

Sampler-Controller

Type 6771-12/-22

Operating Manual (CHILE)

BA 080124

Table of Contents

	Contents	Page	Date of issue
1	Device description _____	1-1	
1.1	Technical data _____	1-2	
1.2	Assembly and wiring _____	1-3	
1.2.1	Allocation of inputs and outputs _____	1-4	
1.2.2	Wiring _____	1-4	
1.2.3	Suggestion for configuration (Default Parameter) _____	1-7	
1.3	Key functions _____	1-8	
1.4	Status displays _____	1-9	
2	Safety requirements _____	2-1	
3	Operation _____	3-1	
3.1	Put into operation _____	3-1	
3.1.1	Self-test _____	3-1	
3.2	Sampling _____	3-2	
3.2.1	Change of display or of menu _____	3-2	
4	Configuration _____	4-1	
4.1	Call the configuration _____	4-1	
4.2	Enter the password _____	4-1	
4.2.1	Driver password _____	4-1	
4.2.2	User password _____	4-1	
4.2.3	Service password _____	4-2	
4.3	Change the program parameters _____	4-2	

*All rights reserved. Subject to change without prior notice.
No part of this document may be reproduced, processed or distributed
in any form or by any means without the prior written permission of
BARTEC.*

Copyright © 2008 by BARTEC
Schulstraße 30,
D-94239 Gotteszell

Document:

BA 080124

valid from: 05.08

Status:

Author:

Stefan Rankl, Margita Meindl

1 Device description

The controller type 6771-xx serves as an electronic control unit for the ULTRASAMPLER[®] sampling system.

This efficient device, equipped with an On/Off output module and a microprocessor-controlled data processing unit, has a robust aluminium die cast casing and is even suited to the tough conditions on tank trucks.

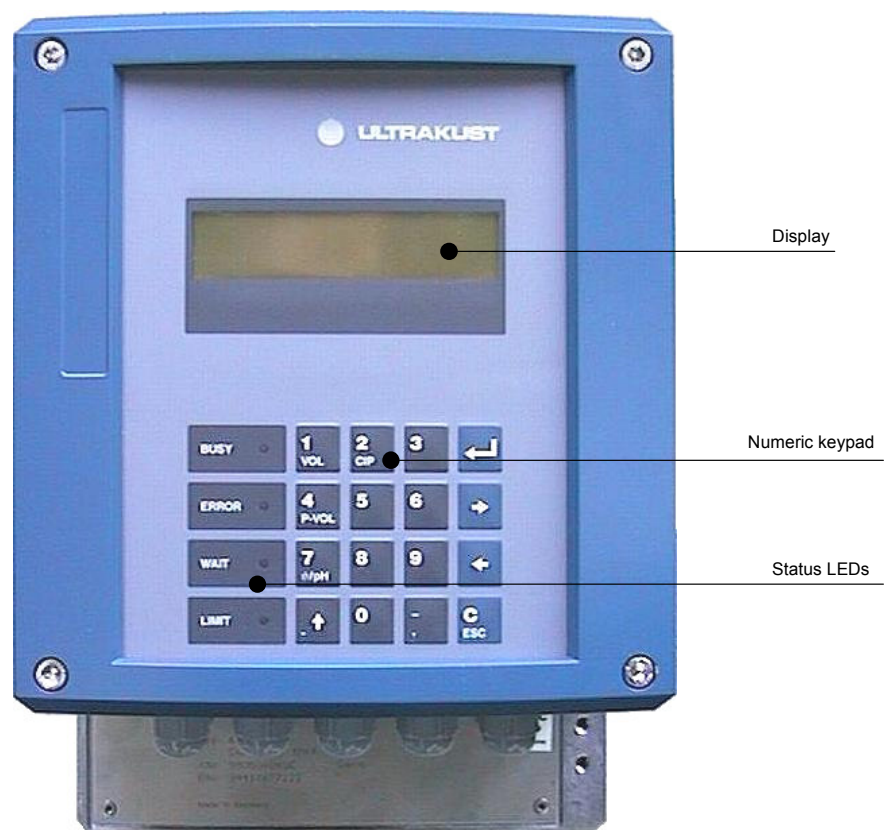
A two-line alphanumeric LC display with background illumination serves to display all indications.

16 characters with a maximum height of 8 mm can be represented per line.

The effective size of the screen display is 100 x 24 mm.

Four LEDs serve to signal operating conditions.

The device can be operated by means of a membrane keypad with 16 keys.

