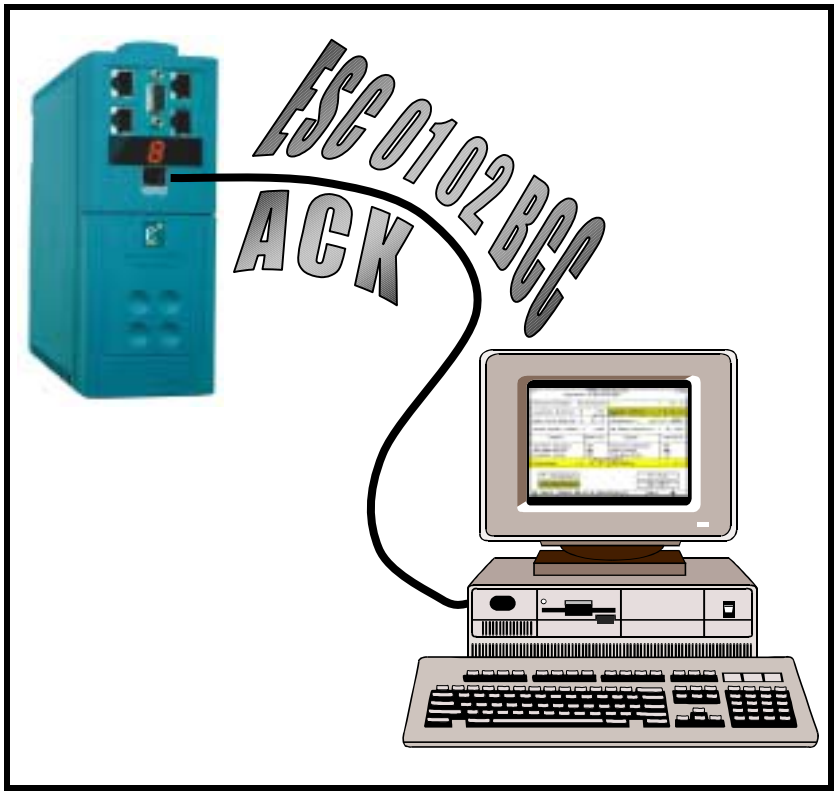
SSD DRIVES

früher EUROTHERM DRIVES

631

Serielles Übertragungsprotokoll
serial transfer protocol

Series



Serielles Übertragungsprotokoll 631
Serial transfer protocol 631

Typ / *Model*: EASY-seriell 631

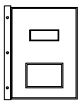
Produkt-Handbuch
Product manual

Weitere Unterlagen,
die im Zusammenhang mit
diesem Dokument stehen.

Further descriptions,
that relate to this document.

UL: 7.1.8.2

631 - Produkt-Handbuch



631 - Product manual

Hergestellt in Deutschland, 1998

Made in Germany, 1998

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INHALTSVERZEICHNIS *CONTENTS*

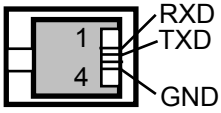
1 Serielles Übertragungsprotokoll *Serial transfer protocol*

1.1 Schnittstellen-Einstellung für X15 *Standard interface setting for X15*

19200 Baud
gerade Parität
1 Startbit
8 Datenbit
1 Stopbit

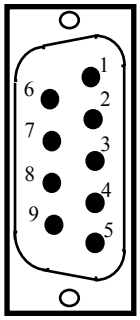
19200 baud
even parity
1 start bit
8 data bits
1 stop bit

X15 RS232
4-Pol Modular-Buchse,
4-pole Modular-Jack



PC RS232

SUB D 9
Buchse
Ansicht auf Lötseite
female
view to solder side



RXD	1	631 Receive serial Data	PC Receive serial Data	3	RXD
TXD	2	631 Transmit serial Data	PC Transmit serial Data	2	TXD
	3	do not connect	do not connect		
GND	4	631GND	PC GND	5	GND

➢ Kabel komplett konfektioniert erhältlich

➢ *Cable ready to use available*

Jeder Befehl, der vom PC zum 631 gesendet wird, muß mit dem Zeichen ESC (1Bh) eingeleitet werden

Every command sent by the PC to the 631, must be introduced with the sign ESC (1Bh).

An das ESC-Zeichen schließt sich die Nummer der angesprochenen Achse (immer 1) an.

The ESC-sign follows the number of the concerned axis (1).

Danach folgt eine Befehlskennung.
Abhängig von der Befehlskennung sind Datenbytes zu senden.

Then a command code follows.
Depended on the command code data bytes have to be sent.

Beendet wird der Befehl mit dem BCC-Zeichen[1].

The command is cancelled with the BCC-sign[1].

Jeder akzepierte Befehl wird mit ACK(06h) (verstanden) quittiert.

Every accepted command is acknowledged with ACK (06h) (understood).

Kann ein Befehl nicht korrekt interpretiert werden (Befehlscodierung nicht eingehalten, BCC nicht korrekt), so wird mit NAK (15h) (nicht verstanden) quittiert.

If a command cannot be interpreted correctly (not kept command coding, BCC not correct), it is acknowledged with NAK (15h) (not understood).

Wird der Befehl nicht innerhalb einer Maximalzeit[2] übertragen, so wird mit TIMEOUT (TOUT, 16h) quittiert.

If the command is not transmitted within a maximum time[2], it is acknowledged with TIMEOUT (TOUT, 16h)

[1] BCC-Bildung siehe Kapitel 1.4
[2] ca. 40 ms

BCC-setting see chapter 1.4
approx. 40 ms

Schnittstellen-Einstellung für X15

Die Fehlermeldungen NAK, TIMEOUT werden sofort nach dem Erkennen des Fehlers gesendet.

Danach ist der 631 wieder bereit, eine neue Befehlssequenz zu empfangen.
Ist der Befehl korrekt übertragen worden, aber im Betriebszustand des 631 nicht zulässig[3], wird der Befehl mit einem CAN (18h) quittiert.
Quittungszeichen ACK, CAN, NAK und TIMEOUT sind nicht der Kreuzsicherung unterzogen.

Wird ein Befehl gesendet, der den 631 zur Rücksendung von Daten veranlaßt, z.B. Diagnoseinformationen auslesen, so wird erst das Erkennen des Befehls mit ACK quittiert. Anschließend werden die Daten mit BCC-Zeichen gesendet.

Standard interface setting for X15

The error messages NAK, TIMEOUT are sent immediately after recognizing the error.

Then the 631 is ready again to receive a new command sequency.
If the command was transmitted correctly, but not permissible in the operating mode of the 631 time[3],the command is acknowledged with a CAN (18h).
Acknowledgement signs ACK, CAN, NAK, TIMEOUT are not subject to cross check.

If a command is sent, inducing the 631 to return data, e.g. read out diagnosis information, at first recognizing the command with ACK is acknowledged. Then the data with BCC-signs are sent.

1.2 Beispiel-Codierung

Example for encoding

condition/activity	631	example command	host	length	condition/action
explanation of the condition an reaction of the drive.		← ← ← ← request from host ←←←←	←	number of send Byte	explanation of the EASYRIDER conditions and menue and hotkey selection.
		ESC — Beginning of the command 1 01 — axis-number 2 hex — command 3 hex — data 0 4 hex — data n 5 hex — BCC			
		→ → → response from 631 !!! → → →			
		Command was correctly transmitted and executed — ACK			
		with read-commands data in response — byte n ---- byte 0 (1-n)			
		BCC — hex (n+1)		number of receive byte	
		Command was not transmitted correctly — NAK			
		Command was transmitted correctly but is not allowed in the current operating mode. — CAN			
		Command was not transmitted completely — TOUT			

[3] z.B. fehlende Anmeldung für Parameterbefehle o.ä. *e.g. missing login for parameter commands*

1.3 BCC-Bildung

Das BCC-Zeichen wird über das ganze Befehlswort gebildet, beginnend mit ESC ... bis zum BCC. Das BCC-Zeichen selbst wird nicht der Prüfung unterzogen.
Gebildet wird es durch eine "Exclusive Oder"-Verknüpfung der zu übertragenden Bytes

Setting up the BCC

The BCC-sign is set up with the whole command word, beginning with ESC ... up to the BCC. The BCC-sign itself is not subject to the check.
It is set up via an "Exclusive Or"- connection of the bytes to be transmitted.

BEISPIEL:

EXAMPLE:

PC: <ESC> <1> <0> | <BCC>

wird der Kreuzsicherung unterzogen — Ergebnis
is subject to the cross check — *result*

BCC = <ESC> ***XOR*** < 1 > ***XOR*** < 0 > **= 1Ah**
*BCC = <ESC<**XOR**< 1 > **XOR** < 0> = **1Ah***

631: <ACK>
631: *<ACK>*

Kreuzsicherung des 631 bei Lesebefehlen
Cross check of the 631 with read commands

PC: <ESC> <1> <24> <HEX> <HEX> <HEX> | <BCC>

wird der Kreuzsicherung unterzogen — Ergebnis
is subject to the cross check — *result*

631: <ACK > <HEX> <HEX> <HEX> | <BCC>

wird der Kreuzsicherung unterzogen — Ergebnis
is subject to the cross check — *result*

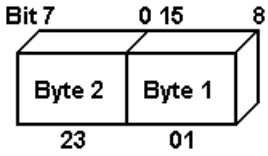
BCC = <ACK> ***XOR*** <HEX> ***XOR*** <HEX> ***XOR*** <HEX>
BCC = <ACK> ***XOR*** <*HEX*> ***XOR*** <*HEX*> ***XOR*** <*HEX*>

1.4 Zahlendarstellung in den Befehlen *Numbers representation in the commands*

1.4.1 2 Byte hexadezimale Werte (WORD) *2 byte hexadecimal values (WORD)*

Zahlenbereich $\pm 2^{15}$ (signed integer)
Beispiel: Der hexadezimale Wert 0123h stellt sich folgendermaßen dar:
01 = High-Byte (Byte 1)
23 = Low-Byte (Byte 2)
Reihenfolge innerhalb des seriellen Befehls:

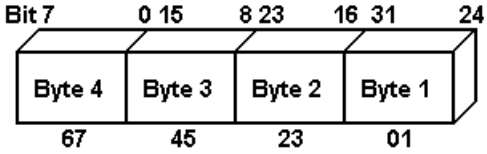
Number range $\pm 2^{15}$ (signed integer)
Example: The hexadecimal value 0123h represents itself as follows:
01 = High-Byte (Byte 1)
23 = Low-Byte (Byte 2)
Precedence within the serial command:



1.4.2 4 Byte hexadezimale Werte (LWORD) *4 byte hexadecimal values (LWORD)*

Zahlenbereich $\pm 2^{31}$ (signed long)
Beispiel: Der hexadezimale Wert 01234567h stellt sich folgendermaßen dar:
01 = High-Byte (Byte 1)
23 = Low-Byte (Byte 2)
45 = High-Byte (Byte 3)
67 = Low-Byte (Byte 4)
Reihenfolge innerhalb des seriellen Befehls:

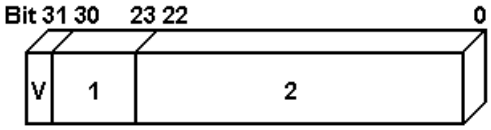
Zahlenbereich $\pm 2^{31}$ (signed long)
Example: The hexadecimal value 01234567h represents itself as follows:
01 = High-Byte (Byte 1)
23 = Low-Byte (Byte 2)
45 = High-Byte (Byte 3)
67 = Low-Byte (Byte 4)
Precedence within the serial command:



1.4.3 4 Byte Fließkommawerte (FLOAT) *4 byte floating point values (FLOAT)*

Zahlenbereich ca. ±1,18 * 10^{-38} ... ±3,40 * 10^{38}

Number range approx. ±1,18 x 10^{-38} ... ±3,40 x 10^{38}



V = Vorzeichen (0 = positiv; 1 = negativ)
1 = Exponent (2^n Multiplikator; n =Exponent-127)
2 = Mantisse (Bit 22=2^0)

