows per zone the curve in the color on the right screen page.
*	By means of the SETPOINT VALUE key (SHOW/HIDE), the setpoint value is displayed in the trend.
%	If the key DEGREE OF OPERATION (SHOW/HIDE) is activated, a window is shown below the setpoint/actual value plot with the plot of the degree of oper- ation.
~	If the key CURRENT (SHOW/HIDE) is activated, a window is shown below the setpoint/actual value plot with the plot of the current.



Ť

As soon as the key P-, I-, or D-proportion (SHOW/HIDE) is activated, the window that displays the degree of operation is shown. The respective P-, I-, D-proportion can be shown/hidden with the degree of operation.

Over the TREND key one can reach a dialog box.

Should the data of the database view be shown (ONLINE/OFFLINE), the starting point and the display range, as well as the parameters displayed in the legend, can be defined. The axes scaling can be manually stipulated for temperature, degree of operation and current or the automatic scaling is left to flexotempMANAGER.

Trend settings	X
Scaling of temperature axis           Automatic         From         To:         300	Scaling of time axisOnline
Scaling of degree of operation axis           Automatic         From -99         To : [100         [%]	Display range Hours - 0 + - 1 +
Scaling current axis           Automatic         From         To :         100         [A]	Starting point
Legend	- 27. September 2010 +
Setpoint value         Actual value         Degree of operation           Zone names         PID         Current	Mo Tu We Th Fr Sa Su
Hing buffer	Hour Minute - 8 + - 34 +
b)	
	OK Cancel

The ring buffer a) shows the degree of filling of the database, that collects the trend data.

With the scroll bar b) positions in the database can be indexed, where data for the trend display (green bar) is available.



When a file was imported, the axes scaling can only be manually stipulated for temperature, degree of operation and current or the automatic scaling is left to flexotempMANAGER.







By the key PRINT TREND DATA a dialog boy is opened. System printers are offered in a list.

By the key EXPORT TREND DATA IN CSV FILE, the visible data in the trend window (comparable with screen shot) is written in a CSV file and is stored to a selectable directory on disk.

Sethon is Agine	Actual value	Degree of oper	ation	Current	
P proportion	l pro	oportion	D	D proportion	
activate					

Before storing the data, the operator is asked by menu, which data he wants to export and whether a data reduction should be executed. Is data reduction selected  $\mathbf{M}$ , a time pattern in the form of H:M:S (hour:minute:second) must be set.

In the example here the by trend collected data (setpoint value, actual value, degree of operation, current) is exported every 1 minute into the CSV file.

By the key EXPORT TREND DATA, the visible data in the trend window (comparable with screen shot) is written in a trend graphic file (file extension PSG, proprietary file format of flexotempMANAGER) and is stored to a selectable directory on disk.

By the key IMPORT TREND DATA stored trend graphic files (file extension PSG) are read from a selectable directory from disk and displayed as trend in the flexotempMANAGER.

By the key HIDE IMPORTED TREND DATA, the display of data from an imported trend graphic file can be ended and the display returns to display of data from the database view.

By this key the display jumps to the first data set of the database view.



By this key the display scrolls stepwise in direction to the first data set of the database view.



By this key the display scrolls stepwise in direction to the last data set of the database view.

By this key the display jumps to the last data set of the database view.

## 12 Components

All available components in flexotempMANAGER are listed here with data sheet, order number. In the window |Project| they could be

- connected by the menu item <Create new component>
- taken per drag&drop out of the window |Components|

The selection lists, that open, in the window |Project|, only offer components, which are compatible in this place.

