Single Feeder 1 / Single Feeder 2

FEEDING

PROM CPS4FSS

CONTENTS

FCC ID: CGD-SF2
IC: 1444A-SF2

Compliance statements (Part 15.19)
This device complies with Part 15 of the FCC Rules and to RSS210 of Industry Canada.
Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

Cet appareil se conforme aux normes RSS210 exemptés de license du Industry Canada. L'opération est soumis aux deux conditions suivantes:
(1) cet appareil ne doit causer aucune interférence, et
(2) cet appareil doit accepter n'importe quelle interférence, y inclus interférence qui peut causer une opération non pas voulu de cet appareil.

Warning (Part 15.21)
Changes or modifications not expressly approved by party responsible for compliance could void the user's authority to operate the equipment.
This in particular is applicable for the antenna which can be delivered with this System.

PROM overview CPS4FSS

CPS4FSI 0.04	first release with inverse motor contact
CPS4FSS 1.00	motor installation menu added
CPS4FSS 2.00	- Menu of the Self test (St) is automatically adjusted to the found values during the output configuration test (Oc). - Modification of motor routine, analogue in stead of digital. - Modification for factory test : by pushing the button during start up the menu for tuning the HF-field will appear automatically. After pushing the button the responder test menu will appear. This function can also be used at installation/test. - Modification for single feeder 2 : extra in- and output squelch menu, SF depending on type
CPS4FSS 3.00	<u>Identification</u> : The prom is capable to identify future phase-code activity responders. <u>Feedmotor</u> : The feedmotor may consume a higher current before the transmitter receiver signals an error. <u>St Menu</u> : The test menu will not jump automatically to the next menu item after testing an in- or output <u>Relay output</u> : When an output is configured as a relay output it is possible to block the feeding temporarily. The transmitter receiver will always first read the input before the output is activated. The program will only then continue to activate the outputs when the blocking input is 'high' (no connection with I-). <u>Responder Selection</u> : An AM code (X-ponder and Respactor) and a PM code (earbutton and phase code activity) can not be identified simultaneously. A selection item is introduced in the HF menu of the Single 2 transmitter receiver to select one of these modes. This selection item is called rS (responder select). You can make a choice between either rA, for AM code carriers, or rP voor de PM code carriers. <u>Squelch</u> : The adjustment of the squelch in four levels is re-introduced (0,-1,-2,-3 instead of on/of). The default value for the squelch level depends on the transmitter receiver type and the choice of code carrier.
CPS4FSS 3.05	- Suitable for HC11E1 micro processor (yellow sticker) - SF2 with 4 outputs: operation of motor on output 4 improved - Menu settings for neutrodynistation have been added. - When overloaded, the time after which the transmitter/receiver switches the output off, is set higher. This means that during congestion or blockade of the auger the motor remains switched on longer.
CPS4FSS 3.08	2-hour activity added (Lactivator)
CPS4FSS 4.00	Program change for use with SF model 2, 3 and 4

1   General

The Transmitter/Receiver Single Feeding (T/R SF) is used for identifying and feeding animals in a feed station. Three or four motors can be connected.
- 3 outputs T/R art. nr. 9845062
- 4 outputs T/R art. nr. 9863397

This transmitter/receiver can also be used for a floor antenna in the feed station for leg respactors, see special chapter at the end.

CPS4FSS   The name of the EPROM for the standard feed station is **CPS4FSS** x.xx.

Description of the code : **C**attlecode **P**oiesz **S**ingle feeder VC**4 F**eed Station **S**tandard, x.xx = version number.

This VC4 Transmitter / Receiver can only identify responders with a fast code (X-ponders and respactors)

T/R-single 1 and T/R-single 2

The T/R-single 2 is the new generation hardware for the T/R-single. The PCB has been re-designed in order to meet the new EMC demands in Europe. Furthermore, the board has been extended with a 4th motor connection. The motor connections are now fully protected against over-voltage and short circuiting.

In this module, the existing generation Single feeder hardware will be referenced as T/R-single 1, to distinguish it from the redesigned version, the T/R-single 2.

T/R-single 2 : new motor brake circuit

On the T/R-single 2 PCB the motor control circuitry has been changed. The new motor connections include a common brake circuitry, that is used to slow motors down quickly.

⚠ **When an T/R-single 1 board is replaced by a T/R-single 2 board, please check the parking-position of the motors that are connected.**

For every motor connection (output), the use of the new brake circuit has to be enabled. This can be done by means of the "brake jumpers". These jumpers to the left ("BRAKE" or "BR") enables the brake system for the corresponding motor. The brake system should be enabled for an output only when a motor is connected to that output. When e.g. a solenoid, or a lamp is connected, the brake system must be disabled for that output. If the brake system is enabled e.g. for a connected lamp, and the lamp is switched on, this will interfere with the brake function of a motor, connected to another port.

When over heated the brake circuit will switch off, the brake does not function anymore at that moment, when the temperature drops again, the brake function will restore itself.

Compatibility Single 1 versus Single 2

The T/R-single 2 PCB has been set up in such a manner, that all programs that run on the T/R-single 1 hardware, also run on the new board of T/R Single 2.

2   Operation

Feeding
- Wait until a X-ponder of a cow is identified in the antenna.
- When a cow is identified send the X-ponder number to the process controller and wait for feed data.
- When feed data are received, start feeding
- First feed 1 will be dispensed, then feed 2 and 3 when connected en programmed
- Wait until interval time has passed.
- When there is no feed balance left, the feeding will stop

Interval time calculation

Definition of interval time
interval time =   time between last motor run (of any connected motor) and the next motor run (of any connected motor)
The interval time is calculated <u>per feed type</u> out of the following parameters (supplied by the process controller) :
- feed portion size of 1 motor run
- `feed consumption / minute`

Calculation of interval time

interval time =	$\dfrac{\text{feed portion-size} \times 60}{\texttt{feed consumption / minute}}$ (sec.)
(per feed type)	

Example :

feed 1	• feed portion-size	= 100 gr.
	• feed consumption / minute	= 1000 gr. / min.
feed 2	• feed portion-size	= 150 gr.
	• feed consumption / minute	= 500 gr. / min.
interval time feed 1 =	$\dfrac{100 \times 60}{1000}$ = 6 sec.	
interval time feed 2 =	$\dfrac{150 \times 60}{500}$ = 18 sec.	