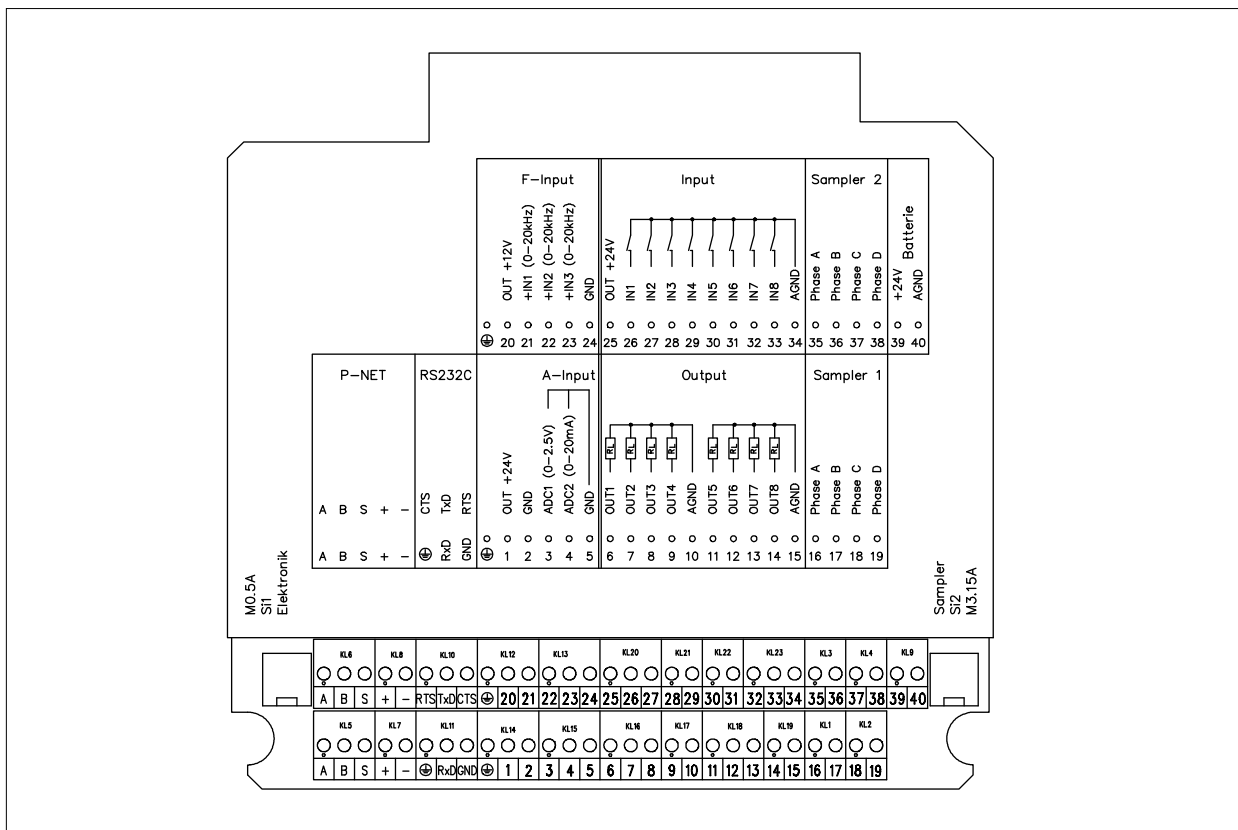
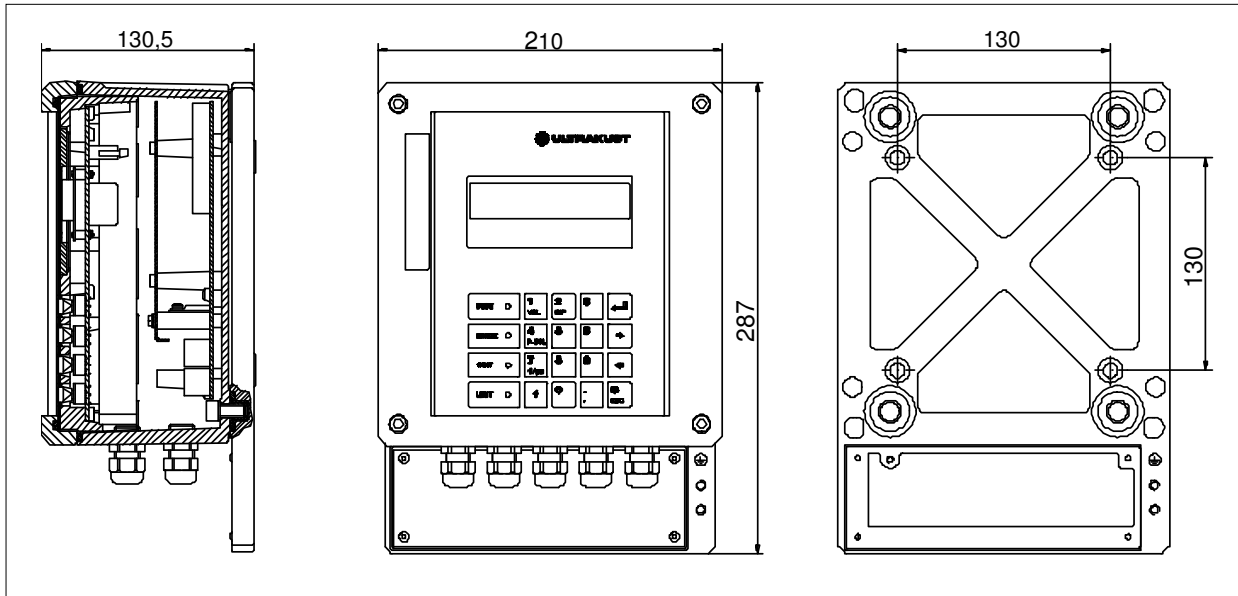


