

MEGATRON Elektronik GmbH & Co. KG Hermann-Oberth-Straße 7, 85640 Putzbrunn Tel: +49 89 / 8946094 -0 Fax: +49 89 / 46094 -201 E-Mail: info@megatron.de https://www.megatron.de

# <u>Manual</u>



# HTB36, FHB58 rotary encoder Setting the CANopen Node-ID and baudrate



#### Inhaltsverzeichnis

1.	General information	3
2.	Communication mechanisms	4
3.	Setting Node-ID with SDO	5
3.1.	Step: Activation of the pre-operational mode	5
3.2.	Step: Changing message of the specified object	6
3.3.	Schritt: To check the setting, read out the specified object	7
4.	Node-ID einstellen mit LSS	8
5.	Setting baudrate with SDO	9
6.	Recommended accessories	10
7.	Copyright	11
8.	Additional exclusion of liability	11
9.	Customer service and technical support	11



#### 1. General information

This technical note is to assist all those who deal with the products stated above.

This technical note serves as an example of a functioning application. A liability is excluded for material and legal errors in this documentation, especially for their accuracy, correctness, freedom from intellectual property and rights of third parties, completeness and/or usability in cases of intent or malice.

To ensure a safe operation, the device may be operated only according to the instructions of the operating manual. When used, the legal and security provisions are also to be observed for each specific application.

This also applies when using accessories.

The different settings are available at our technical manual "Technical Manual Absolute Encoder HTB36, FHB58 with CANopen interface". You can download it on <a href="https://www.megatron.de">https://www.megatron.de</a>



#### 2. Communication mechanisms

#### SDO Service Data Object

Use: For status query and changes in the object directory. Two identifiers are assigned to one SDO channel. A SDO always has to be confirmed therefore the receiver acknowledges the receipt of each SDO message. In the event of an error, an "abort" message can also be sent. For HTB, FHB rotary encoders the delay time until the acknowledge message is sent is maximum 1 millisecond.

#### PDO Process Data Object

Use: For process data transmission. A PDO supports the full length of a CAN message (8 data bytes), since a PDO does not require a protocol overhead. PDOs are not acknowledged and can be used for time-critical applications. By exploiting the full 8 bytes for user data, the protocol information is not available. As a result, the format between the PDO producer and consumer must be defined during configuration.

This is done by PDO mapping.

PDOs can be sent in several ways:

- **On request:** Another bus subscriber requests data via an RTR. (CiA does not advise the use of RTR. That's why RTR isn't supported by MEGATRON).
- In synchronous mode: On receive of a synchronization message (SYNC) from another bus subscriber, PDOs are transmitted independently.
- **In asynchronous mode:** A PDO message is triggered by an internal event (e.g. measured value change, internal event timer, etc.).



#### 3. Setting Node-ID with SDO

After connecting the encoder HTB36 or FHB58 with the CAN bus respectively the master and suppling the product-specific voltage the LED starts "flickering red and green".

The Node ID is set to 127d (7Fh) by factory default. Proceed the following steps to change the Node ID.

(The following pictures were taken with the tool PCAN-View by PEAK Systems: https://www.peak-system.com/PCAN-View.242.0.html)

#### 3.1. Step: Activation of the pre-operational mode.



The setting by SDO is only possible, if the encoder is in pre-operational mode (green flashing). For this send a sync message (see Spreadsheet 3.1; Illustration 3.1).

080h	8	00h	00h	00h	00h	00h	00h	00h	00h
CAN-ID	DLC	Command	Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6
Shirondobast 2.1; Suina masaara									