Menu bar $\rightarrow$ <view> <comp< th=""><th>onents&gt;</th></comp<></view>	onents>
---	---------

Master	Controller and open loop control units
PCU024	
PCU048	
PCU128	
MCU 128	
PCU024PNIO PCU048PNIO PCU128PNIO	Master components with mnemonic "PNIO" can be accessed by protocol PROFINET IO.
PT_DC PT_DC_USB PT_CUR	Only the master component can be created, no allocation of further compo- nents possible. Import project into flexotempMANAGER e.g. by see chapter <a href="mailto:AMenu Bar">AMenu Bar</a> : File - SCAN (see documentation on profi-TEMP)
PCU024HA PCU048HA PCU128HA	The master components marked with (*HA) are used for application Home Au- tomation. This affects temperature control in rooms with infrared heating ele- ments.
ETR132PNIO ETR112PNIO	Details on this component see separate operating instructions.
HPCBC	
	Details on this component see separate operating instructions.
MPI 05 PNIO	Master component with mnemonic "PNIO" can be accessed by protocol PROFINET IO.
PCU.web	Details on this component see separate operating instructions.
CAN	CAN- (bus coupler modules, I/O modules)
	To the CAN components
	"CANEC con PCU
CANTC 24	"CANCT and CANCT SPL can RS/85.
CANPC03	"HPCBCCAN can HPC-
CANPC06	components be connected
CANPC12	
CANAIN08	For the use of CANopen devices, are electronic data sheets, so called EDS
CANIO08	files, necessary. These files, written in a standardized text format, describe the
CANBC	most important parameters of the objects of the object directory of the device
CANCT	as well, as physical parameters like e.g. supported baud rates. flexotempMA-
CANCT_SPL	communicate with the corresponding device and parameterize it. if necessary
<import eds="" file="" new=""></import>	(see chapter <i>i</i> Integration of a CAN slave)
PT_BC	Internal used, not assignable;

### Menu bar $\rightarrow$ <View> <Components>

	PCU- (bus coupler modules, I/O modules)
PCU	
AIO04	To the PCU component
TCPT08	■ BACI can RS485-
TC12	components be connected
PT08	
PT12	
PT16	
DIO16_CI	
DIO16_CI_SPL	
DO16	
BACI	
DO08R	
VC02	
VC04	
MPI02	
CANBE	
HC06_16	
CANBEG	Only for PCUXXXPNIO
PT_WKZ	Internal used, not assignable;
HPC	HPC-Components
HPC24	
1	
R\$485	RS485- (I/O modules PSG output bus)
SMV04	
SMACO4	
SMA09G	
SMA09	
SMA08	
SMA06G	
MC08	
MA08	
MA08K	

### 12.1 Integration of a CAN slave

For integration of a CAN slave the following has to be done.

Put EDS file (here **example.eds**) of the CAN slave in the directory Installation directory  $\rightarrow$  flexotempMANAGER  $\rightarrow$  EDS

#### Start flexotempMANAGER NEW

The CAN slave is now visible under menu bar  $\rightarrow$  <View> <Components> <CAN>



Select CAN slave and integrate it in project setup

ER Communication View Extras 7	1 88 63 68 08 08 08 1 <b>1</b>	6		
Comunication server Commentary Conservation Connectary Connectary Connectary Connectary Connectary System parameters System parameters Name of concluped bols Proble DFA Proble DFA Proble DFA Crock object bir (Pc)	Create new component for EDS L - Component names - CAN Noted - CAN Noted - Th	sangle	X	
Chern ICs Dent ICs Urbuid dotal nouts What dotal nouts What dotal nouts Massard values Massard values Grap administration Grap dotate new components Conside ne	B:         Send PDO1           B:         Send PDO2           B:         Send PDO3           B:         Send PDO3           B:         Send PDO3           B:         Send PDO3           B:         Receive PDO1	0×100 0×200 0×300 0×400 0×200		
C CANTON     CONTON      CONTON		K. Concel		

Already at integration in the project, the CAN slave shows the send and receive PDO's, that are available.

### Components



The project setup has to be written into the MCU/PCU (see chapter PContext menu for master components)

The variable list of CoDeSys can be exported (see chapter PContext menu for master components)

The export file can be imported in a CoDeSys project.

## 13 Data recording

The function data recording offers the recording of zone parameters, system parameters, communication parameters and process parameters.

Zone parameters, system parameters and communication parameters can be found under the controller under menu item  $\rightarrow$  <View> <Project> register <Project>, process parameters under Register <Status>.