V = Sign (0 = positive; 1 = negative)
1 = Exponent (2^n Multiplier; n =Exponent-127)
2 = Mantissa (Bit 22=2^0)

Beispiel: Der Fließkommawert 3.141592654 stellt sich als 4 Byte hexadezimaler Wert folgendermaßen dar: 40 49 0F DB h
d.h. Vorzeichen = 0
Exponent = 80h; n=1; 2^n=2
Mantisse = 490FDBh

Example: The floating point value 3.141592654 represents itself as follows as 4 bytes of hexadecimal value: 40 49 0F DB h
that is Sign = 0
Exponent = 80h; n=1; 2^n=2
Mantissa = 490FDBh

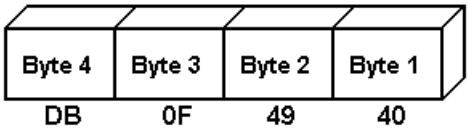
4			9				0				F				D				B			
0	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	-16	-17	-18	-19	-20	-21	-22
1	0	0	1	0	0	1	0	0	0	0	1	1	1	1	1	1	0	1	1	0	1	1
$2+2^0+2^{-3}+2^{-6}+2^{-11}+2^{-12}+2^{-13}+2^{-14}+2^{-15}+2^{-16}+2^{-18}+2^{-19}+2^{-21}+2^{-22}$= 3,141592741013																						

40 = Byte 1
49 = Byte 2
0F = Byte 3
DB = Byte 4

40 = Byte 1
49 = Byte 2
0F = Byte 3
DB = Byte 4

Reihenfolge innerhalb des seriellen Befehls:

Precedence within the serial command:



1.5 Normierungen der Parameter *Parameters scaling*

Nummer ***number***	**Normierung**	***scaling***
1	Wert = v [min^{-1}] * 2	*value = v [rpm] * 2*
2	Wert = a [min^{-1}/s] / 5	*value = a [rpm/s] / 5*
3		

2 Serieller Befehlssatz — *Serial command set*

2.1 Befehl 0: 631 deaktivieren — *Command 0: disable 631*

Funktion:
Dieser Befehl deaktiviert den 631.
Der Befehl ist jederzeit erlaubt.

Function:
This command disables the 631.
This command is allowed at any time.

condition/activity	631	command 0 : disable 631	host	length	condition/action
This command disables the 631 This command is allowed at any time. The display shows / - / if there is now higher prior sign.		← ← ← ← request ??? ←←←← ESC — Beginning of the command 01 — axis-number 00 — command 1A — BCC (1B*xor*01*xor*00 = 1A) → → → → response !!! → → → → Command was correctly transmitted and executed — ACK Command was not transmitted correctly — NAK Command was not transmitted completely — TOUT		4 Byte 1 Byte	EASYRIDER menu „command“; „deactivate drive“ or hotkey **F10**

2.2 Befehl 1: 631 aktivieren — *Command 1: activate 631*

Funktion:
Dieser Befehl hebt die Wirkung des Befehl 0 "631 deaktivieren" auf.
Der Befehl ist jederzeit erlaubt.

Function:
This command cancels the effect of the command 0 ”disable 631”
The command is allowed at any time.

condition/activity	631	command 1 : activate 631	host	length	condition/action
This command cancels the effect of the command 0 ”disable 631”. This command is allowed at any time.		← ← ← ← request ??? ←←←← ESC — Beginning of the command 1 01 — axis-number 2 01 — command 3 1B — BCC (1B*xor*01*xor*01 = 1B) → → → → response !!! → → → → Command was correctly transmitted and executed — ACK Command was not transmitted correctly — NAK Command was not transmitted completely — TOUT		4 Byte 1 Byte	EASYRIDER menu „command“; „activate drive“ or hotkey **shift+F10**

2.3 Befehl 2: 631-Reset

Command 2: 631-Reset

Funktion:
Dieser Befehl setzt eine erkannte Fehlerbedingung zurück.
Der Befehl ist nur erlaubt, wenn der PC angemeldet ist und der 631 deaktiviert wurde.

Function:
This command resets a recognized error code.

The command is only allowed when the PC is logged in and the 631 was enabled.

condition/activity	631	command 2 : reset 631		host	length	condition/action
This command resets a recognized error code. The command is only allowed when the PC is logged in and the 631 was enabled		← ← ← ← request ??? ←←←←		←	4 Byte	EASYRIDER menu „command“; „reset drive“
		ESC	Beginning of the command	↑		
		1 01	axis-number			
		2 02	command			
		3 18	BCC (1B*xor*01*xor*02 = 18)			
		→ → → → response !!! → → → →		↑		
		Command was correctly transmitted and executed	ACK			
		Command was not transmitted correctly	NAK		1 Byte	
		Command was transmitted correctly but is not allowed in the current operating mode.	CAN			
		Command was not transmitted completely	TOUT			

2.4 Befehl 3: Hostlogin (Anmeldung ausführen)

Command 3: Hostlogin (execute login)

Funktion:
Dieser Befehl führt die Hostanmeldung des PC aus.
Der Befehl ist nur erlaubt, wenn nicht bereits eine Hostanmeldung vorliegt.

Function:
This command executes the hostlogin of the PC.

The command is only allowed, when there is not already a hostlogin.

condition/activity	631	command 3 : hostlogin		host	length	condition/action
This command executes the hostlogin of the PC. The command is only allowed, when there is not already a hostlogin. Notice : for several commands it is neccessary to set the drive in the host login mode.		← ← ← ← request ??? ←←←←		←	4 Byte	EASYRIDER menu „command“; „PC login“ or hotkey **F6**
		ESC	Beginning of the command	↑		
		1 01	axis-number			
		2 03	command			
		3 19	BCC (1B*xor*01*xor*03 = 19)			
		→ → → → response !!! → → → →		↑		
		Command was correctly transmitted and executed	ACK			
		Command was not transmitted correctly	NAK		1 Byte	
		Command was sent correctly, but there is already a login	CAN			
		Command was not transmitted completely	TOUT			

2.5 Befehl 4: Hostlogout (Anmeldung aufheben)

Command 4: Hostlogout (cancel login)

Funktion:
Dieser Befehl hebt eine zuvor ausgeführte Hostanmeldung wieder auf.
Der Befehl ist nur erlaubt, wenn eine Hostanmeldung vorliegt.

Function:
This command cancels a hostlogin executed before.
This command is only allowed, when a hostlogin exists.

condition/activity	631	command 4 : hostlogout	host	length	condition/action
This command cancels a hostlogin executed before. This command is only allowed, when a hostlogin exists. Notice : for several commands it is neccessary to set the drive in the host login mode.		← ← ← ← request ??? ←←←← ESC — Beginning of the command 1 01 — axis-number 2 04 — command 3 1E — BCC (1B*xor*01*xor*04 = 1E) → → → → response !!! → → → → Command was correctly transmitted and executed — ACK Command was not transmitted correctly — NAK Command was sent correctly, but there is no login — CAN Command was not transmitted completely — TOUT		4 Byte 1 Byte	EASYRIDER menu „command“; „PC logout“ or hotkey **shift + F6**

2.6 Befehl 5: Daten in das EEPROM übertragen

Command 5: Transfer data in the EEPROM

Funktion:
Dieser Befehl startet das Speichern der 631-Parameter im EEPROM.
Der Befehl ist nur nach Anmeldung erlaubt[4], weiterhin muß der 631 deaktiviert sein und nicht bereits eine Speicherung gestartet worden sein.

Function:
This command starts storing the 631-parameters in the EEPROM.
The command is only allowed after having logged in [4], furthermore the 631 must be disabled and a storage may not be started already.

condition/activity	631	command 5 : transfer data to EEPROM	host	length	condition/action
This command starts storing the 631-parameters in the EEPROM. The command is only allowed after having logged in, furthermore the 631 must be disabled and a storage may not be started already.		← ← ← ← request ??? ←←←← ESC — Beginning of the command 1 01 — axis-number 2 05 — command 3 1F — BCC (1B*xor*01*xor*05 = 1F) → → → → response !!! → → → → Command was correctly transmitted and executed — ACK Command was not transmitted correctly — NAK Command was sent correctly, but the conditions are not met. — CAN Command was not transmitted completely — TOUT		4 Byte 1 Byte	EASYRIDER menu „command“; „store all data“ or hotkey **F7** notice : the store procedure can be controlled with th command 16h[5]

[4] siehe Befehl 3: Hostlogin, Kapitel 2.4 — *see command 3: Hostlogin, chapter 2.4*
[5] siehe Befehl 16h EEPROM Zeiger Kapitel 2.23. — *see command 16h: read 631 EEPROM pointer , chapter 2.23*

2.7 Befehl 6: 631 Firmwareversion lesen

Command 6: read 631 firmware version

Funktion:
Dieser Befehl liest die aktuelle Version der 631-Firmware aus.
Der Befehl ist jederzeit erlaubt

Function:
This command reads out current the version of the 631-firmware.
The command is allowed at any time.

condition/activity	631	command 6 : read 631 firmwareversion	host	length	condition/action
This command reads out current the version of the 631-firmware. The command is allowed at any time. The ASCII-text of the firmware version looks like: **6 3 1 _ V _ 5 . 1 0 a _**		← ← ← ← request ??? ←←←← **ESC** Beginning of the command 1 **01** axis-number 2 **06** command 3 **1C** BCC (1B*xor*01*xor*06 = 1C) → → → → response !!! → → → → Command was correctly transmitted and sends the following data **ACK** byte 1 6 **36** 1 byte 2 3 **33** 2 byte 3 1 **31** 3 byte 4 **20** 4 byte 5 V **56** 5 byte 6 **20** 6 byte 7 5 **35** 7 byte 8 . **2E** 8 byte 9 1 **31** 9 byte 10 0 **30** 10 byte 11 a **61** 11 byte 12 **20** 12 **BCC** 13 Command was not transmitted correctly **NAK** Command was not transmitted completely **TOUT**		4 Byte 14 Byte 1 Byte	

2.8 Befehl 7: 631 Diagnoseinformationen

Command 7: 631 Diagnosis information

condition/activity	631	command 7 : read 631 diagnosis information	host	length	condition/action
This command reads out the diagnosis information of the 631. The command is allowed at any time		← ← ← ← request ??? ←←←← ESC — Beginning of the command 1 01 — axis-number 2 07 — command 3 1D — BCC (1B*xor*01*xor*07 = 1D) → → → → response !!! → → → → Command was correctly transmitted and sends the following data — ACK error word; low byte[6]; high byte[7] — word 1 status word 1; low byte[8]; high byte[9] — word 3 status word 2; low byte[10]; high byte[11] — word 5 operating word; lowbyte[12];highbyte[13] — word 7 actual speed at scaling 1 — word 9 input-output state[14] — byte 11 reserve — byte 12 actual position at increments — lword 13 reserve — lword 17 BCC 21 Command was not transmitted correctly — NAK Command was not transmitted completely — TOUT	← ↑ 💻 ↑ 👂	4 Byte 22 Byte 1 Byte	

[6] errorword; low byte

7	6	5	4	3	2	1	0
I^2t-motor	*Overvoltage*	*Temperature of the output stage too high*	*Motor temperature too high*	*Resolver error*	-	*input activ befor ready*	*Overcurrent (Software)*

[7] errorword; high byte

15	14	13	12	11	10	9	8
Watchdog-Reset	*Internal stop*	*Overcurrent (Hardware)*	-	*trailing error + deactive*	*EEPROM-check total*	*Ballast power exceeded*	*I^2t-regulator*

[8] statusword1; low byte

7	6	5	4	3	2	1	0
analog. Setpoint within setpoint zero window	Warning output stage temperature	Warning I^2t-regulator	Warning motor temperature	Warning I^2t-motor	-	Undervoltage	Output stage passive