	PCAN-View						
D	atei <u>C</u> AN	Bearbeiten Senden Ansicht Tra	ice <u>H</u> ilfe				
P	- 🔲 4	•+ 🏷 🚰 🗶 🕞 🕞 🔴 💷	i 🧆 🕦				
	ኛ Senden / E	Empfangen 🔄 Trace 🛱 PCAN-US	B			-	
	Botschaft	DI C	Daten		Zyklusz	eit	Anzahl
	//Fh	1	00				1
E							
<u>je</u>							
Ĕ							
ця В							
Ξ							
ш							
	Botschaft	DIC	Daten	Zykluszeit	Anzahl	Trigger	Kommentar
	Botschaft 000h	DLC 8	Daten 00 00 00 00 00 00 00 00 00	Zykluszeit Warte	Anzahl 1	Trigger Manuell	Kommentar Svnc
	Botschaft 000h 000h	DLC 8 2	Daten 00 00 00 00 00 00 00 00 00 81 00	Zykluszeit Warte Warte	Anzahl 1	Trigger Manuell	Kommentar Sync NMT-Reset
	Botschaft 000h 000h 000h	DLC 8 2 2	Daten 00 00 00 00 00 00 00 00 81 00 01 00	Zykluszeit Warte Warte Warte	Anzahl 1 0 0	Trigger Manuell	Kommentar Sync NM1-Reset Start all nodes
	Botschaft 000h 000h 000h 601h	DLC 8 2 2 8	Daten 00 00 00 00 00 00 00 00 81 00 01 00 40 01 21 00 00 00 00 00	Zykluszeit Warte Warte Warte Warte	Anzahl 1 0 0 0 0	Trigger Manuell	Kommentar Sync NM1-Reset Start all nodes Node-ID Iesen
en 🛛	Botschaft 000h 000h 000h 601h 601h	DLC 8 2 8 8 8	Daten 00 00 00 00 00 00 00 00 00 81 00 01 00 40 01 21 00 00 00 00 00 2F 01 21 00 7F 00 00 00	Zykluszeit Warte Warte Warte Warte Warte	Anzahl 1 0 0 0 0 0	Trigger Manuell	Kommentar Sync NMI - Reset Start all nodes Node-ID lesen Node-ID auf 127 setz
nden 🛛	Botschaft 000h 000h 000h 601h 601h 67Fh	DLC 8 2 2 8 8 8 8 8	Daten           00 00 00 00 00 00 00 00 00           81 00           01 00           40 01 21 00 00 00 00 00           2F 01 21 00 7F 00 00 00           2F 01 21 00 01 00 00 00	Zykluszeit Warte Warte Warte Warte Warte Warte	Anzahl 1 0 0 0 0 0 0 0	Trigger Manuell	Kommentar Sync NMI - Keset Start all nodes Node-ID lesen Node-ID auf 127 setz Node-ID auf 1 setzen
enden 🛛	Botschaft 000h 000h 000h 601h 601h 67Fh 67Fh	DLC 8 2 2 8 8 8 8 8 8 8 8 8 8 8 8	Daten           00 00 00 00 00 00 00 00 00           81 00           01 00           40 01 21 00 00 00 00 00           2F 01 21 00 7F 00 00 00           2F 01 21 00 01 00 00 00           2F 01 21 00 01 00 00 00           2F 01 21 00 02 00 00 00	Zykluszeit Warte Warte Warte Warte Warte Warte Warte	Anzahl	Trigger Manuell	Kommentar Sync NM1-Reset Start all nodes Node-ID lesen Node-ID auf 127 setz Node-ID auf 127 setzen Node-ID auf 2 setzen
Senden 🛛	Botschaft 000h 000h 000h 601h 601h 67Fh 67Fh	DLC 8 2 8 8 8 8 8 8 8 8	Daten           00 00 00 00 00 00 00 00 00           81 00           01 00           40 01 21 00 00 00 00 00           2F 01 21 00 7F 00 00 00           2F 01 21 00 10 00 00 00           2F 01 21 00 02 00 00 00	Zvkluszeit Warte Warte Warte Warte Warte Warte Warte Warte	Anzahl 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Trigger Manuell	Kommentar Sync NMI-Keset Start all nodes Node-ID lesen Node-ID auf 127 setz Node-ID auf 1 setzen Node-ID auf 2 setzen
Senden	Botschaft 000h 000h 000h 601h 601h 67Fh 67Fh	DLC 8 2 8 8 8 8 8 8 8 8 8	Daten           00 00 00 00 00 00 00 00 00           81 00           01 00           40 01 21 00 00 00 00 00           2F 01 21 00 7F 00 00 00           2F 01 21 00 01 00 00 00           2F 01 21 00 02 00 00 00	Zykluszeit Warte Warte Warte Warte Warte Warte Warte	Anzahl 1 0 0 0 0 0 0 0 0	Trigger Manuell	Kommentar Sync NMI - Reset Start all nodes Node-ID lesen Node-ID auf 127 setz Node-ID auf 1 setzen Node-ID auf 2 setzen
Senden	Botschaft 000h 000h 000h 601h 601h 67Fh 67Fh	DLC 8 2 8 8 8 8 8 8 8 8	Daten           00 00 00 00 00 00 00 00 00           81 00           01 00           40 01 21 00 00 00 00 00           2F 01 21 00 7F 00 00 00           2F 01 21 00 01 00 00 00           2F 01 21 00 02 00 00 00           2F 01 21 00 02 00 00 00	Zykluszeit Warte Warte Warte Warte Warte Warte Warte	Anzahl	Trigger Manuell	Kommentar Sync NMI - Reset Start all nodes Node-ID lesen Node-ID auf 127 setz Node-ID auf 1 setzen Node-ID auf 2 setzen
Senden	Botschaft 000h 000h 601h 601h 67Fh 67Fh 67Fh	DLC 8 2 3 8 8 8 8 8 8 8	Daten           00 00 00 00 00 00 00 00 00           81 00           01 00           40 01 21 00 00 00 00 00           2F 01 21 00 7F 00 00 00           2F 01 21 00 01 00 00 00           2F 01 21 00 02 00 00 00           2F 01 21 00 02 00 00 00	Zykluszeit Warte Warte Warte Warte Warte Warte Warte	Anzahl 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Trigger Manuell	Kommentar Sync NMI - Keset Start all nodes Node-ID lesen Node-ID auf 127 setz Node-ID auf 1 setzen Node-ID auf 2 setzen

