

Software Manual

Transponder Coding TC2

Application Software

Contents

1.	General notes			
	1.1.	Use of the manual	3	
	1.2.	Scope	3	
	1.3.	Requirement for the user	3	
	1.4.	System requirements	3	
	1.5.	Use of brand names	3	
2.	Gene	eral function of the application software	3	
3.	Insta	lling Transponder Coding TC2 and starting it for the first time	4	
4.	Selec	cting project	5	
5.	Editir	ng transponder data	7	
6.	Writi	ng transponder	8	
7.	Hex/	ASCII editor	8	
8.	Mana	aging security settings (only available for FKS2)	9	
•	8.1.	Resetting a project (only available for EKS2)	9	
	8.2.	Using transponders after changing the user access key	10	
9.	Elect	ronic-Key-System EKS project and data structure		
	9.1.	EKS structure EU000	11	
10.	Elect	ronic-Key-System EKS2 project and data structure		
	10.1.	EKS2 structure EU001	12	
	10.2.	EKS2 structure EU002 (only for machine manufacturers)	13	
11.	Addit	tional functions (only available for EKS2)	14	
	11.1.	Factory reset	14	
12.	Chan	iging settings	15	
13.	Upda	ting software and firmware		
	13.1.	Updating Transponder Coding TC2	16	
	13.2.	Updating EKS2 programming station firmware	17	
14.	FAQ	- Frequently Asked Questions		
	14.1.	For what is the project password required?		
	14.2.	Can I assign a new project password without changing the user access key?	18	
	14.3.	already written in my project?		

1. General notes

1.1. Use of the manual

This manual describes the function and use of the Transponder Coding TC2 application software (order no. 8000151), version V2.0.X.

1.2. Scope

(

$\overline{1}$	Important!
•	 Make sure to use the operating instructions valid for your product version. Please contact the EUCH- NER support team if you have any questions.
	 Your software may have been updated. Make sure that the software documentation corresponding to the update is available and is observed.

1.3. Requirement for the user

Proper use of the Transponder Coding TC2 application software requires knowledge about handling the Identification System CIS and/or the Electronic-Key-System EKS or EKS2.

1.4. System requirements

Hardware:	Standard PC
Operating system:	Windows® 10, 64-bit
	Windows® 11

1.5. Use of brand names

Microsoft Windows[®] is a registered trademark of Microsoft Corporation.

2. General function of the application software

The Transponder Coding TC2 application software is used on a standard PC for reading and writing CIS data carriers or EKS or EKS2 Electronic-Keys. The software is used in conjunction with an EUCHNER read/write station with serial interface or USB interface.

The following transponders can be written:

System	Transponder
	CIS3(A) with 16-byte read/write memory
Identification System CIS	CIS3A-Mini with 116-byte read/write memory
	CIS3A-Mini with 5-byte read-only memory
Electronic-Key-System EKS	Electronic-Key EKS with 116 bytes read/write memory
Electronic-Key-System EKS2	Electronic-Key EKS2 with MIFARE DESFire transponder

You will find further information about writing data to the transponders in the manuals for the related read/write stations.



3. Installing Transponder Coding TC2 and starting it for the first time

- 1. Use the supplied link to download the ZIP folder Euchner_Transponder_Coding_2_8000151-....zip. Unzip the folder and save it to a local directory on the PC.
- 2. Run the *TC2.exe* application.
- ➡ The Settings window appears.

Transponder Coding TC2		-	×
EUCHNER	Language Select your language.		
📎 Edit transponder data	English		
Ô Project	Device / COM port		
① Information	Select a device to read the transponders. Select the COM port to which the device is connected.		
	⊘ Advanced settings		
🐯 Settings			
Port: 😣	Transponder: Status:		

- 3. Select the language.
- 4. Connect the read/write station to the PC and select the corresponding device.
- 5. Select the COM port where the read/write station is connected.
- The connection to the read/write station is established.

Important!
 Whenever the program is started again, the <i>Edit transponder data</i> menu item will display the most recently used window. If you would like to change the settings after starting the program for the first time, select the <i>Settings</i> menu item in the navigation area.

4. Selecting project

Prerequisite:

• A read/write station is connected.