## 13.1 Start recording

--

Menu bar $\rightarrow$ <view> <data red<="" th=""><th>cording&gt;</th></data></view>	cording>
Select recording	First, an entry must be selected out of the list.
	Image: Component Identification     Name/Address/Index       Image
	Is no entry available, see chapter <i></i> ⊅Create new variable for data recording.
Set scanning frequency	The scanning frequency of the values can be adjusted. Standard is 1000 ms.
a) Start recording on file	The recording of the selected variable on file, has to be started by $\begin{tabular}{c} \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$
Enter recording file	The name of the CSV file, where the data is stored and that is saved on disk, has to be specified and confirmed by <save>.</save>
	data recording       ? ×         Search in:       PRUJEKTE       • • • • • • • • • • • • • • • • • • •

#### Menu bar $\rightarrow$ <View> <Data recording>

Recording on file is running	The selected data is displayed in the window and is stored to the file, specified in the header. After the file name, the size of the file is displayed in brackets.
	Total Market C:\Programme\PSG\lexotempMANAGER\PR0JEKTE\TestRecording_ActualValue_Zone1to6.CSV (375)
	Component Identification Name/Address/Index I
	<pre>Create new variable&gt;</pre>
b) Start recording interactive	The recording of the selected variable has to be started by The selected data is only displayed in the window.
	× • 1000 ms
	Component Identification Name/Address/Index
	<pre>Create new variable&gt;</pre>
Stop recording	The recording is active, as long as the operator does not stop it by

## 13.2 Create new variable for data recording

## Menu bar $\rightarrow$ <View> <Data recording>

Start data recording	×	• <b>1</b> 000 ms	,						
		Component	Identification	Name/Address/Index					
	>	💣 <create new="" variable=""></create>							
	1								•
l									

Specify settings for recording Select <Create new variable>. The following window opens.

		data recording				×	
			Identification			ОК	
						Abbrechen	
		Corr	Variable				
		PCU048	•	freely definable		•	
		Address	Туре	Factor	Decim	nal places	
		0x0000000	int 💌	1	0		
		Available z	rones	Se	elected zones		
		0 - System 1 - System +1 2 - System +2 3 - System +3 4 - System +4 5 - System +5 6 - System +7 8 - System +7 9 - System +10 11 - System +10 11 - System +11 12 - System +13 14 - System +14 15 - System +16 17 - System +17 18 - System +18		> < <			
	Identification	The function only <no a<br="" component="">ther entries possil Free entry of an io</no>	runs, when a pr vailable> occurs ble. dentification for th	oject is display under <compo ne data recordir Zone1to6)</compo 	ed. Oth nents>	nerwise the and there	e message are no fur-
	Component	All components, v can be selected for	which are in-use or logging.	in the project, v	vhere a	logging is	available,
	Variable	All variables, of th selected for loggin	ne selected comp ng.	oonent, where a	logginę	g is availal	ole, can be
		Is the variable <fi dress, type, factor</fi 	reely definable> o r and decimal pla	chosen, the vari ice (specialist fu	able ca inction)	in be speci ).	fied by ad-
Avai	lable zones/Sub indexes	All available zone of these zones/su by > and transferre es>.	es/sub indexes and b indexes, all car ed to the field <s< td=""><td>e displayed due be selected by elected zones&gt;</td><td>e to the &gt;&gt; or s and/or</td><td>e settings a ingle can b <selected< td=""><td>above. Out be selected sub index-</td></selected<></td></s<>	e displayed due be selected by elected zones>	e to the >> or s and/or	e settings a ingle can b <selected< td=""><td>above. Out be selected sub index-</td></selected<>	above. Out be selected sub index-
		Indexes of CANor is identified by inc	ben are used for dex (variable nam	communication ne defines the ir	with C/ ndex) a	AN I/O's. E nd sub ind	ach object ex.

#### Menu bar $\rightarrow$ <View> <Data recording>





In the present example with the identification **TestRecording\_ActualValue\_Zone1to6**, the zone parameter: PV02: actual value for the zones 1 ... 6 is selected for the component PCU048. The data is presented in the window in decimal format.