1.1 Technical data

Technical data		Type 6771-12	Type 6771-22
CPU data		16 / 32 Bit processor, 256 kByte Flash, 256 kByte RAM, EEPROM 2 kByte, real-time clock, battery-backed, watchdog timing	
Ambient conditions			
Permissible operating temperature		-20 ... +60 °C	
Permissible storage temperature		-30 ... +85 °C	
Climatic classification		ISF	
Display		alphanumeric, 2 x 16 digits, with background illumination	
Status displays		4 LED	
Keyboard		Membrane keyboard, 16 keys	
Interfaces			
P-NET		serial, asynchronous, baud rate 76800 bit/s	
Serial interface		RS232C	
Inputs			
Analog inputs		0 ... 2.5 V, 0 ... 20 mA	
Frequency inputs		3 x 0 ... 20 kHz	
Digital inputs eightfold		Switching current about 10 mA	
Outputs			
Switching outputs eightfold		With control of voltage supply of open Load <120 mA and of short-circuit. $I_{max.} = 1.0 A$	
Stepper motor outputs		1	2
Electrical data			
Auxiliary energy CPU		DC 24 V (16 - 35 V); 250 mA	
Auxiliary energy DC 24...30 V	Digital inputs	Common ground	
	Switching outputs	OUT1 - OUT4 max. 3.6 A; OUT5 - OUT8 max. 3.6 A (reversible fuse)	
	Stepper motor outputs	Maximum fuse 3.15 A; medium time-lag	
Electrical connection		Screw terminals in the base	
Mechanical data			
Weight		5.2 kg	
Dimensions		210 x 287 x 130.5 mm	
Casing		Robust aluminium diecast casing, blue powder paint; controller bracket: aluminium diecast, bright	
Protection classification:		IP65	
Assembly		Controller bracket is locked in position by means of 4 x M8 assembly screws	

1.2 Assembly and wiring

The assembly of the Controller has to be carried out according to the service instruction MAK 3002 (SA 971113).



1.2.1 Allocation of inputs and outputs

The inputs and outputs are firmly assigned to the respective functions and can't be selected freely.

The inputs and outputs are minus switching.

The maximum permissible current per output is 0.8 A.

Output/Input	Signal	Remarks
Outputs		
OUT 1	Release of pump (MSW)	If the pump is released, the „throttling“ output is activated at the same time. After the expiry of suction time 1, „throttling“ is deactivated.
OUT 2	Throttling	
OUT 3	Alarm signal if there is a fault	
OUT 4	Outlet cassette	Only with Bottle Drive
OUT 5	reserved	for star 2
OUT 6	radial engine	Bottle Drive
OUT 7	upward (lifting motor)	Bottle Drive
OUT 8	downward (lifting motor)	Bottle Drive
Eingänge		
IN 1	Bottle in position 1	
IN 2	Bottle in position 2	
IN 3	Free	
IN 4	Free	
IN 5	Free	
IN 6	Free	
IN 7	Star in position	Bottle Drive
IN 8	Bottle at the bottom	Bottle Drive

1.2.2 Wiring

The following wiring diagram and the suggestion for configuration serve as examples.

With regard to the configuration of your individual system, you will get expert advice from our service staff.