[9] statusword1; high byte

15	14	13	12	11	10	9	8
limit switch detected	Warning	Speed controller without I-component	EEPROM-protect storage runs	EEPROM-storage runs	Warning ballast power	-	EEPROM-active

[10] statusword2 low byte

7	6	5	4	3	2	1	0
Position reached	-	-	X20 CAN 631 disabled	-	X20 CAN send istpos 2	X 20 CAN hostlogin	-

[11] statusword2 high byte

15	14	13	12	11	10	9	8
Trailing distance o.K	-	initialised (move datum)	X15 631 disabled	position reached dynamic	-	X15 hostlogin	X15 active

[12] operatingword; low byte

7	6	5	4	3	2	1	0
Operating mode position control with BIAS(5)	-	-	Internal setpoint generator	Operating mode position control	Operating mode speed(0)-current(1) control	-	-

[13] operatingword; high byte

15	14	13	12	11	10	9	8
-	-	-	-	virtual axis activ	-	-	-

[14] input output state

7	6	5	4	3	2	1	0
input X10.10	input X10.9	input X10.8	input X10.7	-	-	*output X10.6*	*output X10.5*

2.9 Befehl 13: BIAS-Satzzeiger setzen

Command 13: set BIAS process pointer

condition/activity	631	command 0D : set BIAS process pointer	host	length	condition/action
This command set's the BIAS- process pointer. notice : operating mode 5 and running BIAS – pogramm is nesseccary!		← ← ← ← request ??? ←←←← ESC — Beginning of the command 1 01 — axis-number 2 0D — command 3 word — processpointer (0 –1499) 5 hex — BCC → → → → response !!! → → → → Command was correctly transmitted and executed — ACK Command was not transmitted correctly — NAK Command was sent correctly, but the conditions are not met.(pointer > 1499) — CAN Command was not transmitted completely — TOUT	← ↑ 💻 ↑ 👂	6 Byte 1 Byte	

2.10 Befehl 16: 631 Diagnoseinformationen 2

Command 16: 631 Diagnosis information 2

condition/activity	631	command 10 : read 631 diagnosis information 2	host	length	condition/action
This command reads out the diagnosis information 2of the 631. The command is allowed at any time		← ← ← ← request ??? ←←←← ESC — Beginning of the command 1 01 — axis-number 2 10 — command 3 0A — BCC (1B*xor*01*xor*10 = 0A) → → → → response !!! → → → → Command was correctly transmitted and sends the following data — ACK error word l; see command 7 — word 1 status word 1; see command 7 — word 3 status word 2; see command 7 — word 5 operating word; see command 7 — word 7 actual speed without scaling — word 9 actual I^2 motor value — word 11 actual current value — word 13 actual UCC value — word 15 actual I^2 drive value — word 17 actual break resistor power — word 19 reserve (0) — word 21 input outputstate; see command 7 — word 23 absolut value resolver (16 Bit) — word 25 actual analog setpoint value — word 27 actual motor temp. value — word 29 actual position at increments — lword 31 internal calculation time — lword 35 BCC 39 Command was not transmitted correctly — NAK Command was not transmitted completely — TOUT	← ↑ 💻 ↑ 👂	4 Byte 40Byte 1 Byte	

2.11 Befehl 17: 631 interne Diagnoseinformationen

Command 17: 631 intern Diagnosis informations

condition/activity	631	command 11 : read 631 intern diagnosis informations	host	length	condition/action
This command reads out the intern diagnosis information of the 631. The command is allowed at any time		← ← ← ← request ??? ←←←← **ESC** Beginning of the command 1 **01** axis-number 2 **11** command 3 **0B** BCC (1B*xor*01*xor*11 = 0B) → → → → response !!! → → → → Command was correctly transmitted and sends the following data **ACK** drive-type (1;2;4;6) **word** 1 intern serial number **word** 3 production-data **word** 5 repair-number **word** 7 I_nom^2 motor (intern units) **word** 9 A FULL(Ieff* 1,414 *100) **word** 11 I NORM (internal factor) **word** 13 I_nom^2 drive(intern units) **word** 15 break resistor power (in watt) **word** 17 UCC_NORM (internal factor) **word** 19 reserve **word** 21 CONFIG_CODE[15;16] **word** 23 maximum speed (intern 32000) **word** 25 speed factor (intern) **lword** 27 **BCC** 31 Command was not transmitted correctly **NAK** Command was not transmitted completely **TOUT**		4 Byte 32Byte 1 Byte	

15

7	6	5	4	3	2	1	0
internal break resistor actic	-	-	*current limiting with warning*	*motor temp. sensor NTC*	*high resolver resolution*	-	-

16

15	14	13	12	11	10	9	8
count direction X40 istpos2 input		*rotation direction*	-	-	*position control on istposition 2*	-	*input "active" monitoring switched on*

2.12 Befehl 22: 631 EEPROM-Zeiger lesen

Command 22: read 631 EEPROM-pointer

condition/activity	631	command 16 : pointer of save data	host	length	condition/action
This command reads out the status and the pointer of the EEPROM storage. The command is allowed at any time..		← ← ← ← request ??? ←←←← ESC — Beginning of the command 1 01 — axis-number 2 16 — command 3 0A — BCC (1B*xor*01*xor*16 = 0A) → → → → response !!! → → → → Command was correctly transmitted and sends the following data — ACK Pointer of the EEPROM storage — byte 1 State of the EEPROM storage (0 = no storage active) — byte 2 BCC 3 Command was not transmitted correctly — NAK Command was not transmitted completely — TOUT		4 Byte 4 Byte 1 Byte	

2.13 Befehl 23: Positionierbefehl

Command 23: positioning command

Funktion:
Dieser Befehl startet eine Positionierung mit den angegebenen Parametern.
Der Befehl ist nur erlaubt, wenn die Anmeldung ausgeführt wurde, sich der 631 in der Betriebsart Lageregelung befindet und der 631 aktiv ist

Function:
This command starts positioning with the stated parameters.
The command is only allowed when the login was executed, the 631 is in the operating mode of positioning regulation, and the 631 is active.

condition/activity	631	command 17 : 631 positioning command	host	length	condition/action
This command starts positioning with the stated parameters. The command is only allowed when the login was executed, the 631 is in the operating mode of positioning regulation, and the 631 is active!		← ← ← ← request ??? ←←←← ESC — Beginning of the command 1 01 — axis-number 2 17 — command 3 byte — Positioning mode[17] 4 word — Nominal speed at scaling 1 6 word — Acceleration at scaling 2 8 word — Deceleration at scaling 2 10 word — position-window at incr. 12 lword — Nominal position at increments 16 hex — BCC → → → → response !!! → → → → Command was correctly transmitted and executed — ACK Command was not transmitted correctly — NAK Command was sent correctly, but the conditions are not met.(login) — CAN Command was not transmitted completely — TOUT		17 Byte 1 Byte	

[17] siehe Befehl 69a — *see command 69 a*

2.14 Befehl 33: BIAS-Diagnose lesen

Command 33: read BIAS diagnosis

Funktion:
Dieser Befehl liest Informationen über den aktuellen Zustand der BIAS-Abarbeitung.
Dieser Befehl ist immer erlaubt

Function:
This command reads informations about the status of BIAS-execution.
The command is allowed at any time.

condition/activity	631	command 21 : read 631 BIAS diagnosis informations	host	length	condition/action
This command reads informations about the status of BIAS-execution. The command is allowed at any time		← ← ← ← request ??? ←←←← ESC — Beginning of the command 1 01 — axis-number 2 21 — command 3 3B — BCC (1B*xor*01*xor*21 = 3B) → → → → response !!! → → → → Command was correctly transmitted and sends the following data — ACK BIAS execution pointer — word 1 PLC execution pointer — word 3 block number at strobe — word 5 BIAS stack — word 7 wait time — word 9 BIAS status[18] — word 11 PLC status[19] — word 13 PLC stack — word 15 actual position 1 — lword 17 actual position 2 — lword 21 act. pos. 3 (canbus absolute encoder) — lword 25 reserve — word 29 reserve — word 31 BCC 33 Command was not transmitted correctly — NAK Command was not transmitted completely — TOUT	← ↑ ↑	4 Byte 34Byte 1 Byte	

[18] BIAS status low-byte

7	6	5	4	3	2	1	0
-	-	Warte auf IBT-Kommunikation	IBT-Fehler	Stackfehler	Start nicht möglich	ungültiger Parameter	ungültiger BIAS Befehl
-	-	*wait for IBT-communication*	*IBT error*	*stack error*	*Start not possible*	*parameter not valid*	*BIAS command not valid*

BIAS status high-byte

15	14	13	12	11	10	9	8
-	-	-	Warte auf Position	BIAS-Programm-abarbeitung aktiv	-	-	Warte auf Starteingang
-	-	-	*Wait for position reached*	*BIAS program execution active*	-	-	*wait for start input*

[19] PLC status low-byte

7	6	5	4	3	2	1	0
-	-	-	-	*stack error plc*	-	*parameter not valid*	*plc command not valid*

PLC status high-byte

15	14	13	12	11	10	9	8
-	-	-	-	*PLC program execution active*	-	-	-

2.15 Befehl 34: Variablen / Merker lesen

Command 34: read variables / flags

Funktion:
Dieser Befehl liest den Inhalt der angegebenen Variablen- oder Merkerblöcke.
Dieser Befehl ist immer erlaubt

Function:
This command reads the content of the desired variables or flags group.
The command is allowed at any time.

condition/activity	631	command 22 : read flags or variables	host	length	condition/action
This command reads the content of the desired variables or flags group. The command is allowed at any time.!		← ← ← ← request ??? ←←←←	←		
		ESC — Beginning of the command	↑	6 Byte	
		1 01 — axis-number			
		2 22 — command			
		3 byte — variable = 0 / flag = 1	↑		
		4 byte — group number; variable (0 – 15) / flag (0 – 3)			
		5 hex — BCC			
		→ → → → response !!! → → → →			
		Command was correctly transmitted and sends the following data: ACK		66 Byte	64 * byte or 16 * lword
		byte 1 … byte 64 (1 … 64)			
		BCC (65)			
		Command was not transmitted correctly: NAK		1 Byte	
		Command was sent correctly, but the conditions are not met.(groupnumber): CAN			
		Command was not transmitted completely: TOUT			

2.16 Befehl 36: Positionssatz starten

Command 36: start position set

Funktion:
Dieser Befehl aktiviert den angegebenen Positionssatz (0-9). Der Befehl ist nur erlaubt, wenn die Anmeldung ausgeführt wurde, sich der 631 in der Betriebsart Lageregelung befindet und der 631 aktiv ist.
Die Positionssätze müssen vorher mit dem Befehl 69 geladen werden !!

Function:
This command activates the position-block(0-9). The command is only allowed when the login was executed, the 631 is in the operating mode of positioning regulation, and the 631 is active. The position blocks must be programmed with the command 69 first !!

condition/activity	631	command 24 : start position block 631	host	length	condition/action
This command activates the position-block(0-9). The command is only allowed when the login was executed, the 631 is in the operating mode of positioning regulation, and the 631 is active. The position blocks must be programmed with the command 69 first!! !		← ← ← ← request ??? ←←←← ESC — Beginning of the command 1 01 — axis-number 2 24 — command 3 byte — position block number (0 –9 4 hex — BCC → → → → response !!! → → → → Command was correctly transmitted and executed — ACK Command was not transmitted correctly — NAK Command was sent correctly, but the conditions are not met.(blocknumber > 9) — CAN Command was not transmitted completely — TOUT	← ↑ ↑ ↑ ear	6Byte 1 Byte	

2.17 Befehl 37: CAN-BUS Diagnose lesen

Command 37: read CAN-BUS diagnosis

Funktion:
Dieser Befehl liest den Inhalt des angegebenen CAN-BUS Objektes (0-15).
Dieser Befehl ist immer erlaubt

Function:
This command reads the content of the desired CAN-BUS object (0-15).
The command is allowed at any time.

condition/activity	631	command 25 : read CAN-BUS diagnosis	host	length	condition/action
This command reads the content of the desired CAN-BUS object (0-15). The command is allowed at any time		← ← ← ← request ??? ←←←← ESC — Beginning of the command 1 01 — axis-number 2 25 — command 3 byte — object number;(0 – 15) 4 hex — BCC → → → → response !!! → → → → Command was correctly transmitted and sends the following data — ACK byte 1 1 * * byte 16 16 can-message counter — word 17 BCC 19 Command was not transmitted correctly — NAK Command was sent correctly, but the conditions are not met.(groupnumber) — CAN Command was not transmitted completely — TOUT	← ↑ ↑ ↑ ear	5 Byte 20 Byte 1 Byte	

2.18 Befehl 39: Merker/Variable vorladen

Command 39: flag/variable preset

Funktion:
Dieser Befehl lädt den gesendeten Wert in den angegebenen Merker bzw. die angegebene Variable. Der Befehl ist immer erlaubt.