Proportional feeding
The T/R SF feeds proportional, which means that the total feed-amount is fed proportional in time : the ratio between the different feed types is constant.

Example :

feed 1	• feed portion-size	= 100 gr.
	• feed balance	= 3.0 kg. $\Rightarrow$ # portions = 30
	• interval time	= 6 sec.
feed 2	• feed portion-size	= 150 gr.
	• feed balance	= 0.9 kg. $\Rightarrow$ # portions = 6
	• interval time	= 18 sec.

The portion-ratio feed 1 / feed 2 = 30 : 6 = 5 : 1, which implicates that on every portion of feed 2, five portions of feed 1 are fed.

The following feeding-procedure is executed
supply 1 portion of feed 1, wait interval time feed 1
supply 1 portion of feed 1, wait interval time feed 1
supply 1 portion of feed 1, wait interval time feed 1
supply 1 portion of feed 1, wait interval time feed 1
supply 1 portion of feed 1, supply 1 portion of feed 2, wait interval time feed 1, wait interval time feed 2
supply 1 portion of feed 1, wait interval time feed 1
supply 1 portion of feed 1, wait interval time feed 1, `etc.`

PC-calibration

In order to work properly, the T/R SF needs additional information from the process controller at start-up. The following data has to be entered in the PC and is automatically transferred at start-up :

Data transfer at start-up from process controller → T/R SF :

- HF row-number   used in HF-scanning procedure
- motor row-number   used in motor-request procedure
- clixon time   used in motor safeguard procedure (< 15 seconds)
- motor configuration   informs T/R SF that motors or relays are connected
- feed portion-size   feed amount when motor makes one turn

3   Installation

The Nedap guarantee-regulations are only valid when the T/R is installed as indicated in this manual. The following is important :

Technical specifications Single Feeder 2	
Input voltage	24 VDC -/+10%
Power consumption with motors	At least 1.5 A
Power consumption without motors	0.25 A
Max. current per output	3A DC
Operating temperatures (environment)	-10ºC / +45ºC
Transport / storage temperatures	-25ºC / +70ºC
Humidity (rh)	45ºC / 93%
Enclosure protection class	IP65
(cover and cables installed correctly !)	

⚠️ **Never change a prom when the power to the T/R is still switched on !**
Shut off the power when service is needed for the station !
Install data cables at a safe distance from (high) powered cables

Wiring the T/R Single Feeding
Figure 2 shows an overview of the T/R SF cable-connection.

Wiring the motors
Cable connections between T/R and motor :

Attention : when using "new" grey motors
the I- has to be connected to the R of the motor

| T/R	motor
M+	+
M1,2,3	M
I1,2,3	I
I-	R

Hardware motor safeguard
When the micro processor has no control over the T/R anymore and a motor is running uncontrolled and keeps turning continuously, a hardware circuit on the T/R will stop the motor by means of a relay (25 seconds). This motor safeguard can only be reset by switching off the power from the T/R for a few seconds.

Software motor safeguard

This software function monitors the motor current. If a motor current is detected which is too high ($I_{motor} > 900$ mA) for a certain time, the T/R program will try to stop the motor. At the VC4 system this time programmable, the default setting is 15 seconds. If the motor cannot be stopped, the T/R program will shut off the power supply on all outputs. An error message will be sent to the process controller.

Motor with 3-wire connection

It is possible to use this motor after modification. The green wire must be cut at the cover (near the soldering). The green wire can be connected with a separate connector. The present resistor (under the connection block) must be removed. At **motor configuration**, "Oc menu", must "1n" appear on the display. This means a normal motor connection.
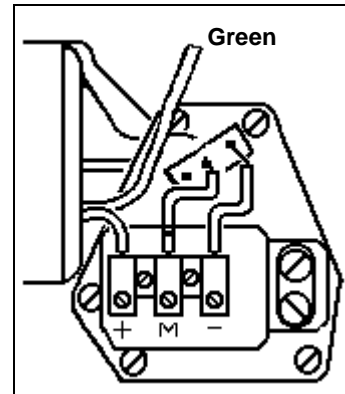
Connections :

MOTOR	COLOUR	T/R
+	red	M+
	green	M1,2,3
-	blue	I1,2,3
M	black	I-

Max. cable-lengths, wire-ø's and cable colours

The cable-overviews in the figures all show Lmax. at wire-ø = 0.8 mm.

The values for L_{max} at ø=1.0 and ø=1.2 :
Lmax.(ø=1.0) = **1.5 x** Lmax.(ø=0.8)
Lmax.(ø=1.2) = **2.0 x** Lmax.(ø=0.8)

cable	colour
C	white
D	yellow
-	black
+	red

Shielding, grounding

In order to protect the VC-System for over-voltages, due to severe thunderstorms, cable A in figure 2 must be a shielded cable. The cable-shield however may <u>not</u> be used as a wire for current-supply. The connection of the cable-shield of cable A is as follows :

interface bridge   connected to "-"terminal
Transmitter / Receiver   connected to ground-terminal

N.B.   All T/R electronics must be isolated from the calf drink station. Also the T/R
        bottom has to be isolated from the T/R ground-terminal.

Warnings

- Due to guarantee-regulations, the entire T/R PCB (incl. metal plate) must be changed.
- Always replace with same type and rating of fuse.

4   Set Address

For communication the Transmitter / Receiver needs an address. Then the computer knows where to send the information to. At the transmitter / receiver with help of the display and the push button the stations address is configured.

The two segment display and the yellow push-button must also be used for several adjustments of the Transmitter / receiver. A number of different codes will appear on the display when the push-button is pushed, these codes represent the so-called menus. Each menu on its turn is divided into a number of functions. By varying the pushing time of the push-button, you will get access to the different menus and/or functions.

The first time you switch on the power of the T/R, the display will show "0-". The Transmitter / Receiver asks now for the first address. When an address is entered the display will blank out and the transmitter / receiver returns to the normal status.

The address setting concerns the following menus and procedures (see figure 3):

- **A**ddress menu
   - **s**et **A**ddress
   - **d**isplay **A**ddress

N.B.   The address-range of all connected peripherals on the same controller channel is from 1-50.
Remember that the used peripheral-address has to be unique on this controller channel.

