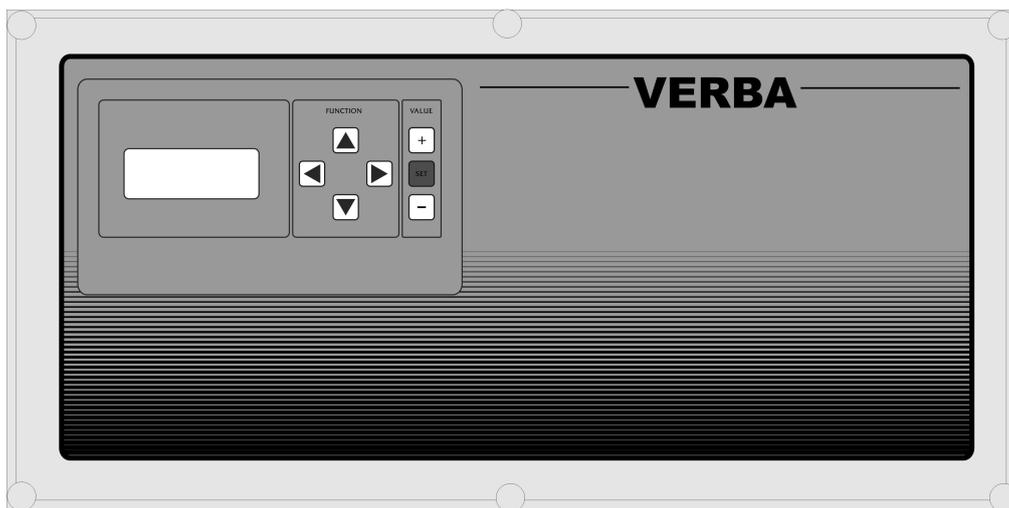


Manual
VERBA Feed computer
Version VVC03.5
Jan. 22, 2009



Verbakel BV

Industrieweg 13
5492 NG St. Oedenrode
Nederland

Tel.+31(0)413 474036 Fax.+31(0)413 475587

Dear customer,

This manual contains all the necessary information to master the operational characteristics of the VERBA feed computer. Carefully read this manual before you start working with the VERBA feed computer. It makes it a lot easier to familiarize oneself with the controller. Keep this manual at hand, so that you can use it as a reference book at all times.

As our products are subject to continuous development and updating, Verbakel BV is entitled to revise or modify its products without prior notice.

IMPORTANT!

Never disconnect the cabling from the various circuit boards, when the computer is plugged.

All weak current wiring should be shielded. Shield connected as shown in the wiring diagram.

It is really important to provide the installation of a reliable alarm mechanism. Verbakel BV advises next to the application of the computer alarm signalling, a minimum/maximum thermostat that is not dependent on the computer.

Verbakel BV recommends checking its proper functioning regularly (at least 1x a day).

Table of contents

Table of contents	2
Description VERBA feed computer	3
How to operate the VERBA feed computer	3
Feed process	3
Explanation Menu.....	4
Starting up with standard settings.....	8
Installation program.....	9
Testprogram.....	11
Wiring diagram print.....	12
Wiring data basis circuit board.....	13
Wiring data expansion board.....	14
Feed tray allocation and section names form.....	15
Specifications	16

Description VERBA feed computer

The VERBA feed computer is designed to accurately meter feed in sties. The VERBA feed computer has the following possibilities:

- Constructed out of modules
- The minimum configuration consists of 8 controls for feeding flaps
- Can be expanded with up to four modules with 8 controls each, thus 40 controls in total
- Feeding flap control for each feeding trough and feed sensor registration
- The option of using feeding curves with 9 break points
- Registration of feed per section and per trough for the previous 7 days
- Registration of portions fed per trough for the previous 7 days

How to operate the VERBA feed computer

The front of the VERBA feed computer has 7 keys and an LCD display. The display consists of 4 lines. The first shows you which menu you are in. Using the ◀ and ▶ keys you can select another menu. The second, third and fourth lines display measurements and settings, and the cursor (< symbol at the end of the line) shows which line can be set. Of course you can only change actual settings. Using the ▲ and ▼ keys one can move the cursor and point to any function in this way. If the function indicated by the cursor is a setting, this can be changed using the + and – keys. Once the setting is set at the correct value, this can be recorded in the computer's memory using the SET key. Don't forget to do this! From then on the new values shall be used.