Spreadsheet 3.1: Sync-message

Illustration 3.1: reaction of the encoder after sync message



#### 3.2. Step: Changing of the specified object.

The Node-ID is saved in object 2101h sub-index 00h, so this is the object to change the Node-ID by using the following message (see Spreadsheet 3.2).

The SDO-write-message with the elected Node-ID (value as hex) must be sent (see Spreadsheet 3.2; Illustration 3.2).

600h+ID	8	2Fh	01h	21h	00h	Node-	00h	00h	00h
						ID			
CAN-ID	DLC	Command	Objekt	Objekt	Sub-	Byte 0	Byte 1	Byte 2	Byte 3
			L	H	Index	-	-	-	-

Spreadsheet 3.2: SDO-write command to set Node-ID

The Node-ID can be selected. A value between 1-127d is possible. This value has to be send to the encoder as an hex value. The following table includes examples (see Spreadsheet 3.3).

Node-ID (d)	Node-ID (hex)
1	01h
2	02h
4	04h
127	7Fh

Spreadsheet 3.3: Examples for Note-ID in hex and dec

After changing the Node-ID it is not necessary to save this change manually. The change will not be active before you have done a NMT-reset or a manuell reset. After this reset it will be saved in the EPROM (see Illustration 3.3).

8	PCAN-View							
Di	itei <u>C</u> AN	Bearbeiten Se	enden <u>A</u> nsicht	Irace <u>H</u> ilfe				
	- 4	• 4 10 10 1	/ 🗈 🖻 🔺					
1/ 5	🖉 Senden /	Empfangen 🔄	🛛 Trace 🛛 🚔 PCA	N-USB				
	Botschaft		DLC	Daten		Zyklus	zeit	Anzahl
	5FFh		8	60 01 21 00 00 00 00	0 00			1
	77Fh		1	00				1
ษ								
2								
a a								
멑								
Ъ								
	Botschaft		DLC	Daten	Zykluszeit	Anzahl	Trigger	Kommentar
	000h		8	00 00 00 00 00 00 00 00	Warte	1	Manuell	Sync
	000h		2	81 00	Warte	0		NMT-Reset
	000h		2	01 00	Warte	0		Start all nodes
	601h		8	40 01 21 00 00 00 00 00	Warte	0		Node-ID lesen
E E	601h		8	2F 01 21 00 7F 00 00 00	Warte	0		Node-ID auf 127 setz
Þ	67Fh		8	2F 01 21 00 01 00 00 00	Warte	1	Manuell	Node-ID auf 1 setzen
jā l	67Fh		8	2F 01 21 00 02 00 00 00	Warte	0		Node-ID auf 2 setzen
0,								
	Verbunden	mit PCAN-USB	(250 kBit/s) 🚔 C	verruns: 0 QXmtFull: 0	BUSHEAVY			.4

Illustration 3.2: Example: changed Node-ID on 1



## 3.3. Step: To check the setting, read out the specified object

The changed Object 2101h Sub-Index 00h has to be read out. This is possible with the following message (see Spreadsheet 3.4; Illustration 3.4)

600h+ID	8	40h	01h	21h	00h	00h	00h	00h	00h
CAN-ID	DLC	Command	Objekt	Objekt	Sub-	Byte 0	Byte 1	Byte 2	Byte 3
			L	Н	Index				

Spreadsheet 3.4: Message to read Node-ID

In the following screenshot you can see the response of the encoder (see Spreadsheet 3.5). The Node-ID of the encoder is displayed in Byte 0 as a hex value.