Changing addresses

When the display shows **sA**, the "**s**et **A**ddress procedure" is entered by pressing the button until the display blinks. The procedure is as follows :

set decimal-digit   display scrolls from **0-** through **5-**
set unit-digit   display scrolls from **x0** through **x9**

- to indicate that the "**S**et **A**ddress procedure" has been entered, the display will show "**0-**"
- by pressing the button short, the next decimal will be displayed ("**1-**","**2-**"...."**5-**")
- the displayed decimal is entered by pressing the button until the display blinks
- when the decimal has been entered, the display will show "**x0**" (where **x** = entered decimal), the unit-digit now can be entered
- by pressing the button short, the next unit will be displayed ("**x1**", "**x2**", .. , "**x9**")
- the displayed unit is entered by pressing the button until the display blinks

The following points should be noted
- the "**S**et **A**ddress procedure" can be quit by pressing the button until the display blanks. The entered digits then are not stored
- the T/R will restart when the address is changed

Show addresses

When the display shows **dA**, the "**d**isplay **A**ddress procedure" is entered by pressing the button until the display blinks. The display then shows the T/R address.

5   Adjust antenna

The antenna adjustment has to be done with help of the display, push button, potentio meter (P1) and the tuning capacitor (Ct) on the transmitter / receiver. The T/R HF-menu looks as follows :

[HF]

HF menu

Responder **S**elect	• selection of responder type
Adjust **A**ntenna	• adjust antenna by means of tuning capacitor **Ct**
Adjust **P**ower	• adjust transmitter-power by means of potentio meter **P1**
Adjust **S**quelch	• adjust receiver-sensitivity (0,1,2,3)
Identification	• Test identification

⇒   The antenna adjustment-procedure consists of several steps. It is essential that these steps are executed in the sequence as in the manual described.

[r S]

Responder Select
Auto detect of type T/R, 120kHz (for rA and rP) or 134.2 kHz (for ri and r2)
rA = AM labels, X-ponder and Respactor (default)
rP = PM labels, ear button and Phase code responders
ri = ISO responder types (default)
r2 = Nedap 2 hour activity meter (Lactivator)
Select rS on the display and then rA or rP, press until display blinks to enter.

[A A]

Adjust antenna procedure
Select HF on the display and then AA (see figure 3). When the display shows **AA**, the "**A**djust **A**ntenna procedure" is entered by pressing the button until the display blinks. The display now shows the percentage of the maximum transmitting-power of the T/R. The tuning-procedure is as follows :

• tune **P1** until the display shows a value about 30 (i.e. 30% of maximum transmitter-power)
• tune **Ct** until the display shows a maximum value. During tuning, this maximum should not exceed 95%. If this is the case, the power must be reduced again (**P1**), the LC-tuning (**Ct**) then can be continued.

When the maximum value is found and it does not exceed 95 (%) you can continue by pressing the button short.
The next step is tuning the power with AP.

Adjust power procedure
After correct processing the antenna adjustment procedure, Ct is adjusted (highest point is on the display now), **P1** must be adjusted with help of AP.

[A P]

When the display shows **AP**, the "**A**djust **P**ower procedure" is entered by pressing the button until the display blinks. The display now shows the percentage of the maximum transmitting-power of the T/R. The T/R is equipped with a power-limitter. When the transmitted HF-power exceeds a certain level, the HF-current will be limited automatically. To indicate this, the display will blink, after this point power-increase (P1) is not desirable.

The tuning-procedure is as follows :

set power-level	tune **P1** maximal until just before the point where the display starts to blink (SF2 : in most cases 99 and not blinking)

You can continue by pressing the button short

Adjust squelch procedure

The adjusted squelch determines the sensitivity of the receiver in the T/R. In case e.g. animals outside the station are identified, the transmitted power can be reduced ("Adjust Power procedure") or the receiver-sensitivity can be reduced by means of the squelch-adjustment.

Normally squelch does not have to be adjusted (automatically set to default)

When the display shows **AS**, the "Adjust Squelch procedure" is entered by pressing the button until the display blinks. The display now shows the actual sensitivity of the receiver, a value from "-0" (most sensitive) "-1", "-2" or "-3" (less sensitive).
By shortly pressing the button, the desired squelch can be adjusted. The setting can be entered by pressing the button until the display blinks.

Advised and default Squelch settings CPS4FSS 3.00

Single Feeder model 1 (9842616)	Squelch = 0
Single Feeder model 2 (9863311 or 9863320) AM CODE	Squelch = -2
Single Feeder model 2 (9863311 or 9863320) PM CODE	Squelch = -1

SF2 CPS4FSS 2.00 and SF2 CPS4FSS 3.00 with output 4 in use:
Two levels "ON" and "OF" are available to set te Squelch level

> Note : AS can be used to reduce the HF-field if animals are identified outside the station, check if the identification is still sufficient

6   Output Configuration

Since PROM version CPS4FSS 1.00. The "Oc-menu" is used as output installation menu. When selecting the menu option all outputs are tested.
This means all the specific outputs are activated for a certain time. In this period the T/R monitors the input and the current. After this period it decides what is connected to that specific output. The result will be in the memory of the T/R until the outputs are changed.

`The following situation are possible:`

Connected to output	display (x = output)
motor, connected normally	x n
motor, connected inverse	x i
relays (or lamp)	x r
nothing	x -

If a motor is connected the motor will be turned to the start position. From now on the output configuration is determined, until the menu is selected again. The output install menu is selected automatically at start-up and when a PROM with a other version number is installed.
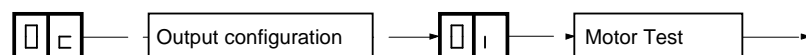
Using the "Oc-menu"
Select "Oc" on the display. Press the button until the display blinks. Select "Oi" on the display. Press the button until the display blinks. All outputs will be tested now.

7   Display values

During operation, the program steps through different program-states which are monitored on the display. This gives information about the state of the T/R and therefore can be used as an extra service tool.

