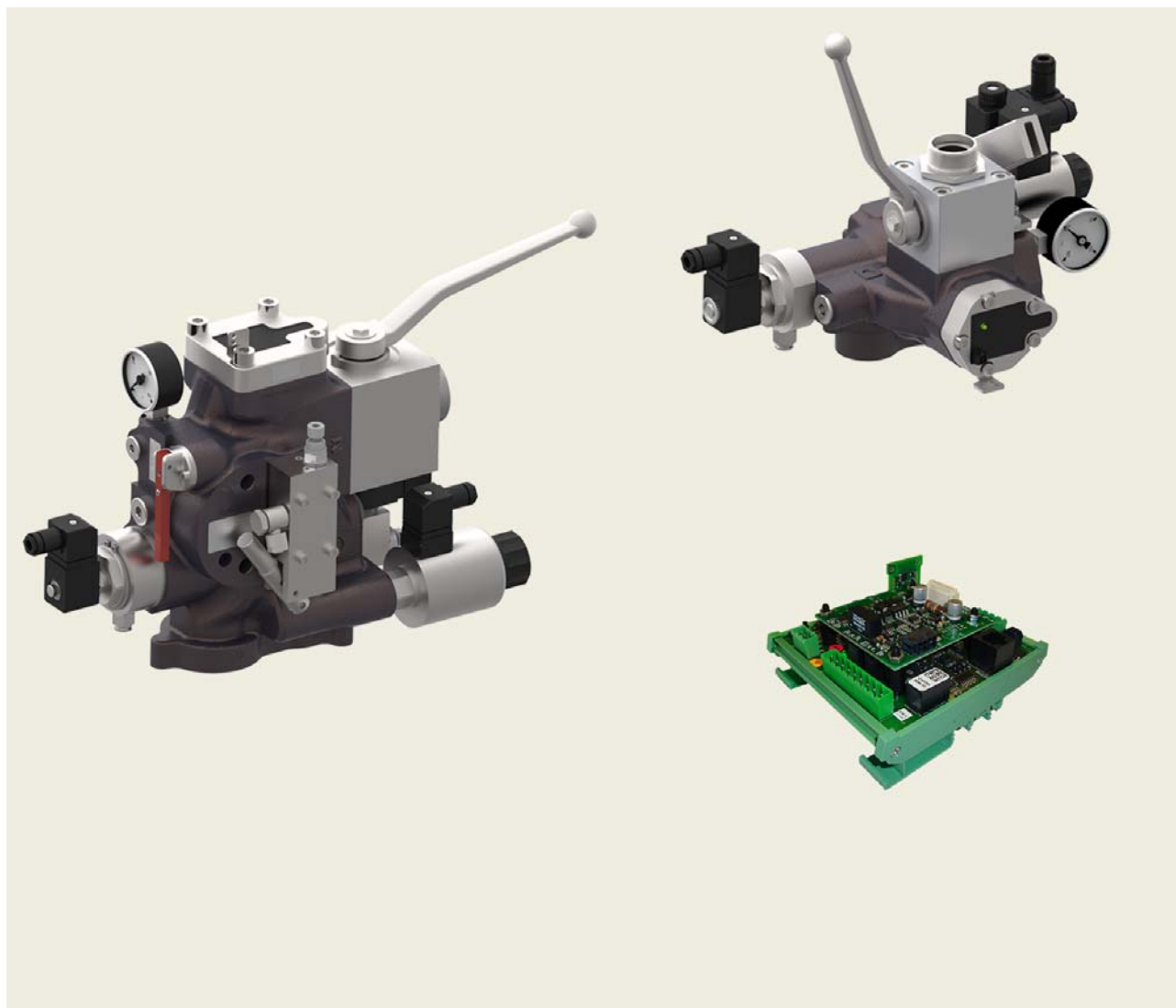


Parametrisation and Maintenance Manual



Lift Control Valve VF-iValve – VF-i250 / VF-i500

Published by

Bucher Hydraulics AG
Industriestrasse 15
CH-6345 Neuheim

Phone +41 41 757 03 33
Fax +41 41 757 05 00
Email info.ch@bucherhydraulics.com
Internet www.bucherhydraulics.com

Classification: 430.310.

© 2016 by Bucher Hydraulics AG, CH-6345 Neuheim

All rights reserved. This documentation, in whole and/or in part, is protected by copyright. It may not be reproduced, nor may it be stored, processed, replicated or distributed by electronic means, without written permission from Bucher Hydraulics.

Data is provided for the purpose of product description only, and must not be construed as warranted characteristics in the legal sense. No assertion regarding either a particular property or the fitness for a particular intended purpose can be derived or deduced from this information. The information does not relieve users from the duty of conducting their own evaluations and tests.

Because the products are subject to continual improvement, we reserve the right to amend the product specifications contained in this catalogue. The original language and legal terminology of all Bucher Hydraulics documentation is exclusively German. Bucher Hydraulics cannot be held liable for any possible errors in translation.

Contents		Page
1	About this document	4
1.1	Scope	4
1.2	Target group	4
1.3	Other applicable documents	4
1.4	Specialist terms	4
2	Product description	5
2.1	Handterminal	5
2.1.1	Description of function	5
2.1.2	Password	7
3	Operation	12
3.1	Description of parameters	12
3.2	Parameterisation with Handterminal	22
3.2.1	Overview of travel curve parameters	29
3.3	Parametrisation with iWIN	30
3.3.1	Menus	30
4	Repair	31
4.1	Troubleshooting / Fault diagnosis	31
4.1.1	LED displays (iCon)	31
4.1.2	LED display (options board – switching outputs)	33
4.1.3	LED display (options board – VF)	33
4.1.4	Incident with Emergency Stop	34
4.1.5	Events which cause a Drive disable	37
4.1.6	Incidents related to SMA-Signal	39
4.1.7	Events without impact (only as information)	40
4.2	Soft-stop	42

1 About this document

The parametrisation and maintenance manual is used during commissioning to adjust the lift-control valve, type VF-i250 / VF-i500 VF-iValve, and the iCon electronic card. It is also used after installation in the event of essential alterations.

1.1 Scope

This manual is:

- a part of the VF-iValve lift-control valve / iCon for parametrisation and maintenance
- applicable to the VF-iValve and related components such as the Handterminal and iWIN

1.2 Target group

This parametrisation and maintenance manual provides commissioning personnel and service technicians with all the information required for parametrisation.

1.3 Other applicable documents

Reference	Description
300-D-9010545	Planning information VF-i250 / i500
300-I-9010546	Commissioning-, maintenance VF- i250 / i500
EU-UCM-018	Type examination certificate (TÜV) VF-i250
EU-UCM-023	Type examination certificate (TÜV) VF-i500
300-S-9010547	Spare parts VF-i250 / iCon with VF-board
300-S-9010549	Spare parts VF-i500 / iCon with VF-board

1.4 Specialist terms

Term	Description
VF-iValve	Intelligent lift control valve frequency controlled
iCon with VF-board	Electronic control card for VF-iValve
Handterminal	Terminal (optional) for the parametrisation
iWIN	PC software (optional) for the parametrisation
iBox	Sensor unit in the VF-iValve
iTeach	Comprise self-learning algorithm
ParamCard	Memory card
SMA	Monitoring of the UCM/A3 valve function ("Self Monitoring Acknowledgement")

2 Product description

2.1 Handterminal



Keys

- 1 Menu direction-dependent parameters
- 2 Menu direction-independent parameters
- 3 Menu iTeach / adjustments / tests
- 4 Menu functions / information
- ↑ Steps to previous parameter
- ↓ Steps to next parameter
- + Increases the value of the current parameter
- Decreases the value of the current parameter

Connection

- Connect the handterminal to the iCon using the cable provided
- Connecting cable is a standard ethernet network cable

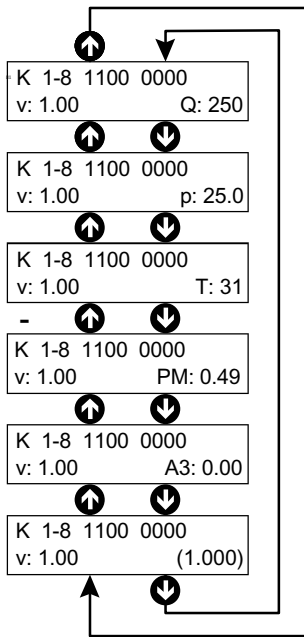
2.1.1 Description of function

- By pressing any of the keys 1 to 4 the program switches from the run mode to the menu mode. Travels can be executed nevertheless, however, setting changes will be applied only after the end of the travel.
- Select the desired parameter using the ↑ or ↓ key
- Increase value with + key, decrease value with – key
- Set parameter to factory setting value: keep + key pressed, then press – key
- Set parameter to maximum value: keep + key pressed, then press ↑ key
- Set parameter to minimum value: keep – key pressed, then press ↓ key
- With ↑ or ↓ key, save the value and return to parameter selection
- With keys 1, 2, 3 or 4, do not save the value and return to menu mode

Note:

In order to quit menu mode:

- Either press keys ↑ and ↓ simultaneously (changes to the currently displayed parameter are saved)
- Unplug cable and wait for about 3 seconds (changes to the currently displayed parameter are NOT saved)
- For the change language option, use key 2



Example: Display in run mode

- The first line always indicates the state of the command signals K1 ... K8
- The left part of the second line always indicates the current speed (v) in m/s.
- Pressing the $\uparrow$ or $\downarrow$ key changes the indication in the right part of the second line:
- Indication of current flow Q in l/min
- Indication of current pressure p in bar
- Indication of current temperature T in °C
- Indication of current solenoid current UP/DOWN (PM) in A
- Indication of current solenoid current UCM/A3 (A3) in A
- Indication of current demand speed in m/s

Fast speed
0.630 m/s $\wedge$

Fast speed
{ 0.629}m/s $\wedge$

Fast speed
! 0.630 m/s $\wedge$

Status: ---
ok

Status: 48
P-card: Access

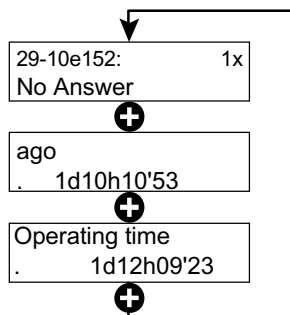
Example: Display in menu mode, parameterisation (menu bar 1)

- Default indication
- Parameter value is being edited, indicated value not yet saved
- Invalid parameter value (saved value outside permissible range, value could not be read, ...), indication of default value

Example: Display in menu mode, event log, status (menu bar 4)

- Default indication
- Indication with error present

Example: Display in menu mode, event log, status, error/event stack (menu bar 4)



- Basic indication
1st line: list entry, category (*mnemonic), error/event no., number of occurrences
2nd line: description
- 2nd line: reading of time elapsed since occurrence
- 2nd line: reading of operating hour counter at occurrence
* Category (mnemonic): e, d, s, i (see Chapter 4.1.4 - 4.1.7)

2.1.2 Password

The iCon parameters and certain functions can be password-protected. There are two password levels, level 1 and level 2, which can be logged in. The passwords for the two levels consist of four digits each.

Factory setting for level 1: 0000

Factory setting for level 2: 1930

Login on level 1 is required to modify parameters and to execute certain functions.

Password "0000" for level 1 means: no password protection (login on level 1 always active).

Login on level 2 is only required for very rarely used service functions.

If a password is set and the user is currently logged in the display will read

1: Logout
+ execute

Setting/changing a password (level 1)

1. Press the key 4

The display will read

Functions
Information

2. Press the key ↑ several times until the display reads

Password
+ select

3. Press the key +

If either no password has previously been set (i.e. password is "0000"), the display will read

1: Login 2
+ execute

Continue with step 4

If a password is set and the user is currently not logged in the display will read

0: Login 1
+ execute

In this case the user must log in first before the password can be changed: ⇒ Logging in

In order to continue setting a password:

4. Press the key ↓ several times until the display

1: Change 1
+ execute

reads

5. Press the key +

The display will read

Change
{0}000

6. Press the key + to increase
or
the key – to decrease the value between the brackets

-
7. Press the key ↓ to select the next digit
or
the key ↑ to select the previous digit
-

When all digits display the desired value:

8. Press the keys ↑ and ↓ simultaneously to transmit the password
-

The display will read

Confirmation
{0}000

The user is prompted to enter the password a second time for confirmation.