- 1. Click Project in the navigation area.
- 2. Select a project using the All tab or the tab for the corresponding system.

😌 Transponder Coding TC2	
EUCHNER	Select a suitable project.
📎 Edit transponder data	All EKS CIS ->>
Ô Project	EKS structure EU000 EKS project for transponders with 116-byte read/write memory
① Information	Structure: EU000
	CIS3(A)
	CIS3(A) project for transponder with 16-byte read/write memory
	Open
	CIS3A-Mini
	CIS3A-Mini project for transponder with 116-byte read/write memory

The following selection options are available:

Project	System	Further information		
EKS2 structure EU001	Electronic Kov System EKS2	10.1. EKS2 structure EU001 on page 12		
EKS2 structure EU002	Electronic-ney-system ENS2	10.2. EKS2 structure EU002 (only for machine manufacturers) on page 13		
EKS structure EU000	Electronic-Key-System EKS	9.1. EKS structure EU000 on page 11		
CIS3(A)				
CIS3A-Mini	Identification System CIS	Related operating instructions		
CIS3A-Mini unique				

➡ The status bar at the bottom of the window displays the COM port used and the selected system:

Port: 📀 COM3 - EUCHNER Electronic-K... Transponder: 🥥 Status:

If the connection to the read/write station is interrupted, this situation is indicated in the Status field.

• Depending on the selected project, different menu items are displayed in the navigation area:

Transponder Coding TC2		EKS2 structure EU001 - Transponder Coding TC	C2	
EUCHNER	Select a suitable project.	EUCHNER	Select a suitable project.	
Edit transponder data	AII EKS <u>CIS</u> -⊨		All EKS2 EKS -⊨	
	CIS3(A)	💊 Edit transponder data	EKS2 structure EU001	More 🔻
O Project	CIS3(A) project for transponder with 16-byte read/write memory	O Project	EKS2 project for the user	
 Information 	Open	A country	Structure: EU001	
	CIS3A-Mini	□ security	Open	\bigcirc
	CIS3A-Mini project for transponder with 116-byte read/write memory	 Additional functions 	EKS2 structure ELIO02	
	Open	(i) Information	EKS2 project for the machine manufacturer	
			Structure: EU002	
	CIS3A-Mini project for transponder with 5-byte read-only memory		Open	
	Open			

Fig. 1: Navigation area, EKS/CIS projects

Fig. 2: Navigation area, EKS2 projects

Load the corresponding hex/ASCII editor or an input mask using the Edit transponder data menu item. The transponder data can be edited.

5. Editing transponder data

The following options are available for editing the transponder data:

© EKS2 structure EU001 - Transponder Coding TC2		2	3	
EUCHNER	Read Write	Edit V Clear Input Mask	Template ▼ Load Save	
Ö Project	Header data		0	

1	Transponder data Prerequisite: a transponder is located in t	the read/write station's actuating range.		
	Read	The data of the transponder are read.		
	Write	The data are written to the transponder.		
2	Edit			
2	Clear Input Mask	All fields are cleared.		
	Template			
	Load	The most recently saved template is loaded.		
2		The data are saved as a template. This can simplify the following tasks:		
3	_	 Writing additional transponders with the same characteristics. 		
	Save	Writing several transponders with similar characteristics.		
		It is only ever possible to save the data currently displayed as a template. One template can be saved per project.		

The transponder's unique serial number (UID – unique identifier) is factory defined and cannot be edited. A hex/ASCII editor corresponding to the selected project is displayed.

😌 CIS3(A) - Transponder Coding TC2				-	×
EUCHNER	Read Write	Edit 🔻	Template V		
📎 Edit transponder data	Free user data # Hex	ASCII			
O Project	00 00 00 00 00 00 00 00 00 00 00				
① Information					
🐯 Settings					
Port: 😣	Transponder: Status :				

6. Writing transponder

Prerequisites:

- A read/write station is connected.
- > The data to be written have been prepared in the corresponding input mask.
- 1. Bring a transponder into the read/write station's actuating range.
- ➡ The Write button is active.
- 2. Click the Write button.
- The data are written to the transponder.