The indication on the display is as follows :

Start process : status 0-5

status	description of the status
00	start : processor-initialisation
01	wait for valid address, "SA"-menu is started automatically
02	No communication with computer. Request for total peripheral number. At installation, the process controller asks here for peripheral information
03	request for external data
04	T/R SF under test
05	start-up process finished, task is killed

Feeding process

status	description of the status
10	wait until cow identified
11	cow identified and wait for feed-data
12	check if cow has feed balance for connected motors
13	motor-request
14	motor active. This state contains several substates, see table below
15	wait until interval time has passed
16	no feed balance (left), wait for cow to leave station

Motor rotation

status	description of the status
20	measuring motor current (check motor running)
21	read I-contact (must go low first)
22	read I-contact (must go high again)
23	M-output is switched off, wait until motor current is off

8 Internal test menu

The different functions of the transmitter / receiver can be tested by means of the push-button. A special program is build into the prom of the T/R. On the display this option is called "It", which stands for "Internal test"

The Internal test menu is a powerful service tool in case of system-service. The T/R stores registered errors which can be displayed on demand of the trouble-shooter. Also the T/R can execute a complete self test on demand, the test results also are displayed.

Internal test menu
− display Error procedure
− self test menu : depends on result of the "Oc-test"

Display error procedure
The detected errors are stored by the T/R itself and can be monitored on the display. When the display shows dE, the "display Error procedure" is entered by pressing the button until the display blinks. Two types of messages can be displayed by the T/R :
- error-messages   (E1)
- warning-messages   (E2, not used yet)

The procedure shows all registered errors on the display, one after the other, proceeded by the message-type. First all error-messages will be shown, then all warning-messages.

error	description	how to handle
- -	no errors	
01	error detected in motor 1	perform self test motor 1
02	error detected in motor 2	perform self test motor 2
03	error detected in motor 3	perform self test motor 3
04	error detected in motor 4	perform self test motor 4
07	motor hardware error : • no outputs were active, yet a motor current is detected • power supply to outputs then is switched off : − if motor current remains detected, T/R will restart − if motor current now is 0, T/R status remains unchanged	possible cause(s) : • one or more motor-outputs defect • uProc A/D-converter defect solution : • switch power supply off and on again • if any motors are running unauthorised, outputs are defect, replace T/R PCB • if T/R continuously restarts, the A/D-converter is defect. Replace T/R -PCB
08	motor watchdog activated : • software detects that motor runs > 15 seconds (unauthorised) • T/R restarts	possible cause : • unknown, probably software-error
09	Antenna error : • no or low HF-current detected	possible cause(s) : • antenna not connected or wrong adjusted solution : • check antenna / tune antenna • check HF-field • replace T/R-PCB
11	RAM error at start up : • data written does not match data read	solution : • replace T/R-PCB

12	ROM error at start up : • calculated checksum does not match checksum of EPROM	solution : • replace T/R-PCB

Self test menu

When the display shows `st`, the "self test menu" is entered by pressing the button until the display blinks. By shortly pressing the button, the T/R self tests can be selected. The selected test is executed by pressing the button until the display blinks.
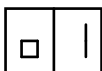
Test motor o1 (or o2, o3 and o4)

A motor is found at the "Oc-test". The motor now makes a complete revolution during which the motor current and status change of the I-contact of the motor are measured.

N.B. When a motor self test is executed, the previously detected errors will be overwritten, it therefore is important to write down all messages in order to not forget a message.

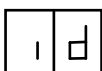| 00	motor run okay
02	no motor current measured
03	status change of I-contact not measured
05	unknown error
06	motor current > 3A

Test Lamp L1 (or L2, L3 and L4)

A valve, relay, lamp or nothing is found at the "Oc-test". The concerning output is now activated.
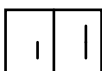
Test Input i1 (or i2, i3 and i4)

A valve, relay, lamp or nothing is found at the "Oc-test". The concerning input is now read.
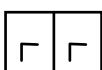
Test identification procedure

When The HF-field now continuously will be on while the ID-status is displayed as follows:
- - = no responder identified
xx = responder identified (xx = last two digits of responder number)

Test HF-scan

The HF-field now continuously is switched on (1.5 sec.) and off (1.5 sec.), during which the HF-status is displayed : ON = HF-field on
OF = HF-field off

Test ROM / RAM

The T/R now will restart, during which the memory-tests are executed. The table underneath shows an overview of the return values of these tests.

E1	RAM error
E2	ROM error
E3	RAM and ROM error

9   Trouble shooting

Symptom	cause	solution
• T/R SF does not start up, display remains blank	• No power	• check wiring
• T/R SF does not start up, display shows "**E1**", "**E2**" or "**E3**"	• RAM, ROM or both failed	• replace T/R SF
• T/R SF does not start up, display shows "**02**"	• T/R SF remains in start-up process, status 02	• check T/R SF address
	• T/R SF not supported by process controller	• install T/R SF at PC-end
• T/R SF does not feed	• no feed balance for used X-ponder	• check feed balance for this cow
	• motor not correct	• check error-messages at T/R SF-display or at PC • perform motor self test, evaluate test-results • check wiring, motor
	• antenna not correct	• perform identification self test, evaluate test-results • check wiring, antenna
	• Output wrong selected	• perform motor self test, evaluate test-results • check wiring, motor • check the output configuration in the PC-program
• poor identification	• interference from HF-field nearby	• perform identification self test, check reading-distance • if reading-distance not constant, HF-scanning must be enabled
	• antenna badly adjusted	• perform identification self test, check reading-distance • if reading-distance constantly poor, readjust **Ct**, enlarge transmitting-power **P1** or squelch
• Transmitter / Receiver does not feed with a new motor	• motor output blocked by Oc	• use "Oc-menu" to select the outputs. Change functions of the T/R in the PC-program