Feed process

When a feed trough's sensor is operated, the computer will supply a portion of feed by opening the flap of the feed trough for a programmable number of seconds. After this, the computer shall wait for an interval before releasing the next portion. The interval time is calculated by the computer and is based on the daily quantity of food required by each animal, the number of animals in the section, the weight of feed per portion and the total feeding time per day. The computer registers the amount of food supplied each day per trough and per section. The number of portions supplied to each trough is also recorded. These records can be read for up to 7 days. The total quantity of feed is also recorded so that you can monitor the feed consumption during an entire manure cycle, for instance. If desired, you can set the computer to adapt the daily quantity of feed automatically to the animal's age using a feeding curve.

Explanation Menu

Menu: General data

This menu provides access to a number of general settings like time, date etc.

GENERAL DATA		
Time	10:55	<
Date	05-10	
EPROM version	VCC03.5	

Time (00.00 to 23.59)

This is the current time. The clock does not continue running during power failures.

GENERAL DATA		
Time	10:55	<
Date	05-10	<
EPROM version	VCC03.5	

Date (01-01 to 12-31)

This is the current date. The date shall not be updated during power failures.

GENERAL DATA		
Time	10:55	<
Date	05-10	<
EPROM version	VCC03.5	<

EPROM version

This is the program's version number

Menu: Sections 1 – 40

These menus provide access to data regarding the connected sections. The VERBA feed computer can contain up to 40 sections, which have up to 40 troughs in total. Each section can contain a number of troughs. The allocation of troughs to sections takes place in the installation program.

Note 1: the section number at the top of the display can be set according to the user's needs in the installation program

SECTION – 1 –		
Animals	020	<
Kg/animal/day	03.5	
No. trough	01	

Number of animals (0 to 999 animals)

One can set the number of animals present in the section concerned. The computer calculates the amount of feed required by the section concerned using this value.

SECTION – 1 –		
Animals	020	
Kg/animal/day	03.5	<
No. trough	01	

Kilograms of feed an animal a day (0.0 to 50.0 kg)

This is the quantity of food that each animal in the section should receive. This value can be set manually. However, if you use the feeding curve, setting this feed quantity has no use as the computer adjusts this value automatically using the feeding curve.

SECTION – 1 –		
Animals	020	
Kg/animal/day	03.5	
No. trough	01	<

Number of feeding troughs in the section (0 to 40)

This function shows how many troughs have been allocated to this section. Assigning troughs to certain sections takes place in the installation program.

SECTION – 1 –	
Kg/animal/day	03.5
No. trough	01
Feed today	000.0 <

Record of today's feed (0.0 to 6553.5 kg)

Here the computer displays the feed released today. This value is reset to 0.0 every night at 00.00, so that the record is prepared for the next day.

SECTION – 1 –	
No. trough	01
Feed today	000.0
Feed day -1	000.0 <

Yesterday's feed record (0.0 to 6553.5 kg)

This function indicates how much feed was released yesterday. The registration function is moved on one day at 00.00 each night.

SECTION – 1 –	
Feed today	000.0
Feed day -1	000.0
Feed day -2	000.0 <

Feed record for 2 days ago (0.0 to 6553.5 kg)

This function indicates how much feed was released 2 days ago. See previous function.

SECTION – 1 –	
Feed day -1	000.0
Feed day -2	000.0
Feed day -3	000.0 <

Feed record for 3 days ago (0.0 to 6553.5 kg)

This function indicates how much feed was released 3 days ago. See previous function.

SECTION – 1 –	
Feed day -2	000.0
Feed day -3	000.0
Feed day -4	000.0 <

Feed record for 4 days ago (0 tot 999.9 9g)

This function indicates how much feed was released 4 days ago. See previous function.

SECTION – 1 –	
Feed day -3	000.0
Feed day -4	000.0
Feed day -5	000.0 <

Feed record for 5 days ago (0.0 to 6553.5 kg).

This function indicates how much feed was released 5 days ago. See previous function.

SECTION – 1 –	
Feed day -4	000.0
Feed day -5	000.0
Feed day -6	000.0 <

Feed record for 6 days ago (0.0 to 6553.5 kg)

This function indicates how much feed was released 6 days ago. See previous function.