600h+ID	8	4Fh	01h	21h	00h	7Fh	00h	00h	00h
CAN-ID	DLC	Command	Objekt L	Objekt H	Sub- Index	Byte 0	Byte 1	Byte 2	Byte 3

Spreadsheet 3.5: Answer of the rotary encoder after reading the Node ID

<b>D</b> an	PCAIN-VIEW						
	atei <u>C</u> AN <u>B</u> earbeiten S	Senden <u>A</u> nsicht <u>T</u>	[race Hilfe				
6	s - 🔚   🤣 🔶 🔄	X 🖻 🗈 i 🔶 💷	🔲 🧼 🕕				
7	Senden / Empfangen	Trace 🖨 PCAN-L	USB				
	Botschaft	DLC	Daten		Zvklus	eit	Anzahl
	5FFh	8	60 01 21 00 00 00 00 00				1
	701h	i	00				1
	77Fh	1	00				1
F							
l e							
Ľ	1						
Ū.							
2							
1-							
	2.1.6	DIC.	2.	7.0. 2		-	
	Rotschaft	DLC	Daten	Zykluszeit	Anzahl	Trigger	Kommentar
	Botschaft 000h	DLC 8	Daten 00 00 00 00 00 00 00 00 00	Zykluszeit Warte	Anzahl 2	Trigger Manuell	Kommentar Sync
	Botschaft 000h 000h	DLC 8 2	Daten 00 00 00 00 00 00 00 00 00 81 00	Zykluszeit Warte Warte	Anzahl 2 1	Trigger Manuell Manuell	Kommenter Sync NMT-Reset
	Botschaft 000h 000h 000h	DLC 8 2 2	Dateo 00 00 00 00 00 00 00 00 00 81 00 01 00	Zykluszeit Warte Warte Warte	Anzahl 2 1 0	Trigger Manuell Manuell	Kommentar Sync NMT-Reset Start all nodes
	Botschaft 000h 000h 000h 601h	DLC 8 2 2 8	Daten 00 00 00 00 00 00 00 00 81 00 01 00 40 01 21 00 00 00 00 00	Zykluszeit Warte Warte Warte Warte	Anzahl 2 1 0 0	Trigger Manuell Manuell	Kommentar Sync NMT-Reset Start all nodes Node-ID lesen
en	Botschaft 000h 000h 000h 601h 601h	DLC 8 2 2 8 8 8	Daten 00 00 00 00 00 00 00 00 00 81 00 01 00 40 01 21 00 00 00 00 00 2F 01 21 00 7F 00 00 00	Zykluszeit Warte Warte Warte Warte Warte	Anzahl 2 1 0 0 0 0	Trigger Manuell Manuell	Kommentar Sync NMT-Reset Start all nodes Node-ID lesen Node-ID auf 127 setz
Iden 🛛	Rotschaft 000h 000h 000h 601h 601h 601h	DLC 8 2 2 8 8 8 8	Daten 00 00 00 00 00 00 00 00 00 81 00 01 00 40 01 21 00 00 00 00 00 2F 01 21 00 7F 00 00 00 2F 01 21 00 01 00 00 00	Zykluszeit Warte Warte Warte Warte Warte Warte	Anzahl 2 1 0 0 0 1	Trigger Manuell Manuell Manuell Manuell	Kommentar Sync NMT-Reset Start all nodes Node-ID lesen Node-ID auf 127 setz Node-ID auf 1 setzen
enden	Rotschaft 000h 000h 000h 601h 601h 601h 67Fh 67Fh	DLC 8 2 8 8 8 8 8 8 8	Dates           00 00 00 00 00 00 00 00 00           81 00           01 00           40 01 21 00 00 00 00 00           2F 01 21 00 7F 00 00 00           2F 01 21 00 01 00 00 00           2F 01 21 00 02 00 00	Zykluszeit Warte Warte Warte Warte Warte Warte Warte	Apzabl 2 1 0 0 0 1 1 0	Trigger Manuell Manuell Manuell	Kommentar Sync NMT-Reset Start all nodes Node-ID auf 127 setz Node-ID auf 127 setz.n Node-ID auf 12 setzen