9. Enter the password again as described above, finish by pressing the keys ↑ and ↓ simultaneously
-

If the two passwords entered are identical the display will read

Carried out!

for approx. 1 second, then change to

1: Change 1
+ execute

The user is logged in, parameters can be changed and functions can be executed.

In order to log out and protect the parameters against inadvertent parameterisation: ⇒ Logging out

If the two passwords entered are different, the display will read

Confirmation
wrong!

for approx. 1 second, then change to

1: Change 1
+ execute

The user is prompted to repeat the complete password setting procedure

Logging in (level 1)

1. Press the key 4

The display will read

Functions
Information

2. Press the key ↑ several times until the display reads

Password
+ select

3. Press the key +

If the display reads either

1: Logout
+ execute

 or

1: Login 2
+ execute

 the user is either logged in already, or no password is set (i.e. password is "0000").

If the display reads

0: Login 1
+ execute

 a password is set. The user is currently not logged in.
Continue with step 4

4. Press the key +

The display will read

Password
{0}000

5. Press the key + to increase
or
the key – to decrease the value between the brackets
6. Press the key ↓ to select the next digit
or
the key ↑ to select the previous digit

When all digits display the desired value:

7. Press the keys ↑ and ↓ simultaneously to transmit the password

If the password entered is correct the display will read

Carried out!

for approx. 1 second, then change to

1: Logout
+ execute

The user is logged in, parameters can be changed and functions can be executed

If the password entered is incorrect, the display will read

Password
wrong!

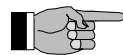
for approx. 1 second, then change to

0: Login 1
+ execute

In order to try again, start over pressing key +

In order to retrieve a forgotten password: ⇒ Forgotten password

Logging out



IMPORTANT!: the iCon has a timer that automatically logs users out after 8 hours. To ensure that the timer operates correctly, the power supply to the iCon must NOT be interrupted. The timer re-starts from zero after a break in the power supply, while the user remains logged in.

In order to log out manually:

1. Press the key 4

The display will read

Functions
Information

2. Press the key ↑ several times until the display reads

Password
+ select

3. Press the key +

The display will read

1: Logout
+ execute

4. Press the key +

The display will read

Carried out!

for approx. 1 second, then

change to

0: Login 1
+ execute

If an attempt is made to change a parameter or to execute a function while the user is logged out, the display will read

parameter name ^
Password(1)!

approx. 1 second. The digit in brackets tells what password level is required to modify the parameter or execute the function.

Forgotten password

1. Press the key 4

The display will read

Functions
Information

2. Press the key ↑ several times until the display reads

Password
+ select

3. Press the key +

4. Press the key ↓ several times until the display reads

0: Code 1
+ display

5. Press the key +

The display will read

0: Code 1
code number

6. Report the code number to the Bucher customer service in order to obtain the valid password

7. Log in with the valid password: ⇒ Logging in

3 Operation

Software V65.060

3.1 Description of parameters

VF-i250 Hardware Release 1.2

VF-i500 Hardware Release 1.0

Menu 1: direction-dependent parameters

Demand values:

Parameter		Setting range	By default	Unit	Description
No.	Name * extended menu only ** service menu only				
0 1	* Start speed	↑ 0 ... 0.5 ↓ 0 ... 0.5	↑ 0.01 ↓ 0.01	m/s	↑ Start speed ↓ Start-speed offset (added to A3 leakage)
2 3	Acceleration	↑ 0.21 ... 3 ↓ 0.21 ... 3	↑ 0.5 ↓ 0.5	m	Acceleration distance, normal travel
4 5	Fast speed	↑ 0 ... 1.1 ↓ 0 ... 1.5	↑ 0.5 ↓ 0.5	m/s	Fast speed, normal travel
6 7	Deceleration	↑ 0.21 ... 3 ↓ 0.21 ... 3	↑ 0.45 ↓ 0.45	m	Deceleration distance, normal travel
8 9	Slow speed	↑ 0 ... 0.2 ↓ 0 ... 0.2	↑ 0.04 ↓ 0.04	m/s	Slow speed
10 11	Soft stop	↑ 0 ... 100 ↓ 0 ... 100	↑ 0 ↓ 0	mm	Soft-stop distance (for all travels except relevelling)
12 13	Relevelling	↑ 0 ... 0.2 ↓ 0 ... 0.2	↑ 0.04 ↓ 0.04	m/s	Relevelling speed
338 339	Soft st. Rlvl.	↑ 0 ... 100 ↓ 0 ... 100	↑ 0.21 ↓ 0.21	mm	Soft-stop distance for re-levelling
14 15	* Insp. accel.	↑ 0.21 ... 1 ↓ 0.21 ... 1	↑ 0.21 ↓ 0.21	m	Acceleration distance, inspection travel
16 17	Insp. speed	↑ 20 ... 80 ↓ 20 ... 80	↑ 50 ↓ 50	%	Speed, inspection travel (as % of fast speed in normal travel)
18 19	* Insp. decel.	↑ 0.21 ... 2 ↓ 0.21 ... 2	↑ 0.21 ↓ 0.21	m	Deceleration distance, inspection travel
20 21 26 27 32 33	* K6/K7/K8 accel.	↑ 0.21 ... 2 ↓ 0.21 ... 2	↑ K6: 0.21 ↓ K6: 0.21 ↑ K7: 0.25 ↓ K7: 0.25 ↑ K8: 0.32 ↓ K8: 0.32	m	Acceleration distance with auxiliary speed K6, K7 or K8
22 23 28 29 34 35	K6/K7/K8 speed	↑ 20 ... 100 ↓ 20 ... 100	↑ K6: 60 ↓ K6: 60 ↑ K7: 70 ↓ K7: 70 ↑ K8: 80 ↓ K8: 80	%	Auxiliary speed K6, K7 or K8 (as % of fast speed in normal travel)
24 25 30 31 36 37	* K6/K7/K8 decel.	↑ 0.21 ... 2 ↓ 0.21 ... 2	↑ K6: 0.21 ↓ K6: 0.21 ↑ K7: 0.21 ↓ K7: 0.21 ↑ K8: 0.24 ↓ K8: 0.24	m	Deceleration distance with auxiliary speed K6, K7 or K8

Parameter		Setting range	By default	Unit	Description
No.	Name * extended menu only ** service menu only				
38	* Emerg. decel.	↑ 0.1 ... 10	↑ 1.5	m/s ²	Deceleration when emergency stop
39		↓ 0.1 ... 10	↓ 1.5		
41	* Trigger speed	↓ 0 ... 60000	↓ 200	↓ %	Trigger flow value (as % of leakage) for start of demand curve
44	** TSA: p red.	↑ 0 ... 100	↑ 100	bar	↑ Demand-value adaptation: if pressure exceeds this value, demand speed will be reduced
45		↓ 0 ... 100	↓ 100		↓ Demand-value adaptation: if pressure is below this value, demand speed will be reduced
46	** Grad. Vm(p)	↑ 0 ... 10	↑ 0	%/bar	Demand-value adaptation: steepness of demand-speed reduction (as % of fast speed / bar)
47		↓ 0 ... 10	↓ 0		
48	** TSA: T red.	↑ 0 ... 100	↑ 30	deg. (=°C)	↑ Demand-value adaptation: if temperature exceeds this value, demand speed will be reduced
49		↓ -50 ... 100	↓ 20		↓ Demand-value adaptation: if temperature is below this value, demand speed will be reduced
50	** Grad. Vm(T,p)	↑ 0 ... 10	↑ 0.2	%/deg. (=°/°C)	Demand-value adaptation: steepness of demand-speed reduction (as % of fast speed / °C)
51		↓ 0 ... 10	↓ 0.8		
437	** Crossover press	↓ 0 ... 100	↓ 100	↓ bar	Pressure value for controller switchover to proportional solenoid with downward travel
406	** VF: const. PWR.	↑ OFF / ON	↑ OFF	↑ -	Constant-power operation (when switched on, the speed in the up direction is reduced in a load-dependent manner)
430	** P stat. min	↑ 0.1 ... 100	↑ 50	↑ bar	The maximum permitted static pressure at full load (only active when parameter 406 "Constant-power operation" is switched on)
429	** Const. PWR. fac	↑ 0 ... 100	↑ 77	↑ %	Power reduction factor: specifies the percentage by which the power is reduced when the motor speed is doubled (only active when parameter 406 "Constant-power operation" is switched on)

Control values:

Parameter		Setting range	By default	Unit	Description
No.	Name * extended menu only ** service menu only				
72	* I PM start	↓ 0 ... 65.534	↓ i250VF: 15 ↓ i500VF:	-	I-component of PID-controller, start ramp for travels other than relevelings

Parameter No.	Name * extended menu only ** service menu only	Setting range	By default	Unit	Description
84	* I PM start r.	↓ 0 ... 65.534	↓ i250VF: 10 ↓ i500VF: 1	-	I-component of PID-controller, start ramp for relevellings
76	P PM travel	↓ 0 ... 65.534	↓ i250VF: 2 ↓ i500VF: 1	-	P-component of PID-controller, travel phase
78	I PM travel	↓ 0 ... 65.534	↓ i250VF: 3 ↓ i500VF: 6	-	I-component of PID-controller, travel phase
80	D PM travel	↓ 0 ... 65.534	↓ i250VF: 0.025 ↓ i500VF: 0.1	-	D-component of PID-controller, travel phase
59	* Pulsation PWM	↑ 100 ... 250	↑ i250VF: 120 ↑ i500VF: 100	Hz	PWM frequency of solenoid input (prop. solenoid and A3 solenoid)
60		↓ 100 ... 250	↓ i250VF: 160 ↓ i500VF: 100		
321	Start Optim.	↓ 0 ... 2	↓ 1	-	Optimisation of start of travel (time optimised [0], balanced [1], comfort [2])
43	* PID gain (v)	↓ 1 ... 10	↓ i250VF: 1.8 ↓ i500VF: 1	-	Speed-dependent amplification of PID-controller
237	* FF Gain accel.	↓ 0 ... 1	↓ i250VF: 0.1 ↓ i500VF: 0.1	-	Feed forward control: weighting factor, demand acceleration
239	* FF Gain speed	↓ 0 ... 1	↓ i250VF: 0 ↓ i500VF: 0.1	-	Feed forward control: weighting factor, demand speed
241	* FF Gain decel.	↓ 0 ... 1	↓ i250VF: 0.1 ↓ i500VF: 0.2	-	Feed forward control: weighting factor, demand deceleration
56	** Min. curr. PM	↓ 0 ... 2700	↓ i250VF: 650 ↓ i500VF: 730	mA	Current threshold (absolute) which must not be undershot
57	** Max. delta PM	↓ 0 ... 2700	↓ i250VF: 150 ↓ i500VF: 500	mA	Current reduction (relative to offset current) which must not be exceeded