SECTION – 1 –	
Feed day -5	000.0
Feed day -6	000.0
Feed day -7	000.0 <

Feed record for 7 days ago (0 to 65535 kg)

This function indicates how much feed was released 7 days ago. See previous function.

SECTION – 1 –	
Feed day -6	000.0
Feed day -7	000.0
Total feed	00000.0 <

Record of total feed (0 to 999999 kg)

This function indicates the total consumption. By pressing the SET key, this value can be reset to 0, at the start of a new manure round for instance.

The VERBA feed computer gives you the opportunity to adjust the required feed quantities according to a curve. The curve consists of 9 break points. At each break point, you must enter the amount of feed required by each animal and on which day the break point should be reached. The computer shall calculate the feed amounts itself for the days between break points. If the computer has processed all the break points, the amount will no longer be adjusted.

Note I: there is no use in setting feed weights manually when using the curve, as the computer will always calculate and adjust the required amount using the curve. See "KG/animal/day" function.

Note II: if you do not wish to use all break points, you only need to set the unused break point's day number to 0. These breakpoints shell then be skipped.

SECTION – 1 –	
Feed day -7	000.0
Total feed	00000.0
Kg break 0	03.5 <

The required amount of feed per day at curve break point 0 (0.0 to 50.0 kg)

Here you can set the required daily amount per animal that should be released at break point 0. Break point 0 is always on day 0 (start of curve), meaning no day number can be set.

SECTION – 1 –	
Total feed	00000.
Kg break 0	0
Day no. break1	03.5 <
	014

Day number of break point 1 (0 to 999 days)

This is the day number by which break point 1 must be reached. If you do not wish to use break point 1, simply set the day number to 000.

SECTION – 1 –	
Kg break 0	03.5
Day no. break1	014
Kg break 1	03.5 <

Required feed quantity per animal at break point 1 (0.0 to 50 kg)

Here you can set the required daily amount per animal that should be released at break point 1.

The following functions are identical to the previous function except that they deal with break point 2 to 8. Therefore they do not need to be described in this manual.

SECTION – 1 –	
Day no. break 8	000
Kg break 8	00.0
Curve day	000 <

Curve day counter (0 to 999 days)

This function displays the curve's progress. If the curve is activated, this day counter will accumulate automatically. If required, the day counter can be adjusted manually in order to influence the curve.

SECTION – 1 –	
KG break 8	00.0
Curve day	000
Mode curve	OFF <

Curve mode (ON/OFF)

Using this function, one can switch the curve on or off. When switched on, you can no longer set the feed quantities in the "KG/animal/day" function manually. The feed computer will then automatically set the amounts according to the curve. If the curve mode is switched OFF, feed quantities can again be set manually.

Menu: Trough 1 – 40

These menus give access to settings and measurements per trough. The user usually creates settings for each section, although these menus also give you the option of monitoring various records per trough.

TROUGH – 1 –		
Section	003	<
Max. portions	2000	
Trough	ON	

Allocated to Section X (1 to 65000)

Here the computer shows to which section the trough belongs. Note: you should set the section to which the trough belongs using the installation program.

TROUGH – 1 –		
Section	003	<
Max. portions	2000	<
Trough	ON	

Maximum permitted number of portions per day (0 to 9999 portions)

This function can be used to limit the number of feed portions in order to gauge feed weight per portion. This is done as follows: Fill the hopper with a known quantity of feed and set the number of portions so that this quantity of food is not used up in one day. Once the set portions have been measured out you can check how much feed remains in the hopper. The difference in weight between the initial quantity and the final quantity is the weight which is fed during the set number of portions. Using these quantities you can adjust the feed weight per portion if needed.

Note 1: during normal use you should set this as high as possible, e.g. 9999 portions.

TROUGH – 1 –		
Section	003	
Max. portions	2000	
Trough	AAN	<

Trough on or off (ON/OFF)

With help of this function you can switch on and off the trough. When the trough is switched off, the concerning department (to which this trough belongs) will take this into account when the number of portions is calculated.

Note 1: in the installation program you can select whether this function is visible or not to the user. When this function is not visible, the trough is always switched on.

TROUGH – 1 –		
Max. portions	2000	
Trough	AAN	
Port./trough	01400	<

Number of portions per trough (0 to 65535)

This is the number of portions which may be released into each trough per day. The computer calculates this value.