Function:
This command presets the content of the desired flag or variable with the transmitted value. The command is allowed at any time.

condition/activity	631	command 27 : write variable / flag	host	length	condition/action
This command presets the content of the desired flag or variable with the transmitted value. The command is allowed at any time.		← ← ← ← request ??? ←←←←	←	10 Byte	
		1 ESC — Beginning of the command			
		2 01 — axis-number			
		3 27 — command			
		4 byte — variable = 0 / flag = 1			
		5 byte — Number of the variable / flag (0...255)			
		9 lword — Value to preset(flags only 0/1)			
		hex — BCC			
		→ → → → response !!! → → → →			
		Command was correctly transmitted and executed — ACK		1 Byte	
		Command was not transmitted correctly — NAK			
		Command was not transmitted completely — TOUT			

2.19 Befehl 37: Power down Diagnose lesen

Command 37: read power down memory diagnosis

Funktion:
Dieser Befehl liest den Inhalt des angegebenen Power down speicherblocks (0-7).
Dieser Befehl ist immer erlaubt

Function:
This command reads the content of the desired power down memory block (0-7). The command is allowed at any time.

condition/activity	631	command 29 : read power down diagnosis	host	length	condition/action
This command reads the content of the desired power down memory block (0-7). The command is allowed at any time *It is possible to get the last 8 powerdown situations.*		← ← ← ← request ??? ←←←←	←	5 Byte	
		1 ESC — Beginning of the command			
		2 01 — axis-number			
		3 29 — command			
		4 byte — block number;(0 – 7)			
		hex — BCC			
		→ → → → response !!! → → → →			
		Command was correctly transmitted and sends the following data — ACK		18 Byte	
		byte 1 — 1			
		*			
		*			
		byte 16 — 16			
		BCC — 17			
		Command was not transmitted correctly — NAK			
		Command was sent correctly, but the conditions are not met.(blocknumber) — CAN			
		Command was not transmitted completely — TOUT		1 Byte	

2.20 Befehl 47: serieller Drehzahlsollwert

Command 47: serial speed setpoint

Funktion:
Dieser Befehl aktiviert den angegebenen Wert als Drehzahlsollwert.
Der Befehl ist nur in der Betriebsart „Drehzahlregelung ohne analogen Sollwert“ verwendbar. Siehe Befehl 48 ; Sub-Befehl 24.

Function:
This command activate the given value as speed setpoint.
The command is only suitable in the operating mode “speed control without analogous set point value”. see command 48; subcommand 24;

condition/activity	631	command 2F : serial speed setpoint	host	length	condition/action
This command activate the given value as speed setpoint. The command is only suitable in the operating mode “speed control without analogous set point value” !		← ← ← ← request ??? ←←←← ESC — Beginning of the command 1 01 — axis-number 2 2F — command 3 word — speed with scaling 1 5 hex — BCC → → → → response !!! → → → → Command was correctly transmitted and executed — ACK Command was not transmitted correctly — NAK Command was not transmitted completely — TOUT	←	6 Byte 1 Byte	

2.21 Befehl 48: SUCOnet K Simulation

Command 48: SUCOnet K simulation

Funktion:
Dieser Befehl erlaubt die Verwendung des SUCOnet K Protokolls über die serielle Schnittstelle.[20]

Function:
This command permit using the SUCOnet K-protocol via the serial interface.[20]

condition/activity	631	command 30 : bus 16 byte simulation	host	length	condition/action
This command permit using the SUCOnet K-protocol via the serial interface.		← ← ← ← request ??? ←←←← ESC — Beginning of the command 1 01 — axis-number 2 30 — command 3 byte 1 — Bus command byte 1 * * 18 byte 16 — Bus command byte 16 19 hex — BCC → → → → response !!! → → → → Command was correctly transmitted and sends the following data — ACK bus-status byte 1 — byte 1 1 * * bus-status byte 16 — byte 16 16 BCC 17 Command was not transmitted correctly — NAK Command was sent correctly, but the conditions are not met. — CAN Command was not transmitted completely — TOUT	←	20 Byte 18 Byte 1 Byte	

[20] siehe Dokumentation 7.5.2.3. „Businterface SUCOnet K“ *see documentation 7.5.2.3. „bus interface SUCOnet K“*

2.22 Befehl 62 a: Nennstrom Motor lesen

Command 62 a: read rated current of the motor

Funktion:
Dieser Befehl liest den Motor Nennstrom.
Das Lesen des Befehles ist immer erlaubt.

Function:
This command reads the rated current motor.
Reading the command is allowed at any time.

condition/activity	631	command 3E : read rated current motor	host	length	condition/action
This command reads the rated current of the motor. Reading the command is allowed at any time		← ← ← ← request ??? ←←←←	←		
		ESC — Beginning of the command	↑	5 Byte	
		1 01 — axis-number	💻		
		2 3E — command			
		3 00 — read-option = 0	↑		
		4 hex — BCC			
		→ → → → response !!! → → → →			
		Command was correctly transmitted and sends the following data: rated current * √2 * 100 — ACK; word 1; BCC 3	👂	4 Byte	
		Command was not transmitted correctly — NAK			
		Command was not transmitted completely — TOUT		1 Byte	

2.23 Befehl 62 b: Nennstrom Motor schreiben

Command 62 b: write rated current of the motor

Funktion:
Dieser Befehl schreibt den Motor Nennstrom.
Der Befehl ist nur erlaubt wenn die Anmeldung ausgeführt wurde und der 631 deaktiviert wurde.

Function:
This command writes the rated current motor.
The command is only allowed when the login was executed and the 631 was disabled.

condition/activity	631	command 3E : write rated current motor	host	length	condition/action
This command writes the rated current motor. The command is only allowed when the login was executed and the 631 was disabled.		← ← ← ← request ??? ←←←←	←		
		ESC — Beginning of the command	↑	7 Byte	
		1 01 — axis-number	💻		
		2 3E — command			
		3 01 — write-option = 1	↑		
		4 word — rated current * √2 * 100			
		6 hex — BCC			
		→ → → → response !!! → → → →			
		Command was correctly transmitted — ACK	👂		
		Command was not transmitted correctly — NAK		1 Byte	
		Command was sent correctly, but the conditions are not met. — CAN			
		Command was not transmitted completely — TOUT			

2.24 Befehl 65 a: Konfigurationsparameter lesen

Command 65 a: read configuration parameters

Funktion:
Dieser Befehl liest die Konfigurations-parameter. Das Lesen des Befehl ist immer erlaubt.

Function:
This command reads the configuration parameters. Reading the command is allowed at any time.

condition/activity	631	command 41: read configuration parameters	host	length	condition/action
This command reads the configuration parameters Reading the command is allowed at any time		← ← ← ← request ??? ←←←←	←		
		ESC — Beginning of the command	↑	5 Byte	
		1 01 — axis-number	💻		
		2 41 — command	↑		
		3 00 — read-option = 0			
		4 hex — BCC			
		→ → → → response !!! → → → →			
		Command was correctly transmitted and sends the following data — ACK	👂	35 Byte	
		Network axis number (1-255;not used) — byte 1			
		Configuration word Low[21], High[22] — word 2			
		Operating mode (0-5) [23] — byte 4			
		reserve — byte 5			
		Rated current motor *100 * $\sqrt{2}$ — word 6			
		Pole pair number (1-6) — word 8			
		EMC/1000 min^{-1} at Volt — word 10			
		Motor inductivity at $\frac{1}{10}$ mH — word 12			
		Motor resistance at $\frac{1}{10}$ Ohm — word 14			
		I^2t-monitoring time of the motor at sec. — word 16			
		NTC-resistance T1 at Ohm — word 18			
		NTC-resistance T2 at Ohm — word 20			
		PTC-resistance at Ohm — word 22			
		Regulator-disable time value (0-3) — word 24			
		Ucc-low threshold at Volt — word 26			
		Ucc-ballast threshold at Volt — word 28			
		Ballast resistance at $\frac{1}{10}$ Ohm — word 30			
		Ballast power at Watt — word 32			
		BCC 34			
		Command was not transmitted correctly — NAK			
		Command was not transmitted completely — TOUT		1 Byte	

21

7	6	5	4	3	2	1	0
internal ballast active			*current limiting at warning active*	*PTC motor temperature sensor*	*high resolver resolution*		

22

7	6	5	4	3	2	1	0
count direction X40 1 = positive	-	*rotation direction 1= positive*			*position control with 0=pos. 1 1=position 2*	*monitoring of the control voltage active*	*monitoring of the active-input activated*

23

5	4	3	2	1	0
position control with BIAS-execution	*position control without BIAS-execution*	*speed control*	*current control*	*speed control*	*speed control*

2.25 Befehl 65 b: Konfigurations-parameter schreiben

Command 65 b: write configuration parameters

Funktion:
Dieser Befehl schreibt die Konfigurations-parameter.
Der Befehl ist nur erlaubt wenn die Anmeldung ausgeführt wurde und der 631 deaktiviert wurde.

Function:
This command writes the configuration parameters.
The command is only allowed when the login was executed and the 631 was disabled.

condition/activity	631	command 41 : write configuration parameter		host	length	condition/action
This command writes the configuration parameters. The command is only allowed when the login was executed and the 631 was disabled		← ← ← ← request ??? ←←←←		←	38 Byte	
		ESC	Beginning of the command			
		1 01	axis-number			
		2 41	command			
		3 01	write-option = 1			
		4 byte	Network axis number (1-255;not used)			
		5 word	Configuration word [24], High[25]			
		7 byte	Operating mode (0-5) [26]			
		8 byte	reserve			
		9 word	Rated current motor *100 * $\sqrt{2}$			
		11 word	Pole pair number (1-6)			
		13 word	EMC/1000 min^{-1} at Volt			
		15 word	Motor inductivity at $\frac{1}{10}$ mH			
		17 word	Motor resistance at $\frac{1}{10}$ Ohm			
		19 word	I^2t-monitoring time of the motor at sec.			
		21 word	NTC-resistance T1 at Ohm			
		23 word	NTC-resistance T2 at Ohm			
		25 word	PTC-resistance at Ohm			
		27 word	Regulator-disable time value (0-3)			
		29 word	Ucc-low threshold at Volt			
		31 word	Ucc-ballast threshold at Volt			
		33 word	Ballast resistance at $\frac{1}{10}$ Ohm			
		35 word	Ballast power at Watt			
		37 hex	BCC			
		→ → → → response !!! → → → →				
		Command was correctly transmitted	ACK		1 Byte	
		Command was not transmitted correctly	NAK			
		Command was sent correctly, but the conditions are not met.	CAN			
		Command was not transmitted completely	TOUT			

[24] siehe “Konfigurationsparameter lesen“ auf vorheriger Seite *see “read configuration parameter“ on previous page*
[25]
[26]

2.26 Befehl 66 a: Drehzahlregler-parameter lesen

Funktion:
Dieser Befehl liest die Drehzahlregler-parameter.
Der Befehl ist immer erlaubt.