Parameter		Setting range	By default	Unit	Description
No.	Name * extended menu only ** service menu only				
221	** FF Unlock i	↓ 0 ... 2700	↓ i250VF: 1500 ↓ i500VF: 2000	mA	Start procedure: unlocking current (only when parameter <T1:Start time> (Menu 3) set to <OFF>)
222	** FF Unlock T	↓ 0 ... 65534	↓ 250	ms	Start procedure: duration of unlocking-current feed
225	** FF Ramp i sta.	↓ 0 ... 2700	↓ i250VF: 950 ↓ i500VF: 1000	mA	Start procedure: starting current for ramp (only when parameter <T1:Start time> (Menu 3) set to <OFF>)
227	** FF Ramp T	↓ 0 ... 60000	↓ i250VF: 500 ↓ i500VF: 250	ms	Start procedure: time until final current for ramp is reached (only when parameter <T1:Start time> (Menu 3) set to <OFF>)
229	** FF Ramp i end	↓ 0 ... 2700	↓ i250VF: 800 ↓ i500VF: 900	mA	Start procedure: final current for ramp (only when parameter <T1:Start time> (Menu 3) set to <OFF>)
218	** FF A3 % open	↓ 0 ... 100	↓ 80	%	A3 solenoid: switching current as % of max. current
219	** FF A3 T	↓ 0 ... 65534	↓ 200	ms	A3 solenoid: duration of switching-current feed
220	** FF A3 % hold	↓ 0 ... 100	↓ 30	%	A3 solenoid: holding current as % of max. current
410 411	** VF:end time	↑ 100 ... 2000 ↓ 300 ... 2000	↑ 100 ↓ 500	ms	Run-on time of the motor after the end of drive
414 415	VF: P travel	↑ 0 ... 65.534 ↓ 0 ... 65.534	↑ 0.75 ↓ 0.24	-	P-component of PID-controller, travel phase in frequency-inverter mode
416 417	VF: I travel	↑ 0 ... 65.534 ↓ 0 ... 65.534	↑ 1.9 ↓ 1.4	-	I-component of PID-controller, travel phase in frequency-inverter mode
418 419	VF: D travel	↑ 0 ... 65.534 ↓ 0 ... 65.534	↑ 0 ↓ 0	-	D-component of PID-controller, travel phase in frequency-inverter mode
420 421	* VF:Pid Gain (v)	↑ 0.1 ... 10 ↓ 0.1 ... 10	↑ 1.1 ↓ 1	-	Speed-dependent gain of PID-controller in frequency-inverter mode
422 423	** VF: P FB Gain	↑ 0 ... 10 ↓ 0 ... 10	↑ 1 ↓ 1	-	Pressure-dependent gain of PID-controller in frequency-inverter mode
424 425	** VF:FF Gain a.	↑ 0 ... 10 ↓ 0 ... 10	↑ 0.1 ↓ 0.01	-	Pilot control: weighting factor for demand acceleration in frequency-inverter mode
426 427	* VF:FF Gain s.	↑ 0 ... 10 ↓ 0 ... 10	↑ 1 ↓ 1	-	Pilot control: weighting factor for demand speed in frequency-inverter mode
428 438	** VF:FF Gain d.	↑ 0 ... 10 ↓ 0 ... 10	↑ 0.1 ↓ 0.1	-	Pilot control: weighting factor for demand deceleration in frequency-inverter mode

Parameter		Setting range	By default	Unit	Description
No.	Name * extended menu only ** service menu only				
446 435	** Trigger volume	↑ 0 ... 100 ↓ 0.1 ... 100	↑ 0.4 ↓ 0.2	ml	Trigger value of integrated flow for start of travel in frequency-inverter mode
431	** VF:slow offs.	↓ 0 ... 100	↓ 6	%	Motor rotation-speed offset during slow-speed drive in down direction (only when parameter 409 "T6:start-speed" (Menu 3) is set to "OFF")

Menu 2: direction-independent parameters

Parameter		Setting range	By default	Unit	Description
No.	Name * extended menu only ** service menu only				
306	Language	English Deutsch Francais Italiano Espanol	English	-	Menu language
93	Display mode	Normal Extended Service	Normal	-	Selection of parameters to be displayed
97	* Car frame type	Side ram 1:1 Side ram 2:1 Tandem 1:1 Tandem 2:1 Equival. diam.	Side ram 1:1	-	Car-frame type: (if <Equival. diam.> is selected, enter the cylinder diameter under the parameter <Cyl.diameter>)
230	* Cylinder type	Plunger Tele. standard Equival. diam.	Plunger	-	Cylinder type (if <Equival. diam.> is selected, enter the cylinder diameter under the parameter <Cyl.diameter>)
231	** Cyl. diameter	1 ... 500	80	mm	Cylinder diameter
223	* Cyl.: tele. type	2 stages 3 stages	2 stages	-	Type of telescopic cylinder
99	* Cyl.:tele. diam.	35 mm 42 mm 50 mm 63 mm 70 mm 85 mm 100 mm 120 mm 140 mm 170 mm 200 mm	140 mm		Diameter of telescopic cylinder

Parameter No.	Name * extended menu only ** service menu only	Setting range	By default	Unit	Description
91	** Valve type	VF-i250 VF-i500	VF-i250	-	Valve type
92	* SIU difference	0 ... 100	40	%	SIU demand/feedback monitoring (difference as % of fast-travel speed, 100 = off)
96	** Cmd. polarity	GND-active +24V-active	GND-active	-	Command polarity
95	* Cmd. encoding	Bucher K1..K8 ELRV K1..K8 binary B1..B4 3 Sign. K1..K8	Bucher K1..K8	-	Command encoding
94	* Start delay	0 ... 100	0	s	Start delay (from detection of command until travel starts)
86	** Reset iTeach	0 ... 1	0	-	Mode for resetting iTeach (with switching off power to the iCon [0] or only explicitly with hand-held terminal/iWin [1])
90	* Log mode	0 ... 100	0	-	Monitoring mode (for guided troubleshooting)
89	* Aux. curve	0 ... 65534	0	-	iWIN curves, for guided troubleshooting, standard: 0 (vSoll, vIst, p, IMgt1Ist)
104	** Gain m0-current	0 ... 2	1.0	-	Scaling (gain) for current measurement, solenoid m0 (A3)
105	** Offset m0-curr.	-3000 ... 3000	0	mA	Scaling (offset) for current measurement, solenoid m0 (A3)
106	** Gain PS24V	0 ... 6.5534	1.0	-	Scaling (gain) for voltage measurement, 24 V supply
107	** Offset PS24V	-32767 ... 32766	0	mV	Scaling (offset) for voltage measurement, 24 V supply
108	** Gain PS UI	0 ... 6.5534	1.0	-	Scaling (gain) for voltage measurement, User-interface feed
109	** Offset PS UI	-32767 ... 32766	0	mV	Scaling (offset) for voltage measurement, User-interface feed
110	** Gain PS5V	0 ... 6.5534	1.0	-	Scaling (gain) for voltage measurement, 5 V supply
111	** Offset PS5V	-32767 ... 32766	0	mV	Scaling (offset) for voltage measurement, 5 V supply
112	** Gain volt.UI	0 ... 6.5534	1.0	-	Scaling (gain) for voltage measurement, User-interface feedback
113	** Offset volt.UI	-32767 ... 32766	0	mV	Scaling (offset) for voltage measurement, User-interface feedback
114	** Gain m1-current	0 ... 2	1.0	-	Scaling (gain) for current measurement, solenoid m1 (prop.)
115	** Offset m1-curr.	-3000 ... 3000	0	mA	Scaling (offset) for current measurement, solenoid m1 (prop.)
116	** Gain Opt.0	0 ... 6.5534	1.0	-	Scaling (gain) for voltage measurement, ADC-input options

Parameter No.	Name * extended menu only ** service menu only	Setting range	By default	Unit	Description
117	** Offset Opt.0	-32767 ... 32766	0	mV	Scaling (offset) for voltage measurement, ADC-input options
118	** Gain Qf	0 ... 6.5534	1.0	-	Scaling (gain) for flow measurement based on frequency
119	** Offset Qf	-3276.7 ... 3276.6	0	l/min	Scaling (offset) for flow measurement based on frequency
122	** Gain p	0 ... 6.5534	1	-	Scaling (gain) for pressure measurement (on valve)
123	** Offset p	-327.67 ... 327.66	0	bar	Scaling (offset) for pressure measurement (on valve)
124	** Gain T	0 ... 6.5534	1	-	Scaling (gain) for temperature measurement (on valve)
125	** Offset T	-100 ... 100	0	deg. (=°C)	Scaling (offset) for temperature measurement (on valve)
58	** f standstill	0 ... 65534	0	l/min	Frequency (flow measurement) when lift is at standstill (used for SMA)
61	** P m0-curr. (A3)	0 ... 10	1	-	P-component of PID-current controller, solenoid m0 (A3)
62	** I m0-curr. (A3)	0 ... 10	1	-	I-component of PID-current controller, solenoid m0 (A3)
64	** Resist. m0 (A3)	1 ... 100	i250VF: 44.3 i500VF: 44.3	Ohm	Ohmic coil resistance, solenoid m0 (A3) at 20 °C
65	** P m1-curr. (PM)	0 ... 10	i250VF: 2 i500VF: 3	-	P-component of PID-current controller, solenoid m1 (prop.)
66	** I m1-curr. (PM)	0 ... 10	i250VF: 3 i500VF: 5	-	I-component of PID-current controller, solenoid m1 (prop.)
68	** Resist. m1 (PM)	1 ... 100	i250VF: 10.1 i500VF: 7.38	-	Ohmic coil resistance, solenoid m1 (prop.) at 20 °C
307	* Type s1	Max. pressure Min. pressure Speed monitor	Max. pressure	-	Function of switching output s1
100	s1: pressure	0 ... 100	50	bar	Switching point, pressure switch s1
101	s1: hysteresis	0 ... 100	0.5	bar	Hysteresis, pressure switch s1
311	* Speed monit. s1	0 ... 1	0.29	m/s	Switching point of speed monitoring s1
312	* Speed m. hyst.s1	0 ... 1	0.01	m/s	Hysteresis of speed monitoring s1
308	* Type s2	Max. pressure Min. pressure Speed monitor	Min. pressure	-	Function of switching output s2

Parameter No.	Name * extended menu only ** service menu only	Setting range	By default	Unit	Description
102	* s2: pressure	0 ... 100	5	bar	Switching point, pressure switch s2
103	* s2: hysteresis	0 ... 100	1	bar	Hysteresis, pressure switch s2
313	* Speed monit. s2	0 ... 1	0.29	m/s	Switching point of speed monitoring s2
314	** Speed m. hyst.s2	0 ... 1	0.01	m/s	Hysteresis of speed monitoring s2
309	* Type s3	Max. pressure Min. pressure Speed monitor	Max. pressure	-	Function of switching output s3 (options board "switching outputs SO-A")
300	* s3: pressure	0 ... 100	80	bar	Switching point of pressure switch s3 (options board "switching outputs SO-A")
301	* s3: hysteresis	0 ... 100	0.5	bar	Hysteresis of pressure switch s3 (options board "switching outputs SO-A")
315	* Speed monit. s3	0 ... 1	0.29	m/s	Switching point of speed monitoring s3 (options board "switching outputs SO-A")
316	* Speed m. hyst.s3	0 ... 1	0.01	m/s	Hysteresis of speed monitoring s3 (options board "switching outputs SO-A")
310	* Type s4	Max. pressure Min. pressure Speed monitor	Max. pressure	-	Function of switching output s4 (options board "switching outputs SO-A")
302	* s4: pressure	0 ... 100	80	bar	Switching point of pressure switch s4 (options board "switching outputs SO-A")
303	* s4: hysteresis	0 ... 100	0.5	bar	Hysteresis of pressure switch s4 (options board "switching outputs SO-A")
317	* Speed monit. s4	0 ... 1	0.29	m/s	Switching point of speed monitoring s4 (options board "switching outputs SO-A")
318	* Speed m. hyst.s4	0 ... 1	0.01	m/s	Hysteresis of speed monitoring s4 (options board "switching outputs SO-A")
400	** VF:start offs.	0 ... 15	5	%	Motor rotation-speed offset at starting
401	** VF:start time	0 ... 2000	150	ms	Duration of motor rotation-speed offset at starting
402	* VF:ramp time	0 ... 10000	3000	ms	Duration of motor rotation-speed ramp at starting
403	** VF:ramp delta	0 ... 200	17	%	Final value of motor rotation-speed ramp at starting
432	** FF Ramp i sta.	0 ... 1000	i250VF: 470 i500VF: 500	mA	Offset-current of proportional solenoid at starting in frequency-inverter mode
434	* Trigger speed	0.001 ... 0.1	0.002	m/s	Trigger flow value for start of travel in frequency-inverter mode