Example

ULTRASAMPLER® „Stand alone“ sampling system

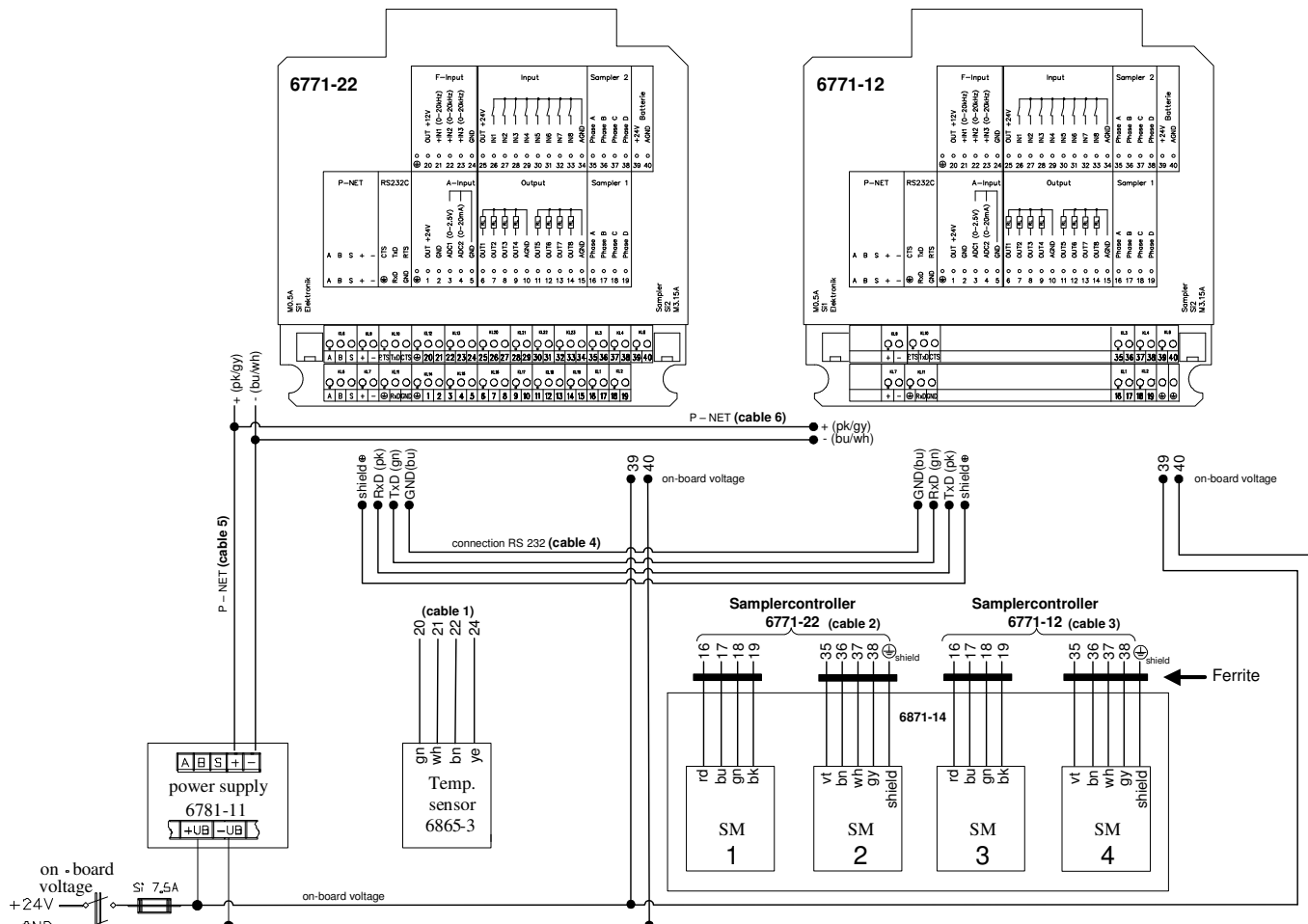
The system consists of:

1	Sampler-Controller:	Type 6771-22
1	Sampler-Controller:	Type 6771-12
1	Power supply:	Type 6781-11
1	Temperature sensor with milk sensor:	Type 6865-3
1	Sampler:	Type 6871-14

Wiring diagram

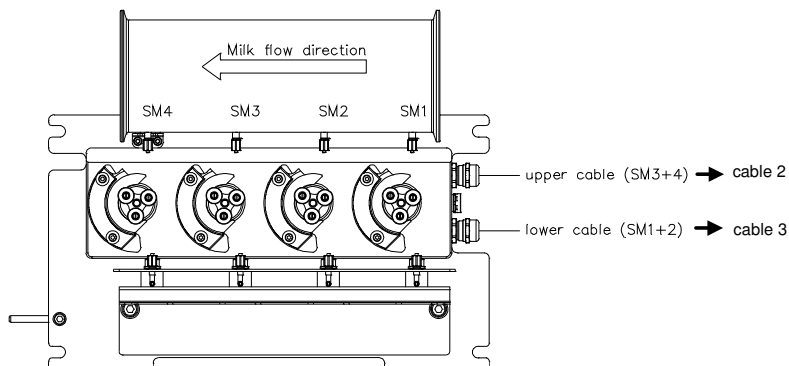
(Example)

Suggestion for corresponding configuration on page 1-7.