Senden	Botschaft           000h           000h           000h           601h           601h           67Fh	DIC 8 2 2 8 8 8 8 8 8 8 8 8 8	Daten           00 00 00 00 00 00 00 00 00           81 00           01 00           40 01 21 00 00 00 00 00           2F 01 21 00 7F 00 00 00           2F 01 21 00 01 00 00 00           2F 01 21 00 02 00 00 00	Zykluszeit Warte Warte Warte Warte Warte Warte Warte Warte	Anzahl 2 1 0 0 0 0 1 0 0	Trigger Manuell Manuell Manuell	Kommentar Sync NMT-Reset Start all nodes Node-ID lesen Node-ID auf 127 setz Node-ID auf 1 setzen Node-ID auf 2 setzen
Senden	Ratschaft 000h 000h 000h 601h 601h 67Fh 67Fh	DLC 8 2 8 8 8 8 8 8 8 8 8 8	Dates           00 00 00 00 00 00 00 00 00           81 00           01 00           40 01 21 00 00 00 00 00           2F 01 21 00 7F 00 00 00           2F 01 21 00 01 00 00 00           2F 01 21 00 01 00 00 00           2F 01 21 00 02 00 00	Zykluszeit Warte Warte Warte Warte Warte Warte Warte	Anzahl 2 1 0 0 0 0 1 0	Trigger Manuell Manuell Manuell	Kommentar Sync NMT-Reset Start all nodes Node-ID lesen Node-ID auf 127 setz Node-ID auf 1 setzen Node-ID auf 2 setzen
Senden	Batschaft           000h         000h           000h         000h           001h         601h           601h         607Fh           67Fh         67Fh	DLC 8 2 2 8 8 8 8 8 8 8	Dates 00 00 00 00 00 00 00 00 00 81 00 01 00 40 01 21 00 00 00 00 00 2F 01 21 00 7F 00 00 00 2F 01 21 00 01 00 00 00 2F 01 21 00 02 00 00 00	Zykluszeit Warte Warte Warte Warte Warte Warte Warte	Anzahl 2 1 0 0 0 0 1 0 0	Trigger Manuell Manuell Manuell Manuell	Kommentar Sync NMT-Reset Start all nodes Node-ID lesen Node-ID auf 127 setz Node-ID auf 1 setzen Node-ID auf 2 setzen
Senden	Botschaft           000h           000h           000h           601h           601h           67Fh	DIC 8 2 2 8 8 8 8 8 8 8 8 8	Daten           00 00 00 00 00 00 00 00 00           81 00           01 00           40 01 21 00 00 00 00 00           2F 01 21 00 7F 00 00 00           2F 01 21 00 01 00 00 00           2F 01 21 00 02 00 00 00	Zykluszeit Warte Warte Warte Warte Warte Warte Warte	Anzahl 2 1 0 0 0 1 1 0	Trigger Manuell Manuell Manuell	Kommentar Sync NMT-Reset Start all nodes Node-ID lesen Node-ID auf 127 setz Node-ID auf 1 setzen Node-ID auf 2 setzen
Senden	Botschaft 000h 000h 000h 601h 601h 67Fh 67Fh	DIC 8 2 2 8 8 8 8 8 8 8 8 8	Daten 00 00 00 00 00 00 00 00 00 81 00 01 00 40 01 21 00 00 00 00 00 2F 01 21 00 7F 00 00 00 2F 01 21 00 01 00 00 00 2F 01 21 00 02 00 00 00	Zykluszeit Warte Warte Warte Warte Warte Warte Warte	Anzahl 2 1 0 0 0 0 1 0 0	Trigger Manuell Manuell Manuell	Kommentar Sync NMT-Reset Start all nodes Node-ID lesen Node-ID auf 127 setz Node-ID auf 1 setzen Node-ID auf 2 setzen