Parameter		Setting range	By default	Unit	Description
No.	Name * extended menu only ** service menu only				
405	VF:duty type	VF CF String	VF	-	Operating mode of frequency inverter (VF: Saturn alpha mode, CF: LRV mode, VF acc: Orion alpha mode)

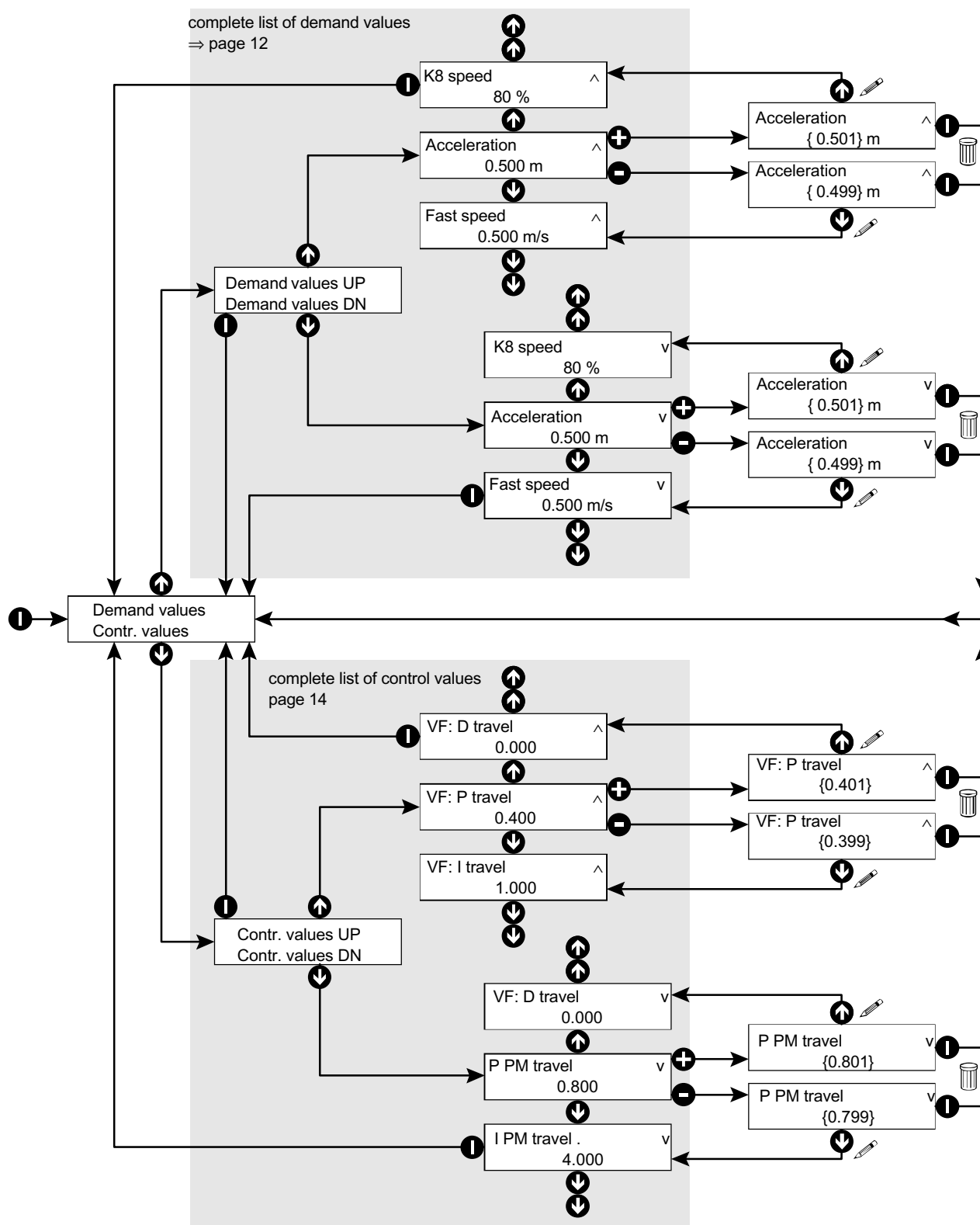
Menu 3: iTeach values

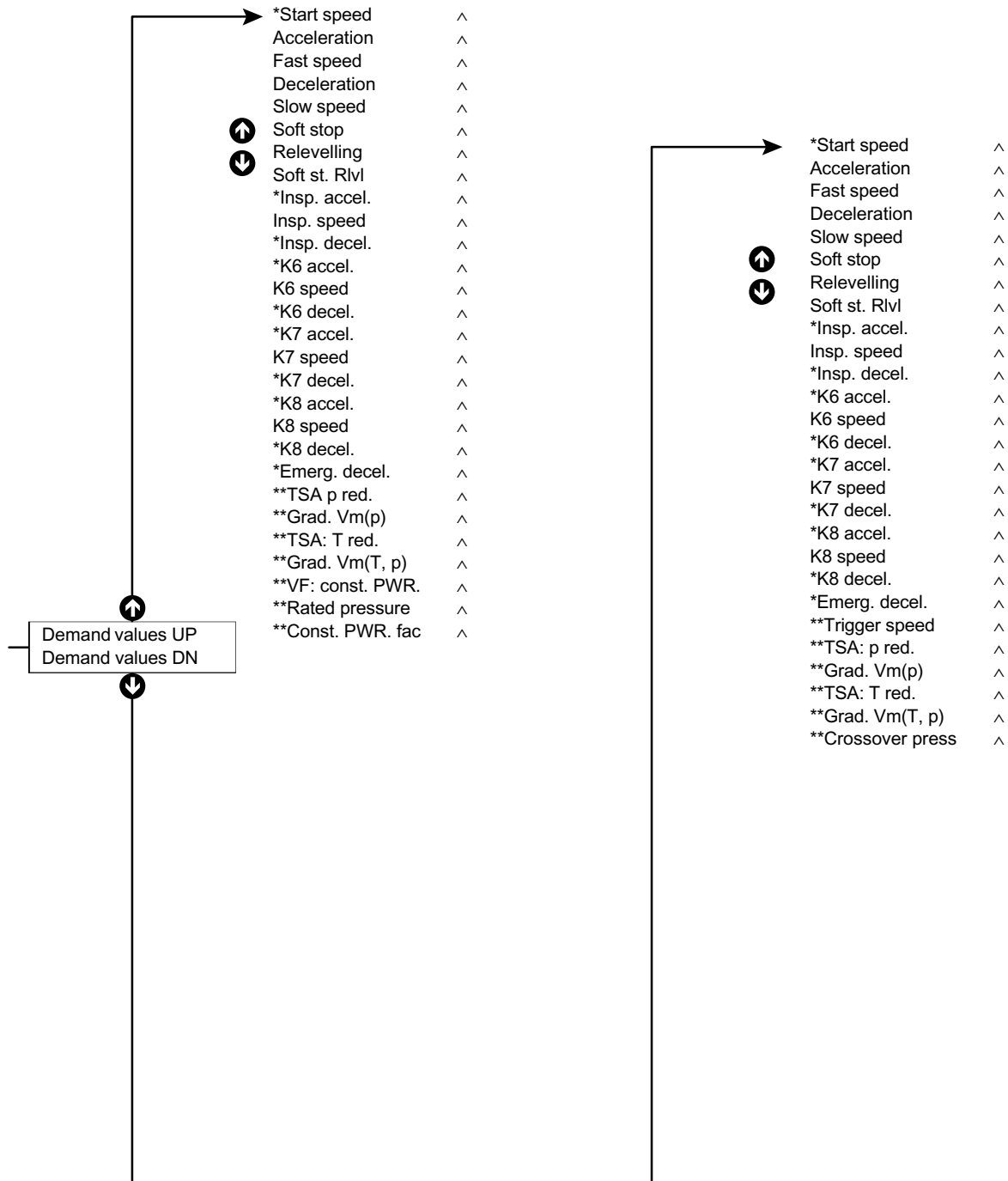
Parameter		Setting range	By default	Unit	Description
No.	Name * extended menu only ** service menu only				
244	T1:start time	↑ OFF / ON	↑ ON	-	iTeach: switching on/off of "optimised start time" function
245		↓ OFF / ON	↓ ON		
246	** T1:p0	↑ 0 ... 100	↑ 30	bar	iTeach: pressure at which the offset current for the start of flow was measured on the test stand
247		↓ 0 ... 100	↓ 30		
248	** T1:i(p0)	↑ 0 ... 2700	↑ 380	mA	iTeach: offset current for the start of flow, measured at p0
249		↓ 0 ... 2700	↓ 680		
250	** T1:grad. i(p)	↑ 0 ... 65.534	↑ 4.452	mA/bar	iTeach: gradient of transfer function "offset current = f(pressure)"
251		↓ 0 ... 65.534	↓ 7.936		
252	** T1:delta ramp	↑ 0 ... 2700	↑ i250VF: 30	mA	iTeach: start procedure, delta start current for ramp
253		↓ 0 ... 2700	↓ i250VF: 30 i500VF: 100		
258	** T1:delta safe	↑ 0 ... 1000	↑ i250VF: 10	mA	iTeach: safety margin – difference between calculated offset current and the final ramp value that is actually set
259		↓ 0 ... 1000	↓ i250VF: 10 i500VF: 10		
254	T1:t target	↑ 0.1 ... 60	↑ 0.8	s	iTeach: target start time
255		↓ 0.1 ... 60	↓ 0.8		
256	* T1:max.corr.	↑ 1 ... 500	↑ 100	mA	iTeach: max. correction of offset current by iTech
257		↓ 1 ... 500	↓ 100		
260	T3:slow travel	↑ OFF / ON	↑ ON	-	iTeach: switching on/off of "optimised slow travel" function
261		↓ OFF / ON	↓ ON		
264	T3:t target	↑ 0.1 ... 60	↑ 0.5	s	iTeach: target slow-travel time
265		↓ 0.1 ... 60	↓ 0.5		
266	* T3:max.corr.	↑ 0 ... 100	↑ 20	%	iTeach: max. relative correction of parametrised deceleration by iTech
267		↓ 0 ... 100	↓ 20		

Parameter		Setting range	By default	Unit	Description
No.	Name * extended menu only ** service menu only				
408 409	T6:start rpm	↑ OFF / ON ↓ OFF / ON	↑ ON ↓ ON	-	iTeach: switching on/off of parameter-grid for motor rotation speed and proportional solenoid current
439 440	** T6:i(p0)	↑ 0 ... 2700 ↓ 0 ... 2700	↑ 340 ↓ 315	mA	iTeach: offset current during acceleration UP/DOWN and constantly movement UP
441 442	** T6:Grad.i(p)	↑ 0 ... 65.534 ↓ 0 ... 65.534	↑ 5.87 ↓ 5.87	mA/bar	iTeach: ramp of current during acceleration UP/DOWN and constantly movement UP
443	** T6:n(T0)	↓ 0 ... 20	↓ 5.95	%	iTeach: offset rotation-speed during slow speed
444	** T6:Grad.n(T)	↓ 0 ... 6.5534	↓ 0.0552	%/deg.	iTeach: rise of rotation-speed during slow speed
445	** T6:offset shift	↓ -10 ... 10	↓ 0	%	iTeach: offset step joint of motor rotation-speed