- Instructions for use: - diameter of voltage supply cables at least 1.5 mm².
 - around the 4 connector cables from the sampler engines must be a Ferrite core.

Sampler 6871 - 14







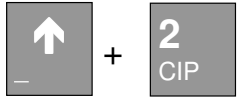




Device	Cable	Pin	Colour	Device	Cable	Pin	Colour
6865-3 Temperature- sensor with milksensor	cable 1			6771-22 Sampler- controller		20	gn
						21	wh
						22	bn
						24	ye
6871-14 Sampler	cable 2 upper cable			6771-22 Sampler- controller		16	rd
						17	bu
						18	gn
						19	bk
						35	vt
						36	bn
						37	wh
			38	gy			
			⊕	shield			
	cable 3 lower cable			6771-12 Sampler- controller		16	rd
						17	bu
						18	gn
						19	bk
						35	vt
			36			bn	
			37			wh	
		38	gy				
		⊕	shield				
6771-22 Sampler- controller	connection RS-232 6771-304 SNr.: 282141 cable 4 (1,5 m)	RxD	pk	6771-12 Sampler- controller		TxD	pk
		TxD	gn			RxD	gn
		GND	bu			GND	bu
		⊕	shield			⊕	shield
6781-11 power supply	P-NET-cable U660033 cable 5			6771-22 Sampler- controller			
		pin +	pk+gy			+ P-NET	pk+gy
		pin -	bu+wh			- P-NET	bu+wh
	P-NET-cable U660033 cable 6			6771-12 Sampler- controller			
		pin +	pk+gy			+ P-NET	pk+gy
		pin -	bu+wh			- P-NET	bu+wh
6781-11 power - supply		pin +UB	+ 24V (on board voltage)				
		pin -UB	- 24V (on board voltage)				
6771-22 Sampler- controller		39	+ 24V (on board voltage)				
		40	- 24V (on board voltage)				
6771-12 Sampler- controller		39	+ 24V (on board voltage)				
		40	- 24V (on board voltage)				





1.2.3 Suggestion for configuration (Default Parameter)

Menu	Submenu	Parameter	Explanations
sampler general	mode sampler 1	1. vessel sample	Vessel sampling
	mode sampler 2	2. supplier sampling	Supplier sampling
	mode pump contr	off	Pump release is not activated
	sensor signal	milk sensor	
	calming distance	long	calming distance > 30cm
	FLM nom. width	50 mm	No FLM installed
	bottle sensor	bottle sensor off	
	pump capacity 1	150 l/min	Suction performance stage 1
	pumping time 1	3 s	Suction time stage 1
	pump capacity 2	250 l/min	Suction performance stage 2
	pumping time 2	3 s	Suction time stage 2
	pump capacity 3	350 l/min	Suction performance stage 3
	flushing min. qty.	39 l	Minimum rinse quantity
	tank smpl. set	10000 l	Total sampling quantity (tank)
finish time	0 s		
sampler 1	preflushing	on	
	samp. bottle vo	500 ml	
	calibr. factor	270 µl/ rev.	
	filling limit	120%	
	start delay	0 s	
	stop delay	0 s	
	pause deduction	0 s	Only for AGRAM
	preflush. freq.	5000 Hz	
	preflush steps	600	
sampler 2	preflushing	on	
	samp. bottle vo	35 ml	
	calibr. factor	270 µl/ rev.	
	filling limit	120%	
	start delay	0 s	
	stop delay	0 s	
	pause deduction	0 s	
	preflush. freq.	5000 Hz	
	preflush steps	600	
temperature sensor	frequ. 0°C	xxx Hz	
	frequ. 25°C	xxx Hz	
language		english	

1.3 Key functions

Key	Function
	Numeric keys
	„Enter“ key (call submenus and parameter selection, confirm entries)
	Leaf forward
	Leaf backward
	„Escape“ button (quit parameter selection without confirming the change, delete entered character, return to the next higher menu level)
	Direct selection of „Expected quantity“ display
	Direct selection of „Cleaning“ menu
	Direct selection of „Volume of sampling bottles“ display
	Direct selection of „Temperature“ display

1.4 Status displays

LED	Meaning
	Flashes about once a second in normal operation
	Lights up if an error has occurred (e.g.: error during the self-test, wrong parameter value, wrong expected quantity ...)
	Lights up if the sampler is waiting for a signal (e.g.: bottle is not in position, proximity switch is defective or has not been adjusted, milk flow is not recognized...)
	Lights up if the controller is operated beyond its specified data.