TROUGH – 1 –		
Trough	AAN	
Port./trough	01400	
Delay	00051	<

The delay between 2 dosing actions (0 to 65535 sec.)

The computer calculates the number of seconds between 2 feed actions as follows: total feeding time per day divided by the number of portions per trough. The total feeding time is set in the installation program, e.g. 20 hours. Note: If the calculated delay is shorter than the dosing time plus 5 seconds, then the dosing time plus 5 seconds is taken as the delay. The dosing time is the period over which the feeding flap is active (e.g. 5 seconds) and is set in the installation program.

TROUGH – 1 –		
Port./trough	01400	
Delay	00051	
Grams/portion	025	<

Amount in grams per portion (5 to 999 g)

Here, the user should set the number of grams that is released into the trough per dose.

TROUGH – 1 –		
Delay	00051	
Grams/portion	025	
Port day 0	0000	<

Record of the number of portions released today (0 to 9999 portions)

Here the computer displays the number of portions already released today. This counter is reset to 0 every night at 00.00

TROUGH – 1 –	
Grams/portion	025
Port day 0 Port	0000
day -1	0000 <

Record of the number of portions released yesterday (0 to 9999 portions)
The records of the number of measured portions are moved on one day every night at 00.00 so that you can view the records of the past 7 days.

Note I: the next functions show the portions released from day -2 to day -7. As these functions are the same as the "Portions day –1" function they are not described further here.

TROUGH – 1 –	
Port day -6	0000
Port day -7	0000
Port total	000000 <

The total number of portions released (0 to 999999 portions)
This function displays the total number of portions released. This counter can be reset to 0 by pressing the SET key, for instance at the beginning of a new manure cycle.

TROUGH – 1 –	
Port day -7	0000
Port total	000000
Feed day 0	000.0 <

Kg feed today (0.0 to 999.9 kg)
This is the weight of feed released into trough 1 today. This counter is reset to 0.0 every night at 00.00. □

TROUGH – 1 –	
Port total	000000
Feed day 0	000.0
Feed day -1	000.0 <

Kg feed yesterday (0.0 to 999.9 kg)
The same as the previous function except it is concerned with the previous day's feed. These counters are moved on to the next day every night at 00.00 so that you can view the quantities of the past 7 days.

Note I: the next functions show the amounts fed from day -2 to day -7 and therefore need no further explanation.

TROUGH – 1 –	
Feed day -6	000.0
Feed day -7	000.0
Feed total	00000.0 <

Total kg feed (0.0 to 9999.9 kg)
This counter can be reset to 0.0 by pressing the SET key. This counter enables you to record the total feed consumption for this trough over an entire manure cycle.

Starting up with standard settings

The VERBA feed computer is fitted with a battery as standard, so that the various settings are held in memory for several months once mains power has been switched off. When switched back on the same settings are available again. However, if you wish to start up using the standard settings, hold down the + and – keys simultaneously with the menu right-key when switching on the mains. Once the computer has started up you can release the keys again. All settings are now reset to the standard settings.

Note I: the computer will continue to check the validity of all settings while running. If a setting does not comply with the minimum or maximum required value, it shall be replaced by a standard setting.

Installation program

The VERBA feed computer contains a comprehensive installation program, which can be used to gear the computer to the user's needs. Start up the installation program as follows:

- Press the ▲, + and – keys simultaneously and hold them down.
- When the "COMP. SETTINGS" menu appears you can release them.

The installation program has been opened.

Menu: Computer settings

COMPUTER SETTINGS		
Tot. Feed time	20:00	<
Dosage time	005	
Computer no.	000	

Total feeding time (1:00 to 23.59)

This is the total time over which the required feed quantity is spread. This setting is used therefore to calculate the delay between two portions.

COMPUTER SETTINGS		
Tot. Feed time	20:00	
Dosage time	005	<
Computer no.	000	

Dosage time (2 to 120 sec.)

This is the time period in which the feeding flap is activated when a portion of feed is released. Note: the calculated delay between 2 portions is always greater than the set dosage time plus 5 sec. If the calculated amount is less than this minimum value shall be used.