Per data recording only one variable of a component can be selected for the maximal available zones/indexes.

Save settings for recording After confirmation by <OK>, the settings for the recording in the window, marked with the used component (including pictogram) and the entered identification, appear.

×	<b>•</b> 1000 m	3						
	Component	Identification	Name/Address/Index					
	PCUD48	TestRecording_ActualValue_Zone1to6	PV02: Actual value					
	of <create new="" variable=""></create>							
	(							Þ

## 14 Template

A complete project or a master component with all allocated components can be saved as a template in flexo-tempMANAGER and be imported for faster project setup / configurations.

Via

- Menu bar → <File> <Save> and/or <Save as...> a project is created (\*1)
- Context bar on project level  $\rightarrow$  <Create template> the Master component is created (\*2)

as a template on the hard disk under

Installation directory  $\rightarrow$  flexotempMANAGER  $\rightarrow$  PROJECTS (\*1) Installation directory  $\rightarrow$  flexotempMANAGER  $\rightarrow$  CONF (\*2)

in XML-format.

If the template is imported into flexotempMANAGER it can be added to an active project.

#### Menu bar $\rightarrow$ <View> <Template>

If files are already stored under

Installation directory  $\rightarrow$  flexotempMANAGER  $\rightarrow$  CONF, and/or via a menu bar  $\rightarrow$  <Extras> <Options> <Directories> <Work group template> defined path, they are displayed in template view. Continue with <Activate template>.



The <Work group template> path can be used not only to locally save project templates on a PC, but also to import from central servers within the company. flexotempMANAGER saves templates upon creating on the above paths (\*1, \*2). From there, for purposes of central use, the files must be copied to the path that is specified under <Work group templates>. For differentiation, the files receive a prefix in <View> <Template> whether it is a locally saved file (CONF \*\*\*) or a centrally saved file (TEAMCONF \*\*\*).

Select menu item
<pre></pre>

Menu bar  $\rightarrow$  <View> <Template>

<import new="" template=""></import>	Import new template       ?         Search in:       PR0JEKTE       Import new template         PCU048       Import new temple_4x.XML       Import new temple_4x.XML         Test       Import new temple_4x.XML       Import new temple_4x.XML         Example_1.XML       Import new temple_4x.XML       Import new temple_4x.XML         Example_1.XML       Import new temple_4x.XML       Import new temple_4x.XML         Import new temple_4x.XML       Import new temple_4x.XML       Import new temple_4x.XML         Import new temple_4x.XML       Import new temple_4x.XML       Import new temple_4x.XML         Import new temple_4x.XML       Import new temple_4x.XML       Import new temple_4x.XML         Import new temple_4x.XML       Import new temple_4x.XML       Import new temple_4x.XML         Import new temple_4x.XML       Import new temple_4x.XML       Import new temple_4x.XML         Import new temple_4x.XML       Import new temple_4x.XML       Import new temple_4x.XML
	File name : Template ("XML) Cancel
	In this example < <b>Test_mcu128.XML</b> > is selected as a template.
	CONF Test_mcu128 <pre>climport new template&gt;</pre>
	A copy of <test_mcu128.xml> is created in Installation menu <math>\rightarrow</math> flexo-tempMANAGER <math>\rightarrow</math> CONF and displayed in the window as available template</test_mcu128.xml>
	<conf test_mcu128="">.</conf>

Activate template Upon selecting, the template can be dragged from the |Template| window and dropped in the |Project| window.

## 15 Appendix

## 15.1 Connection status flexotempMANAGER to PSGCommServer

The following status reports are displayed in the PSGCommServer display (communications server) (also see chapter *¬*Communication concepts of flexotempMANAGER).