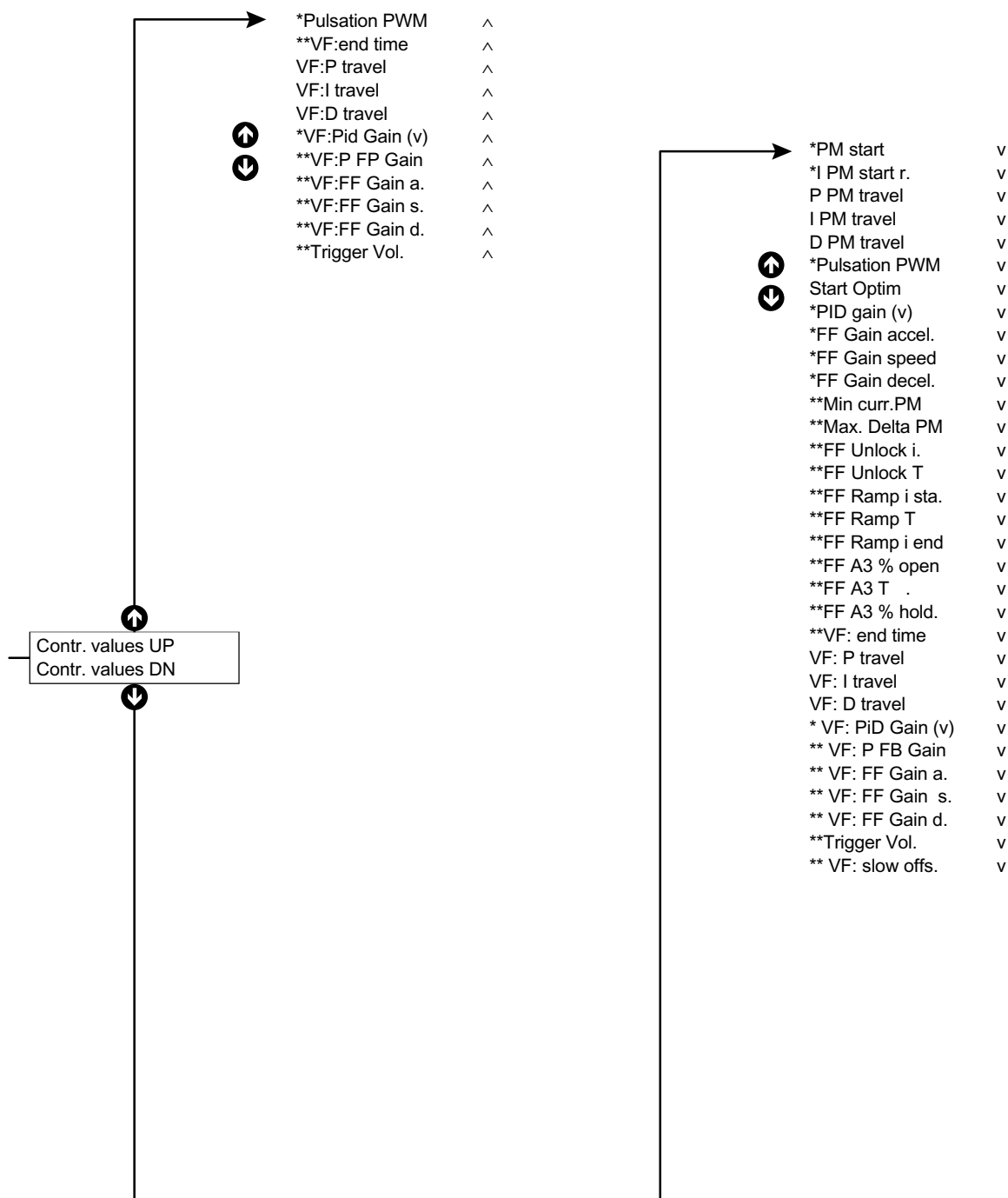
3.2 Parameterisation with Handterminal

Menu 1: direction-dependent parameters, navigation



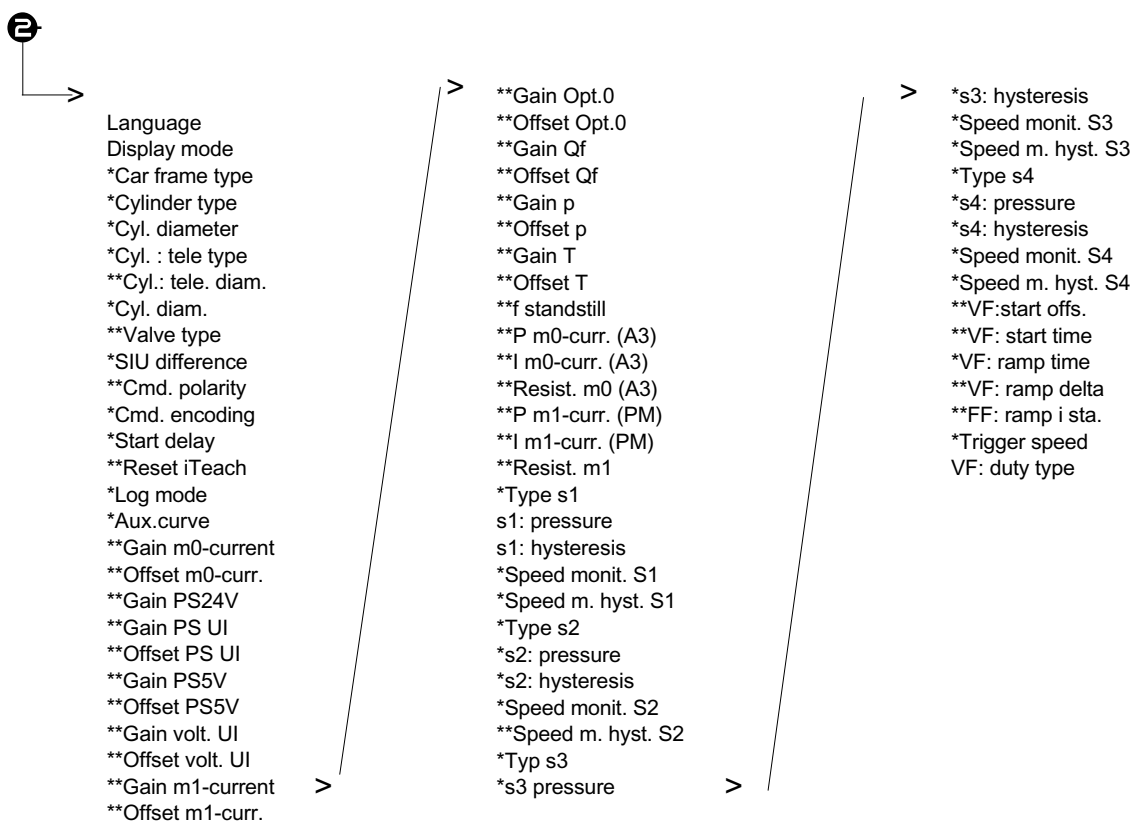
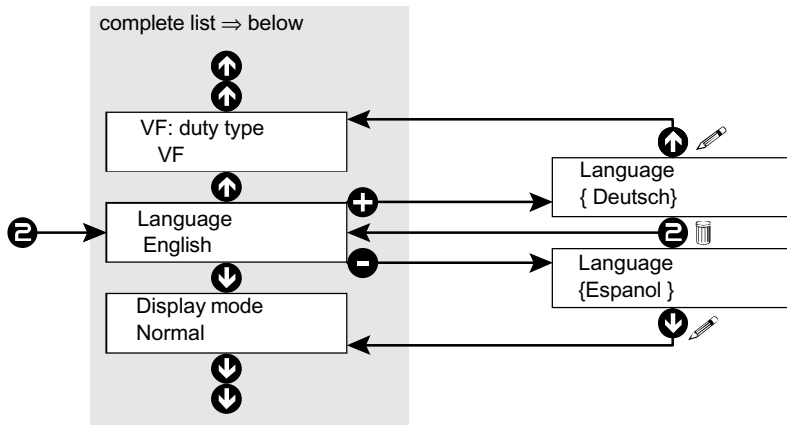
Menu 1: direction-dependent parameters, list of demand values


* extended menu only
 ** service menu only
 see list of parameters

Menu 1: direction-dependent parameters, list of control values


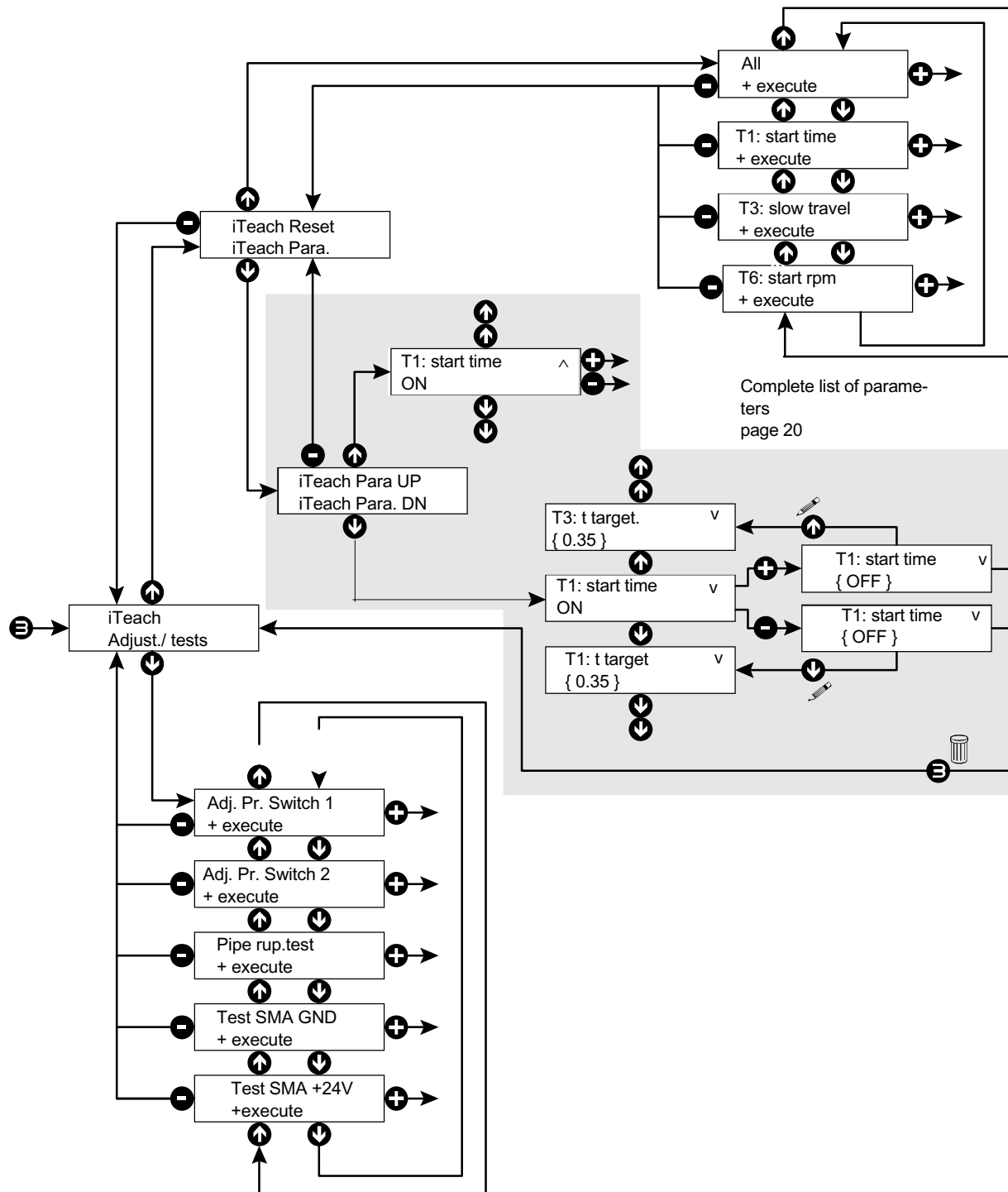
* extended menu only
 ** service menu only
 see list of parameters