Illustration 3.3: After NMT-Reset and Sync message



B	PCAN-View									
D	atei <u>C</u> AN <u>B</u> earb	eiten <u>S</u> enden	<u>A</u> nsicht	<u>T</u> race <u>H</u> ilfe						
6	. 🔲 👍 😽			- A A						
/ =	ኛ Senden / Empfar	ngen 🖳 Trace	🚔 PCAN	I-USB						
	Botschaft		DLC		Daten			Zyk	luszeit	Anzahl
	581h		8		4F 01 21 00 01 00 0	00 00				1
	5FFh		8		60 01 21 00 00 00 0	00 00				1
	701h		1		00					1
S	77Fh		1		00					1
Em										
	Botschaft		DLC	Daten		Zyl	duszeit	Anzahl	Trigger	Kommentar
	000h		8	00 00 0	0 00 00 00 00 00	Wa	te	2	Manuell	Sync
	000h		2	81 00		Wa	te	1	Manuell	NMT-Reset
	000h		2	01.00		Wa	te	0		Start all nodes
	601h		8	40 01 2	1 00 00 00 00 00	Wa	te	1	Manuell	Node-ID lesen
E S	601h		8	2F 01 2	1 00 7F 00 00 00	Wa	te	0		Node-ID auf 127 setz.
ğ	67Fh		8	2F 01 2	1 00 01 00 00 00	Wa	te	1	Manuell	Node-ID auf 1 setzen
e	67Fh		8	2F 01 2	1 00 02 00 00 00	Wa	te	0		Node-ID auf 2 setzen
S										

Illustration 3.4: After reading-message



Changing the Node ID automatically adjusts the PDO and EMCY COB IDs. After the first manual storage, they are frozen at their current value and no longer automatically adjusted. Performing the "Restore Defaults" command will re-enable automatic adjustment.

# 4. Node-ID einstellen mit LSS

The encoder also offers the possibility to change the Node-ID with LSS (Layer Setting Services). This explanation is available at the technical manual in chapter 8.2 (page 41-44). The technical manual is available for as a free download by our website https://www.megatron.de



## 5. Setting baudrate with SDO

The encoders HTB36, FHB58 from MEGATRON provide an automatic baudrate detection. It is also possible to use a fixed baudrate which can be set by either LSS (as described above) or SDO.

The configuration of the encoder is only possible in Pre-Operational mode. To alter the baudrate you have to change object 2100h Sub-Index 00h. This can be achieved with a simple SDO write command with the target baudrate as data.

600h+ID	8	2Fh	00h	21h	00h	Baud	00h	00h	00h
CAN-ID	DLC	Command	Object L	Object H	Sub- index	Byte0	Byte1	Byte2	Byte3

Spreadsheet 5.1: SDO- m	nessage – set baudrate
-------------------------	------------------------

The following values represent the valid baud rates:

Value (d)	Baudrate (kBit/s)	
0	1000	
1	800	
2	500	
3	250	
4	125	
5	100	
6	50	
7	20	
8	10	
Q	Auto	

Spreadsheet 5.2: Baudrate coding



The new baudrate will become effective after a reset of the encoder (hard reset or NMT reset). Writing on object 2100h is not protected and the change will be immediately stored in the internal EEPROM. It is not necessary to perform a "save parameters".



#### 6. Recommended accessories

We recommend the following accessories from MEGATRON for an effective starting up of the rotary encoder:

Recommended Accessories for CAN Rotary-Encoders:				
	T-junction or Y-junction		Stub/bus- cable with connector male and female in varying lengths	
	Termination resistor 120 Ohm male connector			
67	Termination resistor 120 Ohm female connector			

You can receive further technical information on our website, in the data sheet of product family HTx36E



# 7. Copyright

Copying and duplication is prohibited without prior permission from MEGATRON Elektronik GmbH & Co.KG. Contents of this documentation refer to the rotary encoders described therein.

#### 8. Additional exclusion of liability

All technical content within this document can be modified without prior notice. The content of the document is the content of a recurring revision.

MEGATRON is not liable for accidental loss due to use of or inability to use this product, such as loss of business income.

MEGATRON is not liable for the consequences of improper use.

#### 9. Customer service and technical support

If you have technical questions, you can contact us at

 Tel.:
 +49 89 / 46 09 4 - 0

 E-Mail:
 info@megatron.de

 Homepage:
 https://www.megatron.de