A = Power supply

B = Communication

C = Potentiometer

D = Tuning capacitor

E = Display / button

F = T/R module

G = RAM

H = EPROM

I = Micro processor

J = Multi-connector

K = Motor I/O's

L = Tab's

M = Ground tab

N = Antenna adjust
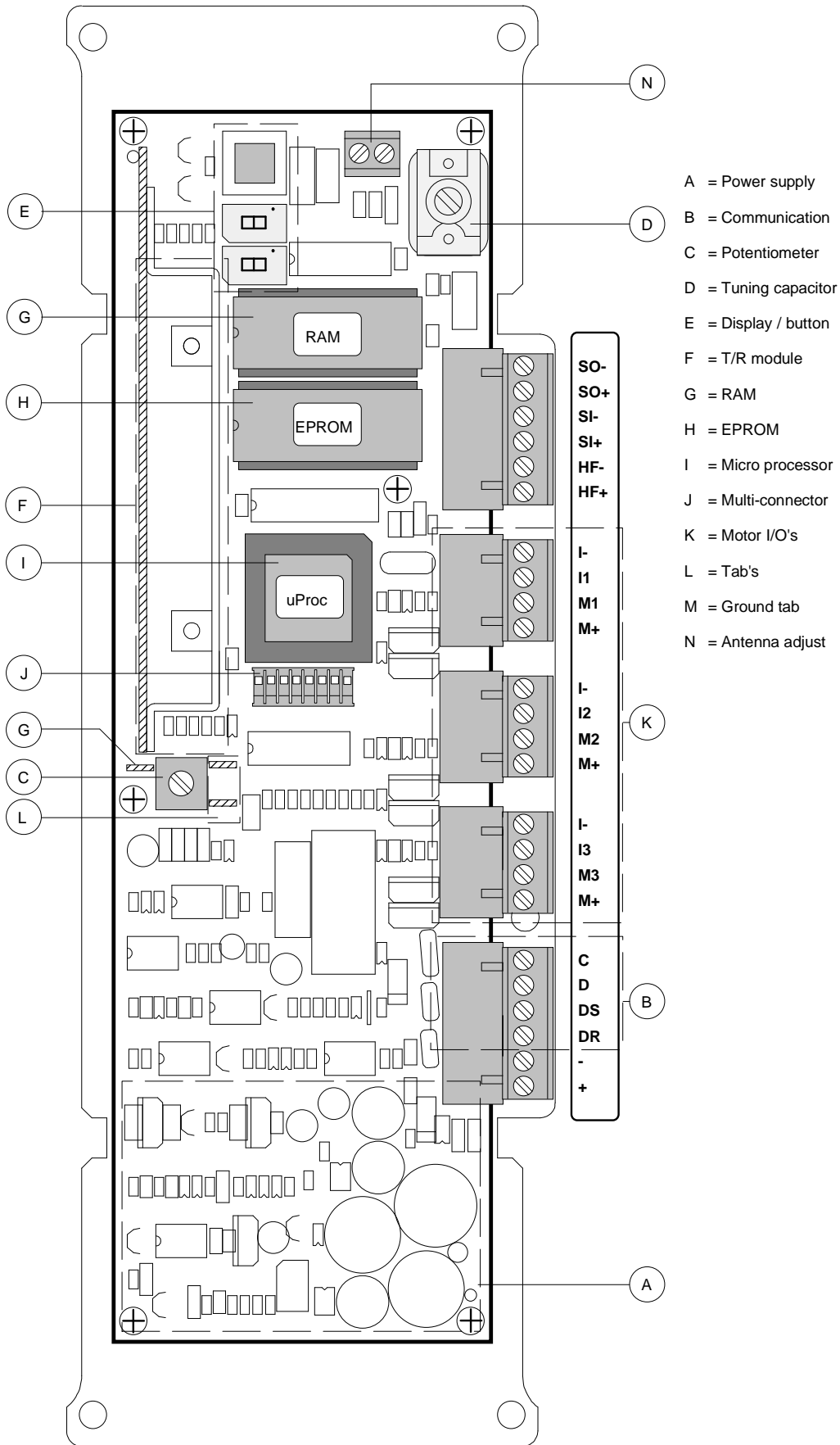
Fig. 1 Overview T/R SF model 1 PCB
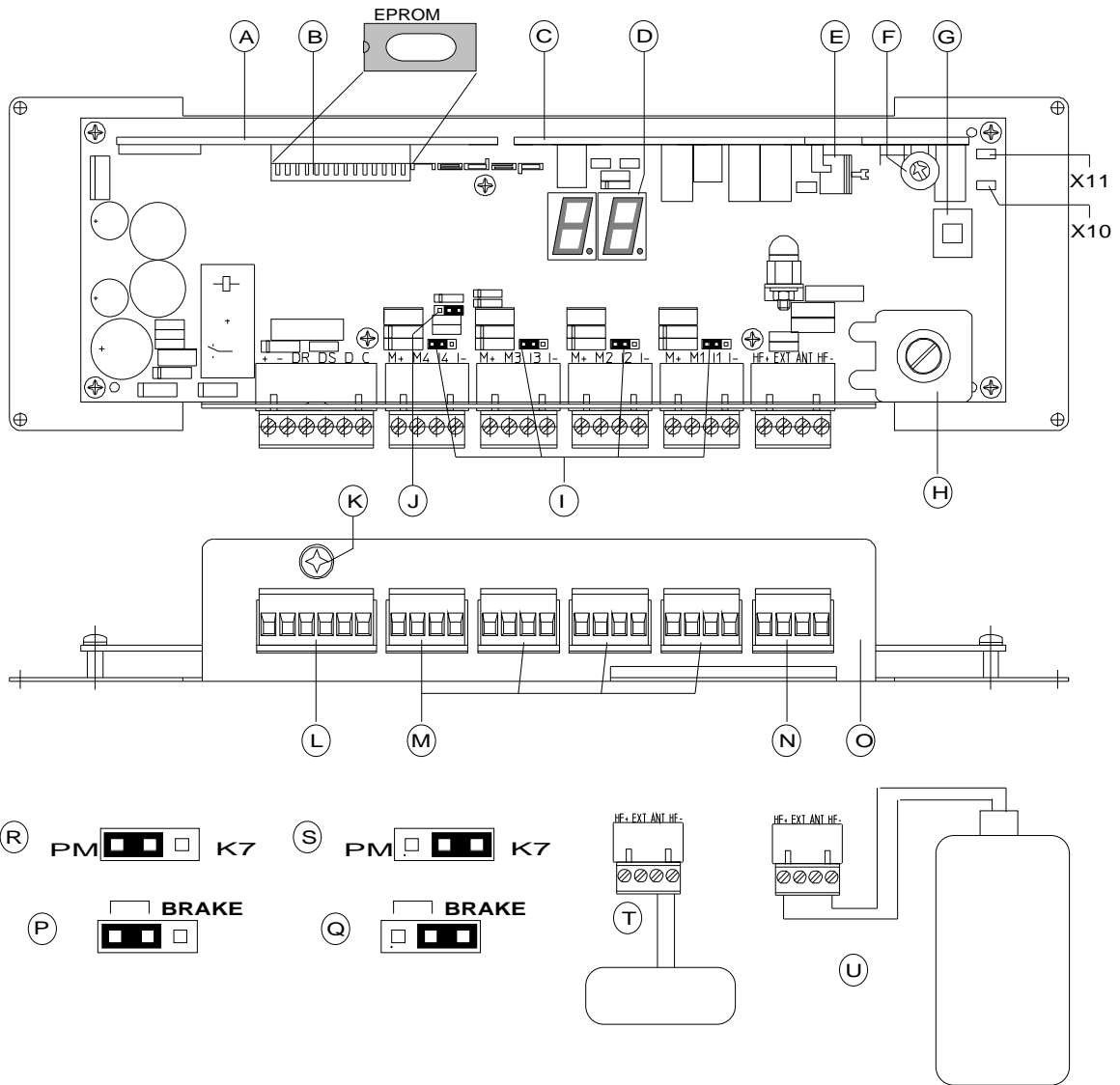
A	Micro processor module	**N**	HF connector
B	EPROM	**O**	Bottom plate
C	HF ID module	**P**	Brake jumper : motor connected
D	Display's	**Q**	Brake jumper : no motor connected
E	Frequency trimmer (not used)	**R**	"I4 low " jumper : Phase code ID
F	HF power potentio meter (P1)	**S**	"I4 low " jumper : No phase code ID
G	Push button	**T**	Antenna connection : antenna coil
H	HF trimmer (Ct)	**U**	Antenna connection : EWA transformer
I	"Enable brake" jumpers		
J	"I4 low " jumper		
K	Cable ground connector		
L	Power / communication connection	**X11**	Signal ground
M	Input / output connectors	**X10**	Responder signal