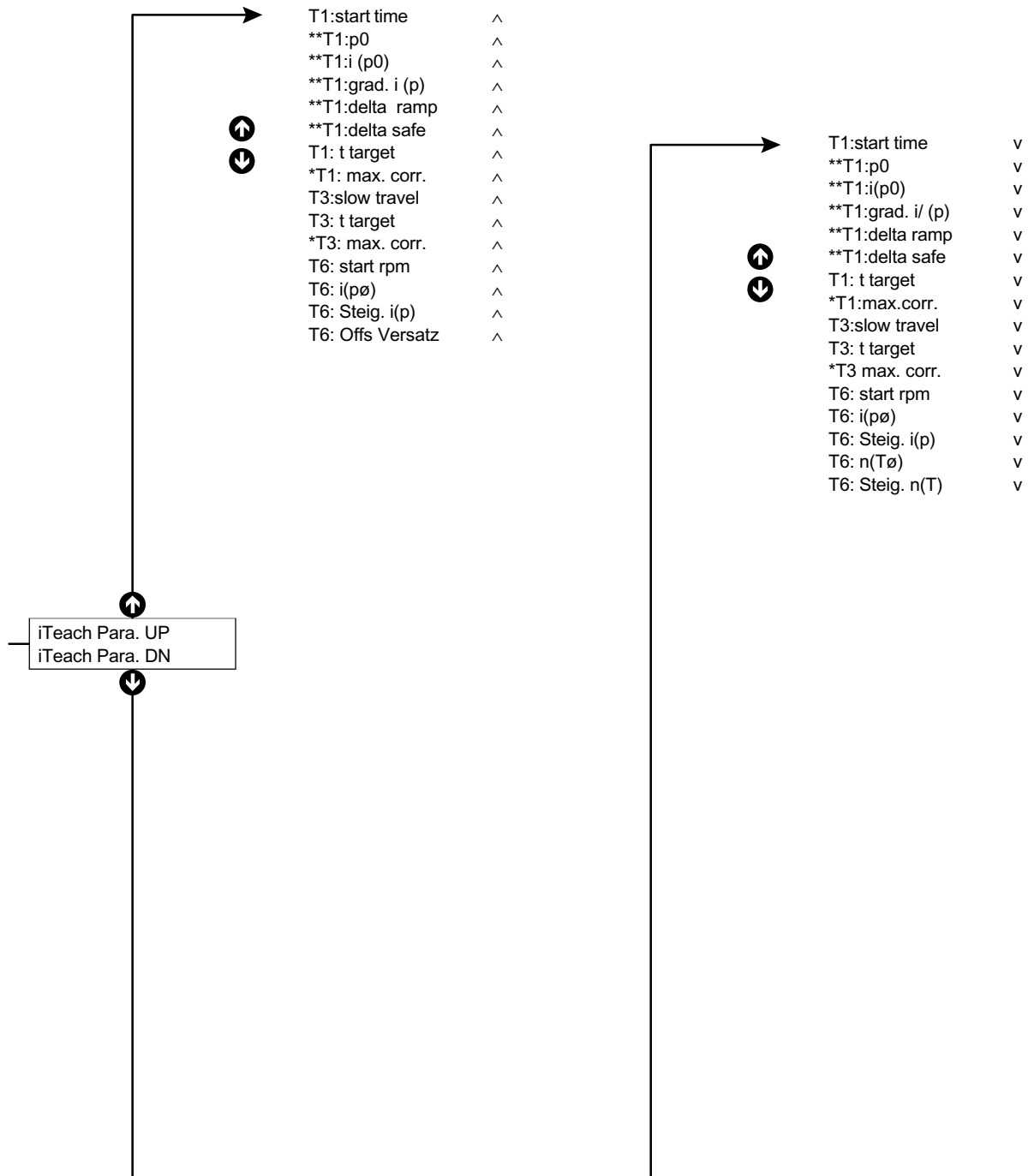
Menu 2: direction-independent parameters



* extended menu only
 ** service menu only
 see list of parameters

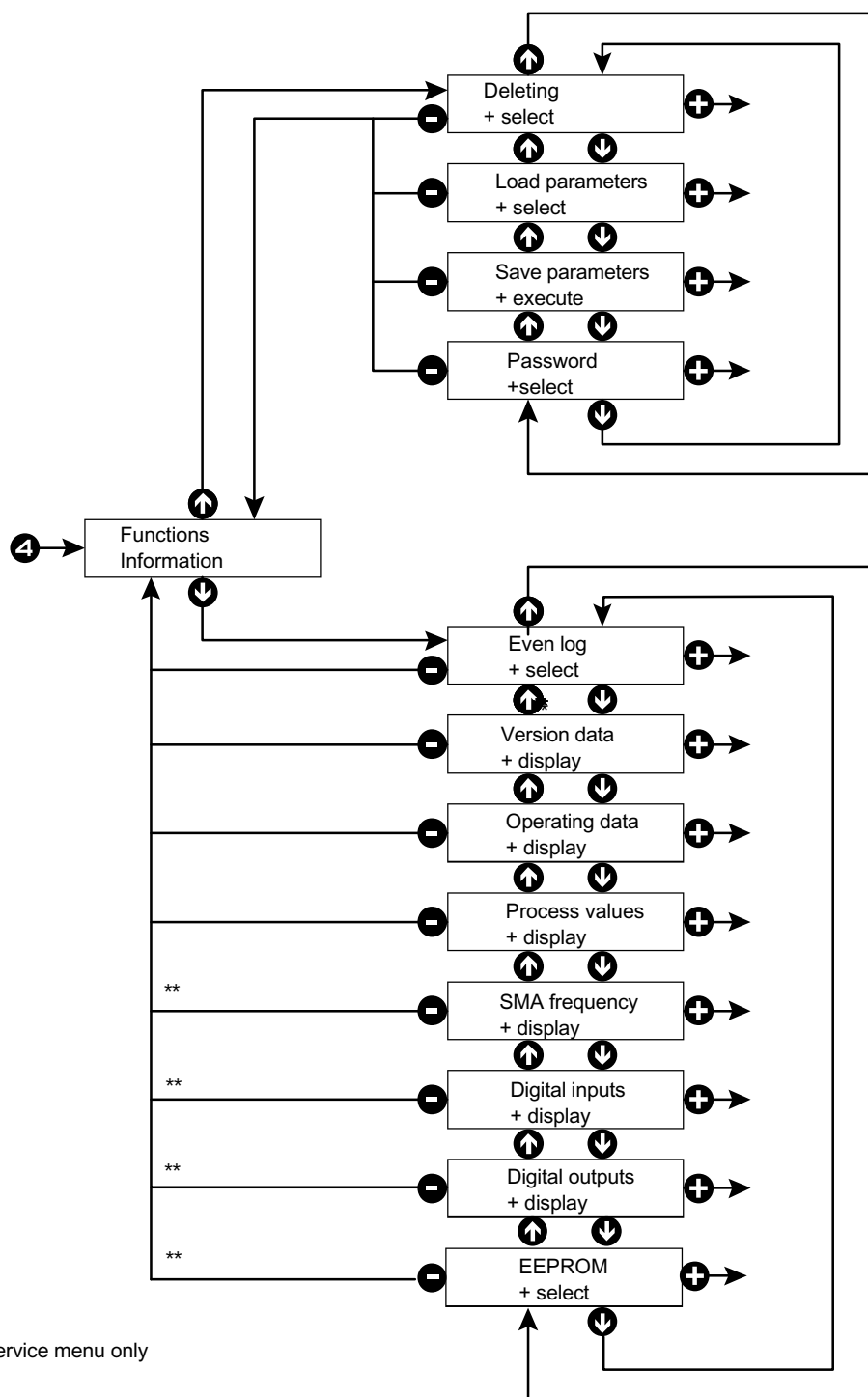
Menu 3: iTeach / adjustments / tests



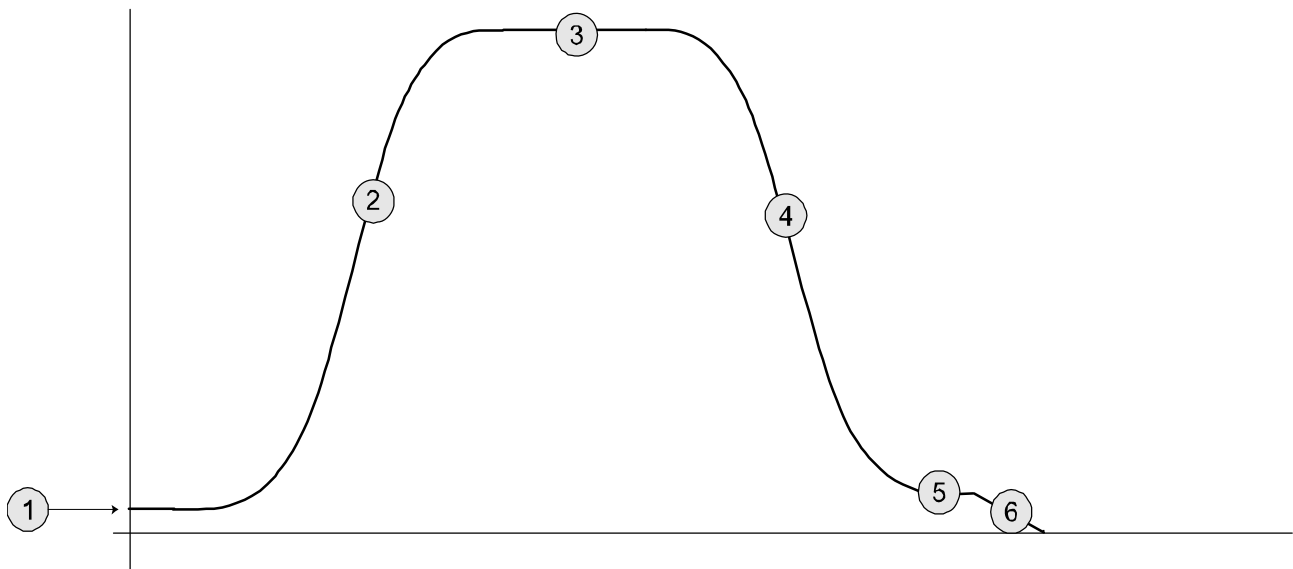
Menu 3: iTeach-parameters, list of control values


* extended menu only
 ** service menu only
 see list of parameters

Menu 4: Functions / Information



3.2.1 Overview of travel curve parameters

**Legend**

1	Start speed	4	Deceleration
2	Acceleration	5	Slow speed
3	Fast speed	6	Soft-Stop

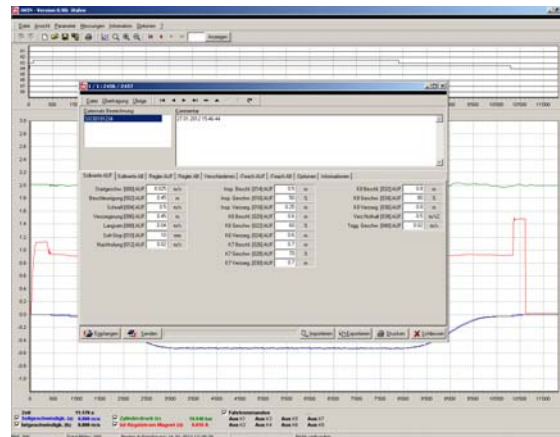
3.3 Parametrisation with iWIN

3.3.1 Menus

Software, RS232-adaptor and cable can be ordered as part no. 3007020027

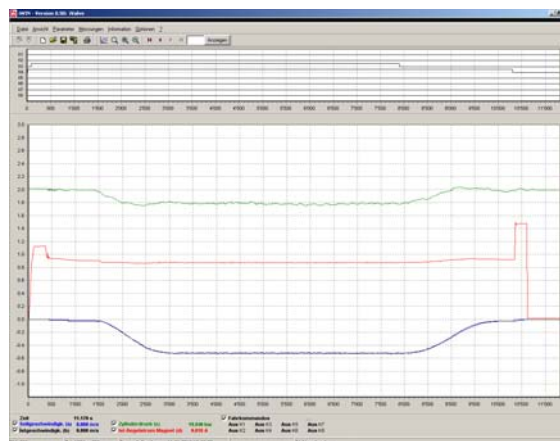
RS232-USB converter can be ordered as part no. 3007014722

Parameterisation



- iCon parameters can be read off and set via PC
- Parameter sets can be saved
- Comments can be added to parameter sets
- Print function

Display of curves



- Curves (demand signal / feedback value / pressure / control current) displayed in real time
- Display of commands K1 ... K8
- Zoom functions / Print functions