2 Safety requirements

The appliances have been built conforming to the statutory regulations and, after having been thoroughly checked, have left the factory in perfectly sound condition.

- The appliances have to be installed and maintained by skilled staff.
- Make sure that the data and operating conditions specified by BARTEC are complied with.
- Before installing the device and taking it into service, please read the operating instruction. If you have any questions on certain issues, you will get expert information by our staff.
- If a fault occurs, please write down all errors indicated on the display and check if they can be removed. If the device can't be repaired on the spot, send the device - together with a detailed error description - to BARTEC to have it repaired.
- Switch off the device immediately and protect it from being switched on again if there is the risk that it can't be operated without danger any more (e.g. when there are visible damages).

Disclaimer

BARTEC will not be responsible for damages resulting from the fact that safety instructions aren't observed or that the operating instruction or the operating conditions are disregarded.

3 Operation

3.1 Put into operation

The Sampler-Controller has no switch. It is put into operation when the 24 V supply voltage is connected.

3.1.1 Self-test

After the device has been turned on, at first a self-test is triggered. The following messages are displayed in the following order.

S-BIOS Date V 1.02 021029	BIOS-version and creation date are displayed
Checksum Test OK	Cchecksum test BIOS
RAM-Test 256 KB OK	Test of internal RAM
EEProm-Test OK	Response test EEPROMs
ADC-Test OK	Test of the internal real-time clock
RTC-Test OK	Test of the internal real-time clock
Sampler V.1.02 Date 080122	Version and creation date of the user software are displayed
Checksum Test OK	Checksum test of user software
preset quantity 0 l	The self-test has been terminated successfully, the system is ready for operation and is waiting for the input of an expected quantity

3.2 Sampling

<p>preset quantity 0 l</p>	<p>After the termination of the self-test, the device automatically moves on to the sampling mode. Depending on the configuration, the sampling starts automatically after an expected quantity has been entered, if the sampling bottle is recognized in position (bottle is below the sampler needle) and if milk flow is recognized (by flow level meter or milk sensor).</p>
<p>samp. bottle vol. 21.5ml 21.5ml</p>	<p>Type the expected quantity and press „Enter“. The display shows the current filling level of the sampling bottles. With flow level meter and milk sensor, the filling process can be aborted.</p>
<p>enter = end 42.0ml 42.0ml</p>	<p>As soon as the sampling bottle is filled, the counting stops. The upper line displays the periodical message „Enter=end“ Press „Enter“ to terminate the latest sampling; the Sampler-Controller is ready for the next sampling.</p>

If a second sampler is configured, the operation doesn't change. The second sampler is automatically started together with the first one.

3.2.1 Change of display or of menu

On the user level, you can switch over to other displays and call other menus.

Press [→] or [←] to leaf forward or backward in the menus.

If you leaf forward, the following messages are displayed in this order:

<p>samp. bottle vol. 42.0ml 42.0ml</p>	<p>The current sampling volume with consideration of the pre-set filling limit for Sampler 1 and Sampler 2 is displayed.</p>
<p>temperature 0.0°C</p>	<p>The measured milk temperature is displayed.</p>
<p>sensor/flow 100.0% 150.0l/m</p>	<p>Filling degree and flow rate of the milk sensor (flow level meter operation) are displayed. Without the flow level meter, the display only shows if there is milk or if there isn't (0 or 100%). The displayed flow rate is the flow rate corresponding to the pump configuration.</p>
<p>tank sampl. start enter = yes</p>	<p>Press „Enter“ to start the tank sampler.</p>
<p>cleaning start enter = yes</p>	<p>Press „Enter“ to start the cleaning of the sampler. Press „Enter“ once more to stop the cleaning which has already started.</p>
<p>configuration ></p>	<p>By means of the configuration menu, you can adjust the system to the actual operation conditions via various parameter settings. The configuration menus are described in the following chapter.</p>

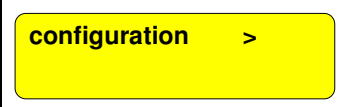
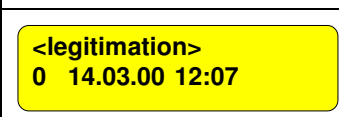
You can call certain displays directly without leafing backward or forward. Press the Shift key and another key. The variety of key combinations is described in tabular form under 1.3 Key Functions.