Fig. 1a   Overview T/R Single Feeder model 2 PCB

Transmitter / Receiver Single Feeder

P1

uProc

E-PROM

RAM

Ct

3 2 1

T/R	Motor
M+	+
M1	M
I1	I
I-	R

Feed motor 1

T/R	Motor
M+	+
M2	M
I2	I
I-	R

Feed motor 2

T/R	Motor
M+	+
M3	M
I3	I
I-	R

Feed motor 3

shielding

Interface Bridge VC4

cable	# wires	wire-D	max. length (meters)
A	4	0.8	40
	4	1.0	60
	4	1.2	80
B	4	0.8	10

article numbers

Transmitter / Receiver	9833153
T/R PCB	9842616
Motor	8005834
IB	9813870
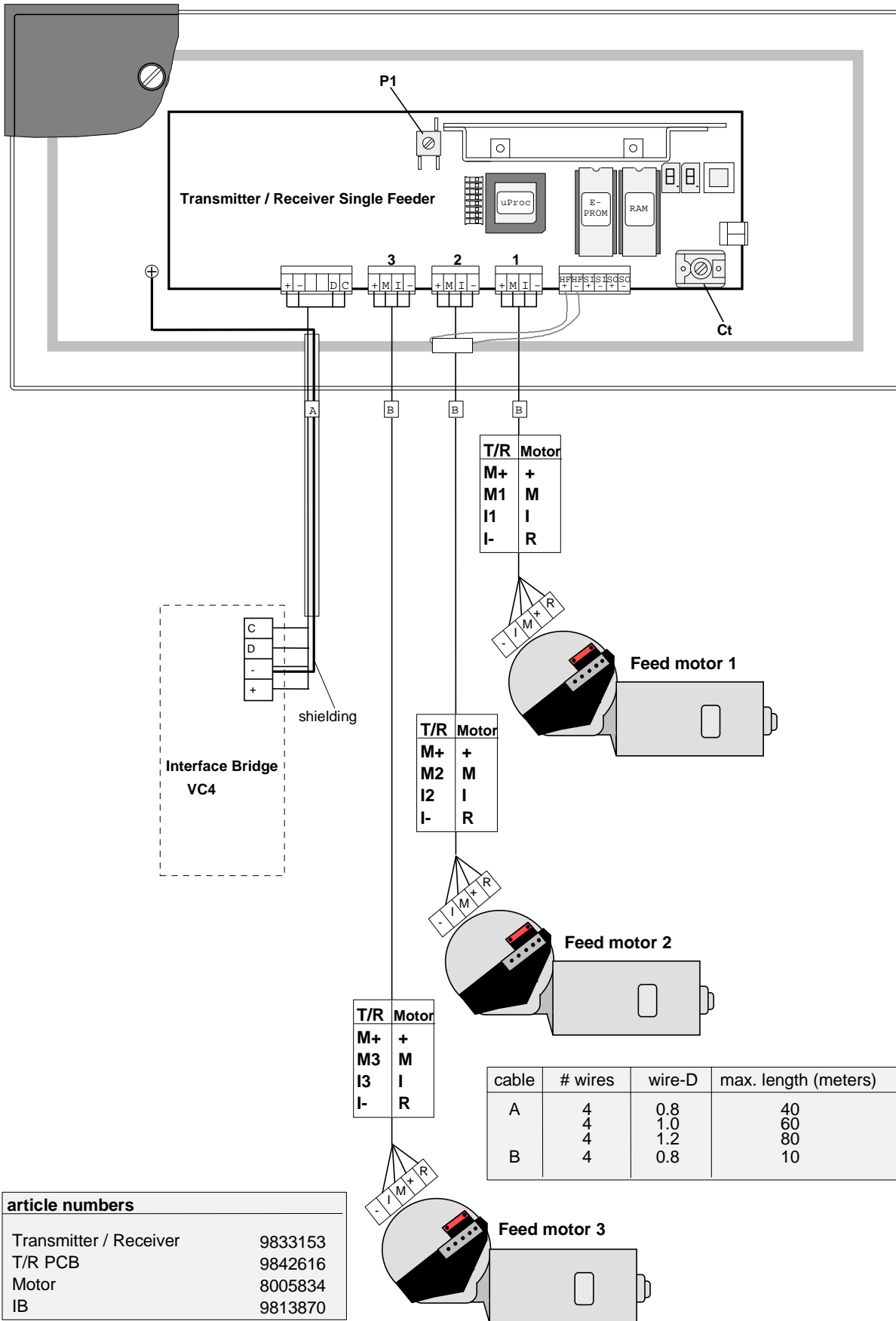
Fig. 2 SF model 1 Feeder cable connections
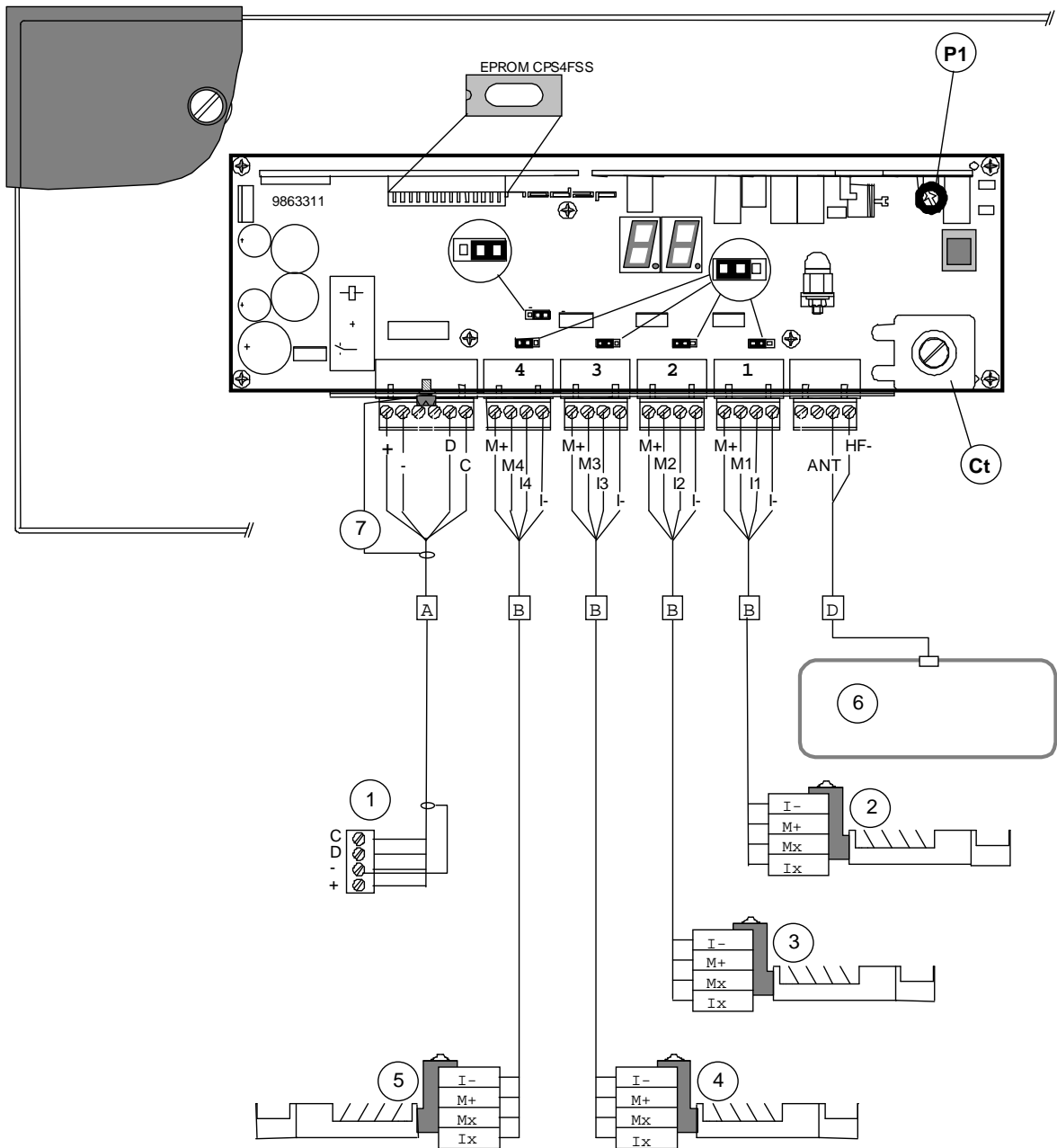
Cable nr.	# of wires	L.max. (m)*
A	4	40
B	4	3**
D	2	2