COMPUTER SETTINGS		
Tot. Feed time	20:00	
Dosage time	005	
Computer no.	000	<

Computer number (0 to 999)

If the computer is connected to others by a communication loop, each one should have a unique number so that it can be recognised by the PC software. Note: always ensure that each computer has its own unique number.

COMPUTER SETTINGS		
Dosage time	005	
Computer no.	000	
'trough off disp	ON	<

Trough off' display (ON/OFF)

This function determines whether the user can switch on and off the troughs or not. If this function is set to 'off' the function 'Trough On or OFF' is not visible to the user. The trough then always will be switched on. When you switch this function to ON, the user will be able to switch the troughs on and off with help of the users function 'Trough ON or OFF'.

Menu: Trough at section

This menu can be used to assign troughs to the desired section. Usually, the user creates the feed settings for each section, whereupon the computer divides the portions over the allocated troughs.

TROUGH AT SECTION		
Tr. 1 at sect.	01	<
Tr. 2 at sect.	02	
Tr. 3 at sect.	03	

Trough 1 is allocated to section X (0 to 40)

Here, you can set the section to which trough 1 belongs.

Attention! The computer uses a maximum of 40 sections, with section numbers 1 to 40. The user however uses section names 1 to 999. These section names can be set according to requirements. In this way it is possible to number the sections continuously if multiple computers are used. The numbers set here must therefore be section numbers 1 to 40. A page for recording section and trough data can be found at the end of this manual.

Note 1: if the current trough is not in use, set the section number to 000. This trough shall then no longer be displayed on screen.

The remaining functions in this menu are for the rest of the troughs. These functions are identical in structure to the above function and therefore do not require further explanation.

Menu: Section names

The computer has up to 40 sections, each of which the user can give individual names. If multiple computers are used, the section names can be continuously numbered to give the user a better overview.

SECTION NAMES		
Name sect. 1	00001	<
Name sect. 2	00002	
Name sect. 3	00003	

Section 1 name (0 to 65000)

Here, you can set the name of section number 1. This name (5 figures) is displayed in the user program. This enables the user to continuously number section names in a logical fashion if using more than one computer.

Note I: the installation program always uses the section number (1 to 40). Do not confuse this with the section name.

Note II: if a section is unused, just set the section name at 00000. This section will no longer be displayed in the menus.

The remaining functions in this menu are identical to the above function but for section numbers 2 to 20. Therefore they do not require further explanation.

Closing the installation program

The installation program is shut down automatically if no key has been pressed for 5 minutes, whereupon the normal user program is started up. A quicker way: hold down the ▼, + and – keys for a few seconds to restart the user program.

Testprogram

The computer contains a test program for checking the working order of all in- and outputs. In addition, each input has its own test light (green) which is lit up when the appropriate sensor is activated. Each output also has a test light (red), which is lit up when the relevant output is activated by the computer.

To start up the test program:

- Hold down the +, - and SET keys for a few seconds.

The "TEST INPUTS" menu appears on the display. The keys can then be released.

Menu: Test inputs

TEST INPUTS		
Input 1	OFF	<
Input 2	OFF	
Input 3	OFF	

Test input 1 (ON/OFF)

The computer now shows input 1's status continuously. When the connected sensor is activated the display shall show 'ON'. The input concerned can be monitored in this way. You can also test using the accompanying green light, which is lit up whenever the sensor is activated.

The remaining inputs can be tested in the same way. These functions shall not therefore be explained further.