4 Repair

4.1 Troubleshooting / Fault diagnosis

4.1.1 LED displays (iCon)

LED	Description	Status	Function
com	Communication with valve	on	communication with valve ok, data packages properly transmitted/received
		flashes rapidly	no (correct) communication with valve
meas	Measurement of feedback values	on	feedback values from valve (flow, pressure, temperature) plausible
		off	when LED "com" flashes rapidly simultaneously: no correct communication with valve
		flashes rapidly	feedback values from valve (flow, pressure, temperature) not plausible, zero balance outside permissible range
		flashes slowly	versions of iCon and iBox not compatible with each other or error during function/EEPROM access on valve
m1(10)	Solenoid UP/DOWN	on	solenoid actuated, current correct
		off	solenoid not actuated
		flashes rapidly	solenoid actuated, resistance not correct
		flashes slowly	current not correct
m0(9)	Solenoid UCM/A3	on	solenoid actuated, current correct
		off	solenoid not actuated
		flashes rapidly	solenoid actuated, resistance not correct
		flashes slowly	current not correct
8	Command input 8	on	command signal K8 present
7	Command input 7	on	command signal K7 present
6	Command input 6	on	command signal K6 present
5	Command input 5	on	command signal K5 present
4	Command input 4	on	command signal K4 present
3	Command input 3	on	command signal K3 present
2	Command input 2	on	command signal K2 present
1	Command input 1	on	command signal K1 present

LED	Description	Status	Function
+SMA	UCM/A3 valve	on	terminal +SMA (X10-2) supplies +24 V
pwr	Power supply	on	all monitored voltages within the permissible range
		flashes rapidly	one of the internally generated voltages outside the permissible range
		flashes slowly	external supply voltage (+24 V) outside the permissible range
run	Readiness for operation	on	program running, ready for travel
		off	not ready for travel
		flashes slowly	not ready for travel, error while starting the program (e.g. EEPROM could not be read), incorrect parameters, parameter synchronisation running (during start, can take up to 10 s)
up	Travel UP	on	travel UP
down	Travel DOWN	on	travel DOWN
		flashes	pipe rupture test activated
misc	iTeach	on	All iTeach functions on and operating in the permissible range
		off	All iTeach functions off
		flashes slowly	At least one iTeach function has reached correction limit
		on for 8 ... 9 s, then interrupted for an instant	Indication of deactivated iTeach-functions (number of interruptions = number of deactivated iTeach-functions)
card	ParamCard	on	ParamCard plugged in, with plausible data
		flashes rapidly	no ParamCard detected
		flashes slowly	data not plausible
error	Error	flashes rapidly	Error present (error relay is energised; list of error messages)
s1	Switching output 1	flashes rapidly	Switching point 1 under-run or exceeded (relay s1 is energised)
s2	Switching output 2	flashes rapidly	Switching point 2 under-run or exceeded (relay s2 is energised)

4.1.2 LED display (options board – switching outputs)

LED	Description	Status	Function
RUN	Readiness for operation	on	Program running, ready for travel
		Off	not ready for travel
		flashes	communication problem with iCon
s3	Switching output 3	flashes rapidly	switching point 3 was under-run / exceeded (relay s3 energised)
s4	Switching output 4	flashes rapidly	switching point 4 was under-run / exceeded (relay s4 energised)

4.1.3 LED display (options board – VF)

LED	Description	Status	Function
RUN	Communication with valve	on	Program running, ready for travel
		Off	not ready for travel
		flashes	Communication problem with iCon
RDY	Ready for operation FU	on	inverter signals readiness
		flashes	unexpected readiness condition
EN	Inverter enable	on	inverter receives enable signal
TRQ	Motor energised	on	inverter signals that motor is energised
		flashes	unexpected motor-energisation condition
ANA OUT +	Positive speed setting	on	lights when speed is positive (intensity depends on setting)
ANA OUT -	Negative speed setting	on	lights when speed is negative (intensity depends on setting)

4.1.4 Incident with Emergency Stop

The following incidents cause the iCon to stop the travel immediately (error relay is activated, solenoids are de-energised until complete standstill).

Incidents are in error- / incident list with mnemonic "e" listed.

In general: When the error relay is activated (switched ON), it remains activated for 500ms at least (unless the 24V power supply fails).

Incident	Description / Comment	Possible causes	Error relay	flashing LED (as long as error present)	valid for K5?	Actions	Hints
(Emergency stop)							
012: CV: Failure	Communication with valve failed	Connection between iCon and iBox (valve) defective / interrupted	1	com error	Y	Check out connection between iCon and iBox (check plugs, cable)	
022: Flow Qf high	Flow signal Qf (unscaled) too high (measured raw value > 6MHz)	EMC disturbance, measurement error, flow measurement faulty	1	meas error	Y	Check electrical earthing / grounding	-
023: Flow Qf low	Flow signal Qf (unscaled) too low (measured raw value < 2MHz)	EMC disturbance, measurement error, flow measurement faulty	1	meas error	Y	Check electrical earthing / grounding	-
076: Flow Qf high	Flow Qf (scaled) too high (highest permissible value depends on valve type: i160:350 l/min / i250:400 l/min / i500:800 l/min)	Measurement error and/or incorrect scaling, possible result from event 022	1	meas error	Y	Check scaling (possibly contact the factory)	-
077: Flow Qf low	Flow Qf (scaled) too low (lowest permissible value: minus 2 l/min)	Measurement error and/or incorrect scaling, possible result from event 023	1	meas error	Y	Check scaling (possibly contact the factory)	-
085: PS failure	Failure of 24 V power supply (voltage < 19 V); error relay is not activated when voltage is too low to switch it!	24 V power supply overloaded / wrongly sized, mains power failure	1	pwr error	Y	Check 24 V power supply (also check during travel)	
090: SIU UP	Difference between demand speed and actual speed too high (travelling UP), threshold for triggering an SIU can be parametrised	Parametrised threshold too low, parametrised fast speed too high, acceleration/deceleration distance too short, ball valve closed, motor does not start / starts too late, pressure relief valve set too low	2	error	N	Check parametrisation, check ball valve / motor start, adjust pressure relief valve correctly	
091: SIU DN	Difference between demand speed and actual speed too high (travelling DOWN), threshold for triggering an SIU can be parametrised	Parametrised threshold too low, parametrised fast speed too high, acceleration/deceleration distance too short, ball valve closed, pipe rupture valve closes at a too low speed, load pressure too low (particularly during commissioning)	2	error	N	Check parametrisation, check ball valve, check pipe rupture valve / adjust it correctly (by authorised personnel only!)	

Legend Hints:

- i= If repeated or lasting: replace valve
- ii= If repeated or lasting: replace iCon
- iii= If repeated or lasting: replace ParamCard
- iv= also recorded at update of iCon firmware

Legend Error relay:

- 1= de-activated (switched OFF) when ok, after 500ms at the earliest
- 2= de-activated (switched OFF) when ok and no commands, after 500ms at the earliest

The following incidents cause the iCon to stop the travel immediately (error relay is activated, solenoids are de-energised until complete standstill).

Incidents are in error- / incident list with mnemonic "e" listed.

In general: When the error relay is activated (switched ON), it remains activated for 500ms at least (unless the 24V power supply fails).

Incident	Description / Comment	Possible causes	Error relay	flashing LED (as long as error present)	valid for K5?	Actions	Hints
096: I m0 (A3) drop	Current in m0 (A3) solenoid drops out	Safety relay opened before end of travel	2	-	N	Check contactor drop-out delay	
108: Error 0-point	Adjustment of 0-point (for flow measurement) not correct. Adjustment is carried out automatically at start of travel!	Load pressure too low (installation incorrectly dimensioned), wrong command timing. RSVQ piston replaced	2	meas error	Y	Check load pressure, check command timing (No new command before end of SMA procedure). After replacement of RSVQ-piston (and only in this case!); adjust 0-point	i
123: Startup failed	Start-up of iCon firmware not correct	Data incorrectly initialised	1	error	Y	Switch iCon off/on, possibly set parameter "Reset iTeach" to "manually only", switch iCon off/on, reset parameter to "when iCon OFF"	ii
132: Pipe rupt. test	End of pipe-rupture valve test, waiting for reset to "normal mode"	-	2	error	Y	Confirm end of pipe-rupture valve test, possibly reset or switch off/on lift controller / iCon	
150: VF: wrong state	VF: unexpected status of inverter	Wiring between iCon and inverter is not correct; there is a fault in the inverter or the VF options board	1	error RDY / TRQ	Y	Rectify wiring between iCon and inverter; check parametrisation and status of inverter; possibly contact the factory	
151: VF: not ready	VF: inverter not ready	Wiring between iCon and inverter is not correct; there is a fault in the inverter or the VF options board	2	error RDY	Y	Rectify wiring between iCon and inverter (white wire must be connected to inverter terminal 24); check parametrisation and status of inverter (when inverter is ready, 24 V DC must be present at inverter terminal 24); possibly contact the factory	

Legend Hints:

- i= If repeated or lasting: replace valve
- ii= If repeated or lasting: replace iCon
- iii= If repeated or lasting: replace ParamCard
- iv= also recorded at update of iCon firmware

Legend Error relay:

- 1= de-activated (switched OFF) when ok, after 500ms at the earliest
- 2= de-activated (switched OFF) when ok and no commands, after 500ms at the earliest

The following incidents cause the iCon to stop the travel immediately (error relay is activated, solenoids are de-energised until complete standstill).

Incidents are in error- / incident list with mnemonic "e" listed.

In general: When the error relay is activated (switched ON), it remains activated for 500ms at least (unless the 24V power supply fails).

Incident	Description / Comment	Possible causes	Error relay	flashing LED (as long as error present)	valid for K5?	Actions	Hints
(Emergency stop)							
152: VF:no torque	VF: inverter has no motor-torque output	Wiring between iCON and inverter is not correct; there is a fault in the inverter or the VF options board; the Enable signal from the safety circuit is missing	2	error TRQ	Y	Rectify wiring between iCON and inverter (green wire must be connected to inverter terminal 25); check parametrisation and status of inverter (when a travel command has been given, 24 V DC must be present at inverter terminal 25); check that inverter is receiving the hardware Enable (display must change from "inh" to "rdy"); possibly contact the factory	
159: VF:no Q trigg.	VF: minimum flow rate downwards not reached	A3 solenoid valve is not energised; proportional solenoid valve is not energised; the Enable signal from the safety circuit is missing	2	error	Y	Rectify wiring to solenoid valves; check that the safety circuit is closing and the safety contacts in the wiring to the solenoid valves are closing	
160: VF:min.Vol.	VF: minimum volume not reached	A3 solenoid valve is not energised; proportional solenoid valve is not energised; the Enable signal from the safety circuit is missing	2	error	Y	Rectify wiring to solenoid valves; check that the safety circuit is closing and the safety contacts in the wiring to the solenoid valves are closing	

Legend Hints:

- i= if repeated or lasting: replace valve
- ii= if repeated or lasting: replace iCon
- iii= if repeated or lasting: replace ParamCard
- iv= also recorded at update of iCon firmware

Legend Error relay:

- 1= de-activated (switched OFF) when ok, after 500ms at the earliest
- 2= de-activated (switched OFF) when ok and no commands, after 500ms at the earliest

4.1.5 Incidents with Drive disable

The following incidents disable starts of new travels at standstill but do not stop an ongoing travel (error relay is activated at standstill, solenoids are not energised at standstill).

Incidents are in error- / incident list with mnemonic "d" listed.