* at wire-D = 0.8mm. (other D's see text)
** Longer cable no problem, but not CE approved

1. IB VC4
2. Feed motor 1
3. Feed motor 2
4. Feed motor 3
5. Feed motor 4
6. Antenna
7. Shielding

Feed motor 4 : only with T/R SF2-4M

Fig. 2a   Single Feeder model 2 cable connections

Fig. 3 Display menu CPS4FSS

```
[A d] → [S A] ──────────① 
          │
        [d A] ──────────②
          
[H F] → [r S] → [r A] ──────③
                  │
                [r P] ──────④
                  │
                [r i] ──────⑤
                  │
                [r 2] ──────⑥
          │
        [A A] ──────────⑦
          │
        [A P] ──────────⑧
          │
        [A S] ──────────⑨
          │
        [A n] ──────────⑩
          │
        [i d] ──────────⑪

[I t] → [d E] ──────────Ⓐ
          │
        [S t] → [o –] ──────Ⓑ
                  │
                [L –] ──────Ⓒ
                  │
                [i –] ──────Ⓓ
                  │
                [i d] ──────Ⓔ
                  │
                [r r] ──────Ⓕ
          │
[O c] → [O i] ──────────Ⓖ
          │
        [r F] ──────────Ⓗ
```
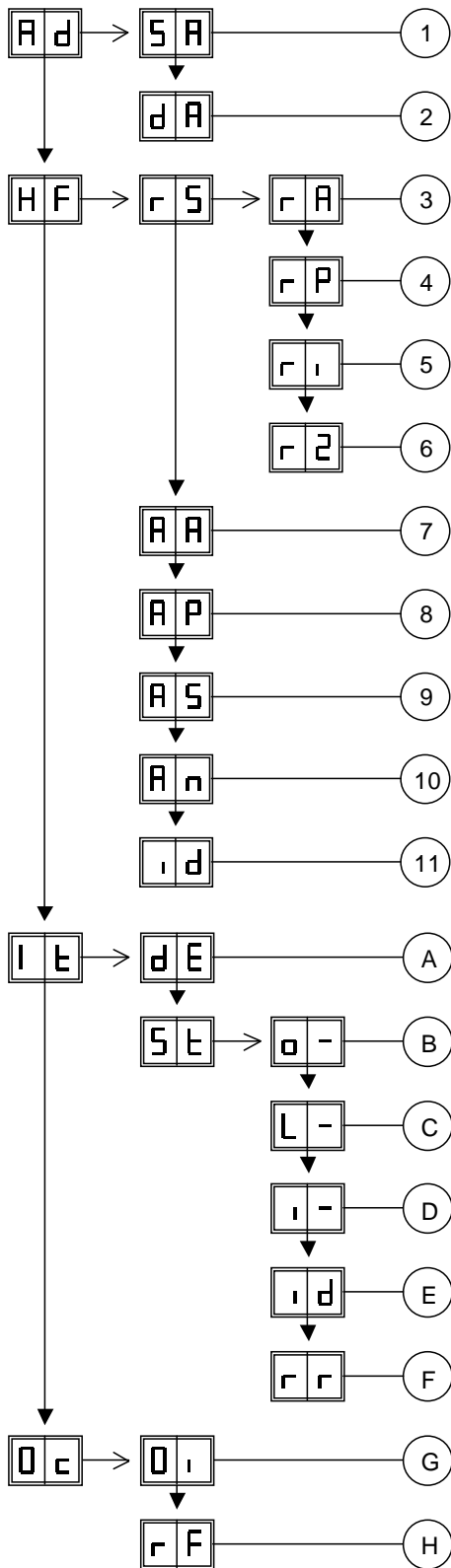
1. Set Address