Displayed status	Causes / Diagnoses
Server connection o.k.	No error
Server connection terminated	Communication with server is OFFLINE
Cannot identify server name	Check if correct server name was entered at communica- tions server.
Error creating socket	Check network connection
Error connecting server	Check if PSGCommServer process running
No socket available	Check network connection
Server has terminated connection	Check if server was stopped manually or if PC is running on the server

## 15.2 Connection status interface to controller

The connection-status-interface-to-controller display in the status bar can display the following conditions. It does not matter whether the controller is connected via Ethernet, CAN or the serial interface. The type of available interface is available on the communications server.

green LED left	The last executed action (for example read parameters) was successful.
red LED left	The last executed action (for example read parameters) was not successful.
yellow LED right	Access to the interface is displayed

# 15.3 Status controller/Master component

Possible status in the status views of master components.

Status are prioritized as only one status can be displayed. The status of the highest priority (first in list below) is displayed. If this status is no longer valid the status of the next lower priority is displayed.

Status information is arranged for a 7-segment display and can be displayed in the zone display.

Status	Meaning	Meaning and error correction
MA	Manual mode	
tCp	Sensor incorrect polarity	Sensor connection interchanged. Change the sensor wire + and – of the corresponding zone.
tCb	Sensor break	Defective sensor. In order to keep on operating zones in the standard oper- ating mode, replace sensors immediately. Otherwise switch zones into manual mode or leading zone mode and keep on working with defect sensor.
ldE	Error at identification	
dri	Drift error report during identification phase	Signal during beginning of the identification phase possible. Disappears by itself. After that zone changes into identification phase with signal Id.
ld	Heating identification active	
ldC	Cooling identification active	
ldS	Starting phase identification cooling	
AL	Alarm measuring range exceeded	Actual value of the zones has exceeded the measuring range's upper limit or the maximum temperature (500°C). Error is stored and must be confirmed. If the error report appears prior to error report I-, a defect of the solid state relay of the zone is possible. Please re- place. Also:Error on sensor possible. Please observe actual value. Contact manufacturer
rAP	Manual temperature ramp active	
SP2	Reduction to 2nd setpoint value	
SP3	Reduction to 3rd setpoint value	
SP4	Reduction to 4th setpoint value	
bSt	Boost function active (relative set- point value increase)	
SbY	Temperature reduction/standby ac- tive (relative setpoint value increase)	
StA	Startup operation active	If the controller is in startup operation mode, the remaining startup time (in minutes) is displayed alternately with the current message,
FAL	Sensor alarm	

Status	Meaning	Meaning and error correction
LiO	Actuator deactivated	
Out	Zone switched off	
CoU	Leading zone manual mode	
ArE	Automatic ramp error	
ArE.	Automatic ramp error (slowest zone)	
Ar	Automatic ramp	
Ar.	Automatic ramp (slowest zone)	
CAn	CAN communication fault (CANAIN)	Possible sources of errors: Address setting or setting of transmission speed do not match at the devices or defective CAN interface. Contact manufacturer
CtC	Error configuration ( <u>CANCT</u> <u>C</u> onfiguration)	The configuration table in the master component and in the connected sub components (z.B. baci, dio16ci, canct, do16, etc.) does not match.
Ctb	Error PSG bus (RS485 on <u>C</u> ANC <u>T B</u> us)	Bus error (e.g. on baci, canct, etc.) to actuator modules. See connectors of components.
ERR	Fault in channel data	Change to parameter level, change a value and confirm the change. The error message disappears. Alternatively enter code number 950.
SYS	Error in system data	
PrO	Learning phase process control ac- tive	
PAL	Process alarm	
Cur	Leakage current error	
Pot	Potential error on the sensor	
MAG	Group manual mode	
dIE	Diagnostics end	
dIA	Diagnostics active	
dEr	Diagnostics error	
I-	Thyristor alarm (TA)	A heating current is measured although the solid state re- lay is not control-activated by the controller. Check solid state relay and replace.
FUS	Short on the heating output	Wiring error, error is stored and must be confirmed.
PhA	Phase error	At least one mains network phase is missing.
HSE	Heat Sink Error	Heat sink temperature too high.
GPO	Bypass group release	
GP	Zone waits for group release	
GPL	Zone waits for group release	and controls on standby values until then.

Status	Meaning	Meaning and error correction
010	Read MMC error	
011	Write MMC error	
LdE	Load Error	Error when loading hex file via MMC card.
Ld	Load	Loading hex file over MMC card active.