TEST OUTPUTS		
Output1	OFF	<
Output 2	OFF	
Output 3	OFF	

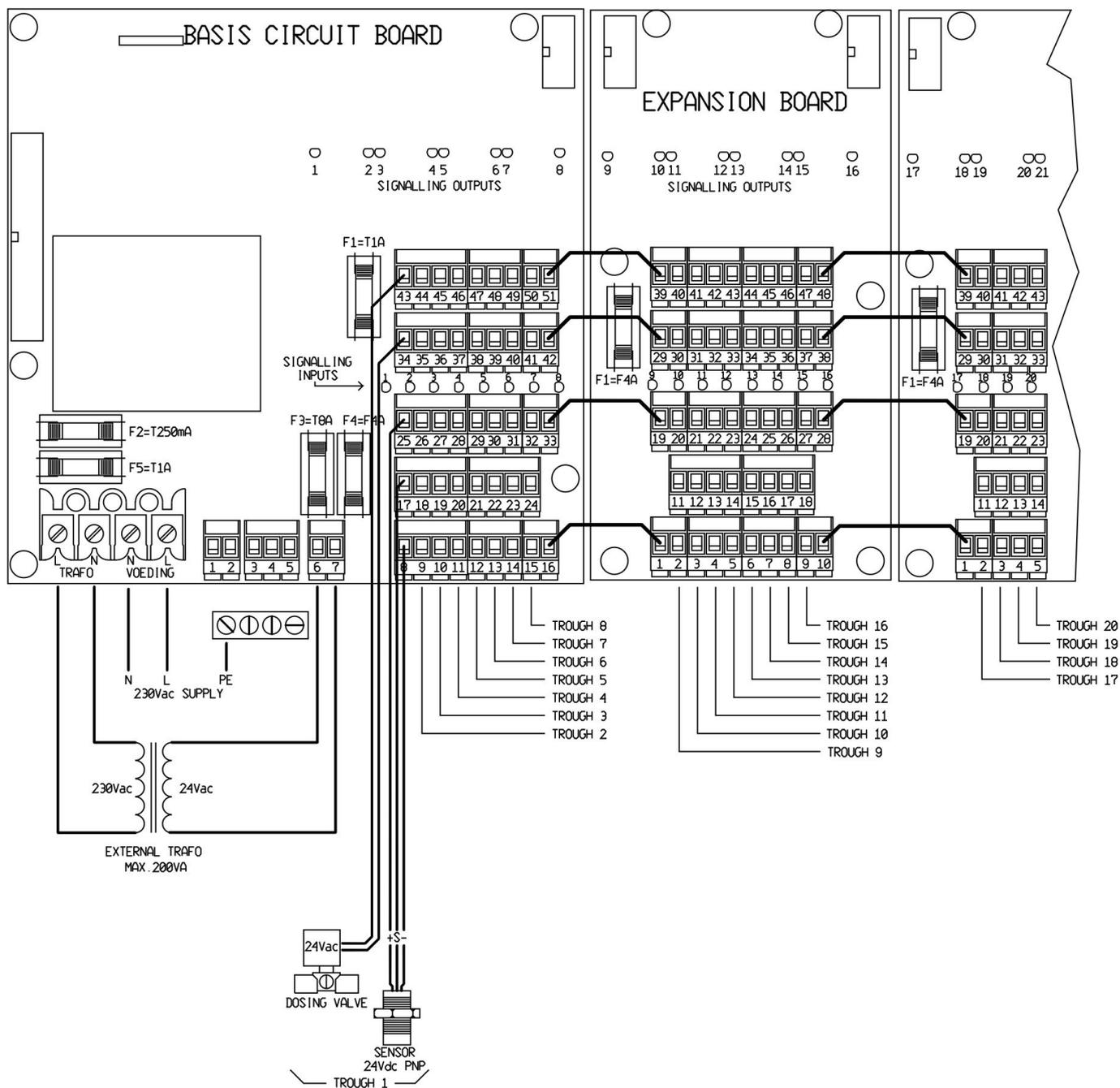
Test output 1 (ON/OFF)

Here you have the option of switching the relevant output on or off manually. OFF = output switched off, ON = output switched on. You can also test using the accompanying red light, which is lit up whenever the sensor is activated.

Closing the test program

If no key is pressed for 5 minutes the test program shall shut down automatically and the user program shall restart. By holding down the ▼, + and – keys for a few seconds, however, the test program will also close down. Release the keys as soon as the user program has restarted