2. Display Address

3. Responder select AM (X-ponder/respactor)

4. Responder select PM (Phase code)

5. Responder select ri (ISO)

6. Responder select r2 (Lactivator)

7. Adjust Antenna

8. Adjust Power

9. Adjust Squelch

10. Not used

11. Test identification

A. Display errors

B. o1 motor output 1
   o2 motor output 2
   o3 motor output 3
   o4 motor output 4

C. L1 output 1 (relais)
   L2 output 2 (relais)
   L3 output 3 (relais)
   L4 output 4 (relais)

D. i1 input 1
   i2 input 2
   i3 input 3
   i4 input 4

E. Test identification

F. ROM/RAM reboot

G. Output installation

H. For robot use only : Blockade on/of

| → | Press button untill blinking | | To leave menu: |
| ↓ | Press button short | [□□] | press button untill display is empty |

---

size = mm

1000

800

150   150

200

690

Art. nr. 9832947 + 9832955

200

Ø 9.0 (6x)
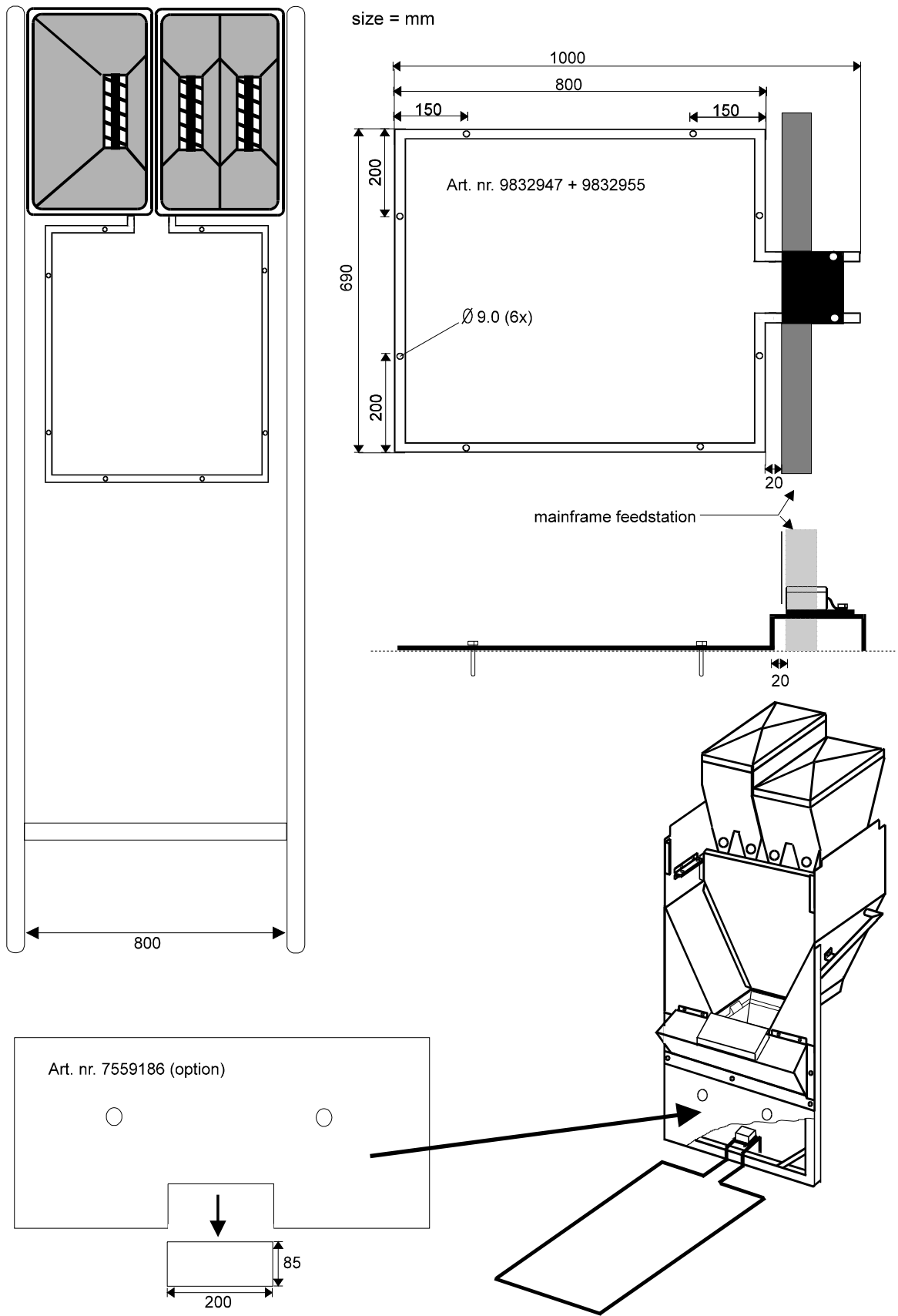
20

mainframe feedstation

20

Art. nr. 7559186 (option)

85

200

800

Figure 4   Floor antenna in the feedstation