4 Configuration

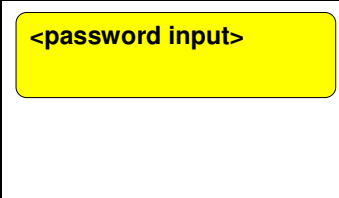
Via the “Configuration“ menus, you make all settings necessary for the operation of the control software or required for the individual configuration of your device. If you quit the “Configuration” menu, all configuration data are saved automatically.

The configuration parameters are protected by different passwords (s. 4.2).

4.1 Call the configuration

	<p>Select the „Configuration“ menu and press „Enter“.</p>
	<p>The lower display line shows the access authorization, the current date and time.</p> <p>Press „Enter“ twice to display the password input.</p>

4.2 Enter the password

	<p>Three different passwords for the Sampler-Controller can be entered.</p> <p>Depending on the password which has been entered, the respective access authorization is displayed.</p> <p>If you don't type a valid password, you can call the “Configuration” menu, but you can't make any changes.</p>
--	--

4.2.1 Driver password

After the driver password has been entered, authorization 1 is granted. With authorization 1, only the configuration of the sampling bottle volume can be changed.

The driver password is the sum of day, month and hour (as shown in the display).

Driver password = day + month + hour

Example

Date: 19. 03. 2000, 08:17

Driver password= 19 + 3 + 8 = 30

4.2.2 User password

The user password is the password of the truck pool manager. This password is created by means of a max. three-figure operator code; this operator code can be defined by the truck pool manager. The user password grants access with authorization 2. With it, you can change configuration data that aren't subject to the calibration obligation, for example switching off and on certain options and hardware modules.

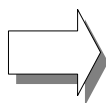
Example

User password = driver password x (operator code + 1) + operator code

Driver password = 30, operator code = 120

User password = 30 x 121 + 120 = 3750

When the device is delivered, its user code = 0. Thus, the user password is the same as the driver password.



If the password is entered without success (the display shows authorization 0), this may result from the fact that the system time isn't in conformity with the current time. To create the password, use date and time as shown in the display.

Change user code

<p><legitimation > 2 14.03.00 13:02</p>	<p>You can only change the user code if you have typed the user password correctly. The display must show authorization 2.</p>
<p><user code></p>	<p>Press „Enter“. The password input is displayed again. Press [↵] to leaf forward to the input of the user code. Press „Enter“. Now you can type the new user code.</p>

4.2.3 Service password

By typing the service password, you gain access to all configuration possibilities (authorization 3).

The service password is created according to a special mode and is changed periodically. It isn't told anybody except the authorized service staff.

The service password can consist of numbers and letters. Press the corresponding numeric buttons to enter numbers. To enter letters, press the shift button [↑] and both arrow keys to leaf forward and backward within the alphabet.

The following example illustrates the way how to enter such a combination.

Example

Enter the service password 1AE20:

<password input 1A>

Press [1], the digit „1“ appears in the first position on the screen, the cursor moves to the next position.

To enter the letter „A“, keep the “Shift” key pressed and press [→].

The display shows the letter „A“. To enter the letter „E“, keep the “Shift” key pressed and press [→] several times until the letter „E“ is displayed.. To enter “20”, press the corresponding numeric keys again..

4.3 Change the program parameters

Within the “Configuration” menu, you use the arrow keys to select the configuration menus. If the menu name is between two arrow tips pointing outward, this means that the displayed menu has further submenus.

As soon as you have selected a menu, press „Enter“ to reach the next menu level where you can select further menus. If a displayed menu doesn't contain any submenus but only parameters, there is only one arrow tip before the menu name. Press „Enter“ now to reach the level where you can change the parameters. The parameters are between two arrow tips pointing inwards. Use the arrow keys to change the respective setting.

Press the Escape button [C] to return to the next higher menu level.

Example

You want to set the parameter „FLM nominal bore“ to 65mm.
Enter the user password according to the instruction:

Display: (lower line: authorization, date, time)

```
<legitimation >
2 14.03.00 13:02
```

Press [→].

Display:

```
<sampler general >
```

Press „Enter“ to select submenus of the <Sampler general> menu.

Display: (The display in the lower line depends on the current configuration.)

```
<mode Sampler 1 >
1. supplier sample
```

Press [→] several times until the following message appears (5 x).