7. Hex/ASCII editor

Edited data or data loaded from a template are displayed in blue in the hex/ASCII editor. The data are displayed in black only after they have been written to the transponder.

Additionally, filling characters can be used to write transponder data uniformly from a defined byte.

The filling characters can be customized as follows:

- 1. Place the cursor on the corresponding hex field and then click the right mouse button.
- 2. Click the Filling characters button.
- 3. Enter a hexadecimal value in the dialog window as specified and confirm with OK.
- The hex fields are filled with the filling character from the cursor position to the end of the programmable character string.

Alternatively, the filling characters can also be adapted under Advanced settings in the Settings menu item.

i

8. Managing security settings (only available for EKS2)

A multilayer security concept is used to protect the project and transponder data for EKS2. Each EKS2 project is protected with a project password. In addition, the data written to the transponder with the aid of the Transponder Coding TC2 application software are encrypted using a private user access key.

The project password prevents unauthorized personnel viewing or changing the user access key in the application software. The project password is assigned specifically by the user. If the project password is lost, it is necessary to reset the project, see chapter 8.1. Resetting a project (only available for EKS2) on page 9.

The user access key is generated by a password generator and can be copied for safe keeping.

Important!
If the user access key is changed by generating the key again, transponders already written can no longer be edited using the related project. For further information, see chapter 8.2. Using transponders
after changing the user access key on page 10.

A public user access key is used for the data area for machine manufacturers; this key can be saved in the control system (PLC). You will find further information in the corresponding application at www.euchner.com.

8.1. Resetting a project (only available for EKS2)

All security settings and templates already saved are lost if you reset a project:

-		
EKS2 structure EU001 - Transponder Coding TC2		
EUCHNER	Select a suitable project.	
	All EKS2 EKS -	
📎 Edit transponder data	FKC2	More V
	EKS2 structure E0001	More V
O Project	EKS2 project for the user	Reset
A Socurity	Structure: EU001	
	Open	\bigtriangledown
Additional functions		
	EKS2 structure EU002	
Information	EKS2 project for the machine manufacturer	
	Structure: EU002	
	Open	

Proceed as follows to be able to continue to use transponders already written:

- 1. Open again the related project in *Project*.
- 2. Type the corresponding user access key in Security and save.
- 3. Assign a new project password and save.
- It is possible to read and edit transponders already written.

8.2. Using transponders after changing the user access key

If the user access key is generated again and saved, transponders already written can no longer be edited using the related project.

Proceed as follows to be able to continue to use the transponders already written:

- 1. Reset transponder to factory settings in Additional functions, see chapter 11.1. Factory reset on page 14.
- 2. Reset all EKS2 systems in use to factory settings. You will find further information in the operating instructions for the Electronic-Key-System EKS2.
- 3. Write data to the transponder again.
- ➡ The newly generated user access key is written to the transponder.
- 4. Teach in the new user access key in the EKS2 system, see operating instructions for the Electronic-Key-System EKS2.

9. Electronic-Key-System EKS project and data structure

9.1. EKS structure EU000

The EKS structure EU000 project is available for the Electronic-Key-System EKS.

😌 EKS structure EU000 - Transponder Coding TC2		-	×
EUCHNER	Read Write Edit V Template V		
💊 Edit transponder data	Identification Serial number (UID)		
Ô Project	02 87 5F 7F 7B 00 10 32		
① Information	Free user data # Hex ASCII 000 00 44 55 00 00 00 .0U 016 00 00 00 00 00 00 00 00 00 024 00 00 00 00 00 00 00 00 00 032 00		
🖏 Settings			
Port: 🥑 COM7 - Serielles USB-Gerät	Transponder: 🤣 Status: Valid transponder		

A typical example for the utilization of the freely programmable memory for an EKS with data interface could be as follows:

- Department (here: WT)
- Personnel number (here: 37)
- Reserve block
- Access rights for process 1, e.g. milling (here: 3)
- Access rights for process 2, e.g. turning (here: 5)
- Mode of safe operation MO 0 (here: 0F0F)
- Unused memory (freely available)
- Fixed serial number (here: 02...32)

Byte no.	0	1	2	3	4	5	6	7	8		112	113	114	115	116		123
Value [hex]	57	54	33	37	00	03	05	OF	OF						02		32
Value [ASCII]	w	т	3	7													
Function	Depar	tment	Perse nun	onnel 1ber	Res.	Rights	Rights	Selec oper mo	tion of ating ode	Freely available			Sei	rial num	ber		

10. Electronic-Key-System EKS2 project and data structure

10.1. EKS2 structure EU001

The *EKS* structure *EU001* project is available to the user for the Electronic-Key-System EKS2. It contains a data structure with pre-defined functions and a corresponding input mask.