Wiring diagram print



Wiring data basis circuit board

L transformer + N transformer	230V supply for external transformer L transformer = Phase N transformer = Zero Connect earth to PE
L supply + N supply	L supply = Phase N supply = Zero Connect earth to PE
1 + 2	Alarm relay (not used)
3+ 4 + 5	Communications connector (not used) 3 + 4 = VIT bus 5 = Not used
6 + 7	24V AC connection from external transformer, supply for sensors and valves
8 t/m 15	GND connection for sensors, troughs 1-8 <i>Note 1:</i> These GND connections are interconnected. A joint cable can therefore be used.
16	GND coupling to expansion board
17 t/m 24	Sensor inputs for troughs 1-8 <i>Note 1:</i> Always use 24V DC PNP sensors and shielded cable for weak current connections and connect the shielding to the sensors' GND connection.
25 t/m 32	+ 24V DC supply for sensors, troughs 1-8 <i>Note 1:</i> These + 24V DC supply terminals are interconnected. A joint cable can therefore be used.
33	+ 24V DC coupling to expansion board
34 t/m 41	Joint connections for dosing valves 1-8 <i>Note 1:</i> always use 24V AC valves. As the joint connections are interconnected, a joint cable can be used.
42	Coupling of joint connections for valves to expansion board
73 t/m 50	Connections for valves 1-8
51	Coupling of valve supply to expansion board

Fuses:

F1	= 5 x 20 mm T1A glass fuse. Fuse for 24V sensors.
F2	= 5 x 20 mm T250mA glass fuse. Fuse for basic board transformer.
F3	= 5 x 20 mm T8A glass fuse. Fuse for secondary side of external transformer. (24V AC)
F4	= 5 x 20 mm F4A glass fuse. Fuse for dosing valves 1-8.
F5	= 5 x 20 mm T1A glass fuse. Fuse for primary side of external transformer.

Wiring data expansion board

- 1** **Coupling of GND connections for sensors from previous board**
- 2 t/m 9** **GND connection for sensors, troughs 9-16**
Note I: These GND connections are interconnected. A joint cable can therefore be used.
- 10** **GND coupling to next expansion board**
- 11 t/m 18** **Sensor inputs for troughs 9-16**
Note I: Always use 24V DC PNP sensors and shielded cable for weak current connections and connect the shielding to the sensors' GND connection.
- 19** **24V DC supply coupling for sensors, from previous board**
- 20 t/m 27** **+ 24V DC supply for sensors, troughs 1-8**
Note I: these + 24V DC supply terminals are interconnected. A joint cable can therefore be used.
- 28** **+ 24V DC supply for sensors, to next expansion board**
- 29** **Joint connections coupling for valves from previous board**
- 30 t/m 37** **Joint connections for valves 9-16**
Note I: always use 24V AC valves. As the joint connections are interconnected, a joint cable can be used.
- 38** **Coupling of joint connections for valves to next expansion board**
- 39** **Supply coupling for valves from previous expansion board**
- 40 t/m 47** **Connections for valves 9-16**
- 48** **Supply coupling for valves to next expansion board**

Fuses:

F1 = 5 x 20 mm F4A glass fuse.

Fuse for valves, expansion board 1: valves 9-16.

Fuse for valves, expansion board 2: valves 17-24.

Fuse for valves, expansion board 3: valves 25-32.

Fuse for valves, expansion board 4: valves 33-40.

Feed tray allocation and section names form

Customer:		Installer:	
Name:		Name:	
Address:		Address:	
City:		City:	
Phone:		Phone:	
Installation date:		Program version:	
Tray	Assigned to section: *1) (0-40 . 0 = no trough.)	Section	Name of section: *2) (0-999 . 0 = no section)
1.		1.	
2.		2.	
3.		3.	
4.		4.	
5.		5.	
6.		6.	
7.		7.	
8.		8.	
9.		9.	
10.		10.	
11.		11.	
12.		12.	
13.		13.	
14.		14.	
15.		15.	
16.		16.	
17.		17.	
18.		18.	
19.		19.	
20.		20.	
21.		21.	
22.		22.	
23.		23.	
24.		24.	
25.		25.	
26.		26.	
27.		27.	
28.		28.	
29.		29.	
30.		30.	
31.		31.	
32.		32.	
33.		33.	
34.		34.	
35.		35.	
36.		36.	
37.		37.	
38.		38.	
39.		39.	
40.		40.	

*1) Enter in installation program,, TROUGH AT SECTION menu. *2) Enter in installation program, SECTION NAMES menu.

Specifications

Power supply	: 230Vac, -10%/+5%
Frequency	: 50 Hz.
Power	: Max. 76 VA
Feed/ valve	: 24 Vac.
Power/valve	: 5 VA
Feed sensor	: 30 - 35 Vdc.
Max. all sensors	: 1 Ampere
Type sensor	: PNP
Alarm relay	: N.C. (Max. 24 V/ 2 Ampere)
Communication	: Optional Vit-bus