Command 66 a: read parameters of the speed controller

Function:
This command reads the parameters of the speed controller.
The command is allowed at any time

condition/activity	631	command 42 : read speed loop parameters	host	length	condition/action
This command reads the parameters of the speed controller. The command is allowed at any time		← ← ← ← request ??? ←←←← ESC — Beginning of the command 1 01 — axis-number 2 42 — command 3 00 — read-option = 0 4 hex — BCC → → → → response !!! → → → → Command was correctly transmitted and sends the following data — ACK List place speed loop P-component[27] — word 1 List place speed loop I-component — word 3 maximum current at 3.125 % steps — word 5 Setpoint zero window at 1.22 mV steps — word 7 Setpoint integrator at 10 rpm/s — word 9 Speed setpoint norming at 0,1 rpm — word 11 current setpoint norming 0,001 ampere — word 13 reserve — word 15 reserve — word 17 reserve — word 19 Setpoint offset correction value at 1.22 mV steps — word 21 BCC 23 Command was not transmitted correctly — NAK Command was not transmitted completely — TOUT		5 Byte 24 Byte 1 Byte	

[27] siehe Kapitel 3 “Anhang“ — *see chapter 3 “Appendix“*

2.27 Befehl 66 b: Drehzahlregler-parameter schreiben

Command 66 b: write parameters of the speed controller

Funktion:
Dieser Befehl schreibt die Drehzahlregler-parameter.
Der Befehl ist nur nach Anmeldung erlaubt.

Function:
This command writes the parameters of the speed controller.
The command is only allowed after logging in.

condition/activity	631	command 42 : write speed loop parameter		host	length	condition/action
This command writes the speed loop parameters. The command is only allowed when the login was executed and the 631 was disabled		← ← ← ← request ??? ←←←←		←		
		ESC	Beginning of the command		27 Byte	
		1 01	axis-number			
		2 42	command			
		3 01	write-option = 1			
		4 word	List place P-component (0-127)			
		6 word	List place I-component (0-127)			
		8 word	maximum current			
		10 word	Setpoint zero window			
		12 word	Setpoint integrator			
		14 word	Setpoint norming (speed)			
		16 word	Setpoint norming (current)			
		18 word	reserve			
		20 word	reserve			
		22 word	reserve			
		24 word	Setpoint offset correction value			
		26 hex	BCC			
		→ → → → response !!! → → → →				
		Command was correctly transmitted	ACK			
		Command was not transmitted correctly	NAK		1Byte	
		Command was sent correctly, but the conditions are not met.	CAN			
		Command was not transmitted completely	TOUT			

2.28 Befehl 67 a: Stromreglerparameter lesen

Command 67 a: read parameters of the current controller

Funktion:
Dieser Befehl liest die Stromreglerparameter. Der Befehl ist immer erlaubt.

Function:
This command reads the parameters of the current controller. The command is allowed at any time.

condition/activity	631	command 43 : read current loop parameter	host	length	condition/action
This command reads the parameters of the current controller. The command is allowed at any time.		← ← ← ← request ??? ←←←←	←		
		ESC — Beginning of the command	↑	5 Byte	
		1 01 — axis-number	💻		
		2 43 — command			
		3 00 — read-option = 0	↑		
		4 hex — BCC			
		→ → → → response !!! → → → →			
		Command was correctly transmitted and sends the following data — ACK	👂	20 Byte	
		List place P-component[28] — word 1			
		List place I-component[28] — word 3			
		reserved — word 5			
		reserved — word 7			
		reserve — word 9			
		reserve — word 11			
		Offset resolver position in 1/65536 — word 13			
		Ucc overvoltage threshold at volt — word 15			
		reserved — word 17			
		BCC 19			
		Command was not transmitted correctly — NAK		1 Byte	
		Command was not transmitted completely — TOUT			

[28] siehe Kapitel 3 "Anhang

see chapter 3 "Appendix"

2.29 Befehl 67 b: Stromreglerparameter schreiben

Command 67 b: write parameters of the current controller

Funktion:
Dieser Befehl schreibt die Stromregler-parameter.
Der Befehl ist nur nach Anmeldung erlaubt

Function:
This command writes the parameters of the current controller.
The command is only allowed after loging in.

condition/activity	631	command 43 : write current loop parameter		host	length	condition/action
This command writes the parameters of the current controller. The command is only allowed after loging in.		← ← ← ← request ??? ←←←←		←		
		ESC	Beginning of the command	↑	19 Byte	
		1 01	axis-number			
		2 43	command			
		3 01	write-option = 1			
		4 word	List place P-component (0-127)			
		6 word	List place I-component (0-127)			
		8 word	reserved			
		10 word	reserved			
		12 word	Offset resolver position			
		14 word	Ucc overvoltage threshold			
		16 word	reserved			
		18 hex	BCC			
		→ → → → response !!! → → → →				
		Command was correctly transmitted	ACK			
		Command was not transmitted correctly	NAK		1Byte	
		Command was sent correctly, but the conditions are not met.	CAN			
		Command was not transmitted completely	TOUT			

2.30 Befehl 68 a: Lagereglerparameter lesen

Command 68 a: read parameters of the position controller

Funktion:
Dieser Befehl liest die Lagereglerparameter.

Der Befehl ist immer erlaubt.

Function:
This command reads the parameters of the position controller.
The command is allowed at any time.

condition/activity	631	command 44 : read position loop parameter	host	length	condition/action
This command reads the parameters of the position controller. The command is allowed at any time		← ← ← ← request ??? ←←←← ESC — Beginning of the command 1 01 — axis-number 2 44 — command 3 00 — read-option = 0 4 hex — BCC → → → → response !!! → → → → Command was correctly transmitted and sends the following data — ACK Nominal speed at scaling 1 — word 1 Acceleration at scaling 2 — word 3 Deceleration at scaling 2 — word 5 ”Position reached”-window at incr. — word 7 P-component[29] — word 9 I-component[29] — word 11 V-component (0- 255 %) — word 13 BCC 15 Command was not transmitted correctly — NAK Command was not transmitted completely — TOUT		5 Byte 16 Byte 1 Byte	

[29] siehe Kapitel 3 “Anhang“ / *see chapter 3 “Appendix“*

2.31 Befehl 68 b: Lageregler-parameter schreiben

Command 68 b: write parameters of the position controller

Funktion:
Dieser Befehl schreibt die Lageregler-parameter.
Der Befehl ist nur nach Anmeldung erlaubt.

Function:
This command writes the parameters of the position controller.
The command is only allowed after logging in.

condition/activity	631	command 44 : write position loop parameter		host	length	condition/action
This command writes the parameters of the position controller. The command is only allowed after logging in.		← ← ← ← request ??? ←←←←		←		
		ESC	Beginning of the command	↑	19 Byte	
		1 01	axis-number			
		2 44	command			
		3 01	write-option = 1			
		4 word	Nominal speed at scaling 1			
		6 word	Acceleration at scaling 2			
		8 word	Deceleration at scaling 2			
		10 word	"Position reached"-window at incr.			
		12 word	P-component[30]			
		14 word	I-component[30]	↑		
		16 word	V-component (0- 255 %)			
		18 hex	BCC			
		→ → → → response !!! → → → →				
		Command was correctly transmitted	ACK		1Byte	
		Command was not transmitted correctly	NAK			
		Command was sent correctly, but the conditions are not met.	CAN			
		Command was not transmitted completely	TOUT			

[30] siehe Kapitel 3,„“Anhang“ — *see chapter 3 “Appendix“*

2.32 Befehl 69 a: Positionssatz lesen

Command 69 a: read position set

Funktion:
Dieser Befehl liest einen Positionssatz.
Der Befehl ist immer erlaubt.

Function:
This command reads a position set.
The command is allowed at any time

condition/activity	631	command 45 : read position set parameter	host	length	condition/action
This command reads a position set. The command is allowed at any time		← ← ← ← request ??? ←←←← ESC — Beginning of the command 1 01 — axis-number 2 45 — command 3 00 — read-option = 0 4 byte — number of position set (0-9) 5 hex — BCC → → → → response !!! → → → → Command was correctly transmitted and sends the following data — ACK Command mode[31] — byte 1 Nominal speed at scaling 1 — word 3 Acceleration at scaling 2 — word 5 Deceleration at scaling 2 — word 7 ”Position reached”-window at incr. — word 9 Nominal position at increments — lword 11 BCC 15 Command was not transmitted correctly — NAK Command was sent correctly, but number > 9. — CAN Command was not transmitted completely — TOUT	← ↑ ↑ ↑	6 Byte 16 Byte 1 Byte	

[31] siehe Befehlsliste auf der nächsten Seite — *see command list on next page*

Befehl 69 a: Positionssatz lesen *Command 69 a: read position set*

Befehl *command*	**Name** *name*	**Erklärung** *explanation*
1	Fahre absolut *Move absolute*	Es wird auf die angegebene Position gefahren *Moves to the specified position*
2	Fahre Kettenposition *Move incremental*	Es wird auf die Position gefahren, die sich aus der aktuellen Sollposition dem Positionsparameter ergibt *Moves to the position^resulting from the setpoint position + the positioning parameter*
3	Fahre + *Move +*	Es wird mit der angegebene Geschwindigkeit positiv gefahren *Moves in a positive direction at the specified speed*
4	Fahre - *Move -*	Es wird mit der angegebene Geschwindigkeit negativ gefahren *Moves in a negative direction at the specified speed*
5	Fahre ± mit analoger Geschwindigkeit *Move ± with analog speed*	Es wird mit der sich aus dem Sollwerteing. (X10.18, X10.5) ergebenden Geschwindigkeit (Analogwert Normierung für Sollwert) gefahren. *Moves with speed resulting from the analog input (X10.18, X10.5)*
11	Fahre absolut während der Fahrt *Move absolute during move*	Es wird auf die angegebene Position gefahren, ohne zu stoppen *Moves to the specified position, also during move*
12	Fahre Kettenposition während der Fahrt *Move incremental during move*	Wie "Fahre Kettenposition" ohne zu stoppen *Moves to the position resulting from the setpoint position + the positioning parameter, also during move*
13	Fahre + während der Fahrt *Move + during move*	*Moves in a positive direction at the specified speed, also during move*
14	Fahre - während der Fahrt *Move - during move*	*Moves in a negative direction at the specified speed, also during move*
15	Fahre ± mit analoger Geschwindigkeit während der Fahrt *Move ± with analog speed during move*	Es wird mit der sich aus dem Sollwerteing. (X10.18, X10.5) ergebenden Geschwindigkeit (Analogwert Normierung für Sollwert) gefahren. *Moves with speed resulting from the analog input (X10.18, X10.5), also during move.*
20	geführter Stop *Stop with ramp*	Die Achse wird über die Bremsrampe gestoppt *The deceleration ramp is used to stop the axis.*
21	abrupter Stop *Stop directly*	Die Achse wird ohne Bremsrampe gestoppt *The axis is stopped directly.*
22	Zählerpreset *Counter preset*	Die Istposition wird auf den im Parameter Sollposition angegebenen Wert gesetzt. *The counter value is set to the value of the parameter position.*
30	Referenz 0 *Move datum 0,*	Es wird auf die Resolver-Nulllage in positiver Richtung referiert *Reference to the next zero point of the resolver interface in positive direction.*
31	Referenz 1 *Move datum 1*	Es wird auf die Resolver-Nulllage in negativer Richtung referiert *Reference to the next zero point of the resolver interface in negative direction.*
32	Referenz 2 *Move datum 2,*	Es wird auf die Low-High-Flanke des Referenzsensors in positiver Richtung referiert *Reference to the low-high slope of the reference switch (X10.24) in positive direction.*