In EKS2 structure EU001, the validity of the transponder can be checked in up to four hierarchical levels. The operating mode can be specified for a maximum of four machine groups.

© EKS2 structure EU001 - Transponder Coding TC2			- 🗆 ×	
EUCHNER	Read Write Ed	it v Template v		
N Edit transponder data	Identification Serial number (UID)	Worker Id	SCI editor	(]
Ô Project			lex/AS	
🖞 Security	Header data Company 0	Plant 0		
⊕ Additional functions	Department 0	Cost center		
① Information	Expiry date Not set 🗇 C Clear		_	3
	Selection of operating mode Max. MO for machine group 1 Not set	Max. MO for machine group 2 Not set	÷	
	Max. MO for machine group 3 Not set	Max. MO for machine group 4 Not set	\$	(4)
பல் Settings	Additional data Free user data # Hex ASCII 30 00 00 00 00 00 00 38 00 00 00 00 00 00 00 00			5
Port: 🖉 COM7 - Serielles USB-Gerät	Transponder: 🤡 Status: Valid transponder			

1	Personnel number
2	Area where the transponder is to apply. A descending hierarchical order applies to the <i>Company, Plant, Department, Cost center</i> fields.
3	Expiry date The expiry date can be set with the aid of the calendar, by entering the number of days or manually.
4	Selection of operating mode Individual machines can be combined into up to four groups. An operating mode can be assigned to each group.
5	Additional data A further 86 bytes are available for use as required, e.g. for additional authorizations.

The evaluation of the values set here is specified in the Electronic-Key-System EKS2. You will find further information in the operating instructions for the Electronic-Key-System EKS2.

An invalid entry is marked with a red border.

The data structure in the hex/ASCII table is shown in the Hex/ASCII editor sidebar window on the right:

dentification		
Identification		# Hex ASCII
Serial number (UID)	Worker Id	000 64 00 00 00 6E 00 00 00 dn
04 32 75 2A C7 10 90 00	112	008 71 00 00 00 F1 1A 06 00 g±
		016 80 31 00 00 00 00 00 00 1
		024 00 00 70 00 00 00 00 00p
Header data		032 00 00 00 00 00 00 00 00
Company	Plant	040 00 00 00 00 00 00 00 00 00
100	140	048 00 00 00 00 00 00 00 00 00
100	110	056 00 00 00 00 00 00 00 00
Demostration	Castanta	064 00 00 00 00 00 00 00 00
Department	Cost center	072 00 00 00 00 00 00 00 00
113	400113	080 00 00 00 00 00 00 00 00
		088 00 00 00 00 00 00 00 00
Expiry date		
10/29/2024 🛱 🥂 Cl	ar	

As you edit the fields, the corresponding bytes in the Hex/ASCII editor are displayed with a light-blue background.

10.2. EKS2 structure EU002 (only for machine manufacturers)

The *EKS structure EU002* project is available to the machine manufacturer for the Electronic-Key-System EKS2. You will find further information in the corresponding application at www.euchner.com.

ΕN

11. Additional functions (only available for EKS2)

In Additional functions, transponders can be reset to the factory settings; it is also possible to read their properties and the projects saved on them.

EKS2 structure EU001 - Transponder Coding TC2		
EUCHNER	Factory Reset The transponder will be r The data stored on it will Factory Reset	eset to the factory settings. be deleted.
O Project	Transponder	
🔒 Security	Serial number (UID): Memory size:	04 32 75 2A C7 10 90 00 4192 bytes Free
Additional functions	Order number: Color:	168432 Red
① Information	Manufacturer:	EUCHNER
	Applications and App: Project: Project version: Last changed on: Writing Software: Software version: Locked: Expired:	projects on the transponder
🖏 Settings	Read	

11.1. Factory reset

Use *Factory Reset* to reset a transponder to the factory settings. The data saved are deleted and new transponder data or a new project can be written to the transponder.