Display: (The display in the lower line depends on the current configuration)

```
<FLM nom. width
50mm
```

Press „Enter“ to reach the selection of possible parameters for the nominal bore.

Press [→] or [←] several times, until the desired nominal bore is shown in the lower line.

Display:

```
FLM nom. width
>65mm <
```

Press „Enter“ to confirm the selected parameter and to quit the parameter selection.

If you don't want to make further settings, press „Escape“ several times until you have quit the “Configuration” menu.

Display:

```
configuration >
```

Now press [→] or [←] to select the menu or the display.

The following table lists all menus with their submenus and parameters.

Menu	Submenu	Parameter	Explanations	Legitimation
legitimation	password input		Enter the password	
	user code		Enter /change the operator code	2
sampler general	mode sampler1	1. sample	Supplier sampling	2
		tank sample	Sampling during the entire tour	
		off	No sampler is connected	
	mode sampler2	2. sample		2
		tank sample		
		off		
	mode pump contr.	normal	Pump release is activated	2
		2 speed pump	Pump performance is increased in 2 stages	
		bottle drive	Bottle drive is activated	
		normal + bottle	Pump is released and bottle drive is activated	
		2 speed+ bottle	Pump performance is increased in 2 stages + bottle drive is activated	
		bottle + 3002	Bottle drive is connected, control via 3002Controller	
		bottle drive 2 normal + botDr2	Not available as from program version 1.03	
	sensor signal	flow level meter		2
		milk sensor		
		off		
	calming distance	short	<30 cm	2
		long	>30 cm	
		none		
	FLM nom. width	50mm		2
		65mm		
		76mm		
	bottle sensor	input 1	Bottle in position	2
		input 1 + 2	Bottle in position at Sampler 1 and Sampler 2	
		off		
	pump capacity 1	xxx l/min	Enter the throttled suction performance	2
	pumping time 1	xx s	Enter the suction time for throttled suction performance	2
pump capacity 2	xxx l/min	Enter the suction performance of stage 1	2	
pump time 2	xx s	Enter the suction time of stage 1	2	
pump capacity 3	xxx l/min	Enter the suction performance of stage 2	2	
flush. min. qty.	xx l	Minimum rinsing quantity	2	
tank smpl.set	xxxx l	Total collection quantity (tank)	2	
finish time	xx s	Automatic termination after xx seconds	2	
sampler 1	preflushing	on	(Input quantity has to be higher than minimum rinsing quantity)	2
		off		
	samp. bottle vo.	xx ml	Filling quantity (e.g. 35 ml)	1
	calibr. factor	xxx µl/rev.		2
filling limit	xxx %	Filling limit (e.g. 120% = 42 ml)	2	

Menu	Submenu	Parameter	Explanations	Legitimation	
	start delay	x,x s		2	
	stop delay	x,x s		2	
	pause deduc- tion	x,x ml	Only ACRAM (correction of faults resulting from entrapped air – without FLM)	2	
	preflush. freq	xxxx Hz	Adjust the prerinse characteristic	2	
	preflush steps	xxx		2	
Sampler 2	see Sampler 1				
temp. probe	frequ. 0°C	xxx Hz	read off temperature sensor	2	
	frequ. 25°C	xxx Hz	read off temperature sensor		
language	German			2	
	English				
Bios-Setup	Corresponds to BIOS-Setup for system 3002 (see „Instruction manual BIOS-Setup system 3002“)			2	
test	inputs	11111111	Input conditions are displayed	2	
	outputs	11111111 1111 11	Output conditions are displayed	2	
	sampler 1	rotate			2
		Freq. (Hz): xxxx			
		Cnts: xxxx			
		motor test x			
	sampler 2	see sampler 1			
	ADC-inputs	x,xx V x,xx mA			2
	freq. input 1	xxx Hz			2
	freq. input 2	xxx Hz			2
freq. input 3	xxx Hz			2	
default par.?				3	
serial no.				3	

Bios Setup - V24-configuration

Suggestion for V24 - configuration marks.

Port	Defining the use of the V-24 interface DISABLE not used RS232 used as RS232 interface PNET used as P-NET interface
Baudrate	Setting the transmission rate in bit/s (110, 300, 600, 1200, 2400, 4800, 9600, 19200 , 38400, 76800)
Data/Par.	Data bits / parity check 7 bit/yes data bits, parity check 8 bit/no 8 data bits, no parity check 8 bit/yes 8 data bits, parity check 9 bit/no 9 data bits, parity check
Parity	Even even parity Odd odd parity
Handshake	Defining the type of handshake No no handshake Xon/Xoff software handshake Rts/Cts hardware handshake