Befehl 69 a: Positionssatz lesen *Command 69 a: read position set*

Befehl *command*	**Name** *name*	**Erklärung** *explanation*
33	Referenz 3 *Move datum 3,*	Es wird auf die Low-High-Flanke des Referenzsensors in negativer Richtung referiert *Reference to the low-high slope of the reference switch (X10.24) in negative direction.*
34	Referenz 4 *Move datum 4,*	Es wird auf die der Low-High-Flanke des Referenzsensors folgenden Resolver-Nullage in positiver Richtung referiert. *Reference to the next zero point of the resolver interface after detecting the low-high slope of the reference switch (X10.24) in positive direction*
35	Referenz 5 *Move datum 5,*	Es wird auf die der Low-High-Flanke des Referenzsensors folgenden Resolver-Nullage in negativer Richtung referiert. *Reference to the next zero point of the resolver interface after detecting the low-high slope of the reference switch (X10.24) in negative direction*
36	Referenz 6 *Move datum 6,*	wie Befehl 30, mit automatischer Richtungswahl *same as move datum 0, with automatic direction selection*
37	Referenz 7 *Move datum 7*	wie Befehl 31, mit automatischer Richtungswahl *same as move datum 1, with automatic direction selection*
38	Referenz 8 *Move datum 8,*	wie Befehl 32, mit automatischer Richtungswahl *same as move datum 2, with automatic direction selection*
39	Referenz 9 *Move datum 9,*	wie Befehl 33, mit automatischer Richtungswahl *same as move datum 3, with automatic direction selection*
40	Referenz 10 *Move datum 10,*	wie Befehl 34, mit automatischer Richtungswahl *same as move datum 4, with automatic direction selection*
41	Referenz 11 *Move datum 11,*	wie Befehl 35, mit automatischer Richtungswahl *same as move datum 5, with automatic direction selection*
42	Referenz 12 *Move datum 12,*	wie Befehl 30, mit Verschiebung des Referenzpunktes um die angegebene Position *same as move datum 0, with reference offset, offset = target position*
43	Referenz 13 *Move datum 13,*	wie Befehl 31, mit Verschiebung des Referenzpunktes um die angegebene Position *same as move datum 1, with reference offset, offset = target position*
44	Referenz 14 *Move datum 14,*	wie Befehl 32, mit Verschiebung des Referenzpunktes um die angegebene Position *same as move datum 2, with reference offset, offset = target position*
45	Referenz 15 *Move datum 15,*	wie Befehl 33, mit Verschiebung des Referenzpunktes um die angegebene Position *same as move datum 3, with reference offset, offset = target position*
46	Referenz 16 *Move datum 16,*	wie Befehl 34, mit Verschiebung des Referenzpunktes um die angegebene Position *same as move datum 4, with reference offset, offset = target position*
47	Referenz 17 *Move datum 17,*	wie Befehl 35, mit Verschiebung des Referenzpunktes um die angegebene Position *same as move datum 5, with reference offset, offset = target position*
48	Referenz 18 *Move datum 18,*	wie Befehl 36, mit Verschiebung des Referenzpunktes um die angegebene Position *same as move datum 6, with reference offset, offset = target position*
49	Referenz 19 *Move datum 19*	wie Befehl 37, mit Verschiebung des Referenzpunktes um die angegebene Position *same as move datum 7, with reference offset, offset = target position*

Befehl 69 a: Positionssatz lesen *Command 69 a: read position set*

Befehl *command*	**Name** *name*	**Erklärung** *explanation*
50	Referenz 20 *Move datum 20,*	wie Befehl 38, mit Verschiebung des Referenzpunktes um die angegebene Position *same as move datum 8, with reference offset, offset = target position*
51	Referenz 21 *Move datum 21,*	wie Befehl 39, mit Verschiebung des Referenzpunktes um die angegebene Position *same as move datum 9, with reference offset, offset = target position*
52	Referenz 22 *Move datum 22,*	wie Befehl 40, mit Verschiebung des Referenzpunktes um die angegebene Position *same as move datum 10, with reference offset, offset = target position*
53	Referenz 23 *Move datum 23,*	wie Befehl 41, mit Verschiebung des Referenzpunktes um die angegebene Position *same as move datum 11, with reference offset, offset = target position*

Bei den Referenzmodi mit automatische Richtungswahl wird die Referenzfahrt in der entgegengesetzten Richtung begonnen, wenn der Referenzsensor (X10.24) beim Start der Referenzfahrt High ist.
Nachdem der Sensor auf Low-Pegel wechselt wird die Referenzfahrt in der gewählten Richtung ausgeführt.

The Reference-commands with automatic direction selection starts in the opposite direction if the reference sensor (X10.24) is already set at the start of the reference run.
As soon as the reference sensor is reset the direction of turning is changed to the specified direction.

2.33 Befehl 69 b: Positionssatz schreiben *Command 69 b: write position set*

Funktion:
Dieser Befehl schreibt einen Positionssatz.
Der Befehl ist nur nach Anmeldung erlaubt.

Function:
This command writes a position set.
The command is only allowed after loging in.

condition/activity	631	command 45 : write position set parameter	host	length	condition/action
This command writes a position set. The command is only allowed after loging in.		← ← ← ← request ??? ←←←←	←		
		ESC — Beginning of the command	↑	19 Byte	
		1 **01** — axis-number			
		2 **45** — command			
		3 **01** — write-option = 1			
		4 **byte** — Number of the position set (0-9)			
	↓	5 **byte** — Command mode[32]			
		8 **word** — Nominal speed at scaling 1	💻		
		8 **word** — Acceleration at scaling 2			
		10 **word** — Deceleration at scaling 2			
		12 **word** — "Position reached"-window at incr.	↑		
	↓	14 **lword** — Nominal position at increments			
	🔊	18 **hex** — BCC	👂		
		→ → → → response !!! → → → →			
		Command was correctly transmitted — **ACK**		1Byte	
		Command was not transmitted correctly — **NAK**			
		Command was sent correctly, but the conditions are not met. — **CAN**			
		Command was not transmitted completely — **TOUT**			

[32] siehe Befehl 69 a *see command 69 a*

2.34 Befehl 72 a: Synchronprofil-parameterblock lesen

Command 72 a: Read cam-profile parameter set

Funktion:
Dieser Befehl liest den angegebenen Synchronprofilparameterblock.
Der Befehl ist immer erlaubt.

Function:
This command reads the desired cam-profile parameter set .
The command is allowed at any time.

condition/activity	631	command 48 : read cam-profile parameter			host	length	condition/action
This command reads the desired cam-profile parameter set . The command is allowed at any timew		← ← ← ← request ??? ←←←←			←		
		ESC		Beginning of the command	↑	6 Byte	
		1 01		axis-number	💻		
		2 48		command	↑		
		3 00		read-option = 0			
		4 byte		nr. of the cam-profile parameter set (0-15)			
		5 hex		BCC	👂		
		→ → → → response !!! → → → →				66 Byte	
		Command was correctly transmitted and sends the following data	ACK				
		reserved for EASYRIDER	byte	1			
		number of corrections (always 0)	byte	2			
		number of profile points (PP)	word	3			
		address of first profil point (STS)	word	5			
		reserved	word	7			
		correctionvalue 1. stage (always 0)	word	9			
		correctionvalue 2. stage (always 0)	word	11			
		correctionvalue 3. stage (always 0)	word	13			
		correctionvalue 4. stage (always 0)	word	15			
		correctionvalue 5. stage (always 0)	word	17			
		correctionvalue 6. stage (always 0)	word	19			
		correctionvalue 7. stage (always 0)	word	21			
		correctionvalue 8. stage (always 0)	word	23			
		correctionvalue 9. stage (always 0)	word	25			
		correctionvalue 10. stage (always 0)	word	27			
		Master stroke (MT)	lword	29			
		Slave stroke (ST)	lword	33			
		16 byte reserved	byte	37			
		Synchronmode (identification of calculated profile; 255 for user defined) (TY)	byte	53			
		11 byte reserved	byte	54			
			BCC	65			
		Command was not transmitted correctly	NAK				
		Command was sent correctly, but number > 15.	CAN			1 Byte	
		Command was not transmitted completely	TOUT				

2.35 Befehl 72 b: Synchronprofil-parameterblock schreiben

Command 72 b: Write cam-profile parameter set

Funktion:
Dieser Befehl schreibt den angegebenen Synchronprofilparameterblock.
Der Befehl ist immer erlaubt.

Function:
This command writes the desired cam-profile parameter set .
The command is allowed at any time.

condition/activity	631	command 48 : write cam profile parameter		host	length	condition/action
This command writes the desired cam-profile parameter set . The command is allowed at any time.		← ← ← ← request ??? ←←←←		←		
		ESC	Beginning of the command	↑	19 Byte	
		1 01	axis-number			
		2 48	command			
		3 01	write-option = 1			
		byte	nr. of the cam-profile parameter set (0-15)			
		byte	reserved for EASYRIDER			
		byte	number of corrections (always 0)	💻		
↓		word	number of profile points (PP)			
	📄	word	address of first profil point (STS)			
		word	reserved			
		word	correctionvalue 1. stage (always 0)	↑		
		word	correctionvalue 2. stage (always 0)			
		word	correctionvalue 3. stage (always 0)	👂		
↓		word	correctionvalue 4. stage (always 0)			
		word	correctionvalue 5. stage (always 0)		1Byte	
📢		word	correctionvalue 6. stage (always 0)			
		word	correctionvalue 7. stage (always 0)			
		word	correctionvalue 8. stage (always 0)			
		word	correctionvalue 9. stage (always 0)			
		word	correctionvalue 10 stage (always 0)			
		lword	Master stroke (MT)			
		lword	Slave stroke (ST)			
		byte	16 byte reserved			
		byte	Synchronmode (identification of calculated profile; 255 for user defined)			
		byte	11 byte reserved			
		18 hex	BCC			
		→ → → → response !!! → → → →				
		Command was correctly transmitted	ACK			
		Command was not transmitted correctly	NAK			
		Command was sent correctly, but the conditions are not met.	CAN			
		Command was not transmitted completely	TOUT			

2.36 Befehl 73 a: Stützstellenblock lesen

Funktion:
Dieser Befehl liest die Synchronstützstellen (8) mit der angegebenen Blocknummer.
Jeder Stützstellenblock (0 –255) enthält 8 Stützstellen (8*256 = 2048).
Der Befehl ist immer erlaubt.

Command 73 a: Read profil point block

Function:
This command reads the profile points (8) of the desired set .
*Every profile point set (0...255) contains 8 profile points (8*256 = 2048).*
The command is allowed at any time.

condition/activity	631	command 49 : read cam-profile	host	length	condition/action
This command reads the profile points (8) of the desired set . Every profile point set (0...255) contains 8 profile points (8*256 = 2048). The command is allowed at any time.		← ← ← ← request ??? ←←←← ESC — Beginning of the command 1 01 — axis-number 2 49 — command 3 00 — read-option = 0 4 byte — nr. of the cam-profile set (0-255) 5 hex — BCC → → → → response !!! → → → → Command was correctly transmitted and sends the following data — ACK 8-byte profile point (set nr. *8) — 8 byte — 1 8-byte profile point (set nr. *8 +1) — 8 byte — 9 8-byte profile point (set nr. *8 +2) — 8 byte — 17 8-byte profile point (set nr. *8 +3) — 8 byte — 25 8-byte profile point (set nr. *8 +4) — 8 byte — 33 8-byte profile point (set nr. *8 +5) — 8 byte — 41 8-byte profile point (set nr. *8 +6) — 8 byte — 49 8-byte profile point (set nr. *8 +7) — 8 byte — 57 BCC — 65 Command was not transmitted correctly — NAK Command was not transmitted completely — TOUT	← ↑ ↑ ear	6 Byte 66 Byte 1 Byte	

2.37 Befehl 73 b: Stützstellenblock schreiben

Funktion:
Dieser Befehl schreibt die Synchronstützstellen (8) mit der angegebenen Blocknummer.
Jeder Stützstellenblock (0 –255) enthält 8 Stützstellen (8*256 = 2048).
Der Befehl ist immer erlaubt.