12. Changing settings

The language, device and COM port can be selected in Settings in the navigation area.



The following configurations can be carried out in the Advanced settings drop-down menu:

- » Define filling character (see chapter 7. Hex/ASCII editor on page 8)
- > Search for updates automatically (see chapter 13. Updating software and firmware on page 16)

13. Updating software and firmware

13.1. Updating Transponder Coding TC2

1. Activate "Search for updates automatically" under Update in the Settings menu item in the navigation area:

😌 EKS2 structure EU001 - Transponder Coding TC2		-	×
EUCHNER	Language Select your language.		
📎 Edit transponder data	English \$		
Project	Device / COM port		
	Select a device to read the transponders. Select the COM port to which the device is connected		
□ Security	Serielles USB-Gerät (COM7)	÷	
Additional functions			
i Information	Programming station EKS2 C Electronic-Key-System USB/CIS		
	O Advanced settings		
	Filling characters		
	Define the characters to be used to fill empty data areas in the hex/ASCII editor.		
	00 The following characters can be defined: [0-9], [a-f], [A-F]		
	Update		
	Search for updates automatically		
Settings			
Port: 🥝 COM7 - Serielles USB-Gerät	Transponder: 🤡 Status: Valid transponder		

A yellow dot will appear next to the *Information* menu item when a new update becomes available:

Ô Project	
Information	Available version: V1.0.0
	Release date: 11/14/2023 1. Download the new version. Save the ZIP file to any location on your PC.
	Download New Version

- 2. Click the Download New Version button in the Information menu item.
- ➡ A ZIP file is downloaded.
- 3. Click the Start Transponder Coding 2 update button.
- 4. Select the ZIP file.
- ➡ The application is closed.
- ➡ The Windows input prompt opens automatically.
- Once the update is complete, the application will open again automatically.

13.2. Updating EKS2 programming station firmware

With the aid of the Transponder Coding TC2 application software, it is also possible to update the firmware in the EKS2 programming station.

🙄 Transponder Coding TC2		-	×
EUCHNER	 ℅ +49 711 7597-500 ☎ support@euchner.de 		
📎 Edit transponder data	Help		
Ô Project	Manual		
(i) Information	Software update Available version: The update function is deactivated. You can activate this function in Settings.		
	Update Programming Station Read Current Versions		
	Firmware version:		
	Hardware version: Order number:		
	1. Select the update file (.efu).		
	Select Update File		
	Available version:		
	Start Programming Station Update		
l Settings			1
Port: 🥝 COM7 - Serielles USB-Gerät	Transponder: Status:		

- 1. Click the Read Current Versions button.
- 2. Download the ZIP file.
- 3. Click Select Update File and select the new .efu file in the directory where it is saved.
- 4. Click Start Programming Station Update.
- The new firmware for the programming station is installed.

14. FAQ - Frequently Asked Questions

14.1. For what is the project password required?

The project password is required:

to display the current user access key

+ to generate a new user access key, see chapter 8. Managing security settings (only available for EKS2) on page 9

It is not required to edit the transponder data.

14.2. Can I assign a new project password without changing the user access key?

The project password is independent of the user access key. If it is changed, there is no effect on the user access key.

14.3. I have changed the user access key. Can I continue to use transponders already written in my project?

No, that is not possible. Transponders already written and the EKS2 systems in use must be reset to the factory settings. You will find further information in chapter *8.2. Using transponders after changing the user access key on page 10.*

Euchner GmbH + Co. KG Kohlhammerstraße 16 70771 Leinfelden-Echterdingen, Germany info@euchner.de www.euchner.com

Edition: MAN20001680-02-08/24 Title: Software Manual Transponder Coding TC2 (translation of the original operating instructions) Copyright: © EUCHNER GmbH + Co. KG, 08/2024

Subject to technical modifications; no responsibility is accepted for the accuracy of this information. $% \label{eq:sub_constraint}$