Incident	Description / Comment	Possible causes	Error relay	flashing LED (as long as error present)	valid for K5?	Actions	Hints
(Drive disable)							
024: Valve: Version	iCon does not recognise the existing valve version	Valve version not readable, or unknown	1	meas error	Y	1. Correct valve installed? (check information on nameplate) 2. Check ParamCard (LED "card" must be lit permanently) 3. Replace iCon or update firmware on iCon (using UpdateCard, contact the factory)	iv
026: Pressure high	Pressure signal (unscaled) too high (measured raw value > 32736)	EMC disturbance, measurement error, pressure measurement faulty	1	meas error	Y	Check electrical earthing/grounding	i
027: Pressure low	Pressure signal (unscaled) too low (measured raw value < 1)	EMC disturbance, measurement error, pressure measurement faulty	1	meas error	Y	Check electrical earthing/grounding	i
028: Temperature high	Temperature signal (unscaled) too high (measured raw value > 1023)	EMC disturbance, measurement error, temperature measurement faulty	1	meas error	Y	Check electrical earthing/grounding	i
029: Temperature low	Temperature signal (unscaled) too low (measured raw value < 1)	EMC disturbance, measurement error, temperature measurement faulty	1	meas error	Y	Check electrical earthing/grounding	i
040: Para: OOR	At least one parameter value out of range	-	1	error	Y	Set parameters to correct values (e.g. load factory settings)	iv
041: Para: Init.	Initialisation of parameters in progress (takes up to 10 s). Disappears automatically after initialisation has finished	e.g. new valve connected	1	error	Y	-	
046: Para: Sync.	Synchronisation of parameters in progress (takes up to 10 s). Disappears automatically after synchronisation has finished	e.g. new valve connected	1	error	Y	-	
047: Para: Sync.	Synchronisation of parameters failed	Connection between iCon and iBox (valve) defective, ParamCard (incl. data) not correct, parameter value(s) out of range	1	error	Y	Switch iCon off/on, check connection between iCon and iBox (LEDs "com" and "meas" must be lit permanently), check ParamCard (LED "card" must be lit permanently), ensure that all parameter values are within allowed range	i iii iv

Legend Hints:

i= if repeated or lasting: replace valve

ii= if repeated or lasting: replace iCon

iii= if repeated or lasting: replace ParamCard

iv= also recorded at update of iCon firmware

Legend Error relay:

1= de-activated (switched OFF) when ok, after 500ms at the earliest

2= de-activated (switched OFF) when ok and no commands, after 500ms at the earliest

The following incidents disable starts of new travels at standstill but do not stop an ongoing travel (error relay is activated at standstill, solenoids are not energised at standstill).

Incidents are in error- / incident list with mnemonic "d" listed.

Incident	Description / Comment	Possible causes	Error relay	flashing LED (as long as error present)	valid for K5?	Actions	Hints
(Drive disable)							
048: P-Card: Access	Error when accessing ParamCard (I2C-access)	ParamCard not (correctly) plugged in, ParamCard defective	1	card error	Y	Check ParamCard (LED "card" must be lit permanently)	iii
049: P-Card: Data	Data on ParamCard not coherent	Data on ParamCard not (correctly) stored, possible result from event 048	1	card error	Y	Check ParamCard (LED "card" must be lit permanently)	iii
056: PS 24V high	24 V voltage too high (above 28 V)	Using battery supply in case of emergency lowering, power supply wrongly adjusted	1	pwr error	Y	Check 24 V power supply	
071: PS 5V high	5 V voltage too high (above 5.5 V)	Measurement error, iCon defective	1	pwr error	Y	-	ii
072: PS 5V low	5 V voltage too low (below 4.5 V)	Measurement error, iCon defective	1	pwr error	Y	-	ii
080: Pressure high	Pressure (scaled) too high (highest permissible value: 200 bar)	Measurement error and/or incorrect scaling, possible result from event 026	1	meas error	Y	Check scaling (possibly contact the factory)	i
081: Pressure low	Pressure (scaled) too low (lowest permissible value: minus 1 bar)	Measurement error and/or incorrect scaling, possible result from event 027	1	meas error	Y	Check scaling (possibly contact the factory)	i
082: Temperature high	Temperature (scaled) too high (highest permissible value: plus 100 °C)	Measurement error and/or incorrect scaling, possible result from event 028	1	meas error	Y	Check scaling (possibly contact the factory)	i
083: Temperature low	Temperature (scaled) too low (lowest permissible value: minus 50 °C)	Measurement error and/or incorrect scaling, possible result from event 029	1	meas error	Y	Check scaling (possibly contact the factory)	i
087: Cmd. up AND dn	UP and DOWN commands simultaneously	If while travelling: error relay is not activated during travel, but travel is slowed down (possibly to standstill) as long as UP and DOWN commands are present simultaneously	2	at standstill: error	Y	Ensure correct commands are signalled and check setting for parameter "Cmd. Encoding [095]"	
133: Compat. iCon/iBox	iCon and iValve not compatible with each other	Old iCon firmware in combination with new valve type	1	meas error	Y	Replace iCon or update firmware on iCon (using UpdateCard, contact the factory)	
145: Para: coherence	Parameters not coherent	e.g. parametrised slow speed higher than 1.54 x fast speed, scaling for flow measurement not always in range zero-to-increasing	1	error	Y	Set parameters to correct values (e.g. load factory settings), possibly contact the factory	

Legend Hints:

- i= if repeated or lasting: replace valve
- ii= if repeated or lasting: replace iCon
- iii= if repeated or lasting: replace ParamCard
- iv= also recorded at update of iCon firmware

Legend Error relay:

- 1= de-activated (switched OFF) when ok, after 500ms at the earliest
- 2= de-activated (switched OFF) when ok and no commands, after 500ms at the earliest

4.1.6 Incidents related to SMA-Signal

No SMA-signal is issued as a result of following incidents. No impact, neither on error relay nor on following travel (as lift controller has to lock the elevator when SMA-signal is not issued).

Incidents are in error- / incident list with mnemonic "s" listed.

Incident	Description / Comment	Possible causes	Error relay	flashing LED (as long as error present)	valid for K5?	Actions	Hints
(SMA-signal not issued)							
128: SMA1 error	Self-monitoring acknowledge error (monitored at end of travel). No SMA signal is issued after the travel that caused the SMA1 error	See document SMA-Signal_300-D-SMA-Signal-en.pdf	-	-	J	See document SMA-Signal_300-D-SMA-Signal-en.pdf	
135: SMA2 error	Self-monitoring acknowledge error (monitored while travelling down). No SMA signal is issued after the travel that caused the SMA2 error	See document SMA-Signal_300-D-SMA-Signal-en.pdf	-	-	J	See document SMA-Signal_300-D-SMA-Signal-en.pdf	

Legend Hints:

- i= if repeated or lasting: replace valve
- ii= if repeated or lasting: replace iCon
- iii= if repeated or lasting: replace ParamCard
- iv= also recorded at update of iCon firmware

Legend Error relay:

- 1= de-activated (switched OFF) when ok, after 500ms at the earliest
- 2= de-activated (switched OFF) when ok and no commands, after 500ms at the earliest

4.1.7 Incidents without impact

Following incidents have no impact, neither on error relay nor on log stack lists
 Listed in Status with mnemonic "i".

Incident	Description / Comment	Possible causes	Error relay	flashing LED (as long as error present)	valid for K5?	Actions	Hints
(only information, no effect)							
067: PS 24V high	24 V voltage too high (above 26.4 V. Threshold can also be higher than 26.4 V)	Using battery supply in case of emergency lowering, power supply wrongly adjusted	-	pwr	J	Check 24 V power supply	
068: PS 24V low	24 V voltage too low (below 21.6 V. Threshold can also be lower than 21.6 V)	24 V power supply overloaded / wrongly sized / wrongly adjusted	-	pwr	J	Check 24 V power supply (also check during travel)	
092: I m0 (A3) high	Current in m0 (A3) solenoid too high while not actuated	Measurement error, incorrect wiring, short-circuit, current from external source	-	m0	J	Check wiring of A3 solenoid (m0)	ii
093: I m0 (A3) low	Current in m0 (A3) solenoid too low while not actuated	Measurement error, incorrect wiring, current from external source	-	m0	J	Check wiring of A3 solenoid (m0)	ii
094: I m0 (A3) high	Current in m0 (A3) solenoid too high while actuated	Wrong solenoid connected, incorrect wiring, short-circuit	-	m0	J	Check wiring of A3 solenoid (m0)	
095: I m0 (A3) low	Current in m0 (A3) solenoid too low while actuated	Safety relay not closed, incorrect wiring	-	m0	J	Ensure that related safety relay closes for down travels, check wiring of A3 solenoid (m0)	
097: I m1 (PM) high	Current in m1 (PM) solenoid too high while not actuated	Measurement error, incorrect wiring, short-circuit, current from external source	-	m1	J	Check wiring of UP/DOWN solenoid (m1)	ii
098: I m1 (PM) low	Current in m1 (PM) solenoid too low while not actuated	Measurement error, incorrect wiring, current from external source	-	m1	J	Check wiring of UP/DOWN solenoid (m1)	ii
099: I m1 (PM) high	Current in m1 (PM) solenoid too high while actuated	Incorrect wiring, short-circuit	-	m1	J	Check wiring of UP/DOWN solenoid (m1)	
100: I m1 (PM) low	Current in m1 (PM) solenoid too low while actuated	Safety relay contact not closed, wrong solenoid connected, incorrect wiring	-	m1	J	Ensure that related safety relay closes for up and down travels, check wiring of UP/DOWN solenoid (m1)	
101: R m0 (A3) high	Coil resistance of m0 (A3) solenoid too high	Safety relay contact not closed, incorrect wiring	-	m0	J	Ensure that related safety relay closes for down travels, check wiring of A3 solenoid (m0)	
102: R m0 (A3) low	Coil resistance of m0 (A3) solenoid too low	Wrong solenoid connected, incorrect wiring, short-circuit	-	m0	J	Check wiring of A3 solenoid (m0)	

Legend Hints:

- i= if repeated or lasting: replace valve
- ii= if repeated or lasting: replace iCon
- iii= if repeated or lasting: replace ParamCard
- iv= also recorded at update of iCon firmware

Legend Error relay:

- 1= de-activated (switched OFF) when ok, after 500ms at the earliest
- 2= de-activated (switched OFF) when ok and no commands, after 500ms at the earliest

Following incidents have no impact, neither on error relay nor on log stack lists
 Listed in Status with mnemonic "i".

Incident	Description / Comment	Possible causes	Error relay	flashing LED (as long as error present)	valid for K5?	Actions	Hints
(only information, no effect)							
103: R m1 (PM) high	Coil resistance of m1 (PM) solenoid too high	Safety relay contact not closed, wrong solenoid connected, incorrect wiring	-	m1	J	Ensure that related safety relay closes for up and down travels, check wiring of UP/DOWN solenoid (m1)	
104: R m1 (PM) low	Coil resistance of m1 (PM) solenoid too low	Incorrect wiring, short-circuit	-	m1	J	Check wiring of UP/DOWN solenoid (m1)	
163: VF: CF duty	VF: CF mode used, even though for downwards VF mode is set	Moment signal of inverter is missing or it takes too long until it comes up	-	-	J	Rectify wiring between inverter and iCon VF optional print; check that the hardware enable in operation mode is present	

Legend Hints:

- i= if repeated or lasting: replace valve
- ii= if repeated or lasting: replace iCon
- iii= if repeated or lasting: replace ParamCard
- iv= also recorded at update of iCon firmware

Legend Error relay:

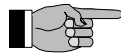
- 1= de-activated (switched OFF) when ok, after 500ms at the earliest
- 2= de-activated (switched OFF) when ok and no commands, after 500ms at the earliest

4.2 Soft-stop

The iCon factory setting for the soft-stop distance is 0 mm.

If a different soft-stop distance is required or set the parameter "Soft-stop" shall be adjusted accordingly (0mm means soft-stop switched off). See Chapter 3.2

In this case the soft-stop switches (0 mm means soft-stop switched off) shall be positioned with the correspondent distance away from the landing. Furthermore it must be made sure, that the contactors drop out with sufficient delay, so that the soft stop distance can be travelled.



IMPORTANT!: A soft-stop of 3...5 mm is usually sufficient. The stopping jolt is not usually improved by using an even greater value. The soft-stop is ended 0.7 s after the command drop-out in any case (required because of SMA), regardless of whether or not the car was able to travel the parametrised soft-stop distance.