Command 73 b: Write profil point block

Function:
This command writes the profile points (8) of the desired set .
*Every profile point set (0...255) contains 8 profile points (8*256 = 2048).*
The command is allowed at any time.

condition/activity	631	command 49 : write cam profile	host	length	condition/action
This command writes the profile points (8) of the desired set . Every profile point set (0...255) contains 8 profile points (8*256 = 2048). The command is allowed at any time.		← ← ← ← request ??? ←←←← ESC — Beginning of the command 1 01 — axis-number 2 49 — command 3 01 — write-option = 1 4 byte — nr. of the cam-profile set (0-255) 5 8byte — 8-byte profile point (set nr. *8) 13 8byte — 8-byte profile point (set nr. *8 +1) 21 8byte — 8-byte profile point (set nr. *8 +2) 29 8byte — 8-byte profile point (set nr. *8 +3) 37 8byte — 8-byte profile point (set nr. *8 +4) 45 8byte — 8-byte profile point (set nr. *8 +5) 53 8byte — 8-byte profile point (set nr. *8 +6) 61 8byte — 8-byte profile point (set nr. *8 +7) 69 byte — BCC → → → → response !!! → → → → Command was correctly transmitted — ACK Command was not transmitted correctly — NAK Command was not transmitted completely — TOUT	← ↑ 💻 ↑	70 Byte 1Byte	

2.38 Befehl 74 a: E/A Definitionen lesen

Command 74 a: read I/O definitions

Funktion:
Dieser Befehl liest die eingestellten E/A Definitionen.
Der Befehl ist immer erlaubt.

Function:
This command reads the programmed I/O definitions.
The command is allowed at any time

condition/activity	631	command 4A : read I/O definitions	host	length	condition/action
This command reads the programmed I/O definitions. The command is allowed at any time		← ← ← ← request ??? ←←←← ESC — Beginning of the command 1 01 — axis-number 2 4A — command 3 00 — read-option = 0 4 hex — BCC → → → → response !!! → → → → Command was correctly transmitted and sends the following data — ACK Definition I X10.7 — byte 1 Definition I X10.8 — byte 2 Definition I X10.9 — byte 3 Definition I X10.10 — byte 4 Definition O X10.5 — byte 5 Definition O X10.6 — byte 6 reserved — byte 7 reserved — byte 8 reserved — byte 9 reserved — byte 10 reserved — byte 11 reserved — byte 12 BCC 13 Command was not transmitted correctly — NAK Command was not transmitted completely — TOUT		5 Byte 14 Byte 1 Byte	

2.39 Befehl 74 b: E/A Definitionen schreiben

Command 74 b: write I/O definitions

Funktion:
Dieser Befehl schreibt die eingestellten E/A Definitionen.
Der Befehl ist nur erlaubt wenn die Anmeldung ausgeführt und der 631 deaktiviert wurde

Function:
This command writes the programmed I/O definitions.
The command is only allowed when the login was executed and the 631 was disabled.

condition/activity	631	command 4A : I/O definitions	host	length	condition/action
This command writes the programmed I/O definitions. The command is only allowed when the login was executed and the 631 was disabled.		← ← ← ← request ??? ←←←←	←		
		ESC Beginning of the command	↑	17 Byte	
		1 01 axis-number			
		2 4A command			
		3 01 write-option = 1			
		4 byte Definition I X10.7			
		5 byte Definition I X10.8			
		6 byte Definition I X10.9			
		7 byte Definition I X10.10	💻		
		8 byte Definition O X10.5			
	↓	9 byte Definition O X10.6			
		10 byte reserved			
		11 byte reserved			
		12 byte reserved			
		13 byte reserved			
		14 byte reserved			
	↓	15 byte reserved	↑		
		16 byte BCC			
		→ → → → response !!! → → → →			
		Command was correctly transmitted — ACK			
		Command was not transmitted correctly — NAK		1Byte	
		Command was sent correctly, but the conditions are not met. — CAN			
		Command was not transmitted completely — TOUT			

2.40 Befehl 75a: CAN-Busparameter lesen

Command 75a: read CAN-bus parameters

Funktion:
Dieser Befehl liest die gewünschten Feldbusparameter.
Der Befehl ist immer erlaubt.

Function:
This command reads the desired CAN-bus parameters.
The command is allowed at any time.

condition/activity	631	command 4B : read CAN-BUS parameters	host	length	condition/action
This command reads the desired CAN-bus parameters. The command is allowed at any time		← ← ← ← request ??? ←←←← ESC — Beginning of the command 1 01 — axis-number 2 4B — command 3 00 — read-option = 0 4 byte — Number of the parameter set (3-7+9) 5 hex — BCC → → → → response !!! → → → → Command was correctly transmitted and sends the following data — ACK parameter byte 0[33] — byte 1 parameter byte 1 — byte 2 parameter byte 2 — byte 3 parameter byte 3 — byte 4 parameter byte 4 — byte 5 parameter byte 5 — byte 6 parameter byte 6 — byte 7 parameter byte 7 — byte 8 parameter byte 8 — byte 9 parameter byte 9 — byte 10 parameter byte 10 — byte 11 parameter byte 11 — byte 12 parameter byte 12 — byte 13 parameter byte 13 — byte 14 parameter byte 14 — byte 15 parameter byte 15 — byte 16 BCC 17 Command was not transmitted correctly — NAK Command was sent correctly, but the conditions are not met. — CAN Command was not transmitted completely — TOUT		6 Byte 18 Byte 1 Byte	

[33] siehe Tabellen nächste Seite — *see table on next page*

Blocknummer 3 (CAN)

Byte	Parameter	*parameters*
0	CAL Modul Identifier (0...255)	*CAL module identifier (0...255)*
1	Unterbrechungsmode	*mode*
2, 3	Word Verzögerung (mit Normierung 2, 1...64000)	*Word deceleration (with scaling 2, 1...64000)*
4	Baudrate (0=1 MBaud, 1=500 kBaud, 2=250 kBaud, 3=125 kB, 4=100 kB, 5=50 kB, 6=20 kB)	*baudrate (0=1 MBaud, 1=500 kBaud, 2=250 kBaud, 3=125 kB, 4=100 kB, 5=50 kB, 6=20 kB)*
5	Konfigurationsmodus (0=PC-Konfiguration, 1=PC-Konfiguration+Achsoffset, 2=Warte auf Kommunikation mit IBT)	*configuration mode (0=PC configuration, 1=PC configuration with axis offset, 2=waite for communication with IBT)*
6	erweiterte Identifier benutzen (0 = Nein, 1 = Ja)	*use extended identifier (0 = No, 1 = Yes)*
7	Status automatisch senden (0 = Nein, 1= Ja)	*send status automaticly (0 = No, 1 = Yes)*
8-15	Reserviert	*reserved*

Blocknummer 4 (CAN)

Byte	Parameter	*parameters*
0-3	Reserviert	*reserved*
4-7	LWord Identifier Steuersatz empfangen[34]	*LWord identifier receive control block*[34]
8-11	LWord Identifier Status senden[34]	*LWord identifier send status*[34]
12-15	LWord Identifier Parameter empfangen[34]	*LWord identifier receive parameters*[34]

Blocknummer 5 (CAN)

Byte	Parameter	*parameters*
0-3	LWord Identifier IBT-Kommunikation[34]	*LWord identifier IBT communication*[34]
4-7	LWord Identifier Parameter senden[34]	*LWord identifier send parameters*[34]
8-11	LWord Identifier High-Speed-Daten[34]	*LWord identifier high speed data*[34]
12-15	Reserve	*reserved*

Blocknummer 9 (CAN)

Byte	Parameter	*parameters*
0	Knotennummer Absolutwertgeber	*node number absolute encoder*
2..4	Reserviert	*reserved*
5	Zählrichtung Absolutwertgeber (1 = negativ)	*counting direction absolute encoder (1 = negative)*
6/ 7	Reserviert	*reserved*
8	Knotennummer BCD-Schalter	*node number BCD switch*
9	BCD-Schaltermodus (immer 0)	*BCD switch mode (always 0)*
10/ 11	Reserviert	*reserved*
12	Knotennummer E/A-Modul	*node number I/O module*
13	E/A-Modulmodus (immer 0)	*I/O module mode (always 0)*
14/ 15	Reserviert	*reserved*

[34] 0..2047, *0..2047*

2.41 Befehl 75b: CAN-Busparameter schreiben

Command 75b: write CAN-bus parameters

Funktion:
Dieser Befehl schreibt die gewünschten Feldbusparameter.
Der Befehl ist nur nach Anmeldung erlaubt.

Function:
This command writes the desired CAN-bus parameters .
The command is only allowed after logging in.

condition/activity	631	command 4B : write CAN- BUS parameters		host	length	condition/action
This command writes the desired CAN-bus parameters. The command is only allowed after logging in.		← ← ← ← request ??? ←←←←		←		
		ESC	Beginning of the command	↑	22 Byte	
		1 01	axis-number			
		2 4B	command			
		3 01	write-option = 1			
		4 byte	Number of the parameter set (3-7+9)			
		5 byte	parameter byte 0[35]			
		6 byte	parameter byte 1			
	↓	7 byte	parameter byte 2			
		8 byte	parameter byte 3			
		9 byte	parameter byte 4			
		10 byte	parameter byte 5			
		11 byte	parameter byte 6			
		12 byte	parameter byte 7			
		13 byte	parameter byte 8			
		14 byte	parameter byte 9			
		15 byte	parameter byte 10			
		16 byte	parameter byte 11			
	↓	17 byte	parameter byte 12			
		18 byte	parameter byte 13			
		19 byte	parameter byte 14	↑		
		20 byte	parameter byte 15			
		21 byte	BCC			
		→ → → → resnonse !!! → → → →				
		Command was correctly transmitted	ACK		1Byte	
		Command was not transmitted correctly	NAK			
		Command was sent correctly, but the conditions are not met.	CAN			
		Command was not transmitted completely	TOUT			

[35] siehe Tabellen vorherige Seite — *see table on previous page*

2.42 Befehl 76 a: BIAS-Programm lesen *Command 76 a: read BIAS-programm*

Funktion:
Dieser Befehl liest einen BIAS-Befehl.
Der Befehl ist immer erlaubt.

Function:
This command reads a BIAS command.
The command is allowed at any time

condition/activity	631	command 4C : read BIAS command	host	length	condition/action
This command reads a BIAS command. The command is allowed at any time		← ← ← ← request ??? ←←←← ESC — Beginning of the command 1 01 — axis-number 2 4C — command 3 00 — read-option = 0 4 word — setnumber (0-1499) 6 hex — BCC → → → → response !!! → → → → Command was correctly transmitted and sends the following data — ACK BIAS command code[36] — byte 1 BIAS comman databyte 1 — byte 2 BIAS comman databyte 2 — byte 3 BIAS comman databyte 3 — byte 4 BIAS comman databyte 4 — byte 5 BIAS comman databyte 5 — byte 6 BIAS comman databyte 6 — byte 7 BIAS comman databyte 7 — byte 8 BCC 9 Command was not transmitted correctly — NAK Command was sent correctly, but the conditions are not met. — CAN Command was not transmitted completely — TOUT		7 Byte 10 Byte 1 Byte	

[36] Die Befehlscodierung ist in der Dokumentation 10.6.5 „BIAS-Befehlsbeschreibung „ beschrieben

the command coding is described in the documentation 10.6.5 „BIAS - Command Description“

2.43 Befehl 76 b: BIAS-Programm schreiben

Command 76 b: write BIAS-Programm

Funktion:
Dieser Befehl schreibt einen BIAS-Befehl.
Der Befehl ist nur nach Anmeldung erlaubt.