## 15.4 Access via Direct IOs

The access of Direct IOs by

- CAN-Bus
- Ethernet
- Profibus
- PROFINET IO
- CoDeSys

occurs via the respective read-/write command and the respective index in the Direct IO table (see chapter 7Direct IOs table). Please see below for further details and where relevant information can be found.

#### 15.4.1Access via CAN-Bus

The Direct IOs are addressed via SDO (data type long) via object 0x2200 and 0x2201.

The subindex of the objects is the same as the index in the Direct IOs table

Indexes 1...255 are addressed via object 0x2200 and indexes 256...300 are addressed via object 0x2201 (here the subindex over index -255 occurs).



Read Direct IO 5 from master component with NodeID 32 (0x20)

Message Length					Data					
S	620	8	40	00	22	05	00	00	00	00
А	5A0	8	43	00	22	05	00	00	00	00



Read Direct IO 1 from master component with NodeID 32 (0x20)

Message Length				Data						
S	620	8	40	00	22	01	00	01	00	00
A	5A0	8	43	00	22	01	28	01	00	00



Set over Direct IO 5 digital port 2 and 9 on the component

Message Length						Data				
S	620	8	2B	00	22	05	02	01	00	00
A	5A0	8	60	00	22	05	00	00	00	00

#### 15.4.2Access via Ethernet

Access via Ethernet ASCII currently not possible. Two additional commands were implemented via Ethernet binary:

- Read Direct IOs: Command 0x0010
- Write Direct IO: Command 0x0011

#### 15.4.3 Access via Profibus

See chapter 7Communication by Profibus and protocol description Profibus DP and Profibus DPEA (see chapter 7Additional and continuative documents).

#### **15.4.4Access via PROFINET IO**

See chapter *¬*Communication by PROFINET IO and protocol description PROFINET IO (see chapter *¬*Additional and continuative documents).

#### 15.4.5Access via CoDeSys

Two library commands exists for access via CoDeSys (for further documentation see chapter Additional and continuative documents).

#### 15.5 Software version of components

The software version (also HEX-File) is marked as follows

kk	identifier for HEX-File
XX	Week
уу	Year
Z	Index

## **15.6 Version History**

Version	Date	Changes
1.04.11	8/28/2015	Amendments of operating manual to
		flexotempMANAGER Software version 1.03.05
		In detail, the following amendments were made:
		PROFINET IO meaning for status messages added; amendments for DIOs
		Components added
		<ul> <li>Display Operating instructions (when existing)</li> </ul>
		Chapter ARP added
		MPI05PNIO separate operating instructions
1.04.10	4/17/2014	Amendments of operating manual to
		flexotempMANAGER Software version 1.02.26
		In detail, the following amendments were made:
		Time synchronization Status 6 added
		New components amended OtO OtD en estimation
		CIC, CIB specified     Restore factory setting added
4.04.00	7/00/0040	Restore factory setting added
1.04.09	7/26/2013	Amendments of operating manual to
		Tiexotempi/IANAGER Software version 1.02.24
		In detail, the following amendments were made:
		<ul> <li>Display of Ethernet scan</li> <li>Out of convice a Communication for this component out of convice</li> </ul>
		<ul> <li>Out of service -&gt; Communication for this component out of service</li> <li>Selection for Write parameter</li> </ul>
		<ul> <li>Option color. Color when status deviates from project" added</li> </ul>
		<ul> <li>Option system "Save selected input block with component change" added</li> </ul>
1 04 08	2/6/2013	Amendments of operating manual to
1.0 1.00	2,0,2010	flexotempMANAGER Software version 1 02 20
		In detail, the following amendments were made:
		Eurotion software version revised
		<ul> <li>Turction software version revised</li> <li>"For service purposes only" added</li> </ul>
		<ul> <li>Data sheet display</li> </ul>
		<ul> <li>Number of virtual in-/outputs raised to 64</li> </ul>
		Date/Time time synchronization with time server
		Context menu item store/restore parameter image added
		Selection path for HEX-Files
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