Function:
This command writes a BIAS command.
The command is allowed at any time.

condition/activity	631	command 4C : write BIAS -command		host	length	condition/action
This command writes a BIAS command. The command is allowed at any time		← ← ← ← request ??? ←←←←		←		
		ESC	Beginning of the command	↑	15 Byte	
		1 01	axis-number			
		2 4C	command			
		3 01	write-option = 1			
		4 word	setnumber (0-1499)			
	↓	6 byte	BIAS command code[37]			
		7 byte	BIAS command databyte 1	💻		
		8 byte	BIAS command databyte 2			
		9 byte	BIAS command databyte 3			
		10 byte	BIAS command databyte 4			
	↓	11 byte	BIAS command databyte 5			
		12 byte	BIAS command databyte 6	↑		
		13 byte	BIAS command databyte 7			
		14 byte	BCC			
		→ → → → response !!! → → → →		👂		
	📣	Command was correctly transmitted	ACK			
		Command was not transmitted correctly	NAK			
		Command was sent correctly, but the conditions are not met.	CAN		1Byte	
		Command was not transmitted completely	TOUT			

[37] Die Befehlscodierung ist in der Dokumentation 10.6.5 „BIAS-Befehlsbeschreibung „ beschrieben

the command coding is described in the documentation 10.6.5 „BIAS - Command Description“

2.44 Befehl 78 a: Erweiterte Regelparameter lesen

Command 78 a: read extended control parameters

condition/activity	631	command 4E : read extended parameters	host	length	condition/action
This command reads the extended control parameters. The command is allowed at any time		← ← ← ← request ??? ←←←← ESC — Beginning of the command 1 01 — axis-number 2 4E — command 3 00 — read-option = 0 4 hex — BCC → → → → response !!! → → → → Command was correctly transmitted and sends the following data — ACK V-gain low-byte (256 = 100%) — word 1 X40-Mode (0...3) — byte 3 X40-resolution (0...3) only if output — byte 4 "Position reached" time at 2 ms steps — word 5 reserved — word 7 trail window at increments — word 9 trail fault reaction (0...3) — byte 11 n-filter (0...30) — byte 12 reserved — word 13 BCC 15 Command was not transmitted correctly — NAK Command was not transmitted completely — TOUT		5 Byte 16 Byte 1 Byte	

2.45 Befehl 78 b: Erweiterte Regelparameter schreiben

Command 78 b: write extended control parameters

condition/activity	631	command 4E : write extende parameters	host	length	condition/action
This command writes the extended control parameters. The command is only allowed after logging in		← ← ← ← request ??? ←←←← ESC — Beginning of the command 1 01 — axis-number 2 4E — command 3 01 — write-option = 1 4 word — V-gain low-byte (256 = 100%) 6 byte — X40-Mode (0...3) 7 byte — X40-resolution (0...3) only if 8 word — "Position reached" time at 2 ms 10 word — reserved 12 word — trail window at increments 14 byte — trail fault reaction (0...3) 15 byte — n-filter (0...30) 16 word — reseved 18 byte — BCC → → → → response !!! → → → → Command was correctly transmitted — ACK Command was not transmitted correctly — NAK Command was sent correctly, but the conditions are not met. — CAN Command was not transmitted completely — TOUT		19 Byte 1Byte	

3 Anhang *Appendix*

Zuordnung der Tabellenplätze für P- und I-Anteil im Strom- und Drehzahlregler zu den physikalischen Werten

Assignment of the table positions for P- and I-gain in the current and speed controller to the physical value

Stromregler			Drehzahlregler		
Index	**P-Anteil**	**I-Anteil in 1/ms**	**Index**	**P-Anteil**	**I-Anteil in 1/ms**
current controller			***speed controller***		
Index	***P-gain***	***I-gain in 1/ms***	***Index***	***P-gain***	***I-gain in 1/ms***
0	0,12	1/160,00	0	0,24	-
1	0,12	1/152,00	1	0,25	1/228,00
2	0,13	1/144,40	2	0,26	1/216,60
3	0,14	1/137,18	3	0,28	1/205,77
4	0,15	1/130,32	4	0,29	1/195,48
5	0,15	1/123,80	5	0,31	1/185,71
6	0,16	1/117,61	6	0,32	1/176,42
7	0,17	1/111,73	7	0,34	1/167,60
8	0,18	1/106,15	8	0,36	1/159,22
9	0,19	1/100,84	9	0,38	1/151,26
10	0,20	1/95,80	10	0,40	1/143,70
11	0,21	1/91,01	11	0,42	1/136,51
12	0,22	1/86,46	12	0,44	1/129,69
13	0,23	1/82,13	13	0,46	1/123,20
14	0,24	1/78,03	14	0,49	1/117,04
15	0,26	1/74,13	15	0,51	1/111,19
16	0,27	1/70,42	16	0,54	1/105,63
17	0,28	1/66,90	17	0,57	1/100,35
18	0,30	1/63,55	18	0,60	1/95,33
19	0,31	1/60,83	19	0,63	1/90,56
20	0,33	1/57,36	20	0,66	1/86,04
21	0,35	1/54,49	21	0,70	1/81,73
22	0,37	1/51,77	22	0,73	1/77,65
23	0,39	1/49,18	23	0,77	1/73,77
24	0,41	1/46,72	24	0,81	1/70,08
25	0,43	1/44,38	25	0,85	1/66,57
26	0,45	1/42,16	26	0,90	1/63,24
27	0,47	1/40,06	27	0,95	1/60,08
28	0,50	1/38,05	28	1,00	1/57,08
29	0,52	1/36,15	29	1,05	1/54,22
30	0,55	1/34,34	30	1,10	1/51,51
31	0,58	1/32,63	31	1,16	1/48,94
32	0,61	1/30,99	32	1,22	1/46,49
33	0,64	1/29,44	33	1,29	1/44,17
34	0,68	1/27,97	34	1,36	1/41,96
35	0,71	1/26,57	35	1,43	1/39,86
36	0,75	1/25,24	36	1,50	1/37,87
37	0,79	1/23,98	37	1,58	1/35,95
38	0,83	1/22,78	38	1,67	1/34,17
39	0,88	1/21,64	39	1,75	1/32,47
40	0,92	1/20,56	40	1,85	1/30,84
41	0,97	1/19,53	41	1,94	1/29,30
42	1,02	1/18,56	42	2,04	1/27,84
43	1.08	1/17,63	43	2,15	1/26,44
44	1,13	1/16,75	44	2,27	1/25,12
45	1,19	1/15,91	45	2,38	1/23,87
46	1,26	1/15,11	46	2,51	1/22,67
47	1,32	1/14,36	47	2,64	1/21,54
48	1,39	1/13,64	48	2,78	1/20,46
49	1,46	1/12,96	49	2,93	1/19,44
50	1,54	1/12,31	50	3,08	1/18,47
51	1,62	1/11,70	51	3,24	1/17,54
52	1,71	1/11,11	52	3,41	1/16,67
53	1,80	1/10,56	53	3,59	1/15,83
54	1,89	1/10.03	54	3,78	1/15,04
55	1,99	1/9,53	55	3,98	1/14,29
56	2,10	1/9,05	56	4,19	1/13,57
57	2,21	1/8,60	57	4,51	1/12,90

58	2,32	1/8,17	58	4,65	1/12,25
59	2,45	1/7,76	59	4,89	1/11,64
60	2,57	1/7,37	60	5,15	1/11,06
61	2,71	1/7,00	61	5,42	1/10,50
62	2,85	1/6,65	62	5,70	1/9,98
63	3,00	1/6,32	63	6,00	1/9,48
64	3,16	1/6,00	64	6,32	1/9,01
65	3,33	1/5,70	65	6,65	1/8,56
66	3,50	1/5,42	66	7,00	1/8,13
67	3,69	1/5,15	67	7,37	1/7,72
68	3,88	1/4,89	68	7,76	1/7,34
69	4,08	1/4,65	69	8,17	1/6,97
70	4,30	1/4,41	70	8,60	1/6,62
71	4,52	1/4,19	71	9,05	6,29/
72	4,76	1/3,98	72	9,53	1/5,97
73	5,01	1/3,78	73	10,02	1/5,68
74	5,28	1/3,59	74	10,56	1/5,39
75	5,56	1/3,41	75	11,11	1/5,12
76	5,85	1/3,24	76	11,70	1/4,87
77	6,16	1/3,08	77	12,31	1/4,62
78	6,48	1/2,93	78	12,96	1/4,39
79	6,82	1/2,78	79	13,64	1/4,17
80	7,18	1/2,64	80	14,36	1/3,96
81	7,56	1/2,51	81	15,11	1/3,77
82	7,96	1/2,38	82	15,91	1/3,58
83	8,37	1/2,27	83	16,75	1/3,40
84	8,81	1/2,15	84	17,63	1/3,23
85	9,28	1/2,04	85	18,56	1/3,07
86	9,77	1/1,94	86	19,53	1/2,91
87	10,28	1/1,85	87	20,56	1/2,77
88	10,82	1/1,75	88	21,64	1/2,63
89	11,39	1/1,67	89	22,78	1/2,50
90	11,99	1/1,58	90	23,98	1/2,37
91	12,62	1/1,50	91	25,24	1/2,25
92	13,29	1/1,43	92	26,57	1/2,14
93	13,99	1/1,36	93	27,97	1/2,03
94	14,72	1/1,29	94	29,44	1/1,93
95	15,50	1/1,22	95	30,99	1/1,84
96	16,31	1/1,16	96	32,63	1/1,74
97	17,17	1/1,10	97	34,34	1/1,66
98	18,07	1/1,05	98	36,15	1/1,57
99	19,03	1/1,00	99	38,05	1/1,50
100	20,03	1/0,95	100	40,06	1/1,42
101	21,08	1/0,90	101	42,16	1/1,35
102	22,19	1/0,85	102	44,38	1/1,28
103	23,36	1/0,81	103	46,72	1/1,22
104	24,59	1/0,77	104	49,18	1/1,16
105	25,88	1/0,73	105	51,77	1/1,10
106	27,24	1/0,70	106	54,49	1/1,04
107	28,68	1/0,66	107	57,36	1/0,99
108	30,19	1/0,63	108	60,38	1/0,94
109	31,78	1/0,60	109	63,55	1/0,90
110	33,45	1/0,57	110	66,90	1/0,85
111	35,21	1/0,54	111	70,42	1/0,81
112	37,06	1/0,51	112	74,13	1/0,77
113	39,01	1/0,49	113	78,03	1/0,73
114	41,07	1/0,46	114	82,13	1/0,69
115	43,23	1/0,44	115	86,46	1/0,66
116	45,50	1/0,42	116	91,01	1/0,63
117	47,90	1/0,40	117	95,80	1/0,59
118	50,42	1/0,38	118	100,80	1/0,56
129	53,07	1/0,36	129	106,20	1/0,54
120	55,87	1/0,34	120	111,70	1/0,51
121	58,81	1/0,32	121	117,60	1/0,48
122	61,90	1/0,31	122	123,80	1/0,46
123	65,16	1/0,29	123	130,30	1/0,44
124	68,59	1/0,28	124	137,20	1/0,41
125	72,20	1/0,26	125	144,40	1/0,39
126	76	1/0,25	126	152,00	1/0,37
127	80	1/0,24	127	160,00	1/0,36

Zuordnung der gesendeten Parameter zu den physikalischen Werten im Lageregler

P-Anteil physikalischer Wert *8

I-Anteil physikalischer Wert *150

Assignment of the transmitted parameters to the physical values

*P-Gain physicalic value * 8*

*I-Gain physicalic value * 150*

V-Anteil	Prozentwert * 2,56	*V-Gain*	*percentage * 2,56*

4 Änderungsliste *Modification Record*

Version	**Änderungsgrund**	***Modification***	**Kapitel** ***Chapter***	**Datum** ***Date***	**Name** ***Name***	**Bemerkung** ***Comment***
V01.17SA99	initial	*initial*		26.04.1999 11.05.1999	SA TB	631 Firmware V 5.10